

MEASURING TOOLS

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SMALL TOOLS

เครื่องมือวัดละเอียด

Mitutoyo

ดิจิเมติกโฮลเทส - แบบสามขา

DIGIMATIC HOLTEST

SERIES 468 - Three-point Internal Micrometer

Range (mm)	a (mm)	b (mm)	c (mm)
6 - 12	2 or below	—	2.5
12 - 20	0.3 or below	5.6	3.5
20 - 30		8.3	5.2
30 - 50		13.0	10.0
50 - 100		17.0	14.0
100 - 300	12.4 or below	21.0	13.8

Micrometer

ไมโครมิเตอร์

Inside

Measurement

เครื่องมือวัดภายใน

Calipers

คาลิเปอร์

Height Gages

เกจวัดความสูง

Linear Height

เครื่องมือวัดความสูง

Depth Gages

เกจวัดความลึก

Gauge Blocks

เกจบล็อก

Reference Gages

เครื่องมืออ้างอิง

Indicators

อินดิเคเตอร์

Stands

ขาตั้ง

Holtest

โฮลเทส

Inside Micrometer

ไมโครมิเตอร์วัดใน

Bore Gages

บอร์เกจ

Other Gages

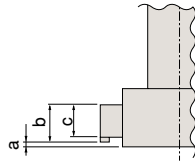
เกจอื่นๆ

Accessories

อุปกรณ์เสริม



468-161



468-168



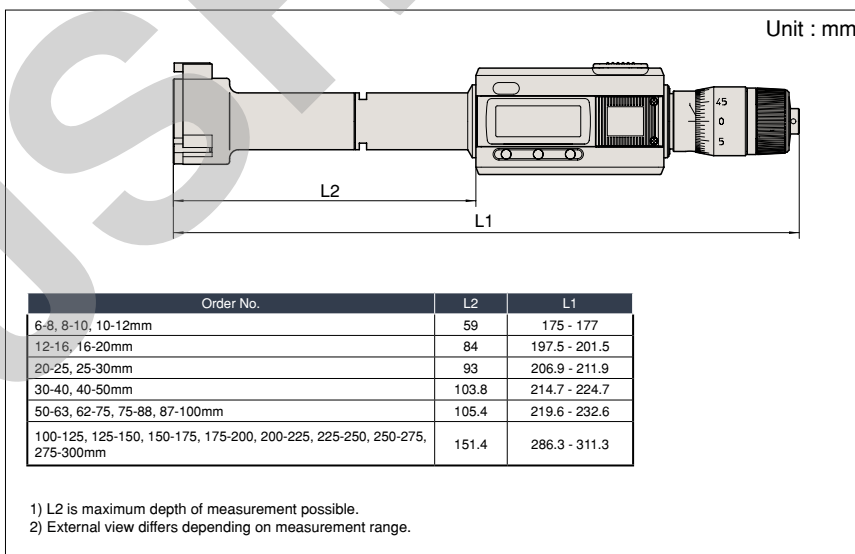
468-174

FEATURE

- Three-point internal micrometer with large LCD readout. (Character height 7.4mm)
- Titanium-coated measuring pins provide excellent durability and impact resistance and allow the instrument to measure right to the bottom of a blind hole.
- One SR44 battery is required and battery life is approx. 1.2 years under normal use.
- ABSolute and INCRemental measurement modes allow highly efficient operation.
- The IP65 protection rating allows the instrument to be used in the presence of splashing coolant.
- Measurements can be made close to the bottom of a blind hole.
- Deep holes can be measured by attaching an extension rod (optional).

- A function lock prevents accidental change of reference point.
- Measurement data output enables operation with Statistical Process Control (SPC) and measurement control systems. Refer to page A-002.
- An interface input tool is available for transferring measurement data, under keyboard control, directly to commercial spreadsheet software. Refer to page A-016.
- Interchangeable-Head Sets (interchangeable measuring heads type) covering an extended measuring range using multiple heads and Non-interchangeable-Head Sets are available.
- For Setting Rings, refer to page C-056.

DIMENSIONS



MeasurLink[®] ENABLED

Data Management Software by Mitutoyo

IP65



www.tuv.com
ID 0000021605



IP CODE

- Level 6 : Dust-proof.
Degree of protection against solid foreign objects.
No ingress of dust allowed.
- Level 5 : Protected against water jets.
Degree of protection against water.
Water projected in jets against the enclosure from any direction shall have no harmful effects.

