

Surface Roughness Measuring System SURFTEST SJ-500/SV-2100

Catalog No.E15006(3)



Surface roughness testers offer benchtop or portable operation and the choice of data analysis by PC or an easy-to-use dedicated processor

Mitutoyo

Dedicated data processor type

Surftest SJ-500/SV-2100

Improved operability

7.5" Color TFT LCD

The dedicated data processor has a high-visibility 7.5" color TFT LCD. Icon display and touch panel operation provide user-friendly display and easy operation.

Positioning by joystick and manual control knobs on the processor

Easy-to-operate joystick. Fine positioning of stylus required for small-hole measurements can be easily performed using the manual fine-adjustment knobs.

Multiple trace function

A machine can be programmed to take up to three traces, one after the other.

Auto leveling table (optional)

Automatically levels the surface to be tested for easy, strain-free setup.

Various types of analysis

Capable of fine-contour analysis

Supports 43 types of analysis parameters, complying with surface roughness standards such as ISO 1997 and JIS 2001. Also capable of various fine-contour analysis.

* Contour analyses: Area, circle, angle, coordinate difference, step, inclination

High-durability

Ceramic guideway

A ceramic guideway, inherently free from wear and deterioration with age, is employed to maintain the traversing straightness of the drive unit (X-axis) indefinitely. Maintenance-free design, since anti-corrosion treatment is not required for ceramic.

SJ-500

Traverse: 50mm
Compact, high-performance type

SV-2100M4

Traverse: 100mm
Manual column type

SV-2100S4/H4/W4

Traverse: 100mm
Power column type

Dedicated data processor

Advanced processing and easy operation



Easy operation, high-accuracy analysis of surface roughness and fine contours!

High-visibility color display panel

A high-visibility 7.5" color TFT LCD, color icon display and touch-operated panel provide user-friendly, easy operation. Built-in thermal printer. Fine contour analysis provided as standard.



Supports 16 languages

Japanese, English, German, French, Italian, Spanish, Portuguese, Korean, Simplified Chinese, Traditional Chinese, Czech, Polish, Hungarian, Turkish, Swedish, Dutch

Multiple trace programming function

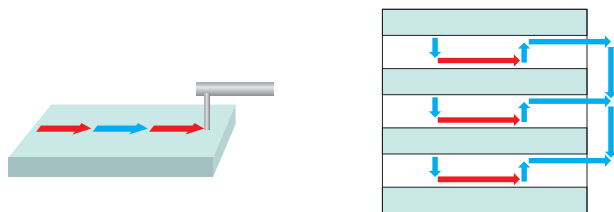
A machine can be programmed to take up to three consecutive traces by one-key operation, as shown in the figure below.

•SJ-500/SV-2100M4

Consecutive tracing in X-axis direction only

•SV-2100S4/H4/W4

X-axis tracing with programmed Z-axis shifts possible



➔ Measurement
➔ Traverse

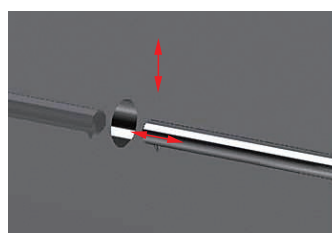
Example: SV-2100S4 input screen



Efficient positioning by joystick and adjustment knobs

Both a fast-traverse joystick (X-axis: 20mm/s for **SJ-500**, 40mm/s for **SV-2100**, Z2-axis: 20mm/s for **SV-2100S4/H4/W4**) and manual fine-adjustment knobs, essential for positioning in small hole measurement, are standard features.

Positioning in small hole measurement



Positioning in Y/Z-directions with column fine-adjustment knob (or detector elevation knob) and optional cross-travel table.



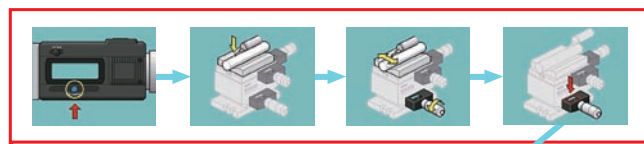
Positioning at the trace start point with X-axis fine-adjustment knob.

Navigation function aids leveling

Powerful support for leveling adjustments

When using an optional 3-axis adjustment table or leveling table, a navigation screen is available to help the operator level the surface to be tested.

Example of 3-axis adjustable table

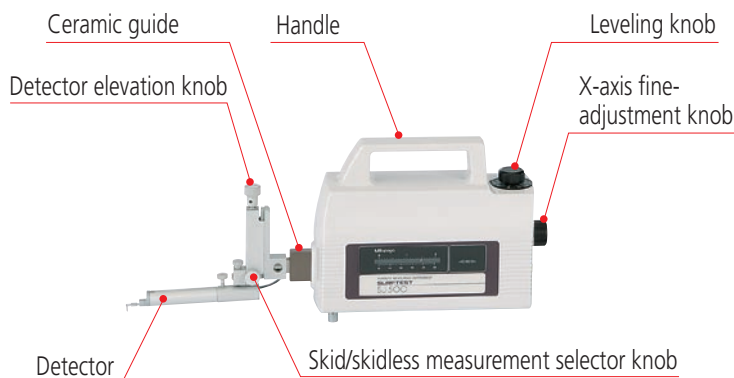


The user is guided through the leveling procedure to determine the amount of adjustment needed.

A portable tester also boasting high performance in desktop applications

Surftest SJ-500

High accuracy, high performance, user-friendly display and easy operation



Class-leading traverse straightness: 0.2 μ m/50mm
High-speed traverse at up to 20mm/s under joystick control
Smooth positioning using the vertical adjustment knob

Vertical adjustment knob

Essential for positioning the stylus close to the workpiece!



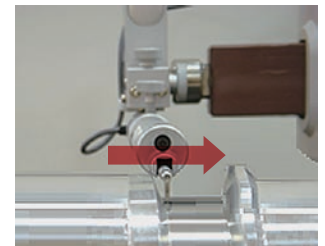
Support for testing problematic features

Supports measurement in the axial direction for shrouded features, such as found on crankshafts, by simply swiveling the detector through 90 degrees.

