

Depth Micrometer SERIES 329, 129 — Interchangeable Rod Type

Functions of series 329

Origin point setting (ABS measurement system):

Resets the ABS origin at the current spindle position to the minimum value of the measuring range and switches to ABS mode.

Zero-setting (INC measurement system):

A brief press on the ZERO/ABS button sets display to zero at the current spindle position and switches to the incremental (INC) measuring mode. A longer press resets to the ABS measuring mode.

Hold:

Pressing the HOLD button freezes the current value in the display. This function is useful for preserving a measurement in situations of poor visibility where the instrument must be moved away from the workpiece before the reading can be recorded.

Data output:

Models equipped with this function have an output port for transferring measurement data to a Statistical Process Control (SPC) system.

Auto power ON/OFF:

The reading on the LCD disappears after this instrument is idle for about 20 minutes, but the reading and measurement mode are retained. Turning the spindle causes the reading to reappear.

Error alarm:

In case of an overflow on the LCD or a computing error, an error message appears on the LCD, and the measuring function stops. This prevents an instrument from giving an erroneous reading. Also, when the battery voltage drops to a certain level, the low-battery-voltage alarm annunciator appears well before the micrometer becomes unusable.

Function lock:

This function allows the PRESET (origin point setting) function and the ZERO (zero-setting) function to be locked to prevent these points being reset accidentally.

Optional Accessories

Order No.	Type	Description
05CZA662	B	Connecting cables (1 m)
05CZA663	B	Connecting cables (2 m)
06AFM380B	B	USB Input Tool Direct (2 m)
02AZD790B	B	Connecting cables for U-WAVE-T (160 mm)
02AZE140B	B	Connecting cables for U-WAVE-T For foot switch
264-622	IP67	U-WAVE-TM
264-623	Buzzer	U-WAVE-TM
264-626	IP67	U-WAVE-TMB Transmitter
264-627	Buzzer	U-WAVE-TMB Transmitter
02AZF310	IP67/ buzzer	Connecting unit for U-WAVE-TM

- Interchangeable rods enable a wide-range measurement.
- Series 329 with data output function (Refer to page A-3).



SPECIFICATIONS

Metric									
Order No.	Range (mm)	Resolution (mm)	Base (mm)	Spindle feed error (μm)	Flatness of reference surface (base) (μm)	Flatness of measuring face (rod) (μm)	Parallelism between reference face and measuring rod face (μm)	Zero point error of rods (μm)	No. of rods
Digimatic (LCD)									
329-250-30	0 - 150	0.001	101.6x16	3	2	0.3	7	±4	6
329-251-30	0 - 300						10	±6	12

Inch/Metric									
Order No.	Range (in)	Resolution	Base (in)	Spindle feed error	Flatness of reference surface (base) (in)	Flatness of measuring face (rod) (in)	Parallelism between reference face and measuring rod face (in)	Zero point error of rods (in)	No. of rods
Digimatic (LCD)									
329-350-30	0 - 6	0.00005 in/ 0.001 mm	4x0.63	0.00015 in/ 3 μm	0.00008	0.000012	0.00035	±0.0002	6
329-351-30	0 - 12	0.0001 in/ 0.001 mm					0.0005	±0.0003	12

Metric									
Order No.	Range (mm)	Graduation (mm)	Base (mm)	Spindle feed error (μm)	Flatness of reference surface (base) (μm)	Flatness of measuring face (rod) (μm)	Parallelism between reference face and measuring rod face (μm)	Zero point error of rods (μm)	No. of rods
Analog									
129-154	0 - 25		63.5x16	3	1.3	0.3	5	3	1
129-155			101.6x16		2		5	3	
129-109	0 - 50		63.5x16	3	1.3	0.3	5	3	2
129-113			101.6x16		2		5	3	
129-110	0 - 75		63.5x16	3	1.3	0.3	6	3	3
129-114			101.6x16		2		6	3	
129-111	0 - 100		63.5x16	3	1.3	0.3	6	4	4
129-115			101.6x16		2		6	4	
129-112	0 - 150		63.5x16	3	1.3	0.3	7	4	6
129-116			101.6x16		2		7	4	
129-152	0 - 300		63.5x16	3	1.3	0.3	10	6	12
129-153			101.6x16		2		10	6	

Inch									
Order No.	Range (in)	Graduation (in)	Base (in)	Spindle feed error (in)	Flatness of reference surface (base) (in)	Flatness of measuring face (rod) (in)	Parallelism between reference face and measuring rod face (in)	Zero point error of rods (in)	No. of rods
Analog									
129-129	0 - 2		4x0.63	0.00015	0.00008	0.000012	0.00025	0.00015	2
129-126	0 - 3		2.5x0.63		0.00005		0.00030	0.00015	
129-130	0 - 4		4x0.63	0.00015	0.00008	0.000012	0.00030	0.00015	4
129-127			2.5x0.63		0.00005		0.00030	0.00020	
129-131	0 - 6		4x0.63	0.00015	0.00008	0.000012	0.00030	0.00020	6
129-128			2.5x0.63		0.00005		0.00035	0.00020	
129-132	0 - 12		4x0.63	0.00015	0.00008	0.000012	0.00035	0.00020	12
129-149			2.5x0.63		0.00005		0.00050	0.00030	
129-150			4x0.63		0.00008		0.00050	0.00030	

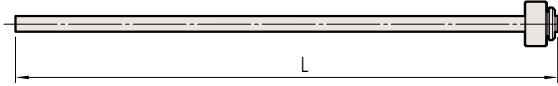
- Battery*: SR44 (1 pc.), **938882**, for initial operational checks (standard accessory)
- Battery life*: Approx. 2.4 years under normal use
- * Digimatic models
- Scale type: Electromagnetic induction absolute encoder
- Standard Accessories: **301336** Spanner, **04GAA274** Spanner, **202863** Hex-Spanner

Depth Gage

Depth Micrometer SERIES 329, 129 — Interchangeable Rod Type

Interchangeable rod (Optional Accessories)