Technical Data

Display: LCD
Battery: SR44 (1 pc), **938882**,
for initial operational checks
(standard accessory)
Battery life: Approx. 1.2 years under normal use
Scale type: Electromagnetic induction-type rotary encoder

Functions

- Zero-setting
- Origin restoration
- Data hold
- 2-point Preset
- Function lock (see illustration of lock symbol below)



inch/mm readout (inch/mm models)
Automatic power ON/OFF
Error alarm
Data output

Optional accessories

- Refer to page A-022 for details.
- USB Input Tool Direct (2m): **06AFM380B**
 - Connecting cables for **U-WAVE-T**
For standard (160mm): **02AZD790B**
For foot switch: **02AZE140B**

Optional accessories

Shown mounted on stand using bracket

Mounting bracket
No.04AZB157Interchangeable-Head Sets (interchangeable
measuring heads type)

* For details, refer to page C-004.



Non-interchangeable-Head Sets

** For details, refer to page C-005.

Metric

Order No.	Range* ²	Resolution	Accuracy* ¹	Optional Accessories * ²	
				Extension rod	SPC cable
468-161	6-8mm			952322	
468-162	8-10mm			(100mm)	
468-163	10-12mm		±2μm (within 2μm)		
468-164	12-16mm			952621	
468-165	16-20mm			(150mm)	
468-166	20-25mm				
468-167	25-30mm			952622	
468-168	30-40mm			(150mm)	
468-169	40-50mm		±3μm (within 3μm)		05CZA662
468-170	50-63mm				(1m)
468-171	62-75mm	0.001mm			
468-172	75-88mm				05CAZ663
468-173	87-100mm				(2m)
468-174	100-125mm				
468-175	125-150mm			952623	
468-176	150-175mm			(150mm)	
468-177	175-200mm				
468-178	200-225mm		±5μm (within 5μm)		
468-179	225-250mm				
468-180	250-275mm				
468-181	275-300mm				

Inch / Metric

Order No.	Range* ²	Resolution	Accuracy* ¹	Optional Accessories * ²	
				Extension rod	SPC cable
468-261	.275"-.35"			952322	
468-262	.35"-.425"			(100mm)	
468-263	.425"-.5"		±.0001" (within .0001")		
468-264	.5"-.65"			952621	
468-265	.65"-.8"			(150mm)	
468-266	.8"-1"				
468-267	1"-1.2"	.0005"/ 0.001mm		952622	
468-268	1.2"-1.6"			(150mm)	
468-269	1.6"-2"		±.00015" (within .00015")		05CZA662
468-270	2"-2.5"				(1m)
468-271	2.5"-3"				
468-272	3"-3.5"				05CAZ663
468-273	3.5"-4"				(2m)
468-274	4"-5"				
468-275	5"-6"			952623	
468-276	6"-7"			(150mm)	
468-277	7"-8"	.0001" /	±.00025"μm		
468-278	8"-9"	0.001mm	(within .00025")		
468-279	9"-10"				
468-280	10"-11"				
468-281	11"-12"				

*1 Excluding quantizing error.

Accuracy: values measured across the entire measuring face.

Maximum difference: differences between the maximum and minimum values.

*2 Setting ring and extension rod: optional.

* It is not advisable to use measuring heads other than as supplied as a standard accessory, or widen a measuring range by using any other multiple sub-measuring heads. (The measuring accuracy in such cases is not guaranteed.)

