



Advanced Test Equipment Rentals
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Surftest SJ-201P

Portable Surface Roughness Tester



Bulletin No. 1795

**Smart tool
in the workshop**

Mitutoyo

Portable Surface Roughness Tester



SURFTTEST SJ-201P

- Large characters are displayed on the large easy-to-view LCD.
- Portable for easy measurement anywhere necessary.
- The detector/drive unit can be detached from the display unit for effortless measurement of awkwardly oriented workpieces.
- Wide 350 μ m (-200 μ m to +150 μ m) measurement range.
- Roughness parameters compatible with ISO, DIN, ANSI, and JIS.
- 19 analysis parameters are provided, including the basic Ra, Rq, Rz, and Ry parameters.
- Customize function allows hiding of unnecessary parameters.
- GO/NG judgment on a desired parameter.
- Auto-calibration for simple gain-adjustment.
- Auto-sleep function saves energy.
- 10 Measurement data is retained in memory even after the power is turned off.
- Data output is available for SPC operation.
- RS-232C interface enables data transfer to computer or other devices using an external device.
- 2-way power system (AC adapter/rechargeable built-in battery).

- A dedicated carrying case is included for safe transport.
- A precision roughness specimen is supplied.
- A hard copy of the measurement data is available with the optional printer (64AAA779).



SPC Data Output and Communication:

The SJ-201P is provided with functions to output SPC data and communicate with external devices via the RS-232C interface.



Setting Modification Keys:

The top cover of the display unit slides to allow access to the setting modification keys underneath.

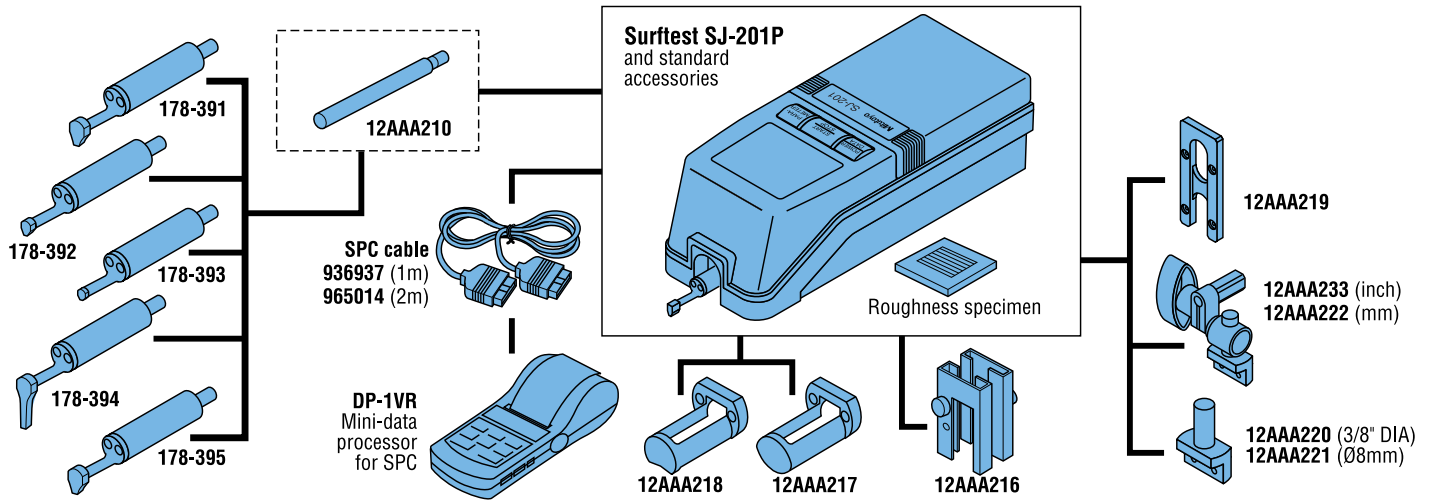
REMOTE Key for Data Output:

To use the RS232C cable, it is possible to connect the printer to print the measured profile. It is also possible to connect PC by changing the cable.



Applications

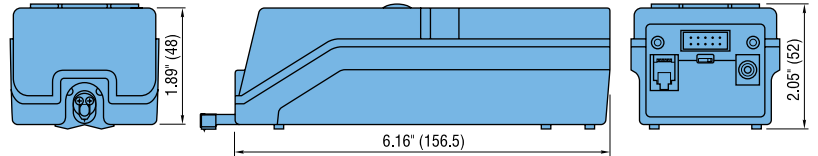
Various optional accessories widen the application range of measurements.