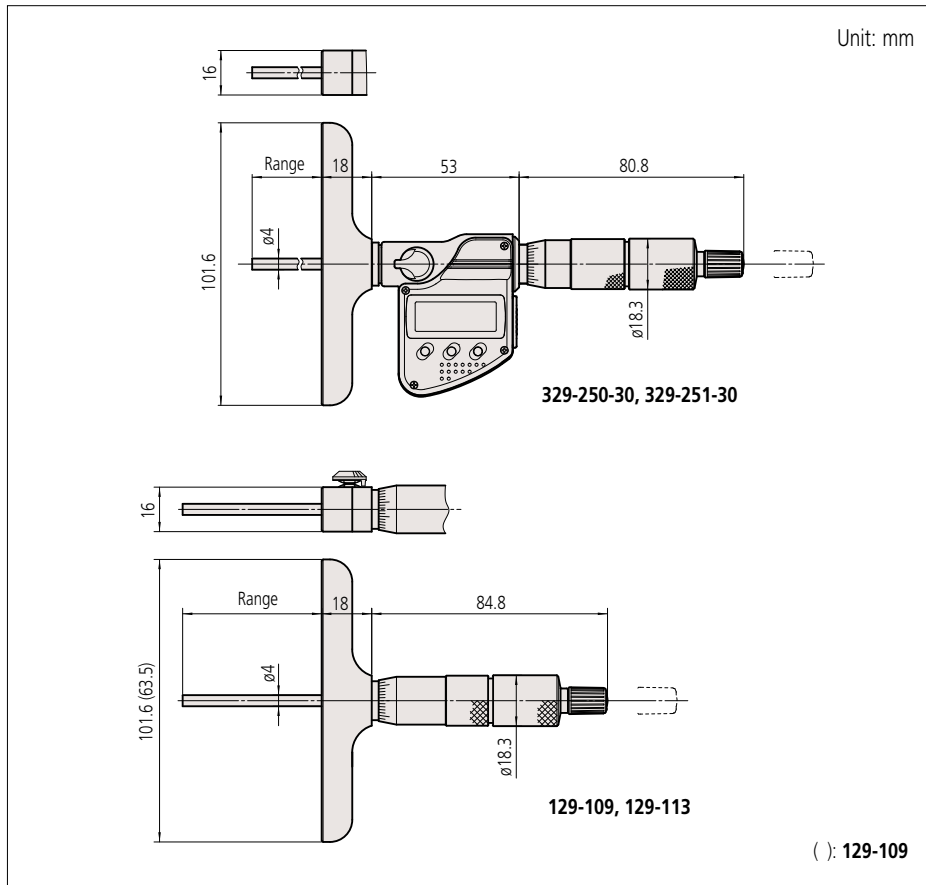
(Check and adjust the origin point before measurement)



Range (mm)	0 - 25	25 - 50	50 - 75	75 - 100	100 - 125	125 - 150	150 - 175	175 - 200	200 - 225	225 - 250	250 - 275	275 - 300
Analog models	Order No. 983501	983503	983505	983507	983509	983511	983525	983527	983529	983531	983533	983535
	L (mm)	104	129	154	179	204	229	254	279	304	329	354
Digimatic models	Order No. 983505	983507	983509	983511	983525	983527	983529	983531	983533	983535	981781	981782
	L (mm)	154	179	204	229	254	279	304	329	354	379	404

Range (in)	0 - 1	1 - 2	2 - 3	3 - 4	4 - 5	5 - 6	6 - 7	7 - 8	8 - 9	9 - 10	10 - 11	11 - 12
Analog models	Order No. 983502	983504	983506	983508	983510	983512	983526	983528	983530	983532	983534	983536
	L (mm)	104.3	129.7	155.1	180.5	205.9	231.3	256.7	282.1	307.5	332.9	358.3
Digimatic models	Order No. 983506	983508	983510	983512	983526	983528	983530	983532	983534	983536	981783	981784
	L (mm)	155.1	180.5	205.9	231.3	256.7	282.1	307.5	332.9	358.3	383.7	409.1

DIMENSIONS



Depth Micrometer SERIES 128

Measurement example



- Measuring rod diameter: 4 mm
- With measuring rod clamp.
- Carbide-tipped measuring rod model is available.
- With ratchet stop for constant measuring force.



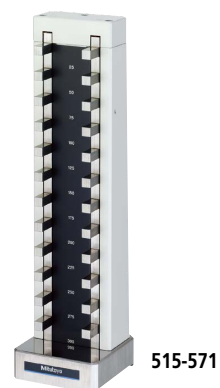
SPECIFICATIONS

Metric							
Order No.	Range (mm)	Graduation (mm)	Maximum permissible error J_{MPE} (μm)	Flatness of reference surface (base) (μm)	Flatness of measuring face (rod) (μm)	Parallelism between reference face and measuring rod face (μm)	Base (mm)
128-101	0 - 25	0.01	± 3	1.3	0.3	within 5	63.5x16
128-103*				1.3			
128-102				2			
128-104*				2			101.6x16
Inch							
Order No.	Range (in)	Graduation (in)	Maximum permissible error J_{MPE} (in)	Flatness of reference surface (base) (in)	Flatness of measuring face (rod) (in)	Parallelism between reference face and measuring rod face (in)	Base (in)
128-105	0 - 1	0.001	± 0.00015	0.00005	0.000012	within 0.00025	2.5x0.63
128-106				0.00008			4x0.63

- Standard Accessories: **301336** Spanner
- * With carbide-tipped measuring rod

Depth Micro Checker SERIES 515

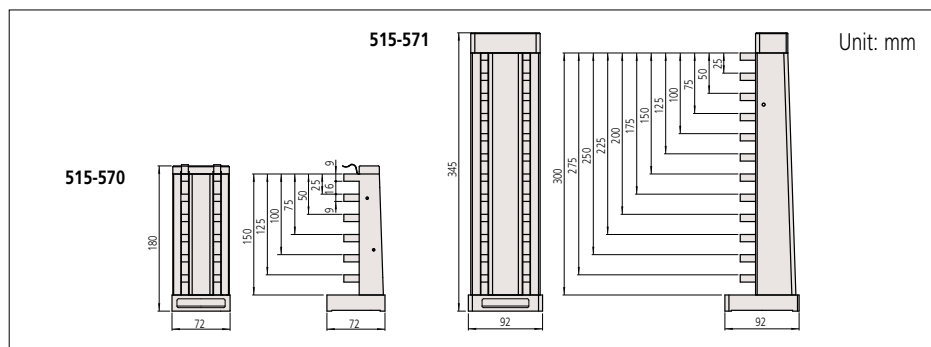
- The Depth Micro Checker is designed to check and help set the range-end points of a depth micrometer.



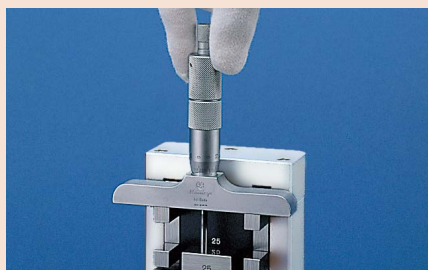
SPECIFICATIONS

Metric			
Order No.	Range (mm)	Block pitch accuracy	Anvil block accuracy (μm)
515-570	0 - 150	$\pm(1 + L/150) \mu\text{m}$, L=Length to check (mm)	± 0.5
515-571	0 - 300		
Inch			
Order No.	Range (in)	Block pitch accuracy	Anvil block accuracy (μin)
515-575	0 - 6	$\pm(40 + L/0.15) \mu\text{in}$, L=Length to check (in)	± 20

DIMENSIONS



Measurement example



Depth Gage

ABSOLUTE Digimatic Depth Gage SERIES 571

- Coolant proof models achieve IP67 protection level.
- Enables stable depth measurement with a resolution of 0.01 mm.
- Allows integration into statistical process control and measurement systems for models with measurement data output connector. (Refer to page A-3.)
- Optional longer extension bases are available. (Refer to page D-76.)



SPECIFICATIONS

Metric				
Order No.	Range (mm)	Resolution (mm)	Base (W×T) (mm)	Maximum permissible error E_{MPE} (mm)*
571-251-20	0 - 150	0.01	100×6	±0.02
571-252-20	0 - 200			
571-253-20	0 - 300		100×6.3	
Inch / Metric				
Order No.	Range (in)	Resolution	Base (W×T) (in)	Maximum permissible error E_{MPE} (in)*
571-261-20	0 - 6	0.0005 in/ 0.01mm	3.93×0.23	±0.001 in/±0.02 mm
571-262-20	0 - 8			
571-263-20	0 - 12		3.93×0.25	

- Battery: SR44 (1 pc.), **938882**. For initial operational checks (standard accessory).
- Battery life: Approx. 5 years
- * Maximum permissible error, E_{MPE} , is the term (notation) used in JIS B 7518: 2018, revised based on ISO/TR 14253-6: 2012.