Micrometer

ไมโครมิเตอร์

Inside

Measurement

เครื่องมือวัดภายใน

Calipers

คาร์ลิเปอร์

Height Gages

เกจวัดความสูง

Linear Height

เครื่องมือวัดความสูง

Depth Gages

เกจวัดความลึก

Gauge Blocks

เกจบล็อก

Reference Gages

เครื่องมืออ้างอิง

Indicators

อินดิเคเตอร์

Stands

ขาตั้ง

Holtest

โฮลเทส

Inside Micrometer

ไมโครมิเตอร์วัดใน

Bore Gages

บอร์เกจ

Other Gages

เกจอื่นๆ

Accessories

อุปกรณ์เสริม

SMALL TOOLS

เครื่องมือวัดละเอียด

Mitutoyo

Interchangeable - Head Sets

Metric

Set Order No.	Range*	Content of Set	Accuracy (optional)
468-971	6 - 12mm	Display Unit 6 - 12mm	1pc
		Measuring head 6 - 8mm	1pc
		8 - 10mm	1pc
		10 - 12mm	1pc
		Setting ring (ø8, ø10)	1pc each
		Extension rod (100mm)	1pc
		Spanner	2pcs
		Hex wrench	1pc
		Phillip screw driver	1pc
468-972	12 - 20mm	Display Unit 12 - 20mm	1pc
		Measuring head 12 - 16mm	1pc
		16 - 20mm	1pc
		Setting ring (ø16)	1pc
		Extension rod (150mm)	1pc
		Spanner	2pcs
		Hex wrench	1pc
		Phillip screw driver	1pc
468-973	20 - 50mm	Display unit 20 - 50mm	1pc
		Measuring head 20 - 25mm	1pc
		25 - 30mm	1pc
		30 - 40mm	1pc
		40 - 50mm	1pc
		Setting ring (ø25, ø40)	1pc each
		Extension rod (150mm)	1pc
		Spanner	2pcs
468-974	50-100mm	Display Unit 50 - 100mm	1pc
		Measuring head 50 - 63mm	1pc
		62 - 75mm	1pc
		75 - 88mm	1pc
		87 - 100mm	1pc
		Setting ring (ø62, ø87)	1pc each
		Extension rod (150mm)	1pc
		Spanner	2pcs
468-975	100-200mm	Display Unit 100 - 200mm	1pc
		Measuring head 100 - 125mm	1pc
		125 - 150mm	1pc
		150 - 175mm	1pc
		175 - 200mm	1pc
		Setting ring (ø125, ø175)	1pc each
		Extension rod (150mm)	1pc
		Spanner	2pcs
468-976	.275-.5"	Display Unit .275-.5"	1pc
		Measuring head .275-.35"	1pc
		.35-.425"	1pc
		.425-.5"	1pc
		Setting ring (.35"DIA., .425"DIA.)	1pc each
		Extension rod (100mm)	1pc
		Spanner	2pcs
		Hex wrench	1pc
468-977	.5-.8"	Display Unit .5-.8"	1pc
		Measuring head .5-.65"	1pc
		.65-.8"	1pc
		Setting ring (.65"DIA.)	1pc
		Extension rod (150mm)	1pc
		Spanner	2pcs
		Hex wrench	1pc
		Phillip screw driver	1pc
468-978	.8-2"	Display unit .8-2"	1pc
		Measuring head .8-1"	1pc
		1-1.2"	1pc
		1.2-1.6"	1pc
		1.6-2"	1pc
		Setting ring (1"DIA., 1.6"DIA.)	1pc each
		Extension rod (150mm)	1pc
		Spanner	2pcs
468-979	2-4"	Display Unit 2-4"	1pc
		Measuring head 2-2.5"	1pc
		2.5-3"	1pc
		3-3.5"	1pc
		3.5-4"	1pc
		Setting ring (2.5"DIA., 3.5"DIA.)	1pc each
		Extension rod (150mm)	1pc
		Spanner	2pcs
468-980	4-8"	Display Unit 4-8"	1pc
		Measuring head 4-5"	1pc
		5-6"	1pc
		6-7"	1pc
		7-8"	1pc
		Setting ring (5"DIA., 7"DIA.)	1pc each
		Extension rod (150mm)	1pc
		Spanner	2pcs
468-981	6-12"	Display Unit 6-12"	1pc
		Measuring head 6-8"	1pc
		8-10"	1pc
		10-12"	1pc
		12-14"	1pc
		Setting ring (6"DIA., 12"DIA.)	1pc each
		Extension rod (150mm)	1pc
		Spanner	2pcs
468-982	12-24"	Display Unit 12-24"	1pc
		Measuring head 12-18"	1pc
		18-24"	1pc
		Setting ring (12"DIA., 24"DIA.)	1pc each
		Extension rod (150mm)	1pc
		Spanner	2pcs
		Hex wrench	1pc
		Phillips screw driver	1pc