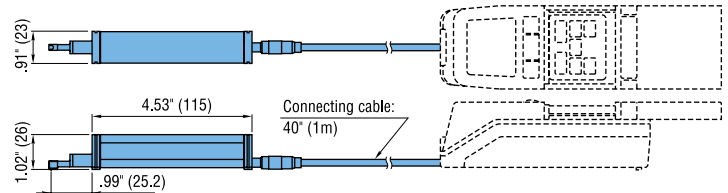
Dimensions



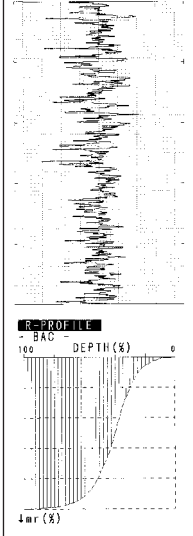
- If the detector/drive unit is attached to the display unit: Unit: inch (mm)



- If the detector/drive unit is detached from the display unit:



| Mitutoyo SJ-201P | |
|-----------------------|------------|
| STANDARD | JIS1994 |
| PROFILE | R |
| FILTER | GAUSS |
| λc | 0.8mm |
| N | 5 |
| RANGE | AUTO |
| M-SPEED | 0.5mm/s |
| PRE/POST | ON |
| PARAMETER | 44% |
| R _{ar} | 44% |
| R-PROFILE | |
| R _a | 0.28μm |
| R _y | 2.09μm |
| R _z | 1.57μm |
| R _q | 0.35μm |
| R _{mr} (44%) | 64% |
| R-PROFILE | |
| VER. | 1.0μm/cm |
| | X10K |
| HOR. | 500.0μm/cm |
| | X20 |



SJ Printer (Optional)

The compact SJ printer (64AAA779) prints out measurement data at high speed and high quality. Printer Cable (64AAA299).



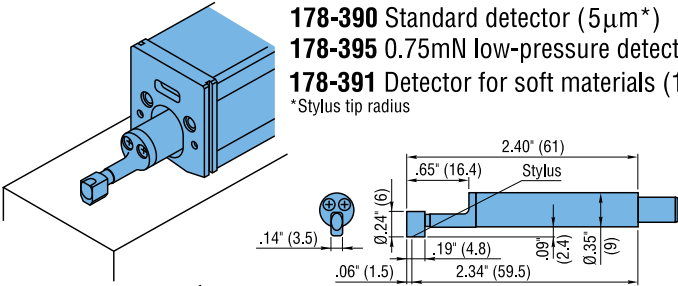
Specifications

| Code No. | 64AAA779 |
|-----------------|-----------------------------------|
| Printing Method | Line Thermal Dot Printing |
| Interface | Serial (RS-232C) |
| Input Buffer | 2KB |
| Printing Width | 1.89" |
| Dot Density | 8 dots/mm |
| Printing Speed | Approx. 11 lines/sec at maximum |
| Power Supply | 120 VAC |
| Weight | Approx. 1.61 lbs. |
| Dimension | 4.17" (W) x 7.24" (D) x 4.33" (H) |

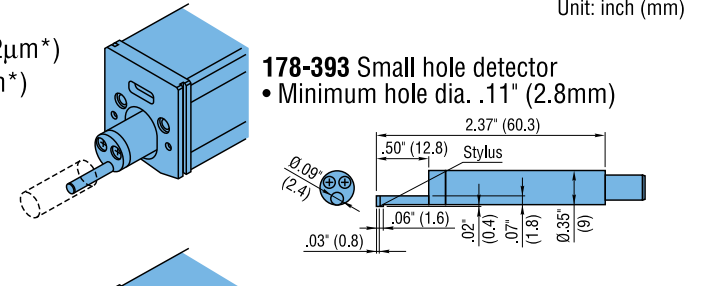
Detectors

Select a detector appropriate for the material and shape of the workpiece to be measured.

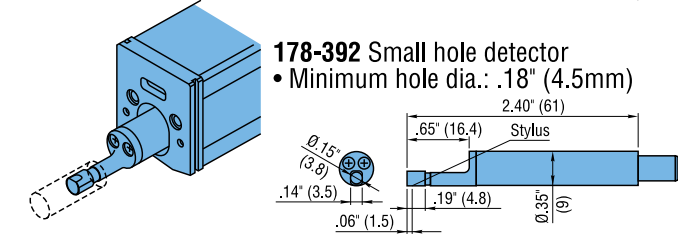
Unit: inch (mm)



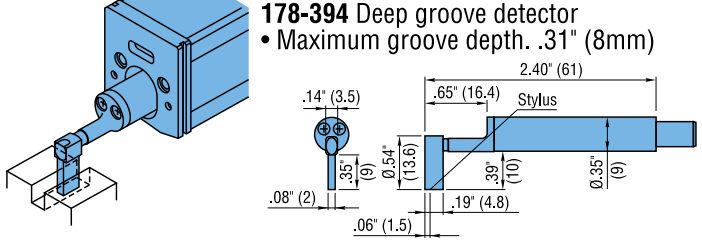
- 178-390 Standard detector ($5\mu\text{m}^*$)
 - 178-395 0.75mN low-pressure detector ($2\mu\text{m}^*$)
 - 178-391 Detector for soft materials ($10\mu\text{m}^*$)
- *Stylus tip radius



