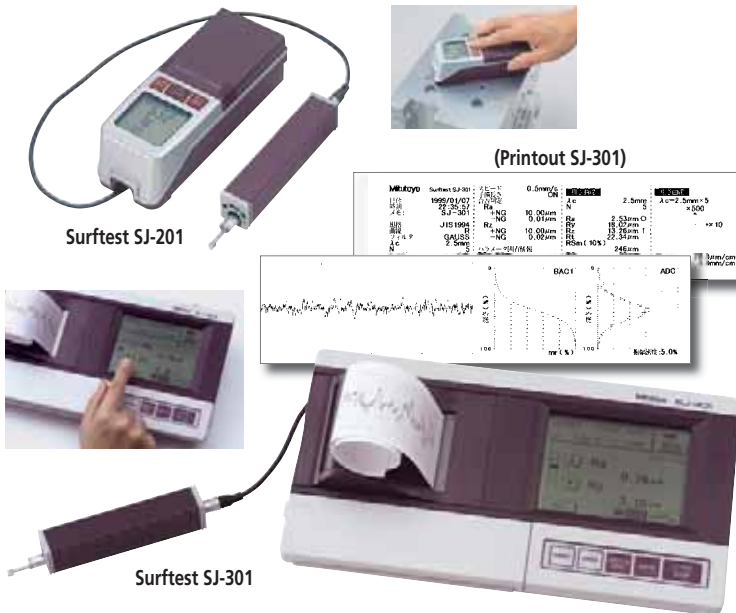


Surftest SJ-301 / ~~SJ-201~~

SERIES 178 — Portable Surface Roughness Tester

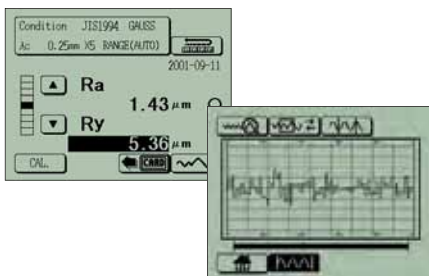


FEATURES: SJ-301

- Large characters are displayed on the large easy-to-view LCD.
- Simple operations performed with the large LCD touch-panel.
- The Measure-Start button and others frequently used are hard wearing and resistant to workshop contaminants.
- Equipped with a large capacity battery that, when fully charged, allows approximately 600 measurements to be made.
- A convenient carrying case is supplied as standard for protecting the instrument in the field.
- A high-resolution, high-speed printer is built into the main unit.
- Five sets of measurement set-ups can be saved in the measurement unit and the optional memory card (compact flash memory) allows saving of set-ups and measurements.
- Measurement data also can be saved in the memory card in CSV format and then loaded onto a personal computer for data handling with spreadsheet software.

FEATURES: ~~SJ-201~~

- ~~The display unit demonstrates IP53 protection level and is resistant to dripping water and dust.~~
- ~~The built-in battery, if fully charged, allows approximately 500 measurements to be made.~~
- ~~A convenient carrying case is supplied as standard for protecting the instrument in the field.~~
- ~~Up to 10 measurement results can be saved in the built-in memory.~~
- ~~Measurement results appear in large characters on the large LCD screen. Results can be confirmed at a glance.~~
- ~~Detailed set-ups, such as change of standards and cutoff lengths, can be made by pressing the relevant buttons after sliding back the top cover.~~
- ~~The SPC connector for Digimatic output and the RS-232C output connector are provided on the rear panel of the display unit for data output to external devices.~~
- ~~Printout of recorded profiles is also possible if the tester is connected to the dedicated hand-held, built-in battery operated compact SJ printer (optional).~~



Technical Data

X-axis (drive unit)	
Measuring range:	.49" (12.5mm)
Measuring speed:	.01", .02"/s (0.25, 0.5mm/s)
	.01"/s (0.25mm/s: S-type)
Traversing direction:	Backward
Detector	
Range:	13780 μin (-7880μin to +5900μin) (350μm (-200μm to +150μm))
Detecting method:	Skid measurement
Measuring force:	4mN or 0.75mN (low force type)
Stylus tip:	Diamond, 90°/5μmR (60°/2μmR: low force type)
Skid radius of curvature:	40mm
Skid force:	less than 400mN
Detecting method:	Differential inductance
Power supply:	Via AC adapter / rechargeable battery
Battery life:	Max. 600 measurements (w/o printing) Recharge time: 15 hours
Data output	Via RS-232C interface / SPC output
Dimensions (WxDxH)	
Control unit:	12.1 x 6.5 x 3.7" 307 x 165 x 94mm (SJ-301) 6.7 x 2.4 x 2.0" 156.5 x 62 x 52mm (SJ-201) 4.5 x .90 x 1.02"
Drive unit:	115 x 23 x 26mm
Mass	
Control unit:	Approx. 1.2kg (SJ-301) Approx. 0.3kg (SJ-201)
Drive unit:	0.2kg