DIMENSIONS

Unit: mm

571-251-20, 571-252-20, 571-253-20

Range (mm)	L	W	Base thickness
0 - 150	239	59.2	6
0 - 200	289		6
0 - 300	403	71	6.3

ABSOLUTE™



Measurement example



Optional Accessories

Order No.	Type	Description
05CZA624	A	Connecting cable (1 m)
05CZA625	A	Connecting cable (2 m)
06AFM380A	A	USB Input Tool Direct (2 m)
02AZD790A	A	Connecting cables for U-WAVE-T (160 mm)
02AZE140A	A	Connecting cables for U-WAVE-T For foot switch
02AZE140C	C	Connecting cables for U-WAVE-T For foot switch
264-620	IP67	U-WAVE-TC
264-621	Buzzer	U-WAVE-TC
264-624	IP67	U-WAVE-TCB Transmitter
264-625	Buzzer	U-WAVE-TCB Transmitter
02AZF310	IP67	Connecting unit for U-WAVE-TC/TCB

ABSOLUTE Digimatic Depth Gauge SERIES 571

- Enables stable depth measurement with a resolution of 0.01 mm.
- Allows integration into statistical process control and measurement systems for models with measurement data output connector. (Refer to page A-3.)
- Optional longer extension bases are available. (Refer to page D-76.)



Optional Accessories

Order No.	Type	Description
959149	C	Connecting cable (1 m)
959150	C	Connecting cable (2 m)
06AFM380C	C	USB Input Tool Direct (2 m)
02AZD790C	C	Connecting cables for U-WAVE-T (160 mm)
02AZE140A	A	Connecting cables for U-WAVE-T For foot switch
02AZE140C	C	Connecting cables for U-WAVE-T For foot switch
264-620	IP67	U-WAVE-TC
264-621	Buzzer	U-WAVE-TC*
264-624	IP67	U-WAVE-TCB Transmitter
264-625	Buzzer	U-WAVE-TCB Transmitter*
02AZF310	IP67	Connecting unit for U-WAVE-TC/TCB

* Cannot be used with 571-20X-10 and 571-21X-10.

SPECIFICATIONS

Metric					
Order No.	Range (mm)	Resolution (mm)	Battery life	Base (W×T) (mm)	Maximum permissible error E_{MPE} (mm)*1
571-201-30	0 - 150	0.01	Approx. 5 years	100×6	±0.02
571-202-30	0 - 200			100×6.3	±0.03
571-203-30	0 - 300				
571-204-10*2	0 - 450	0.01	Approx. 3 years	250×10	±0.05
571-205-10*2	0 - 600				±0.06
571-206-10*2	0 - 750				
571-207-10*2	0 - 1000				

Inch/Metric					
Order No.	Range (in)	Resolution	Battery life	Base (W×T) (in)	Maximum permissible error E_{MPE} (in)*1
571-211-30	0 - 6	0.0005 in/ 0.01mm	Approx. 5 years	3.93×0.23	±0.001 in/±0.02 mm
571-212-30	0 - 8			3.93×0.25	±0.0015 in/±0.03 mm
571-213-30	0 - 12				
571-214-10*2	0 - 18	0.0005 in/ 0.01mm	Approx. 3 years	9.8×0.39	±0.002 in/±0.05 mm
571-215-10*2	0 - 24				±0.0025 in/±0.06 mm
571-216-10*2	0 - 30				
571-217-10*2	0 - 40				

• Battery: SR44 (1 pc.), **938882**. For initial operational checks (standard accessory).

*1 Maximum permissible error, E_{MPE} , is the term (notation) used in JIS B 7518: 2018, revised based on ISO/TR 14253-6: 2012.

*2 Cannot be used with **U-WAVE-TC**

DIMENSIONS

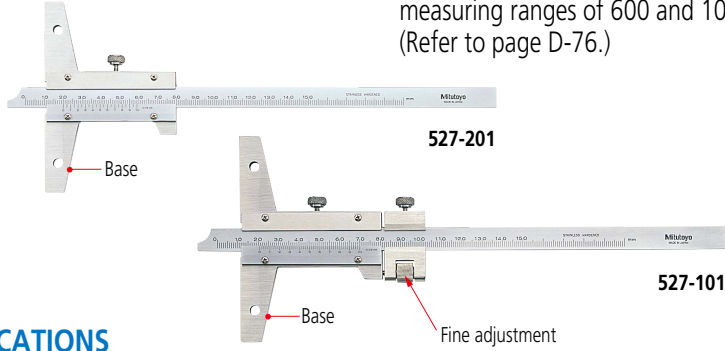
Unit: mm

Range (mm)	L	W	Base thickness
0 - 150	239	59.2	6
0 - 200	289		6
0 - 300	403	71	6.3
0 - 450	635	94	10
0 - 600	785		10
0 - 750	935		10
0 - 1000	1200		10

Depth Gage

Vernier Depth Gage SERIES 527

- Standard gage for depth measurement.
- Optional longer extension bases are available. (Except for models with measuring ranges of 600 and 1000 mm). (Refer to page D-76.)



SPECIFICATIONS

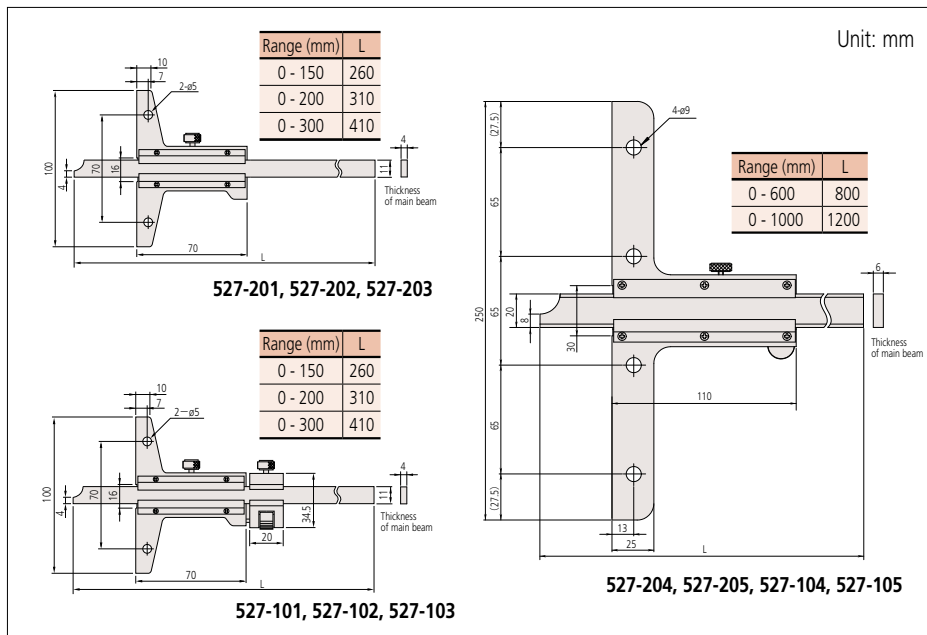
Metric					
Order No.	Range (mm)	Minimum reading (mm)	Base (W×T) (mm)	Maximum permissible error E_{MPE} (mm)*	Remarks
527-201	0 - 150	0.05	100×6.5	±0.05	—
527-202	0 - 200			±0.08	—
527-203	0 - 300			±0.10	—
527-204	0 - 600	250×10		±0.10	—
527-205	0 - 1000			±0.15	—