- 178-393 Small hole detector
- Minimum hole dia. .11" (2.8mm)

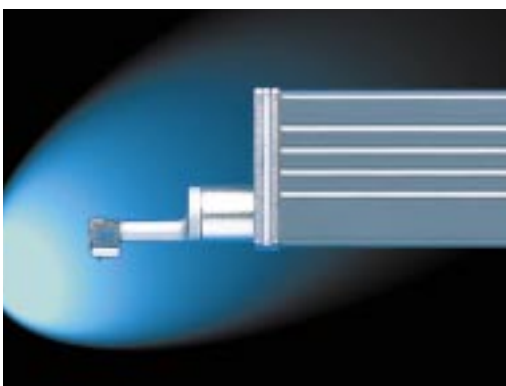
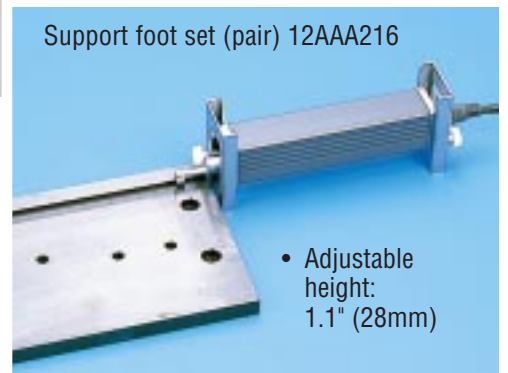
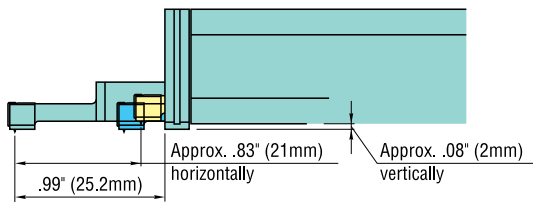


- 178-392 Small hole detector
- Minimum hole dia.: .18" (4.5mm)



- 178-394 Deep groove detector
- Maximum groove depth. .31" (8mm)

Height Gage Adapter – 12AAA222



Detector Retracting Function:

If moving the SJ-201P or if it will not be used for a long period of time, the detector retracting function prevents damage to the detector caused by the tip being accidentally hit.



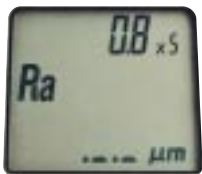
19 Surface Roughness Parameters...



**Compatible with
ISO / DIN / ANSI / JIS**

**Ra, Rq, Ry, Rz,
S, Sm, Pc, R3z, mr, Rt, Rp, Rk,
Rpk, Rvk, Mr1, Mr2, A1, A2, Vo**

Measuring



Measurement:

Pressing the [START/STOP] key in the measurement mode starts the detector measurement traversing.

Measurement traversing indicator " - - - " on the LCD turns out into the parameter value display if measurement is complete. Measurement traversing length can be set according to a national/international standard or to an arbitrary length.

Parameter Ra value being displayed



Ra, Rq, Ry, and Rz Plus Eleven More Parameters:

Seven more analysis/display parameters can be set up in addition to the factory default parameters Ra, Rq, Ry, and Rz. After measurement, press the [PARAMETER] key repeatedly until the desired one is displayed on the LCD.

GO/NG judgment



Parameter Reduction:

Parameter calculations and resultant display can be limited only to those actually required. Reducing the parameters simplifies the key operation and parameter calculations.



Calibration Mode:

Pressing the [CAL/STD/RANGE] key in the measurement mode, the calibration mode is entered allowing the detector to be calibrated to the precision roughness specimen with simple key operation.