Normal tracing

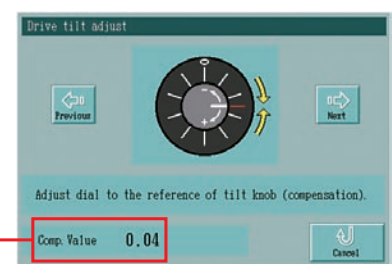


Tracing a shrouded feature



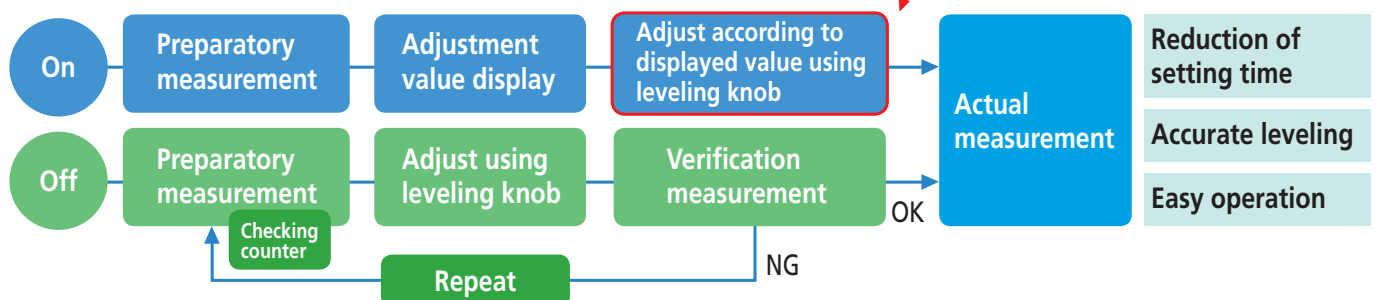
Drive unit inclination adjustment mechanism

Digital Adjustment Tilting (DAT) function is supplied as standard for efficient leveling of workpieces: $\pm 1.5^\circ$



DAT function

Powerful support for manual leveling!!

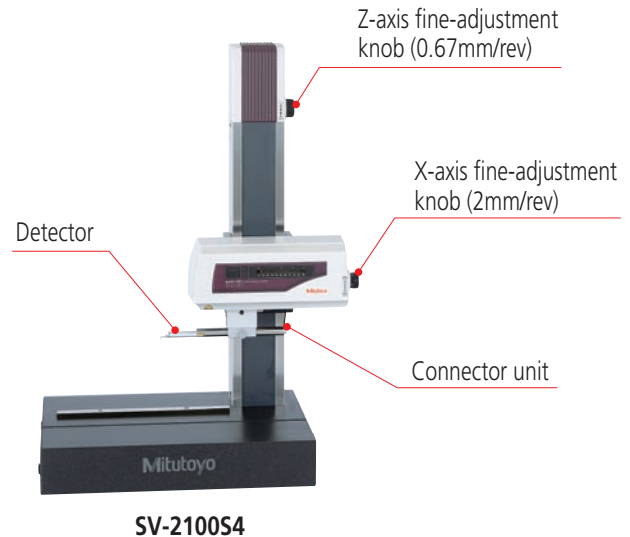
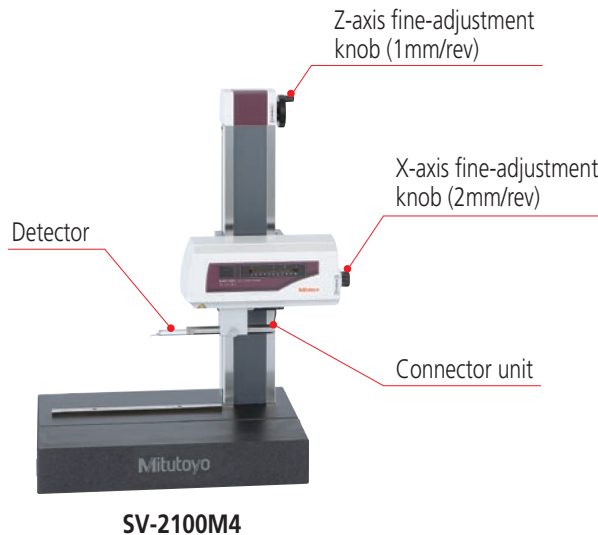


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A desktop tester that's easy to use for portable applications

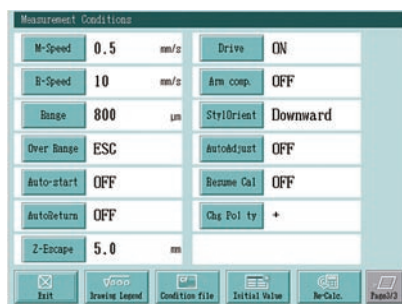
Surftest SV-2100

By setting the origin point at start-up, the Absolute scale system allows accurate positioning for repeated or multiple measurements.



High-speed traverse at up to 40mm/s (X-axis) under joystick control
Smooth positioning, using the Z-axis fine-adjustment knobs
Stable, high-accuracy measurement with a traverse straightness of 0.15μm/100mm

1. Capable of a series of automatic measurements, plus auto leveling (optional) and stylus retraction. Accurate positioning for repeated or multiple measurements possible.



Measurement setup screen

2. **SV-2100S4/H4/W4** models are equipped with an emergency stop button.



3. Base sizes and vertical travel range on column

Model No.	Vertical travel range	Vertical traverse method	Base size
SV-2100S4	350mm	Power and manual	600×450mm
SV-2100H4	550mm		1000×450mm
SV-2100W4			
SV-2100M4	350mm	Manual only	600×450mm

Dedicated data processor

MiCAT

Mitutoyo Intelligent Computer Aided Technology

the standard in world
metrology software
FORM

Data processing unit

- Data saving (internal memory)
- High-speed printing
- Expansion slot for external memory (CF card)
- Display supports 16 languages
- Key panel

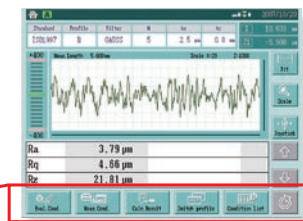


- High-visibility 7.5" color LCD
- Touch panel with color icon display
- Joystick

Customizable menu screen

The menu customization function allows display of frequently used menu icons

One-touch display of various screens



Home screen



Evaluation setup screen



Measurement setup screen



Calibration screen



Contour analysis screen

Statistical processing

Statistical data processing possible (up to 300 data samples)

Statistical processing items: MAX, MIN, average, standard deviation, histogram, probability of acceptance.



Statistical data input



Statistical results

Saving and recalling measurement setups

Up to 10 measurement setups can be saved to and recalled from internal memory.

One-touch recall of stored setups



Click the desired measurement setup file

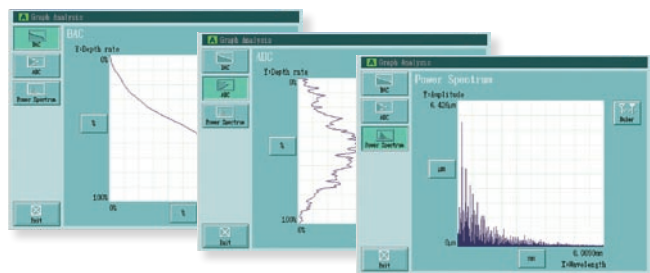


Measurement screen opens

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Analysis to international standards

Evaluates surface roughness using up to 43 parameters complying with international standards such as ISO 1997 and JIS 2001. Bearing Area Curve (BAC), Amplitude Distribution Curve (ADC), and power spectrum (wavelength display) are readily available in graph form.