Evaluation Capability: SJ-301

Applicable standard:	JIS'82, JIS'94, JIS'01, DIN, ISO, ANSI
Assessed profile:	Primary profile (P), Roughness profile (R), DIN4776, MOTIF (R, W)
Evaluation parameters:	Ra, Ry, Rz, Rt, Rp, Rq, Rv, Sm, S, Pc, R3z, mr (c), Rpk, Rvk, δc, Rk, Mr1, Mr2, Lo, Ppi, R, AR, Rx, A1, A2, Vo, HSC, mr, SK, Ku, Δa, Δq, Wte, Wx, W, AW (can be customized)
Analysis graphs:	Bearing Area Curve (BAC1/ 2), Amplitude Distribution Curve (ADC)
Digital filter:	2CR, PC75, Gaussian
Cut-off length:	λc: .003, .01, .03, .1, .3" (0.08, 0.25, 0.8, 2.5, 8mm) λs: .1, .3, 1" (2.5, 8, 25mm)
Number of sampling length:	X1, X3, X5, XL
Arbitrary length:	.01 to .49" (0.3 to 12.5mm) .01" (0.1mm increments)
Sampling length (L):	.003, .01, .03, .1, .3" (0.08, 0.25, 0.8, 2.5, 8mm)
Printer	Thermal printer
Printing width	48mm (paper width: 58mm)
Recording magnification	Vertical magnification: 10X to 100,000X, Auto Horizontal magnification: 1X to 1,000X, Auto

Function

Customization: Desired parameters can be selected for calculation and display.

Statistical processing: Maximum value, minimum value, mean value, standard deviation, pass rate, frequency distribution chart of each parameter

GO/NG judgment:
Upper/lower limits setting: 3 parameters
GO/NG judgment rule: mean value, 16% rule, maximum value rule

Measurement conditions saving: Maximum 5 sets

Data saving: Save/retrieval of measurement conditions (up to 20 sets), evaluation data, sampling data, and statistical data with a memory card (option).

Calibration: Auto-calibration with the entry of numerical value.

Power saving function: If the auto-power-off function is ON then Power turns off if not operated for 5 minutes .

AC adapter: **357651**
Printer paper: **12AAA876**
Battery pack: **12BAA668**

Surftest SJ-301 / ~~SJ-201~~

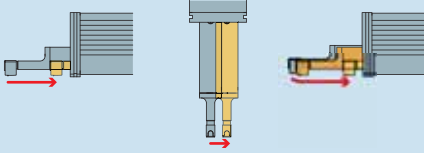
SERIES 178 — Portable Surface Roughness Tester

Detector + Drive unit + Display unit Combination

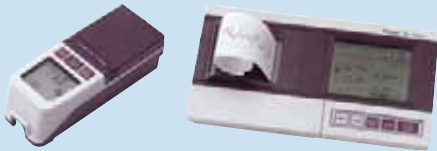
Detector: 0.75mN measuring force, 2 μ m stylus tip radius
4mN measuring force, 5 μ m stylus tip radius

Drive unit:

Standard-type Transverse tracing-type Retractable-type



Display unit:



Evaluation Capability: SJ-201

Applicable standard:

JIS-S2, JIS-S4, JIS-O1, DIN, ISO, ANSI

Assessed profile:

Primary profile (P), Roughness profile (R), DIN4776
(Primary profile (P), Roughness profile (R), MOTIF (R):
M-type)

Evaluation parameters:

Ra, Ry, Rz, Rq, S, Sm, Pc, R3z, mr (c), Rt, Rp, Rk, Rpk, Rvk,
Mr1, Mr2, A1, A2, Vo (can be customized) (R, AR, Rx: M-type)

Digital filter 2CR, PC75, Gaussian

Cut-off length: λ_c : .01, .03, .1" (0.25, 0.8, 2.5mm)
 λ_s : .1", .3" (2.5, 8mm)

Number of sampling length: X1, X3, X5

Arbitrary length: .01" to .49" (0.3 to 12.5mm)

Sampling length (L): .01", .03", .1" (0.25, 0.8, 2.5mm)

Function

Customization: Desired parameters can be selected for
calculation and display.