SJ-201P Specifications

| | |
|---------------------------------|---|
| Order No. | 178-923A |
| Type | inch (mm) |
| Drive Unit | |
| <i>Drive speed</i> | Measuring: .01"/s (0.25mm/s), .02"/s (0.5mm/s), Returning: .03"/s (0.8mm/s) |
| <i>Evaluation length*1</i> | .49" (12.5mm) |
| <i>Mass</i> | .42 lbs. (190g) |
| Detector provided | 178-390 |
| <i>Detecting method</i> | Differential inductance |
| <i>Measuring range</i> | 13780µin (350µm) (-7880µin/-200µm to +5900µin/+150µm) |
| <i>Material of stylus</i> | Diamond |
| <i>Radius of skid curvature</i> | 1.57" (40mm) |
| <i>Mass</i> | .04 lbs. (18g) |
| <i>Stylus tip radius</i> | 200µin (5µm) |
| <i>Measuring force</i> | 4mN |
| Display Unit | |
| <i>Assessed profile</i> | Primary profile (P), Roughness profile (R), DIN4776 profile |
| <i>Roughness parameter</i> | Ra, Ry, Rz, Rq, S, Sm, Pc, R3z, mr, Rt, Rp, Rk, Rpk, Rvk, Mr1, Mr2, A1, A2, Vo (can be customized) |
| <i>Roughness standard</i> | JIS, DIN, ISO, ANSI |
| <i>Sampling length (L)</i> | .01", .03", .1" (0.25mm, 0.8mm, 2.5mm) |
| <i>Number of sampling spans</i> | x1, x3, x5, xL*1 |
| <i>Digital filter</i> | 2CR-75% (without phase compensation), PC-75%, PC50% (Gaussian) |
| <i>Cut-off lc</i> | .01", .03", .1" (0.25mm, 0.8mm, 2.5mm) |
| <i>Length ls</i> | 100µin, 320µin (2.5µm, 8µm) |
| <i>Resolution/range</i> | Auto/depending on the measurement range 16.4µin/1400µin (0.4µm/350µm) 4.1µin/400µin (0.1µm/100µm) 2.0µin/200µin (0.05µm/50µm) .5µin/40µin (0.01µm/10µm) |
| <i>Displaying range</i> | |
| <i>Ra, Rq</i> | .4µin - 4000µin (0.01µm - 100µm) |
| <i>Rz, Ry, Rp, Rt,</i> | .8µin - 13780µin |
| <i>R3z, Rk, Rpk, Rvk</i> | (0.02µm - 350µm) |
| <i>Pc</i> | 6.35 - 12700/inch (2.5 - 5000/cm) |
| <i>mr</i> | 1 - 100% |
| <i>Sm, S</i> | 80µin - .16" (2 - 4000µm) |
| <i>Mr1, Mr2</i> | 0 - 100% |
| <i>A1, A2</i> | 0 - 15000 |
| <i>Vo</i> | 0.000 - 10.00(mm³/cm²) |
| <i>GO/NO-GO judgment</i> | Upper and lower limit values can be specified. |
| <i>Power supply</i> | Via AC adapter/built-in rechargeable battery |
| <i>Rechargeable battery</i> | Charging time: 12 hours (for 500 measurements) |
| <i>Auto-sleep (turning off)</i> | After 30 seconds without operation |
| <i>Data output</i> | Via RS-232C interface unit, SPC output, PC output, Printer output |
| <i>Mass</i> | .64 lbs. (290g) |

*1 Evaluation length can be specified arbitrarily in the range from .01" (0.3mm) to .49" (12.5mm).

Optional Accessories

| | | | |
|-----------------|--|-------------------|--|
| 178-391 | Detector for soft materials (Stylus tip radius: 10µm) | 12AAA222 | Height gage adapter (mm) |
| 178-392 | Small hole detector (ø4.5mm) | 12AAA233 | Height gage adapter (inch) |
| 178-393 | Small hole detector (ø2.8mm) | 12AAA210 | Extension rod (50mm) |
| 178-394 | Deep groove detector | 178-033 | Setting attachment: V type |
| 178-395 | Detector for low pressure type (Stylus tip radius: 2µm, Measuring force: 0.75mN) | 178-034 | Setting attachment: Slider type |
| 936937 | SPC cable (1m) | 178-035 | Setting attachment: Inside diameter type |
| 965014 | SPC cable (2m) | 178-241-2A | Display unit for SJ-301 |
| 12AAA208 | RS-232C connecting cable | | |
| 12AAA216 | Support foot set (pair) | | |
| 12AAA217 | Nosepiece for flat surface | | |
| 12AAA218 | Nosepiece for cylindrical surface | | |
| 12AAA219 | Vertical positioning adapter | | |
| 12AAA220 | Magnetic stand adapter (3/8" DIA. stem) | | |
| 12AAA221 | Magnetic stand adapter (ø8mm stem) | | |



Standard Accessories

| | |
|------------------|--|
| 12BAA303 | Connecting cable (1m) |
| 178-602 | Roughness specimen (inch/mm)* *Either of them supplied. |
| 353134 | Calibration stand |
| 538612 | Phillips screwdriver |
| 12BAA304 | Carrying case |
| 99MBB079A | User's manual (for SJ-201P) |
| 99MBB081A | One-sheet manual |
| 526688 | AC adapter |



Roughness specimen

| | |
|--|-------|
| Coordinate Measuring Machines | ===== |
| Vision Measuring Systems | ===== |
| Surface, Form and Contour Measurement | ===== |
| Optical Measuring | ===== |
| Sensor Systems | ===== |
| Hardness Measuring | ===== |
| Digital Scale and DRO Systems | ===== |
| Small Tool Instruments and Data Management | ===== |

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