Metric					
Order No.	Range (mm)	Minimum reading (mm)	Base (W×T) (mm)	Maximum permissible error E_{MPE} (mm)*	Remarks
527-101	0 - 150	0.02	100×6.5	±0.03	with fine adjustment
527-102	0 - 200			±0.04	
527-103	0 - 300		±0.05		
527-104	0 - 600		±0.05		
527-105	0 - 1000		±0.07		

Inch					
Order No.	Range (in)	Minimum reading (in)	Base (W×T) (in)	Maximum permissible error E_{MPE} (in)*	Remarks
527-111	0 - 6	0.001	3.93×0.25	±0.001	with fine adjustment
527-112	0 - 8			±0.0015	
527-113	0 - 12		±0.002		
527-114	0 - 24		±0.002		
527-115	0 - 40		±0.003		

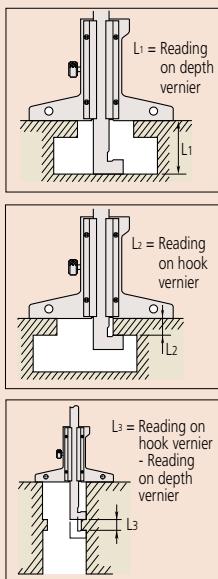
* Maximum permissible error, E_{MPE} , is the term (notation) used in JIS B 7518: 2018, revised based on ISO/TR 14253-6: 2012.

DIMENSIONS

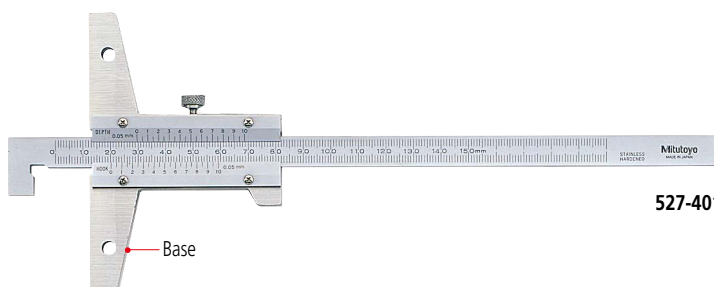


Depth Gage SERIES 527 — Hook End Type Pin End Type

Typical applications



- The end of the main scale is hook-shaped to allow depth and thickness measurements of a projected portion or lip in a hole, in addition to standard depth measurement.
- Depth can be directly measured with the upper vernier of the slider and thickness with the lower vernier.
- Optional longer extension bases are available. (Refer to page D-76.)



527-401

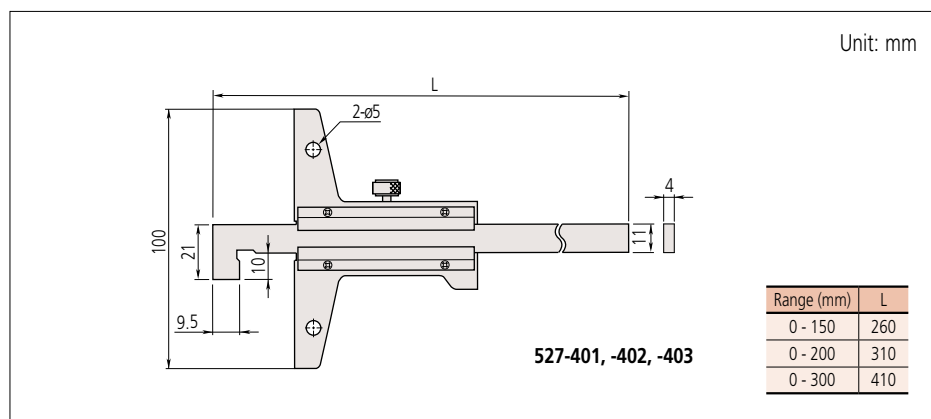
SPECIFICATIONS

Metric				
Order No.	Range (mm): L1 (L2 and L3)	Resolution/Graduation (mm)	Base (W×T) (mm)	Maximum permissible error E_{MPE} (mm)*
527-401	10 - 150 (0 - 150)	0.05	100×6.5	±0.05
527-402	10 - 200 (0 - 200)			±0.08
527-403	10 - 300 (0 - 300)			±0.03
527-411	10 - 150 (0 - 150)	0.02		±0.04
527-412	10 - 200 (0 - 200)			
527-413	10 - 300 (0 - 300)			

• Battery: SR44 (1 pc.), **938882**. For initial operational checks (standard accessory).

* Maximum permissible error, E_{MPE} , is the term (notation) used in JIS B 7518: 2018, revised based on ISO/TR 14253-6: 2012.

DIMENSIONS



Depth Gage

Depth Gage SERIES 571 — Hook End Type

- The end of the main scale is hook-shaped to allow depth and thickness measurements of a projected portion or lip in a hole, in addition to standard depth measurement.
- Coolant proof models achieve IP67 protection level.
- Optional longer extension bases are available. (Refer to page D-76.)
- The measurement result directly readable by OFFSET function.



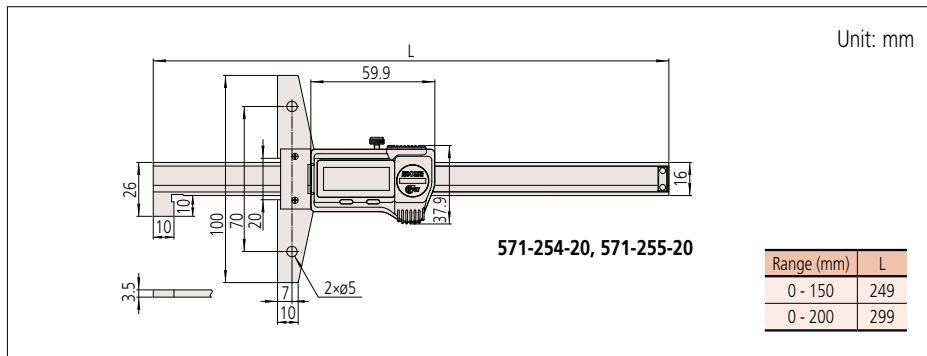
571-254-20

SPECIFICATIONS

Metric				
Order No.	Range (mm): L1 (L2 and L3)	Resolution (mm)	Base (W×T) (mm)	Maximum permissible error $EMPE$ (mm)*
571-254-20	10.1 - 160 (0 - 150)	0.01	100×6	±0.03
571-255-20	10.1 - 210 (0 - 200)			
Inch / Metric				
Order No.	Range: L1 (L2 and L3)	Resolution	Base (W×T) (mm)	Maximum permissible error $EMPE$ *
571-264-20	0.4 in - 6.4 in (0 - 6 in)	0.0005 in/0.01 mm	100×6	±0.0015 in/±0.03 mm
571-265-20	0.4 in - 8.4 in (0 - 8 in)			

- Battery: SR44 (1 pc.), **938882**. For initial operational checks (standard accessory).
- Battery life: Approx. 5 years
- * Maximum permissible error, $EMPE$, is the term (notation) used in JIS B 7518: 2018, revised based on ISO/TR 14253-6: 2012.