Inch / Metric

Set Order No.	Range*	Content of Set	Accuracy (optional)
468-976	.275-.5"	Display Unit .275-.5"	1pc
		Measuring head .275-.35"	1pc
		.35-.425"	1pc
		.425-.5"	1pc
		Setting ring (.35"DIA., .425"DIA.)	1pc each
		Extension rod (100mm)	1pc
		Spanner	2pcs
		Hex wrench	1pc
468-977	.5-.8"	Display Unit .5-.8"	1pc
		Measuring head .5-.65"	1pc
		.65-.8"	1pc
		Setting ring (.65"DIA.)	1pc
		Extension rod (150mm)	1pc
		Spanner	2pcs
		Hex wrench	1pc
		Phillip screw driver	1pc
468-978	.8-2"	Display unit .8-2"	1pc
		Measuring head .8-1"	1pc
		1-1.2"	1pc
		1.2-1.6"	1pc
		1.6-2"	1pc
		Setting ring (1"DIA., 1.6"DIA.)	1pc each
		Extension rod (150mm)	1pc
		Spanner	2pcs
468-979	2-4"	Display Unit 2-4"	1pc
		Measuring head 2-2.5"	1pc
		2.5-3"	1pc
		3-3.5"	1pc
		3.5-4"	1pc
		Setting ring (2.5"DIA., 3.5"DIA.)	1pc each
		Extension rod (150mm)	1pc
		Spanner	2pcs
468-980	4-8"	Display Unit 4-8"	1pc
		Measuring head 4-5"	1pc
		5-6"	1pc
		6-7"	1pc
		7-8"	1pc
		Setting ring (5"DIA., 7"DIA.)	1pc each
		Extension rod (150mm)	1pc
		Spanner	2pcs
468-981	6-12"	Display Unit 6-12"	1pc
		Measuring head 6-8"	1pc
		8-10"	1pc
		10-12"	1pc
		12-14"	1pc
		Setting ring (6"DIA., 12"DIA.)	1pc each
		Extension rod (150mm)	1pc
		Spanner	2pcs
468-982	12-24"	Display Unit 12-24"	1pc
		Measuring head 12-18"	1pc
		18-24"	1pc
		Setting ring (12"DIA., 24"DIA.)	1pc each
		Extension rod (150mm)	1pc
		Spanner	2pcs
		Hex wrench	1pc
		Phillips screw driver	1pc

* It is not advisable to use measuring heads other than as supplied as a standard accessory, or widen a measuring range by using any other multiple sub-measuring heads.
(The measuring accuracy in such cases is not guaranteed.)



468-971



468-972



468-973



468-974



Optional accessories

- USB Input Tool Direct (2m): **06AFM380B**
- Connecting cables for **U-WAVE-T**
For Standard (160mm): **02AZD790B**
For foot switch: **02AZE140B**

Standard accessory
(packed separately)
Setting Rings (ø125, ø175)
468-975

Non-Interchangeable - Head Sets

Metric

Set Order No.	Range*2	Content of Set	Accuracy (optional)	
			Extension rod	SPC cable
468-981	6 - 12mm	Display Unit		
		6 - 8mm 1pc		
		8 - 10mm 1pc		
		10 - 12mm 1pc	100mm	
		Setting ring (ø8, ø10) 1pc each	1pc	
		Spanner 2pcs		
		Hex wrench 1pc		
468-982	12 - 25mm	Display Unit		
		12 - 16mm 1pc		
		16 - 20mm 1pc		
		20 - 25mm 1pc	150mm	
		Setting ring (ø16, ø20) 1pc	2pcs ¹	
		Spanner 2pcs		
		Hex wrench 1pc		SPC cable with data switch
468-983	25 - 50mm	Display unit		
		25 - 30mm 1pc		
		30 - 40mm 1pc		05CZA662 (1m)
		40 - 50mm 1pc	150mm	
		Setting ring (ø30, ø40) 1pc each	1pc	
		Spanner 2pcs		
		Hex wrench 1pc		05CZA663 (2)
468-984	50-75mm	Display Unit		
		50 - 63mm 1pc		
		62 - 75mm 1pc		
		Setting ring (ø62) 1pc each	150mm	
		Spanner 2pcs	1pc	
		Hex wrench 1pc		
		Phillips screw driver 1pc		
468-985	75-100mm	Display Unit		
		75 - 88mm 1pc		
		87 - 100mm 1pc	150mm	
		Setting ring (ø87) 1pc each	1pc	
		Spanner 2pcs		
		Hex wrench 1pc		
		Phillips screw driver 1pc		

Inch / Metric

Set Order No.	Range*2	Content of Set	Accuracy (optional)	
			Extension rod	SPC cable
468-986	.275"-.5"	Display Unit		
		.275-.35" 1pc		
		.35-.425" 1pc		
		.425-.5" 1pc	100mm	
		Setting ring(.35"DIA., .425"DIA) 1pc each	1pc	
		Spanner 2pcs		
		Hex wrench 1pc		
468-987	.5"-1"	Display Unit		
		.5-.65" 1pc		
		.65-.8" 1pc		
		.8-1" 1pc	150mm	
		Setting ring(.65"DIA., .8"DIA.) 1pc	2pcs ¹	
		Spanner 2pcs		
		Hex wrench 1pc		SPC cable with data switch
468-988	1"-2"	Display unit		
		1-1.2" 1pc		
		1.2-1.6" 1pc		05CZA662 (1m)
		1.6-2" 1pc	150mm	
		Setting ring(1.2"DIA., 1.6"DIA.) 1pc each	1pc	
		Spanner 2pcs		
		Hex wrench 1pc		05CZA663 (2)
468-989	2"-3"	Display Unit		
		2-2.5" 1pc		
		2.5-3" 1pc		
		Setting ring(2.5"DIA.) 1pc each	150mm	
		Spanner 2pcs	1pc	
		Hex wrench 1pc		
		Phillips screw driver 1pc		
468-990	3"-4"	Display Unit		
		3-3.5" 1pc		
		3.5-4" 1pc		
		Setting ring(.35"DIA.) 1pc each	150mm	
		Spanner 2pcs	1pc	
		Hex wrench 1pc		
		Phillips screw driver 1pc		