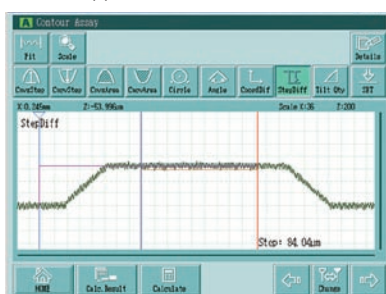
A large variety of optional accessories

Options supporting measurement including an auto leveling table, a 3-axis adjustment table, and a leveling table. Furthermore, these can be easily operated via a navigation function. (Supported accessories differ depending on the model.)



Fine-contour analysis

Various contour analyses (area, circle, angle, coordinate difference, step, inclination) are supplied as standard.



Select desired analysis icon and then specify the range.

Easy, icon-based input of setup conditions

* Patent registered in Japan, U.S.A., China, Germany, U.K., and France.

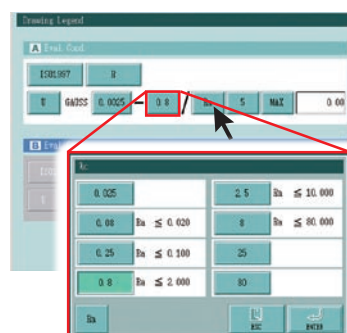
Setups are aided by icons representing ISO/JIS roughness standard parameters with appropriate values selected from recommended lists.

Typical surface roughness symbol on drawing

Grinding
 Ra 1.5
 \perp 0.08-0.8/ Rz 8max 3.3

Typical result of icon-based setup

U"X"0.08—0.8/ Rz 8max 3.3

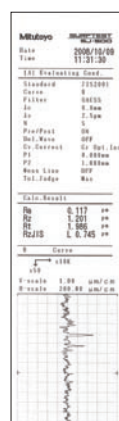


Clicking a parameter icon displays the recommended cut-off value, etc.

Built-in thermal printer

Measurement data is printed by the high-definition, high-speed thermal printer.

In addition to calculation results and evaluation results, BAC, ADC and other curves can also be printed.



Simplified communication program for SURFTEST SJ series

The SurfTest SJ-500/SV-2100 series has a USB interface, enabling data to be transferred to a spreadsheet or other software. We also provide a program that lets you create inspection record tables using a Microsoft Excel* macro.

This program can be downloaded free of charge from the Mitutoyo website.

<http://www.mitutoyo.co.jp>

This program can be downloaded free of charge from the Mitutoyo website.

● OS : Windows XP-SP3 ● Spreadsheet software : Microsoft Excel 2000
 Windows Vista Microsoft Excel 2002
 Window 7 Microsoft Excel 2003
 Window 8 Microsoft Excel 2007
 Microsoft Excel 2010
 Microsoft Excel 2013

*Windows OS and Microsoft Excel are products of Microsoft Corporation.

The optional USB cable is also required.

USB cable for SJ-500/SV-2100 series **No.12AAH490**

PC data processing type Surftest SJ-500P/SV-2100M4

A superior data processing tester with PC data analysis for higher efficiency.

- * If a power column type with PC data-processing is desired, consider the SV-3100 series
- * Printer is optional.



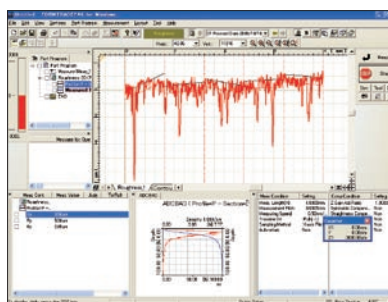
SJ-500P

SV-2100M4 with PC

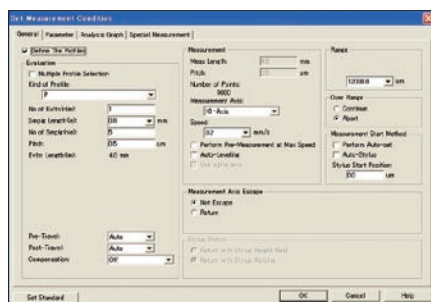
Either FORMTRACEPAK or SURFPAK-EZ software can be used.

FORMTRACEPAK: Best-seller for surface roughness analysis

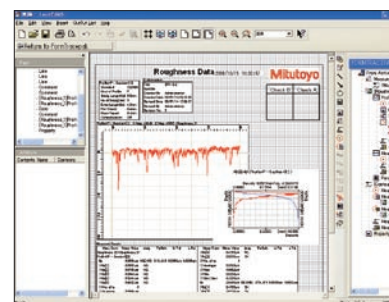
A best-seller dedicated software especially for surface roughness measurement and analysis capable of free print format settings for original inspection certificates.



Measurement and results display screen



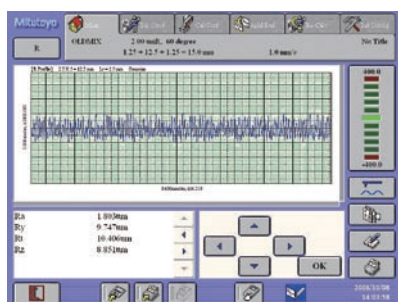
Setup definition screen



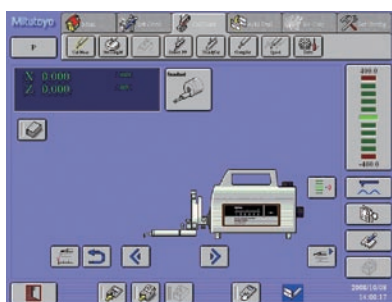
Printing screen

SURFPAK-EZ: Easy-to-use task-focused software

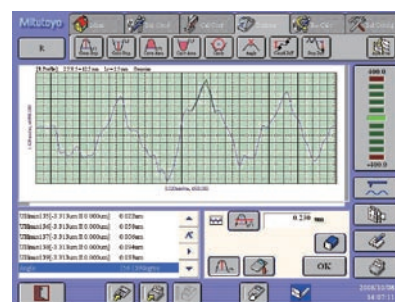
User-friendly graphical display and button layout allows intuitive operation. Simplified fine-contour analysis provided as standard, including step, area, angle, and circle calculation.