DIMENSIONS



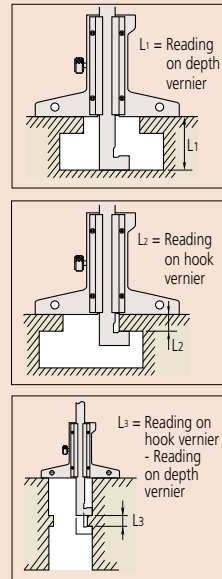
MeasurLink[®] ENABLED Data Management Software by Mitutoyo **U-WAVE^{fit}**

ABSOLUTE[™]

IP67

Dust- and Water-Protected
TÜV Rheinland CERTIFIED
www.tuv.com ID 0000645042

Typical applications



Optional Accessories

Order No.	Type	Description
05CZA624	A	Connecting cables (1 m)
05CZA625	A	Connecting cables (2 m)
06AFM380A	A	USB Input Tool Direct (2 m)
02AZD790A	A	Connecting cables for U-WAVE-T (160 mm)
02AZE140A	A	Connecting cables for U-WAVE-T For foot switch
264-620	IP67	U-WAVE-TC
264-621	Buzzer	U-WAVE-TC
264-624	IP67	U-WAVE-TCB Transmitter
264-625	Buzzer	U-WAVE-TCB Transmitter
02AZF310	IP67	Connecting unit for U-WAVE-TC/TCB

Optional Accessories

Order No.	Type	Description
02AZE140A	A	Connecting cables for U-WAVE-T For foot switch
264-620	IP67	U-WAVE-TC
264-621	Buzzer	U-WAVE-TC
264-624	IP67	U-WAVE-TCB Transmitter
264-625	Buzzer	U-WAVE-TCB Transmitter
02AZF310	IP67	Connecting unit for U-WAVE-TC/TCB

Depth Gauge SERIES 571 — Pin End Type

- Coolant proof models achieve IP67 protection level.
- Optional longer extension bases are available. (Refer to page D-76.)
- Allows integration into statistical process control and measurement systems for models with measurement data output connector. (Refer to page A-3.)



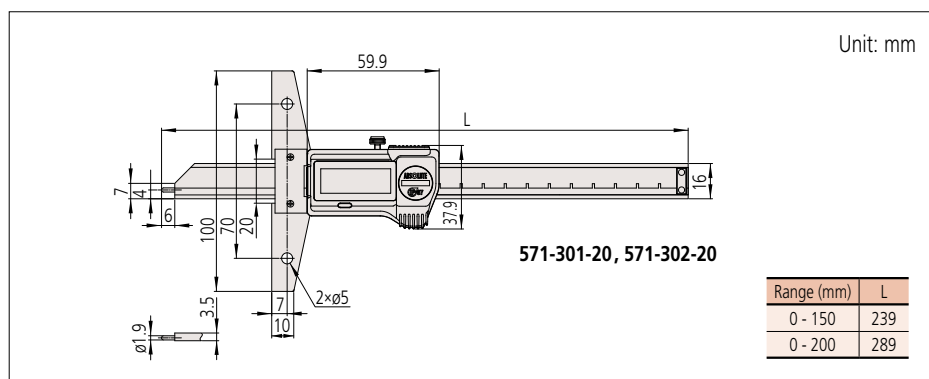
571-302-20

SPECIFICATIONS

Metric				
Order No.	Range (mm): L1 (L2 and L3)	Resolution (mm)	Base (W×T) (mm)	Maximum permissible error E_{MPE} (mm)*
571-301-20	0 - 150	0.01	100×6	±0.02
571-302-20	0 - 200			
Inch / Metric				
Order No.	Range: L1 (L2 and L3)	Resolution	Base (W×T) (mm)	Maximum permissible error E_{MPE} *
571-311-20	0 - 150 mm / 0 - 6 in	0.0005 in / 0.01 mm	100×6	±0.001 in / ±0.02 mm
571-312-20	0 - 200 mm / 0 - 8 in			

- Battery: SR44 (1 pc.), **938882**. For initial operational checks (standard accessory).
- Battery life: Approx. 5 years
- * Maximum permissible error, E_{MPE} , is the term (notation) used in JIS B 7518: 2018, revised based on ISO/TR 14253-6: 2012.

DIMENSIONS



Depth Gage

Mini Depth Gage SERIES 571

- Enables measurement of depth of tire tread.
- ABSOLUTE Digital Depth Gage.
- Allows integration into statistical process control and measurement systems for models with measurement data output connector. (Refer to page A-3.)
- Digital display with 0.01 mm resolution enables measurement without misreading.



571-100-20

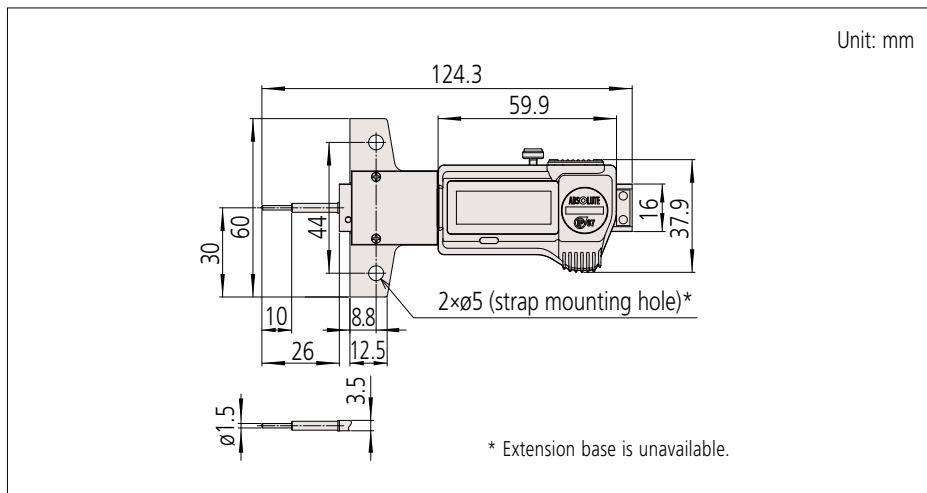
SPECIFICATIONS

Metric				
Order No.	Range (mm)	Resolution (mm)	Base (mm)	Maximum permissible error E_{MPE} (mm)*
571-100-20	0 - 25	0.01	60 (thickness 6.65)	±0.02

Inch / Metric				
Order No.	Range (in)	Resolution (in)	Base (in)	Maximum permissible error E_{MPE} (in)*
571-200-20	0 - 1	0.0005	2.36	±0.001

- Battery: SR44 (1 pc.), **938882**. For initial operational checks (standard accessory)
- Battery life: Approx. 5 years under normal use.
- * Maximum permissible error, E_{MPE} , is the term (notation) used in JIS B 7518: 2018, revised based on ISO/TR 14253-6: 2012.