*1 Total 2 pcs of extension rods: 1 pcs of Part No. 952621 (for measuring range 12 to 16mm, 16 to 20mm) and Part No. 952622 (for measuring range 20 to 25mm).

Two extension rods cannot be connected due to the different mounting positions.

*2 It is not advisable to use measuring heads other than as supplied as a standard accessory, or widen a measuring range by using any other multiple sub-measuring heads. (The measurement accuracy in such cases is not guaranteed.)

Optional accessories

- USB Input Tool Direct (2m): **06AFM380B**
- Connecting cables for **U-WAVE-T**
For Standard (160mm): **02AZD790B**
For foot switch: **02AZE140B**



468-981



468-982



468-983



468-984



468-985

Micrometer

ไมโครมิเตอร์

Inside

Measurement
เครื่องมือวัดภายใน

Calipers

คาร์ลิเปอร์

Height Gages

เกจวัดความสูง

Linear Height

เครื่องมือวัดความสูง

Depth Gages

เกจวัดความลึก

Gauge Blocks

เกจบล็อก

Reference Gages

เครื่องมืออ้างอิง

Indicators

อินดิเคเตอร์

Stands

ขาตั้ง

Holtest

โฮลเทส

Inside Micrometer

ไมโครมิเตอร์วัดใน

Bore Gages

บอร์เกจ

Other Gages

เกจอื่นๆ

Accessories

อุปกรณ์เสริม

SMALL TOOLS

เครื่องมือวัดละเอียด

Mitutoyo

โฮลเทส - สามขา / สองขา

HOLTEST

SERIES 368 - Three-point/Two-point Internal Micrometer

Micrometer
ไมโครมิเตอร์



368-001
(Two-point contact model)

Inside Measurement
เครื่องมือวัดภายใน

Calipers
คาลิเปอร์

Height Gages
เกจวัดความสูง

Linear Height
เครื่องมือวัดความสูง

Depth Gages
เกจวัดความลึก

Gauge Blocks
เกจบล็อก

Reference Gages
เครื่องมืออ้างอิง

Indicators
อินดิเคเตอร์

Stands
ขาตั้ง

Holtest
โฮลเทส

Inside Micrometer
ไมโครมิเตอร์วัดใน

Bore Gages
บอร์เกจ

Other Gages
เกจอื่นๆ

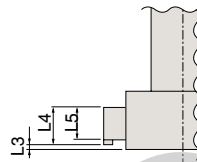
Accessories
อุปกรณ์เสริม

368-170

368-168

368-174

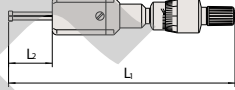
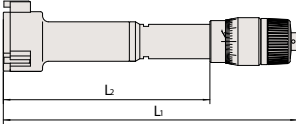
Range (mm)	L3 (mm)	L4 (mm)	L5 (mm)
2 - 6	—	—	2
6 - 12	2 or below	—	2.5
12 - 20	0.3 or below	5.6	3.5
20 - 30		8.3	5.2
30 - 50		13.0	10.0
50 - 100		17.0	14.0
100 - 300	12.4 or below	21.0	13.8



FEATURE

- Titanium-coated measuring pins on the threepoint type (over 6mm range models) provide excellent durability and impact resistance and allow the instrument to measure right to the bottom of a blind hole.
- Three-point bore micrometer with measuring range 6mm or longer allows stable measurement through automatic centering.
- Can measure deep holes using an Extension rod (optional) which is available on models over 6mm (.275") measuring range.
- Ratchet Stop ensures constant-force, repeatable measurement.
- Setting Rings for accurately setting the instrument are optional. Refer to page C-056 for details.