Measurement and results display screen



Calibration and control screen (SJ-500P)



Simplified contour analysis screen

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Specifications

Specifications

Type of data processing			Dedicated data processor					PC system	
Model No.			SJ-500	SV-2100M4	SV-2100S4	SV-2100H4	SV-2100W4	SJ-500P	SV-2100M4
Order No.*	with 0.75 mN detector	mm	178-532-01	178-636-01	178-680-01	178-682-01	178-684-01	178-530-01	178-634-01
		inch/mm	178-533-01	178-637-01	178-681-01	178-683-01	178-685-01	178-531-01	178-635-01
	with 4 mN detector	mm	178-532-02	178-636-02	178-680-02	178-682-02	178-684-02	178-530-02	178-634-02
		inch/mm	178-533-02	178-637-02	178-681-02	178-683-02	178-685-02	178-531-02	178-635-02
Travel range (operation)	X axis		50mm (2inch)	100mm (4inch)				50mm (2inch)	100mm (4inch)
	Z2 axis (column)		———	350mm (13.8inch)	350mm (13.8inch)			———	350mm (13.8inch)
Measuring range	X axis		50mm (2inch)	100mm (4inch)				50mm (2inch)	100mm (4inch)
	Z1 axis (detector unit)		800µm / 80µm / 8µm (3200µinch / 3200µinch / 320µinch)						
Resolution	X axis		0.05µm (1.97µinch)						
	Z1 axis (detector unit)		0.01µm / 800µm range, 0.001µm / 80µm range, 0.0001µm / 8µm range (0.4µinch / 32000µinch, 0.04µinch / 3200µinch, 0.004µinch / 320µinch)						
	Z2 axis (column)		———	———	1µm (39.4µinch)			———	———
Power drive speed	X axis		0 - 20mm/s (via joystick) or manual	0 - 40mm/s (via joystick) or manual				0 - 20mm/s (via PC) or manual	0 - 40mm/s (via PC) or manual
	Z2 axis (column)		———	Manual	0 - 20mm/s (via joystick) or manual			———	Manual
Measuring speed			0.02 – 5mm/s						
Traverse guideway straightness			0.2µm / 50mm	0.15µm / 100mm				0.2µm / 50mm	0.15µm / 100mm
Stylus up/down operation			Arc movement						
Point of stylus			Downward						
Detector	Measuring force		0.75 mN or 4 mN						
	Stylus tip		0.75mN detector: 60°, R2 µm or 4mN detector: 90°, R5µm						
Applicable standards			JIS'82 / JIS'94 / JIS'01 / ISO'97 / ANSI / VDA						
Assessed profiles			Dedicated data processor type: P (primary profile), R (roughness profile), WC, envelope residual profile, roughness motif, waviness motif						
			PC system type: P (primary profile), R (roughness profile), WC, WCA, WE, WEA, DIN4776 profile, E (envelope residual profile), roughness motif, waviness motif						
Evaluation parameters			Dedicated data processor type: Pa, Pq, Pz, Pp, Pv, Pt, Psk, Pku, Pc, PSm, PΔq, Pmr, Pmr(c), Pδc, Rk, Rpk, Rvk, Mr1, Mr2, A1, A2, Rmax, Rz, Pmax, PzJIS Ra, Rq, Rz, Rp, Rv, Rt, Rsk, Rku, Rc, RSm, RΔq, Rmr, Rmr(c), Rδc, Ry, R3z, RPl, Pc, Sm, S, HSC, Rmax, RzJIS, Rppi, RΔa, Rla, Rlq, Rlo, Rlr, tp, Htp, Vo Wa, Wq, Wz, Wp, Wv, Wt, Wsk, Wku, Wc, WSm, WΔq, Wmr, Wmr(c), Wδc, Wy, W3z, WPl, Wmax, WΔa, Wla, Wlq, Wlo, Wlr R, Rx, AR, W, Wx, AW, Wte						
			PC system type: Pa, Pq, Psk, Pku, Pp, Pv, Pz, Pt, Pc, PSm, PΔq, Pmr (c), Pmr, Pδc, Ra, Rq, Rsk, Rku, Rp, Rv, Rz, Rt, Rc, RSm, RΔq, Rmr (c), Rmr, Rδc, Wa, Wq, Wsk, Wku, Wp, Wv, Wz, Wt, Wc, WSm, WΔq, Wmr (c), Wmr, Wδc, Rk, Rpk, Rvk, Mr1, Mr2, A1, A2, Rx, AR, R, Wx, AW, W, Wte, Ry, RyDIN, RzDIN, R3y, R3z, S, HSC, Lo, Ir, Δa, λa, λq, Vo, Htp, NR, NCRX, CPM, SR, SAR, NW, SW, SAW						
Analysis graphs			Dedicated data processor type: ADC, BAC, power spectrum graph PC system type: ADC, BAC Graph, power spectrum graph, auto-correlation graph, Walsh power spectrum graph, Walsh auto-correlation graph, slope distribution graph, local peak distribution graph, parameter distribution graph						
Curved surface compensation			Dedicated data processor type: Parabolic compensation, Hyperbolic compensation, Elliptical compensation, Circular compensation Conic compensation, Inclination (Entire, Arbitrary)						
			PC system type: Parabolic compensation, Hyperbolic compensation, Elliptical compensation, Circular compensation, Conic compensation, Inclination (Entire, Arbitrary), Polynomial compensation						
Contour analysis			Dedicated data processor type: Area, Circle, Angle, Coordinate difference, Step, Inclination PC system type (SURFPAK-EZ): Area, Circle, Angle, Coordinate difference, Step, Inclination						
Filters			Dedicated data processor type: 2CR-75%, 2CRPC-75%, Gaussian, Robust-spline PC system type: 2CR-75%, 2CR-50%, 2CRPC-75%, 2CRPC-50%, Gaussian, Rubust-spline						
Base size (width x depth)			———	600x450mm			1000x450mm	———	600x450mm
Base material			———	Granite				———	Granite
External dimensions (W x D x H)	Main unit		425x94x160mm	716x450x863mm	766x450x966mm	766x450x1166mm	1166x450x1176mm	425x94x160mm	716x450x863mm
	Display unit		330x270x124mm					———	———
	Electronic unit		———	———	372x245x71.8mm			———	———
	PC I/F unit		———	———	———			350x263x86mm	
Mass	Main unit		2.7kg	140kg	140kg	150kg	220kg	2.7kg	140kg
	Display unit		4.0kg				———	———	
	Electronic unit		———	———	3.0kg			———	———

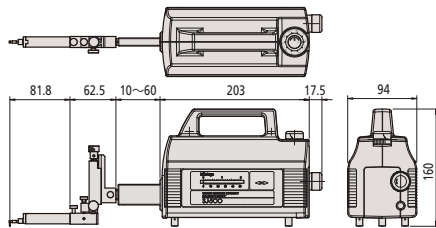
To denote your AC line voltage add the following suffixes (e.g. **178-532-01A**).