GO/NG judgment:

Upper/lower limit setting: 2 parameters

Measurement conditions saving: Saves the conditions when
the power is turned off.

Data saving: A maximum of 10 measurement results can
be saved.

Calibration: Auto-calibration with the entry of numerical
value

Power saving function: If the auto power-off function
is ON then power turns off if no operation for 30
seconds.

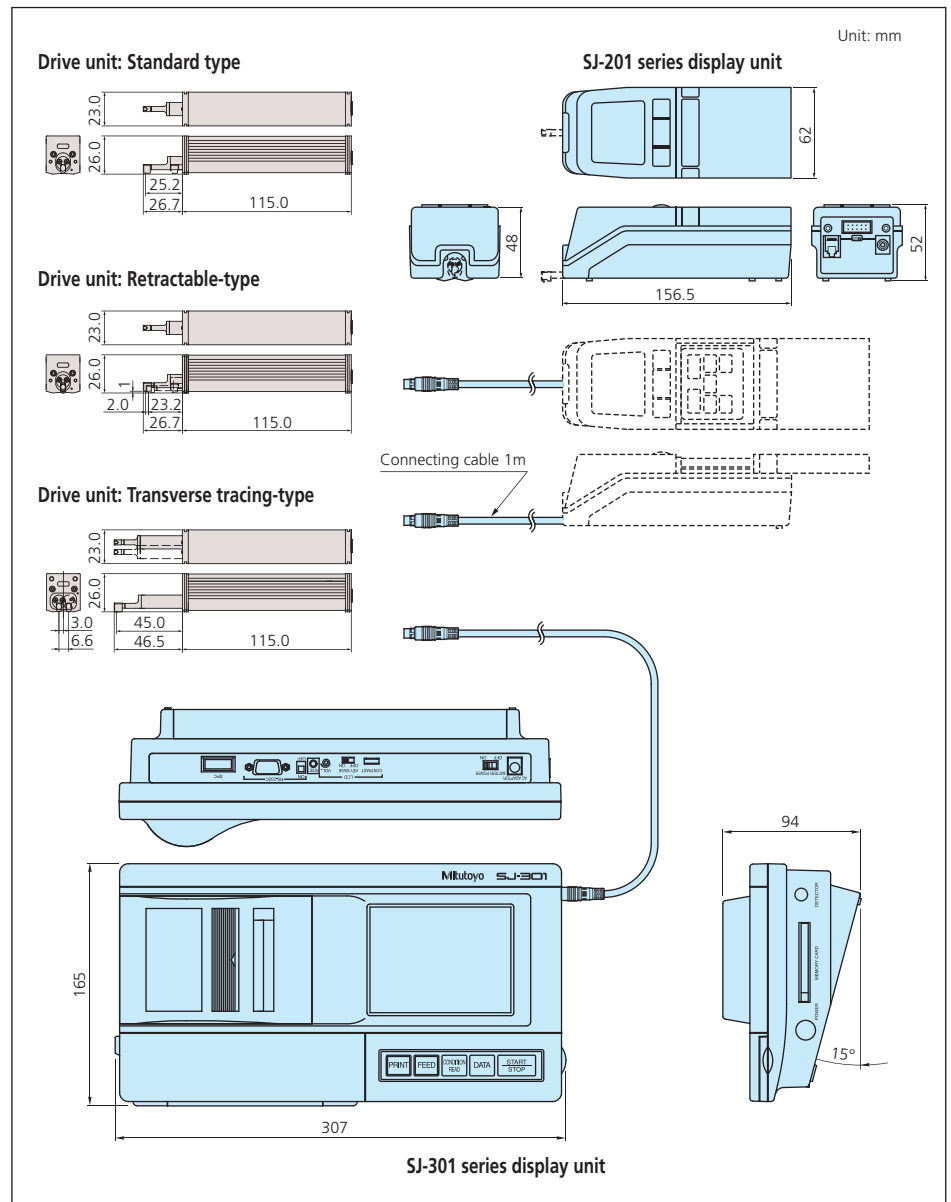
AC adapter: 526688A
Battery pack: 12BAA240