DIMENSIONS

Unit: mm		
		
Range	L2	L1
2-2.5, 2.5-3 mm	12	103.5-104
3-4, 4-5, 5-6 mm	161	113-114
External appearance differs depending on the measuring range.		
		
Range	L2	L1
6-8, 8-10, 10-12 mm	59	102-104
12-16, 16-20 mm	82	126-130
20-25, 25-30 mm	94	137-142
30-40, 40-50 mm	102	145-155
50-63, 62-75, 75-88, 87-100 mm	105	150-163
100-125, 125-150, 150-175, 175-200, 200-225, 225-250	161	227-252
250-275, 275-300 mm		
External appearance differs depending on the measuring range.		



Application using an extension rod

Metric

Order No.	Range	Graduation	Accuracy ^{*1}	Extension Rod (optional)
(Two-point)				
368-001	2-2.5mm	0.001mm	±2μm (within 2μm)	-
368-002	2.5-3mm			
368-003	3-4mm			
368-004	4-5mm			
368-005	5-6mm			
(Three-point)				
368-161	6-8mm	0.001mm	±2μm (within 2μm)	952322 (100mm)
368-162	8-10mm			
368-163	10-12mm			
368-164	12-16mm			
368-165	16-20mm	0.005mm	±3μm (within 3μm)	952621 (150mm)
368-166	20-25mm			
368-167	25-30mm			
368-168	30-40mm			
368-169	40-50mm	0.005mm	±3μm (within 3μm)	952622 (150mm)
368-170	50-63mm			
368-171	62-75mm			
368-172	75-88mm			
368-173	87-100mm	0.005mm	±3μm (within 3μm)	952623 (150mm)
368-174	100-125mm			
368-175	125-150mm			
368-176	150-175mm			
368-177	175-200mm	0.005mm	±3μm (within 3μm)	952623 (150mm)
368-178	200-225mm			
368-179	225-250mm			
368-180	250-275mm			
368-181	275-300mm			

*1 Excluding quantizing error.

Accuracy: values measured across the entire measuring face.

Maximum difference: differences between the maximum and minimum values.

* Setting ring and extension rod: optional.

* It is not advisable to use measuring heads other than as supplied as a standard accessory, or widen a measuring range by using any other multiple sub-measuring heads.

(The measuring accuracy in such cases is not guaranteed.)

Micrometer

ไมโครมิเตอร์

Inside

Measurement

เครื่องมือวัดภายใน

Calipers

คาร์ลิเปอร์

Height Gages

เกจวัดความสูง

Linear Height

เครื่องมือวัดความสูง

Depth Gages

เกจวัดความลึก

Gauge Blocks

เกจบล็อก

Reference Gages

เครื่องมืออ้างอิง

Indicators

อินดิเคเตอร์

Stands

ขาตั้ง

Holtest

โฮลเทส

Inside Micrometer

ไมโครมิเตอร์วัดใน

Bore Gages

บอร์เกจ

Other Gages

เกจอื่นๆ

Accessories

อุปกรณ์เสริม

SMALL TOOLS

เครื่องมือวัดละเอียด

Mitutoyo

Non-Interchangeable - Head Sets

Metric

Set Order No.	Range*	Graduation	Content of Set
(Two-point)			
368-906	2-3mm	0.001mm	Micrometer head unit
			2-2.5mm 1pc
			2.5-3mm 1pc
			Setting ring (ø2.5) 1pc
368-907	3-6mm	0.001mm	Hex wrench 1pc
			Micrometer head unit
			3-4mm 1pc
			4-5mm 1pc
368-911	6-12mm	0.001mm	5-6mm 1pc
			Setting ring (ø4, ø5) 1pc each
			Hex wrench 1pc
			Micrometer head unit
368-912	12-20mm	0.001mm	6-8mm 1pc
			8-10mm 1pc
			10-12mm 1pc
			Setting ring (ø8, ø10) 1pc each
368-913	20-50mm	0.001mm	Extension rod (100mm) 1pc
			Spanner 2pcs
			Hex wrench 1pc
			Measuring head unit
368-914	50-100mm	0.005mm	12-16mm 1pc
			16-20mm 1pc
			Setting ring (ø16) 1pc
			Extension rod (150mm) 1pc
368-915	100-200mm	0.005mm	Spanner 2pcs
			Hex wrench 1pc
			Measuring head unit
			100-125mm 1pc
368-916	200-300mm	0.005mm	125-150mm 1pc
			150-175mm 1pc
			175-200mm 1pc
			Setting ring (ø125, ø175) 1pc each
368-917	300-500mm	0.005mm	Extension rod (150mm) 1pc
			Spanner 2pcs
			Hex wrench 1pc
			Measuring head unit

* It is not advisable to use measuring heads other than as supplied as a standard accessory, or widen a measuring range by using any other multiple sub-measuring heads. (The measuring accuracy in such cases is not guaranteed.)