A for 120V, C for 100V, D for 230V, E for 230V (for UK), DC for 220V (for China), K for 220V (for Korea)

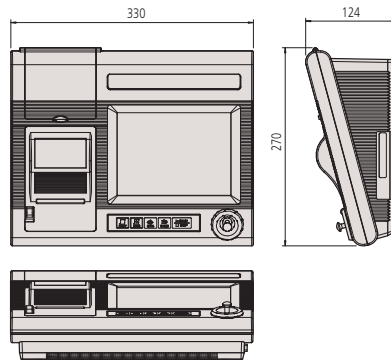
Dimensions

Unit: mm

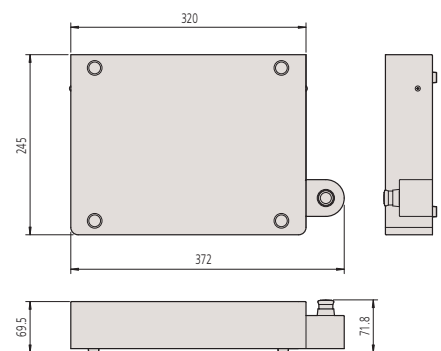
SJ-500



Dedicated data processor

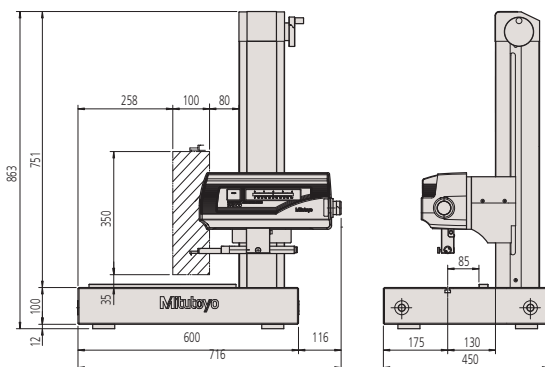


Electronic unit

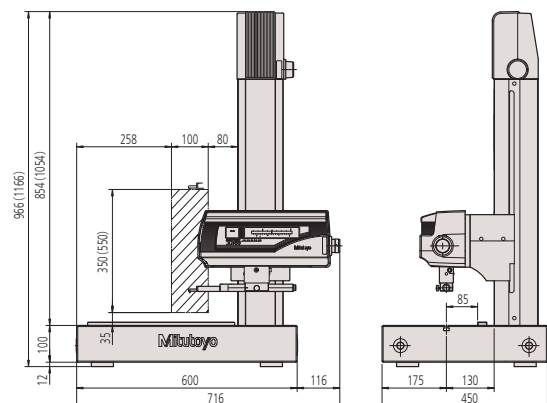


Only for SV-2100S4 / H4 / W4

SV-2100M4

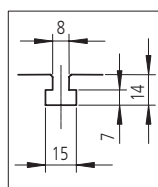
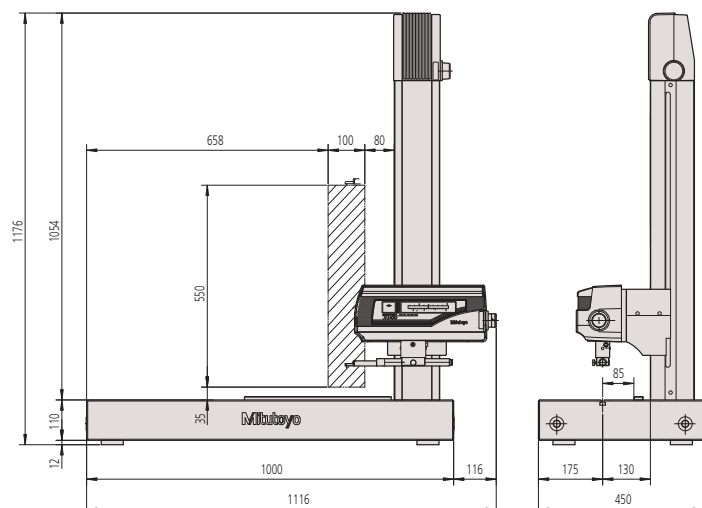


SV-2100S4 / SV-2100H4



(): SV-2100H4

SV-2100W4



T-groove dimensions
(common to all types)



Measuring range

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Optional Accessories

Manual column stand: 178-085 (for SJ-500)

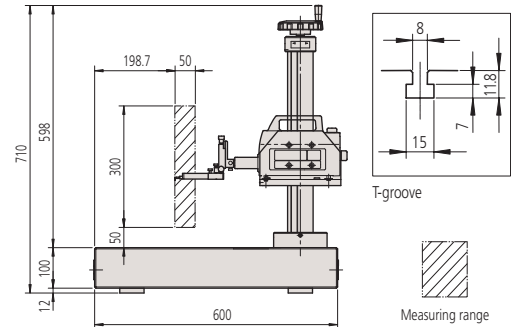
Suitable for desktop use in inspection rooms, etc.

No.178-085 * Except for measuring unit
Vertical adjustment range: 300 mm
Dimension (W x D x H): 600 x 450 x 710 mm
Mass: 110 kg



Note: While the appearance of the natural stone stand varies according to the source, the high stability for which this material is known can always be relied upon.

Dimensions of SJ-500 with manual column stand Unit: mm



Simple column stand: 178-089 (for SJ-500)

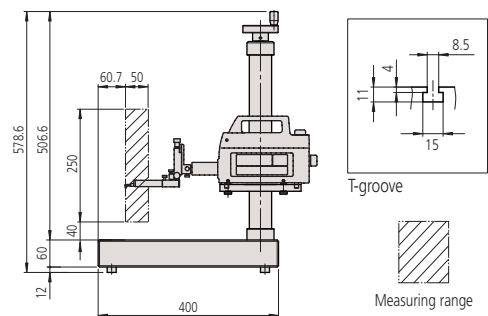
A portable simple column stand.

No.178-089 * Except for measuring unit
Vertical adjustment range: 250 mm
Dimension (W x D x H): 400 x 250 x 578.6 mm
Mass: 20 kg



Note: While the appearance of the natural stone stand varies according to the source, the high stability for which this material is known can always be relied upon.

Dimension of SJ-500 with simple column stand Unit: mm



Auto-leveling table: 178-081 (for SJ-500 / SV-2100M4), 178-083 (for SV-2100S4 / H4 / W4)



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



Inclination adjustment angle	±2°
Maximum load	7kg
Table dimensions	130x100mm
Mass	3.5kg

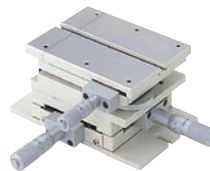
DAT leveling table: 178-048



This table can be used by itself or in conjunction with other leveling tables.

Inclination adjustment angle	±1.5°
Maximum load	7kg
Table dimensions	130x100mm

XY leveling tables



No.178-043-1



No.178-042-1

Order No.	178-042-1(mm) 178-052-1(inch) *with digital heads	178-043-1(mm) 178-053-1(inch) *with analog heads	178-049(mm) 178-058(inch/mm) *with digital heads
Table dimensions	130x100mm		
Maximum load	15kg		
Inclination adjustment angle	±1.5°		—
Swiveling angle	±3°		—
X/Y-axis travel range	±12.5mm	±12.5mm	±12.5mm
Resolution	0.001mm	0.01mm	0.001mm
Dimensions (WxDxH)	262x233x83mm	220x189x83mm	262x233x55mm
Mass	6.3kg	6kg	5kg