SPECIFICATIONS

Model No.	SJ-201P	SJ-201PR	SJ-201S
Order No. (inch)	178-923-2A	178-992A	178-923-2A & 178-234-2
Drive unit	Standard type	Retractable type	Transverse tracing type
Detector	4mN type	4mN type	4mN

Model No.	SJ-301		SJ-301R	SJ-301S
Order No. (inch)	178-954-4A	178-955-4A	178-993-2A	178-954-4A & 178-234-2
Drive unit	Standard type		Retractable type	Transverse tracing type
Detector	4mN type	0.75mN type	4mN type	4mN

DIMENSIONS



Surftest SJ-301 / ~~SJ-201~~

SERIES 178 — Optional Accessories

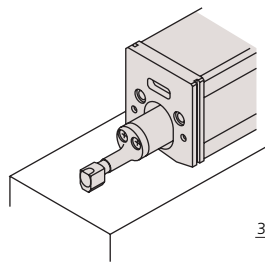
Drive unit, Display unit

Drive unit	Display unit	Model No.
Standard drive unit Order No. 178-230-2	Standard display unit Order No. 178-248-2A (inch)	SJ-201P
Transverse tracing Order No. 178-233-2		SJ-201S
Detector retracting type Order No. 178-235	Dedicated display unit for the detector retracting type Order No. 178-251A (inch)	SJ-201PR

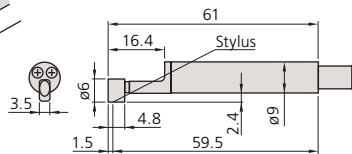
Drive unit	Display unit	Model No.
Standard drive unit Order No. 178-230-2	Order No. 178-241-3A	SJ-301
Transverse tracing Order No. 178-233-2		SJ-301S
Detector retracting type Order No. 178-235		SJ-301R

Detector

Standard detector

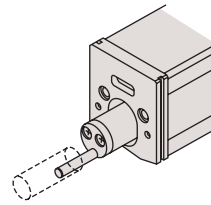


4mN type **178-390**
 0.75mN type **178-296**
178-395
 (Stylus tip radius 2µm, 60°)
 (Stylus tip radius 2µm, 90°)
 Stylus tip radius 10µm type **178-391**

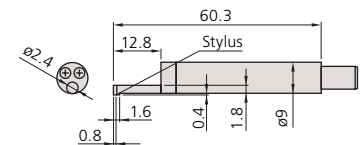


Extra-small hole detector

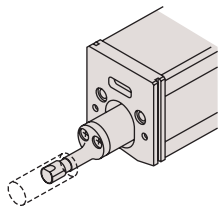
Unit: mm



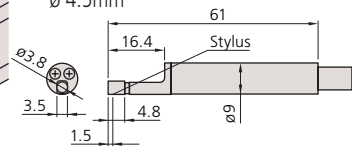
178-393
 Minimum measurable hole diameter:
 ø 2.8mm



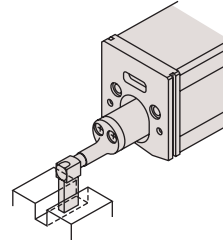
Small hole detector



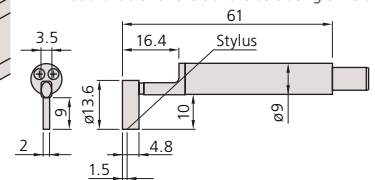
178-392
 Minimum measurable hole diameter:
 ø 4.5mm



Deep groove detector



178-394
 Maximum accessible groove depth: 8mm
 * Not available for the transverse tracing drive unit.



SJ-Printer for SJ-201

Printout of recorded profiles is also possible if the tester is connected to the dedicated hand-held, built-in battery operated compact SJ-printer (optional).