DIMENSIONS



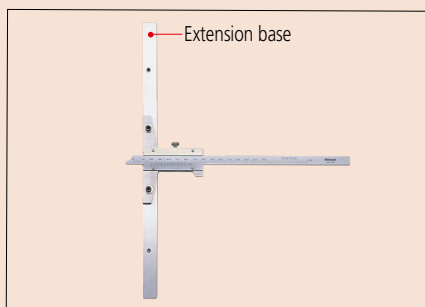
Measurement example



Optional Accessories

Order No.	Type	Description
05CZA624	A	Connecting cables for IT/DP/MUX (1 m)
05CZA625	A	Connecting cables for IT/DP/MUX (2 m)
06AFM380A	A	USB Input Tool Direct (2 m)
02AZD790A	A	Connecting cables for U-WAVE-T (160 mm)
02AZE140A	A	Connecting cables for U-WAVE-T For foot switch
264-620	IP67	U-WAVE-TC
264-621	Buzzer	U-WAVE-TC
264-624	IP67	U-WAVE-TCB Transmitter
264-625	Buzzer	U-WAVE-TCB Transmitter
02AZF310	IP67	Connecting unit for U-WAVE-TC/TCB

Example of attaching the extension base



Extension Bases Optional accessory for Depth Gauge

- Attaches to the base (reference face) plate of a depth gauge to extend its span.
- These Extension Bases cannot be attached to Digimatic models of 18 inch/450 mm and over or vernier models of 24 inch/600 mm and over.
- For these larger models, special-size extension bases are available as shown on the left.

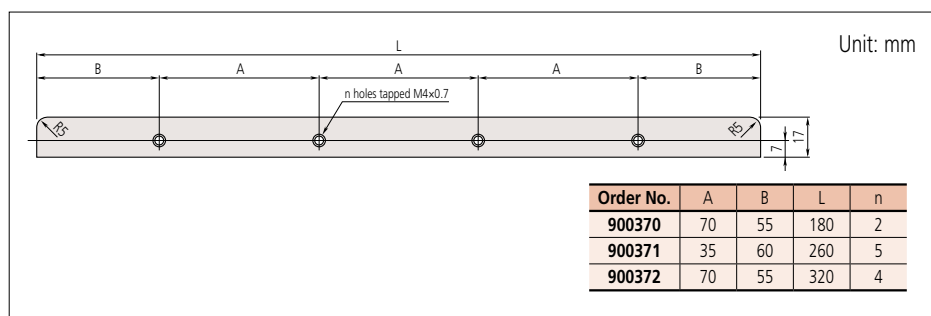


SPECIFICATIONS

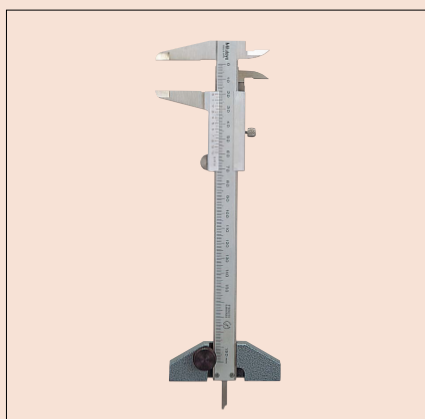
Metric				
Order No.	Size L (mm)	Thickness (mm)	Material	n
900370	180	8	Martensitic stainless steel	2
900371	260			5
900372	320			4

Inch				
Order No.	Size L (in)	Thickness (in)	Material	n
900367	7	0.3	Martensitic stainless steel	2
900368	10			5
900369	12			4

DIMENSIONS

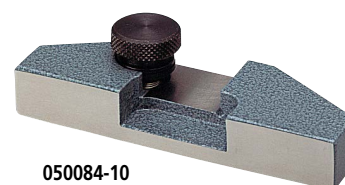


Example of attaching the depth gauge attachment



Depth Gauge Attachment Optional Accessory for Calipers

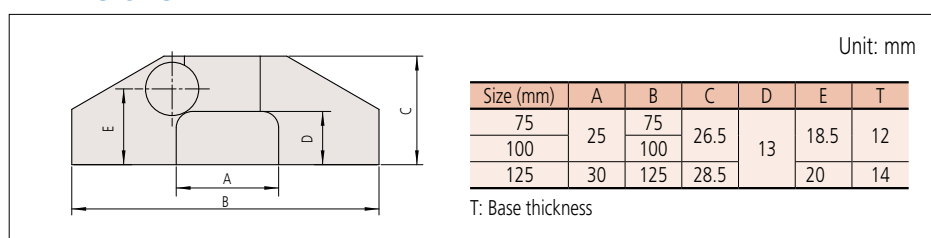
- Attaching this depth gauge attachment to the depth measurement face of the caliper makes depth measurement accurate and secure.



SPECIFICATIONS

Metric		
Order No.	Size (mm)	Applicable measuring range of caliper
050083-10	75	100 mm, 150 mm, 200 mm, 4 in, 6 in and 8 in
050084-10	100	100 mm, 150 mm, 200 mm, 4 in, 6 in and 8 in
050085-10	125	300 mm (12 in)

DIMENSIONS



Depth Gage

Dial Depth Gage SERIES 7

- Optimal for hole, narrow groove and step measurement.



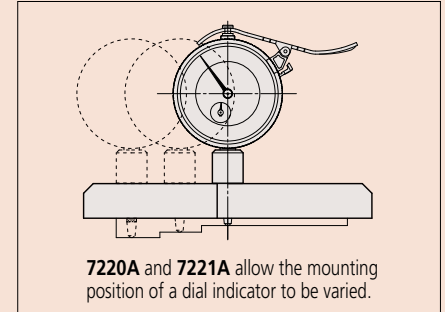
SPECIFICATIONS

Metric										
Order No.	Range (mm)	Graduation (mm)	Stroke (mm)	Accuracy (μm)	Measuring force (N)	Base				
						W (mm)	T (mm)	Flatness (μm)	Mounting position of a dial indicator	
7210A	0 - 10	0.01	10	±15	1.4	40	16	5	1	
7211A	0 - 200					30				63.5
7212A										101.6
7213A										63.5
7214A	0 - 210		101.6							
7220A	0 - 200		10	±15	1.4	100	18			2
7221A						150				3
7222A						0 - 10				1
7223A	0 - 10		5	±15	1.4	∅16	16			1
7224A						∅25				
7231A		0 - 200				∅40				

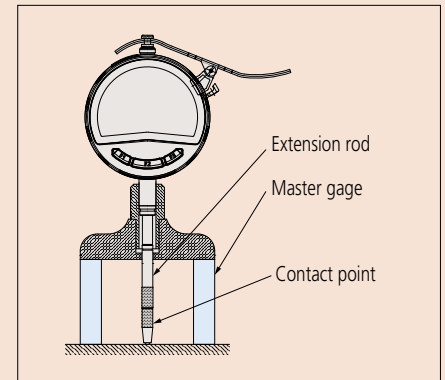
Order No.	Contact point*1	Extension rod*2	Indicator*3 (dial indicator)
7210A	Provided with a needle point (137413)	—	2902AB for Depth Gage
7211A	Provided with a carbide-tipped ball point (21JAA224)	5 pcs. (10, 20, 30, 30, 100 mm)	2902AB for Depth Gage
7212A		3 pcs. (30, 60, 90 mm)	2952AB for Depth Gage
7213A		5 pcs. (10, 20, 30, 30, 100 mm)	2902AB for Depth Gage
7214A		5 pcs. (10, 20, 30, 30, 100 mm)	2902AB for Depth Gage
7220A	Provided with a carbide-tipped ball point (21JAA224)	—	2902AB for Depth Gage
7221A		—	2902AB for Depth Gage
7222A		—	2902AB for Depth Gage
7223A		—	2902AB for Depth Gage
7224A	Provided with a carbide-tipped ball point (21JAA224: 17 mm)	5 pcs. (10, 20, 30, 30, 100 mm) Interchangeable contact point (21JAA226)	1162A for Depth Gage (Back plunger type)
7231A			