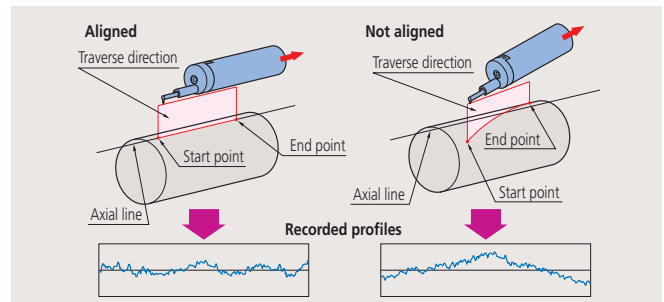
Optional Accessories

3-axis adjustment table: 178-047

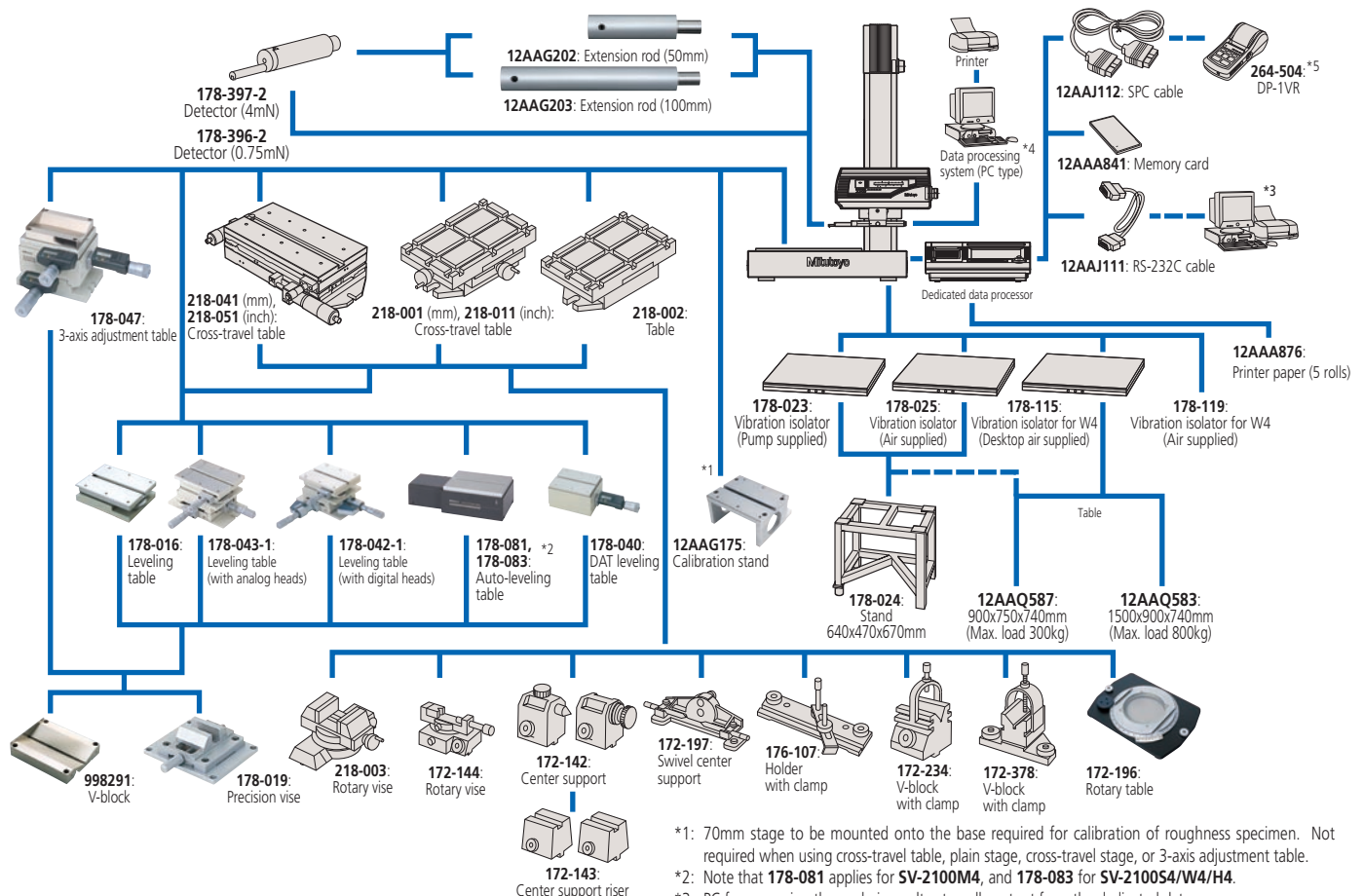
This table helps make the alignment adjustments required when measuring cylindrical surfaces. The corrections for the pitch angle and the swivel angle are determined from a preliminary measurement and the Digimatic micrometers are adjusted accordingly. A flat-surfaced workpiece can also be leveled with this table.



Inclination adjustment angle	$\pm 1.5^\circ$
Swiveling angle	$\pm 2^\circ$
Y-axis range	$\pm 12.5\text{mm}$
Resolution of heads	0.001mm
Table dimensions	130x100mm
Maximum load	15kg



System configuration including optional accessories (for SV-2100M4 / S4 / H4 / W4)



*1: 70mm stage to be mounted onto the base required for calibration of roughness specimen. Not required when using cross-travel table, plain stage, cross-travel stage, or 3-axis adjustment table.

*2: Note that 178-081 applies for SV-2100M4, and 178-083 for SV-2100S4/W4/H4.