- Can be operated with two-way power supply (AC adapter/battery pack)
- Printing items: Measurement conditions, calculation results, surface profiles, bearing area curve (BAC)
- Supplied with connection cable and 20 rolls of printer paper



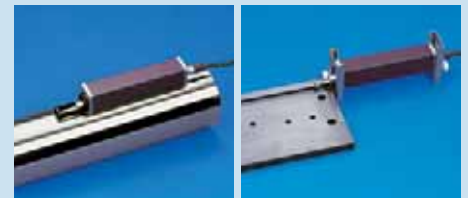
178-420A
 Printer paper (20 rolls):
12AAC243
 Connecting Cable: **12AAC314**

DP-1VR

Powerful data management capabilities make it possible to process the Digimatic data output from the Surftest SJ series for measurement data printout, various statistical analyses for plotting a histogram and D-chart, and calculation of X-R control charts. Also, it is equipped with the RS-232C GO/NG judgment output for connection to a personal computer.



DP-1VR:
264-504-5A
 SPC Connecting cable: **936937** 40" (1m)
 SPC Connecting cable: **965014** 80" (2m)
 AC adapter: **09EAA088**
 Printer paper: **09EAA082**
 RS-232C cable: **09EAA084**
 GO/NG cable: **965516**



Evaluation Capability: SURFPAK-SJ

Industrial standards met: ISO 4287:1997, ANSI / ASME B46.1-1995, JIS B0601 1994, etc.

Assessed profiles: P (primary profile), R (roughness profile), WC, WCA, WE WEA DIN4776 profile, E (envelope residual profile), R - motif (roughness/waviness motif)

Evaluation parameters: Ra, Rq, Rz, Rz (JIS), Ry, Ry (DIN), Rc, Rpi, Rp, Rpm, Rv, Rvmax, Rti, Rt, R3zi, R3z, R3y, S, Pc (Pp), Sm, HSC, mr, δc , plateau ratio, mrd, Rk, Rpk, Rvk, Mr1, Mr2, Δa , Δq , λa , λq , Sk, Ku, Lo, Lr, A1, A2, Rx, RAR, SR, SAR, NR, NCRX, CPM, Wte, Wx, W, AW, SW, SAW, NW

Analysis graphs: ADC, BAC1, BAC2, power spectrum chart, auto-correlation chart, Walsh power spectrum chart, Walsh auto-correlation chart, slope distribution chart, local peak distribution chart, parameter distribution chart

Digital filter: 2CR-75%, 2CR-50%, 2CR-75% (phase corrected), 2CR-50% (phase corrected), Gaussian -50% (phase corrected)

Cutoff length:

λc : .001, .003, .01, .03, .1, .3"
(0.025, 0.08, 0.25, 0.8, 2.5, 8, 25mm)
or arbitrary value

fl: .01, .03, .1, .3" (0.25, 0.8, 2.5, 8mm) or arbitrary value

fh: .01, .03, .1, .3" (0.25, 0.8, 2.5, 8mm) or arbitrary value

Sampling length (L):

.001, .003, .01, .03, .1, .3"
(0.025, 0.08, 0.25, 0.8, 2.5, 8, 25mm) or arbitrary value

Data compensation: Tilt compensation, R-plane (curved surface) compensation, ellipse compensation, parabola compensation, hyperbola compensation, Conic automatic compensation, polynomial compensation, polynomial automatic compensation

Data deletion function

- Data deletion to avoid an over-range error
- Data deletion in a specific range to perform recalculation
- Automatic data deletion

Recording magnifications

Vertical: 100X - 500,000X, Horizontal: 1X - 10,000X

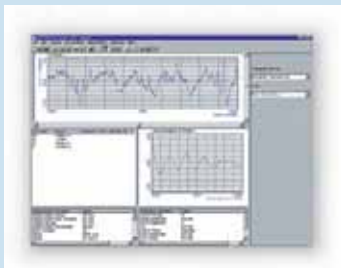
Special functions for report generation

- Bit-map image paste-up function
- Multiple data layout function

An RS-232C cable is required.

12AAA208: RS-232C cable for SJ-201 series

12AAA882: RS-232C cable for SJ-301 series



Surftest SJ-301 / ~~SJ-201~~

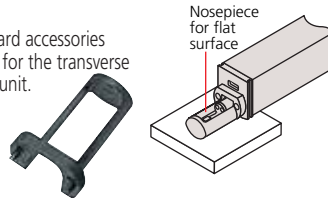
SERIES 178 — Optional Accessories

Drive unit, Display unit

Nosepiece for flat surfaces

12AAA217

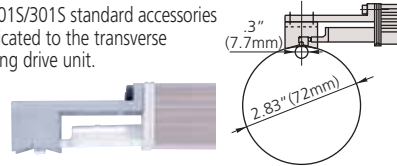
- SJ-301 standard accessories
- Not available for the transverse tracing drive unit.