- *1 Caution should be exercised when exchanging a contact point of a Depth Gage (Dial/Digimatic Indicator):
- If a different size contact point is mounted, displacement of the contact point from the base contact surface will be changed and as a result, measurement range may not be maintained.
 - A contact point cannot be mounted to a Depth Gage if its diameter is too large for the hole diameter of the base.
 - Parallelism adjustment with the bottom face of the base is required when mounting a flat contact point such as the flat/needle or carbide-tipped contact point.
- *2 Caution should be exercised when using an extension rod:
- If the total length of the extension rod exceeds 110 mm (4.5 in) use the instrument in a vertical position (contact point downward).
 - Use a master gage (such as gauge blocks) to perform zero-setting when the extension rod is mounted. (Master gage is an optional accessory.)
- *3 Caution should be exercised when indicators are used on a Depth Gage:
- When the indicator is exchanged and a longer extension rod is connected, the contact-point may deflect significantly with an adverse effect on measuring accuracy.
 - Order No.543-710B/543-712B for Depth Gage has a measuring force less than 1.5 N. (Refer to page D-79.)

Typical application



When using an extension rod



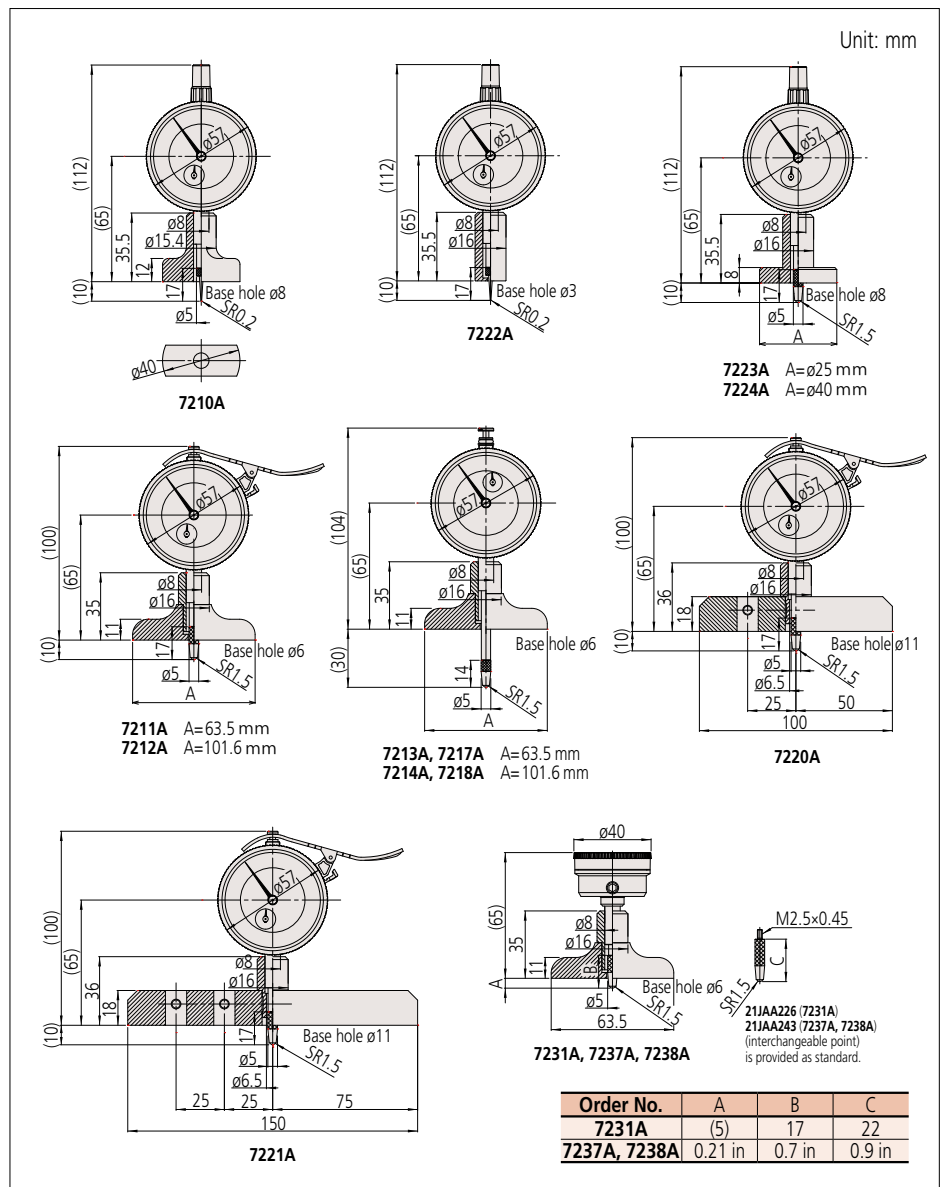
SPECIFICATIONS

Inch									
Order No.	Range (in)	Graduation (in)	Stroke (in)	Accuracy (in)	Measuring force (N)	Base			Mounting position of a dial indicator
						W (in)	T (in)	Flatness (in)	
7217A	0 - 8	0.001	1	±0.002	2.0	2.5	0.63	0.0002	1
7218A			4						
7237A			2.5						
7238A			4						

Order No.	Contact point*	Extension rod*	Indicator* (dial indicator)
7217A	Provided with a carbide-tipped ball point (21JZA242: 0.7 in)	3 pcs. (1 in, 2 in, 4 in)	2904AB for Depth Gage
7218A		4 pcs. (0.5 in, 1 in, 2 in, 4 in) Interchangeable contact point (21JZA243: 0.9 in)	1168A for Depth Gage (Back plunger type)
7237A			
7238A			

* Refer to corresponding notes on page D-77.

DIMENSIONS



ABSOLUTE Digimatic Depth Gauge SERIES 547

- Easy-to-read dial effectively prevents misreading. (Refer to page F-5 for functions.)
- Allows integration into statistical process control and measurement systems for models with measurement data output connector. (Refer to page A-3.)