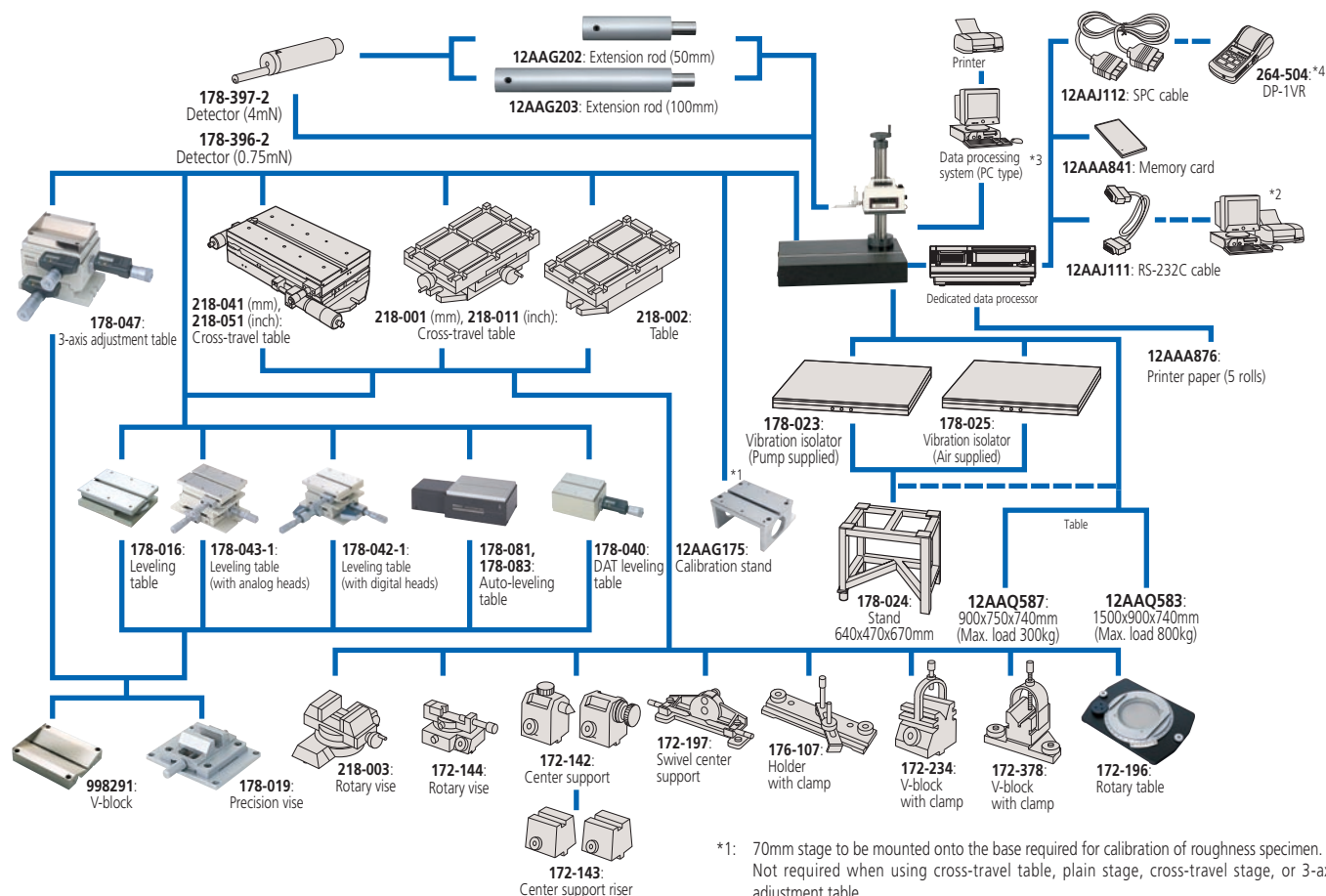
*3: PC for managing the analysis result externally output from the dedicated data processor.

*4: Only SV-2100M4 can be connected.

*5: Since print of unit does not support 'µm', use DP-1VR without print set of unit.

Optional Accessories

System configuration including optional accessories (for SJ-500 with optional manual column stand)



- *1: 70mm stage to be mounted onto the base required for calibration of roughness specimen. Not required when using cross-travel table, plain stage, cross-travel stage, or 3-axis adjustment table.
- *2: PC for managing the analysis result externally output from the dedicated data processor.
- *3: Only SJ-500P can be connected. Use a USB cable when connecting the **SJ-500P** main unit and a PC. A USB cable is a standard accessory of the **SJ-500P**.
- *4: Since print of unit does not support 'µm', use DP-1VR without print set of unit.

Roughness specimen (standard accessory): 178-601

Display	Ra = about 3 µm
Material	Ni (TiN surface coating)

Reference step specimen: 178-611 (mm), 178-612 (inch)

For sensitivity calibration of detector

Nominal value of step	2µm (79µin), 10µm (394µin)
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Roughness specimen: 178-604

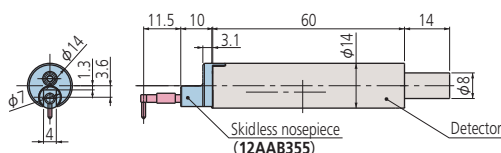
For checking stylus tip

Display	Ra = about 3 µm, about 0.4 µm
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Optional Styli

Detectors



Order No.	Measuring force	
178-396-2	0.75mN	'97ISO and '01JIS compliant detectors
178-397-2	4mN	Detectors that comply with previous standards, for general use, etc.

Extension rods

- 12AAG202 Extension rod 50mm



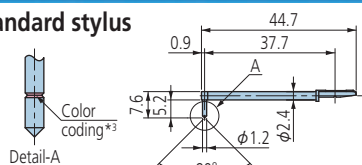
- 12AAG203 Extension rod 100mm



* No more than one extension rod can be connected.

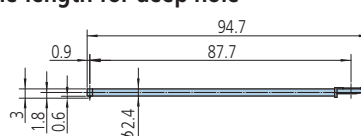
Styli

Standard stylus



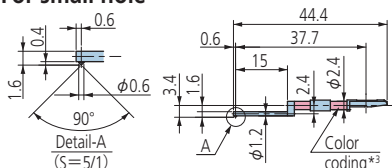
- 12AAE882 (1μm)*¹
- 12AAE924 (1μm)
- 12AAC731 (2μm)*¹
- 12AAB403 (5μm)
- 12AAB415 (10μm)
- 12AAE883 (250μm)*⁴
- (): Tip radius

Double-length for deep hole *²



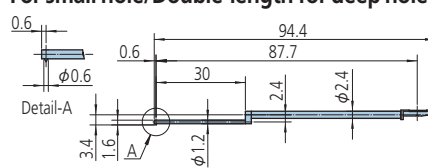
- 12AAE898 (2μm)*¹
- 12AAE914 (5μm)
- (): Tip radius

For small hole



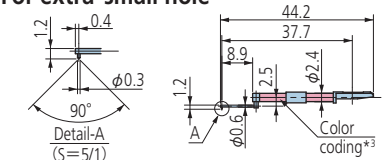
- 12AAC732 (2μm)*¹
- 12AAB404 (5μm)
- 12AAB416 (10μm)
- (): Tip radius

For small hole/Double-length for deep hole *²



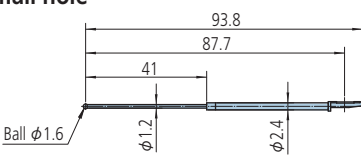
- 12AAE892 (2μm)*¹
- 12AAE908 (5μm)
- (): Tip radius

For extra-small hole



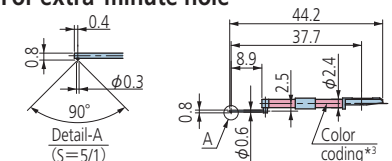
- 12AAC733 (2μm)*¹
- 12AAB405 (5μm)
- 12AAB417 (10μm)
- (): Tip radius

For small hole *² *⁴



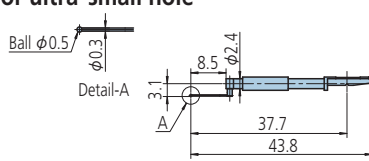
- 12AAE884 (φ1.6mm)
- (): Tip radius

For extra-minute hole



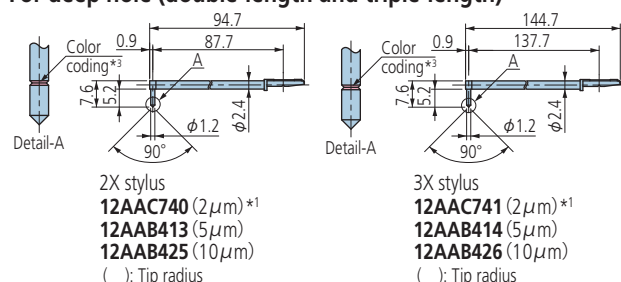
- 12AAC734 (2μm)*¹
- 12AAB406 (5μm)
- 12AAB418 (10μm)
- (): Tip radius