V-type adapter

12AAE644

- SJ-201S/301S standard accessories
- Dedicated to the transverse tracing drive unit.

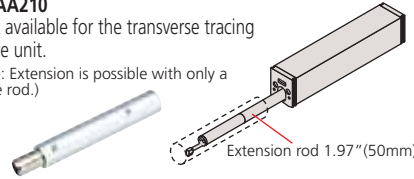


Extension rod 1.97" (50mm)

12AAA210

- Not available for the transverse tracing drive unit.

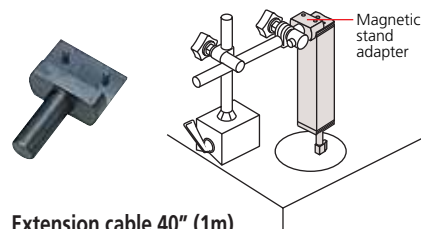
(Note: Extension is possible with only a single rod.)



Magnetic stand adapter

12AAA220 ϕ .375" (9.5mm)

12AAA221 ϕ .315" (8mm)



Extension cable 40" (1m)

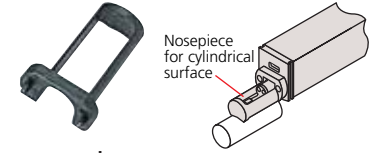
12BAA303 SJ-201

(Note: Extension is possible with only a single cable.)
12BAA686 SJ-301

Nosepiece for cylindrical surfaces

12AAA218

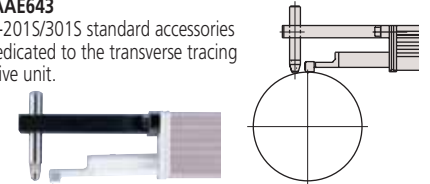
- SJ-301 standard accessories
- Not available for the transverse tracing drive unit.



Point-contact adapter

12AAE643

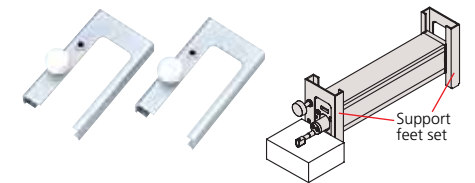
- SJ-201S/301S standard accessories
- Dedicated to the transverse tracing drive unit.



Support feet set

12AAA216

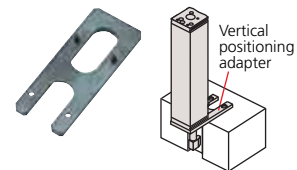
- SJ-301 standard accessory.
- Not available for the transverse tracing drive unit.



Vertical positioning adapter

12AAA219

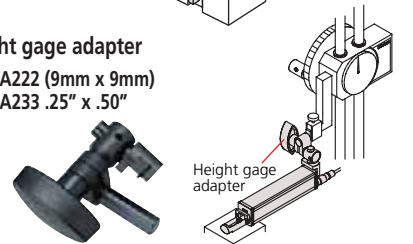
- Not available for the transverse tracing drive unit



Height gage adapter

12AAA222 (9mm x 9mm)

12AAA233 .25" x .50"



* Not available for the transverse tracing drive unit

Setting attachments

Enhances measurement efficiency by facilitating the measurement setup of multiple workpieces of the same type and of the hard-to-access sections of a workpiece.

Setting attachment: V type for measuring in the cylinder axis direction



178-033

The V-width is adjustable to the cylinder diameter facilitating axial measurement of a wide range of cylinder diameters.

- Adjustable range: ϕ .197"~ ϕ .59" (ϕ 5~150mm)

Setting attachment: Magnetic slider type



178-034

The magnet attached to the frame bottom surface allows taking diameter-free measurement on the wall.

Setting attachment: Inside diameter type



178-035

Greatly facilitates measurement of internal wall surfaces of, for example, a cylinder block.

- Applicable diameter: ϕ 2.95~ ϕ 3.74" (ϕ 75~ ϕ 95mm)
- Accessible depth: 1.18"~5.31" (30~135mm)