547-211A

SPECIFICATIONS

Metric								
Order No.	Range (mm)	Resolution (mm)	Stroke (mm)	Accuracy (μm)	Measuring force (N)	Base		
						W (mm)	T (mm)	flatness (μm)
547-211A	0 - 200	0.01	12.7	±20	1.5 or less	63.5	16	5
547-212A		0.0005 (0.001/0.01 mm selectable)		±5		101.6		2
547-251A						63.5		
547-252A				101.6				

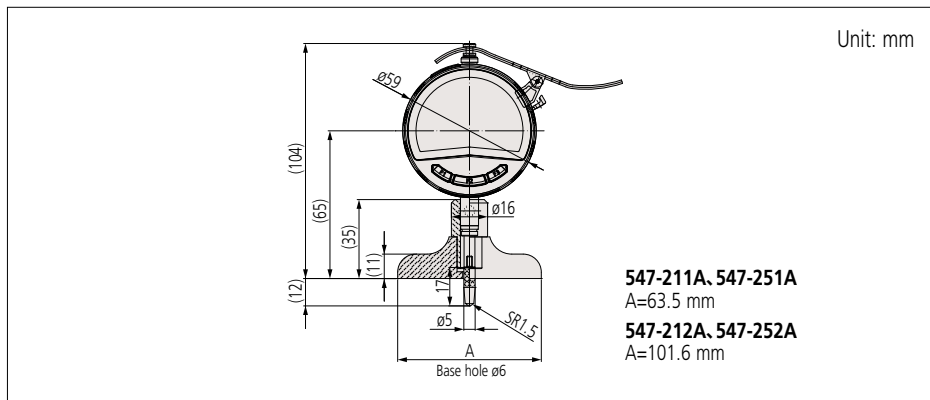
Order No.	Contact point*	Extension rod*	Indicator*
547-211A	Provided with a carbide-tipped ball point (21JAA224)	5 pcs. (10, 20, 30, 30, 100 mm)	543-710B
547-212A			543-700B
547-251A			
547-252A			

Inch / Metric								
Order No.	Range (in)	Resolution	Stroke (in)	Accuracy (in)	Measuring force (N)	Base		
						W (in)	T (in)	flatness (in)
547-217SA	0 - 8	0.0005 in/0.01 mm	0.5	±0.001	1.5 or less	2.5	0.63	0.0002
547-218SA						4		
547-257SA		0.00002 in (0.00005/0.0001/0.0005 in 0.0005/0.001/0.01 mm selectable)		±0.0002		2.5		0.00008
547-258SA						4		

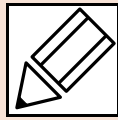
Order No.	Contact point*	Extension rod*	Indicator*
547-217SA	Provided with a carbide-tipped ball point (21JZA242)	4 pcs. (0.5 in, 1 in, 2 in, 4 in)	543-712B
547-218SA			543-702B
547-257SA			
547-258SA			

* Refer to corresponding notes on page D-77.

DIMENSIONS



Quick Guide to Precision Measuring Instruments



Depth Gages

Depth Gauge Performance Evaluation Method

JIS B 7518 was revised and issued in 2018 as the Japanese Industrial Standards of the depth gage, and the "Instrumental error" indicating the indication error of the depth gage has been changed to "Maximum permissible error (MPE) of indication".

The "Instrumental error" of the conventional JIS adopts acceptance criteria that the specification range (precision specification) equals acceptance range, and the OK/NG judgment does not include measurement uncertainty (Fig. 1). The "Maximum permissible error (MPE) of indication" of the new JIS employs the basic concept of the OK/NG judgment taking into account the uncertainty adopted in the ISO standard (ISO 14253-1).

The verification of conformity and nonconformity to the specifications is clearly stipulated to use the internationally recognized acceptance criteria (simple acceptance) when the specification range equals the acceptance range, and it is accepted that the specification range equals the acceptance range if a given condition considering uncertainty is met.

The above said internationally recognized acceptance criterion is ISO/TR 14253-6: 2012 (Fig. 2).

The following describes the standard inspection method including the revised content of JIS 2018.

Fig. 1 Conventional JIS Instrumental error

JIS B 7518-1993

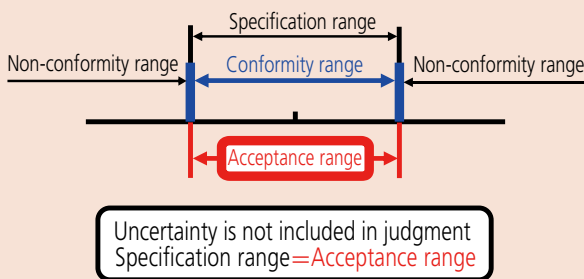
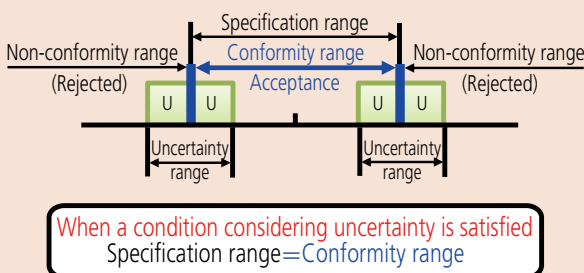


Fig. 2 New JIS Maximum permissible error (MPE)

JIS B 7518: 2018 (ISO/TR 14253-6: 2012)



Maximum permissible error of partial measuring face contact E_{MPE} [JIS B 7518: 2018]

The Maximum permissible error E_{MPE} of a depth gage is an indication error applied to depth measurement.

Table 1 shows the Maximum permissible error E_{MPE} of the indication value of the partial measuring surface contact error.

E_{MPE} for any desired height is obtained by measuring the height of two equal length gauge blocks, or equivalent, with a height gage on a precision surface plate (Fig. 3) and then subtracting the gauge block size from the measured size.

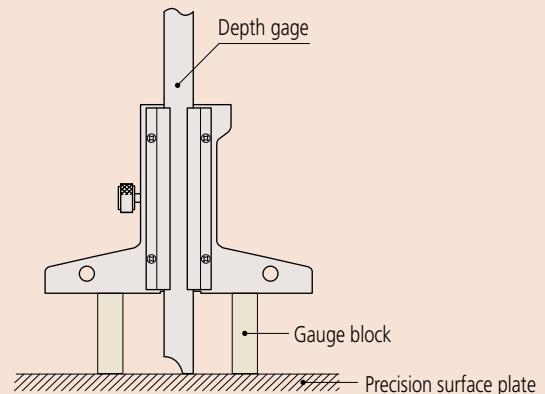
Table 1: Maximum permissible error E_{MPE} of partial measuring face contact of a conventional depth gage

Unit: mm

Measurement depth	Scale interval, graduation or resolution	
	0.05	0.02 or 0.01
50 or less	± 0.05	± 0.02
Over 50, 100 or less	± 0.06	± 0.03
Over 100, 200 or less	± 0.07	
Over 200, 300 or less	± 0.08	± 0.04
Over 300, 400 or less	± 0.09	
Over 400, 500 or less	± 0.10	± 0.05
Over 500, 600 or less	± 0.11	

Note: E_{MPE} includes the measurement error arising from straightness, flatness of the measuring surface and parallelism with the reference surface.

Fig. 3: Determination of partial measuring face contact error



The "Instrumental error" indicating the indication error of JIS has been changed to "Maximum permissible error (MPE) of indication" for the following models:

- **SERIES 571 ABSOLUTE Digimatic Depth Gage** described on page D-69 to D-70 (All models)
- **SERIES 527 Vernier Depth Gage** described on page D-71 (All models)
- **SERIES 527, 571 Hook End Type** described on page D-72 to D-74 (All models)
- **SERIES 571 Mini Depth Gage** described on page D-75 (All models)