For ultra-small hole *⁴



- 12AAJ662 (φ0.5mm)
- (): Tip radius

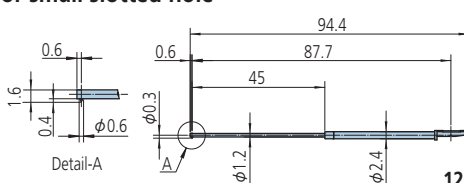
For deep hole (double-length and triple-length) *²



- 2X stylus
- 12AAC740 (2μm)*¹
- 12AAB413 (5μm)
- 12AAB425 (10μm)
- (): Tip radius

- 3X stylus
- 12AAC741 (2μm)*¹
- 12AAB414 (5μm)
- 12AAB426 (10μm)
- (): Tip radius

For small slotted hole *²



- 12AAE938 (2μm)*¹
- 12AAE940 (5μm)
- (): Tip radius

*1: Tip angle 60°

*2: For downward-facing measurement only.

*3:

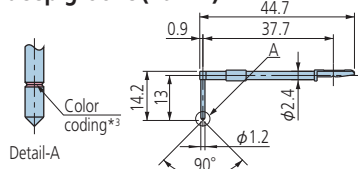
Tip radius	1μm	2μm	5μm	10μm	250μm
Color coding	White	Black	No color	Yellow	No notch or color

*4: Used for calibration, a standard step gauge (No.178-611 or 178-612, option) is also required

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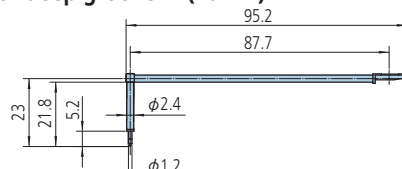
Styli

For deep groove (10mm)



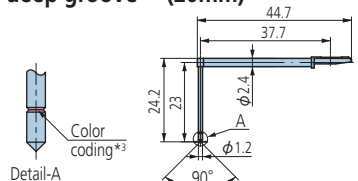
12AAC735 (2μm) *1
12AAB409 (5μm)
12AAB421 (10μm)
 (): Tip radius

For deep groove *2 (20mm)



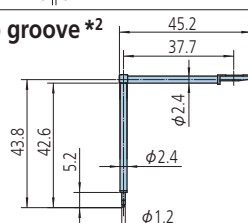
12AAE893 (2μm) *1
12AAE909 (5μm)
 (): Tip radius

For deep groove *2 (20mm)



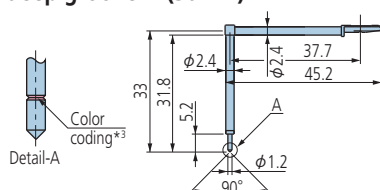
12AAC736 (2μm) *1
12AAB408 (5μm)
12AAB420 (10μm)
 (): Tip radius

For deep groove *2 (40mm)



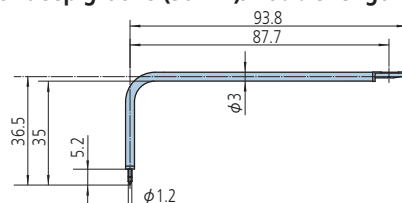
12AAE895 (2μm) *1
12AAE911 (5μm)
 (): Tip radius

For deep groove *2 (30mm)



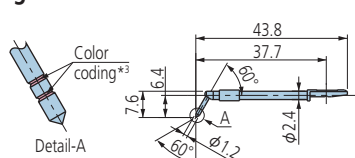
12AAC737 (2μm) *1
12AAB407 (5μm)
12AAB419 (10μm)
 (): Tip radius

For deep groove (30mm)/Double-length for deep hole *2



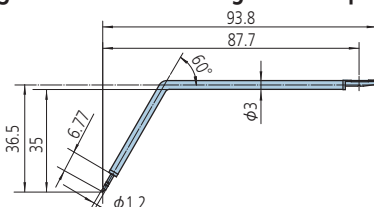
12AAE894 (2μm) *1
12AAE910 (5μm)
 (): Tip radius

For gear tooth



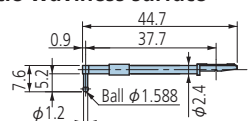
12AAB339 (2μm) *1
12AAB410 (5μm)
12AAB422 (10μm)
 (): Tip radius

For gear tooth/Double-length for deep hole *2



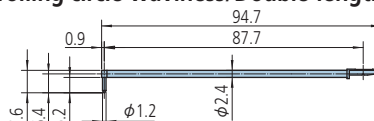
12AAE896 (2μm) *1
12AAE912 (5μm) *1
 (): Tip radius

For rolling circle waviness surface *4



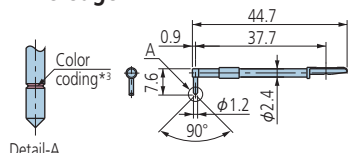
12AAB338 (φ1.588)
 (): Tip radius

For rolling circle waviness/Double-length for deep hole *2 *4



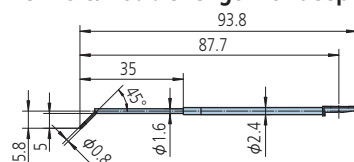
12AAE886 (250μm)
 (): Tip radius

For knife-edge *4



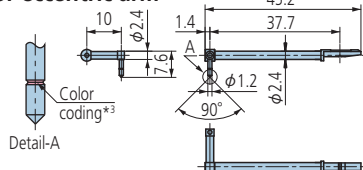
12AAC738 (2μm) *1
12AAB411 (5μm)
12AAB423 (10μm)
 (): Tip radius

For corner hole/Double-length for deep hole *2



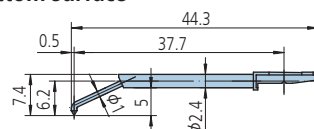
12AAE897 (2μm) *1
12AAE913 (5μm) *2
 (): Tip radius

For eccentric arm *2



12AAC739 (2μm) *1
12AAB412 (5μm)
12AAB424 (10μm)
 (): Tip radius

For bottom surface



12AAE899 (2μm) *1
12AAE915 (5μm)
 (): Tip radius

*1: Tip angle 60°

*2: For downward-facing measurement only.

※ Customized special interchangeable styli are available on request.
 Please contact any Mitutoyo office for more information.

*3:

Tip radius	2μm	5μm	10μm
Color coding	Black	No color	Yellow

*4: Used for calibration, a standard step gauge (No.178-611 or 178-612, option) is also required



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