368-911



368-913



Setting ring supplied as standard (ø125, ø175) (Packed separately)
368-915



368-912



368-914



368-906

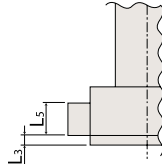


368-907

ไฮลเทส - สามขา

HOLTEST (Type II)**SERIES 368 - Three-point Internal Micrometer**

Range (mm)	L3 (mm)	L5 (mm)
6 - 12	2.6 or below	3.5
20 - 30	3.4 or below	5.2
30 - 50		10
50 - 100		14
100 - 300	19.6 or below	13.8

**DIMENSIONS**

Unit: mm

The image shows a technical drawing of a depth gauge. It consists of a base with a flat surface and a vertical rod. The rod has a threaded section with a knurled adjustment ring. Dimension lines indicate the total length of the rod as L1 and the length of the base as L2.

Range	L2	L1
12-16, 16-20	82	126-130
20-25, 25-30	94	137-142
30-40, 40-50	102	145-155
50-63, 62-75, 75-88, 87-100	105	150-163
100-125, 125-150, 150-175, 175-200, 200-225, 225-250 250-275, 275-300	161	227-252

External appearance differs depending on the measuring range.

Metric

Order No.	Range* ²	Graduation	Accuracy* ¹	Extension Rod (optional)
368-764	12-16mm	0.005mm	±2μm (within 2μm)	952621 (150mm)
368-765	16-20mm			
368-766	20-25mm		±3μm (within 3μm)	952622 (150mm)
368-767	25-30mm			
368-768	30-40mm			
368-769	40-50mm			
368-770	50-63mm			952623 (150mm)
368-771	62-75mm			
368-772	75-88mm			
368-773	87-100mm			
368-774	100-125mm		±5μm (within 5μm)	
368-775	125-150mm			
368-776	150-175mm			
368-777	175-200mm			
368-778	200-225mm			
368-779	225-250mm			
368-780	250-275mm			
368-781	275-300mm			

*1 Accuracy: values measured across the entire measuring face.

Maximum difference: differences between the maximum and minimum values.

*2 The measurement range cannot be enlarged by measuring heads that are not standard-supplied (the accuracy is not guaranteed).

Note: Setting rings are optional.

Micrometer
ไมโครมิเตอร์**Inside Measurement**
เครื่องมือวัดภายใน**Calipers**
คาร์ลิเปอร์**Height Gages**
เกจวัดความสูง**Linear Height**
เครื่องมือวัดความสูง**Depth Gages**
เกจวัดความลึก**Gauge Blocks**
เกจบล็อก**Reference Gages**
เครื่องมืออ้างอิง**Indicators**
อินดิเคเตอร์**Stands**
ขาตั้ง**Holtest**
ไฮลเทส**Inside Micrometer**
ไมโครมิเตอร์วัดใน**Bore Gages**
บอร์เกจ**Other Gages**
เกจอื่นๆ**Accessories**
อุปกรณ์เสริม

SMALL TOOLS

เครื่องมือวัดละเอียด

Mitutoyo

Non-Interchangeable - Head Sets

Metric

Set Order No.	Range*	Graduation	Content of Set
368-991	12 - 20mm		Micrometer head unit
			12 - 16mm 1pc
			16 - 20mm 1pc
			Setting ring (ø16) 1pc
			Extension rod (150mm) 1pc
368-992	20 - 50mm		Spanner 2pcs
			Hex wrench 1pc
			Micrometer head unit
			20 - 25mm 1pc
			25 - 30mm 1pc
368-993	50 - 100mm	0.005mm	30 - 40mm 1pc
			40 - 50mm 1pc
			Setting ring (ø25, ø40) 1pc each
			Extension rod (150mm) 1pc
			Spanner 2pcs
368-994	100 - 200mm		Hex wrench 1pc
			Micrometer head unit
			50 - 63mm 1pc
			62 - 75mm 1pc
			75 - 88mm 1pc
368-993	50 - 100mm	0.005mm	87 - 100mm 1pc
			Setting ring (ø62, ø87) 1pc each
			Extension rod (150mm) 1pc
			Spanner 2pcs
			Hex wrench 1pc
368-994	100 - 200mm		Measuring head unit
			100 - 125mm 1pc
			125 - 150mm 1pc
			150 - 175mm 1pc
			175 - 200mm 1pc
368-994	100 - 200mm		Setting ring (ø125, ø175) 1pc
			Extension rod (150mm) 1pc
			Spanner 2pcs
			Hex wrench 1pc

* It is not advisable to use measuring heads other than as supplied as a standard accessory, or widen a measuring range by using any other multiple sub-measuring heads.
(The measuring accuracy in such cases is not guaranteed.)

Holtest

Inside Micrometer

Bore Gages

Other Gages

Accessories



368-991



368-992



368-993



Setting rings supplied as standard (ø125, ø175) 368-994

ไมโคร - โฮลเทส

Micro-Hole test

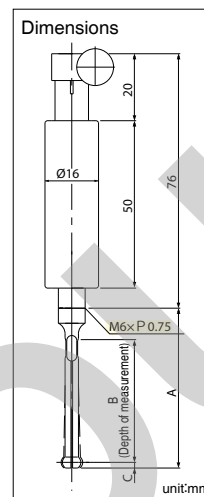
- It can comply with measuring internal diameter from minimum 1.7mm to maximum 10mm.
- It has realized stability accuracy 2μm, even though it is applied for small internal diameter which is difficult to measure.
- It realizes smooth operation with hard chrome plating. It can be naturally inserted to small internal diameter and obtain stable indication value.

[Full Choice] Micro-Hole Test

Series to select only the measuring range is needed.

Order No.	Ordering Method	Measuring Range (mm)	Probe	Driving Rod
MT-3N	MT-3N 1.7	1.7~2.1	012	1
	MT-3N 2.1	2.1~2.4	013	1
	MT-3N 2.3	2.3~2.7	014	2
	MT-3N 2.7	2.7~3.2	015	2
MT-4N	MT-4N 2.7	2.7~3.2	015	2
	MT-4N 3.1	3.1~3.5	016	2
	MT-4N 3.4	3.4~3.8	017	2
	MT-4N 3.8	3.8~4.3	018	2
MT-6N	MT-6N 3.8	3.8~4.3	018	2
	MT-6N 4.2	4.2~5.0	021	3
	MT-6N 4.7	4.7~5.5	022	3
	MT-6N 5.3	5.3~6.2	023	3
MT-10N	MT-10N 6.0	6.0~6.8	024	3
	MT-10N 6.6	6.6~7.5	025	3
	MT-10N 7.3	7.3~8.1	026	3
	MT-10N 8.0	8.0~8.8	027	3
	MT-10N 8.5	8.5~9.4	028	3
	MT-10N 9.2	9.2~10.0	029	3

Product configuration=Probe+Driving rod + Holder + Extension rods + Spanner (Dialgauge options)



MT-10N

Measuring Range 6~10mm

Order No.	Measuring Range (mm)	Probe						Accessories			Indication Error (μm)	Repeat-ability (μm)	Weight (g)	
		Number of Probe	No.	Measuring Range (mm)	Probe Dimensions (mm)			Driving Rod	Extension Rods	Spanner				
A	B				C									
MT-3N	1.7 ~3.2	4	012	1.70 ~2.10	25.3	17	0.9	Driving Rod1	1	1	8	2	100	
			013	2.10 ~2.40										
			014	2.30 ~2.70	30.6	22	1.2	Driving Rod2						
			015	2.70 ~3.20										
MT-4N	2.7 ~4.3	4	016	3.10 ~3.50	30.6	22	1.2		Driving Rod2	1	1	8	2	100
			017	3.40 ~3.80										
			018	3.80 ~4.30	30.6	22	2.0							
			018	3.80 ~4.30										
MT-6N	3.8 ~6.2	4	021	4.20 ~5.00	47.3	40	2.0	Driving Rod3	1	1	8	2	100	
			022	4.70 ~5.50										
			023	5.30 ~6.20	47.3	40	2.0							
			024	6.00 ~6.80										
MT-10N	6.0 ~10.0	6	025	6.60 ~7.50		47.3	40	2.0	Driving Rod3	1	1	8	2	100
			026	7.30 ~8.10										
			027	8.00 ~8.80	50									
			028	8.50 ~9.40										
			029	9.20 ~10.00										

Technical Data

- Dial indicator can be installed to bore gauges and Micro-hole Test. It is selectable for easier reading in compliance with objective and dimension range.



Measuring purpose
Graduation 0.001mm
Applicable Models
TM-1201f
(Measuring Range 1mm)
TM-1202f
(Measuring Range 2mm)



Measuring purpose
Graduation 0.001mm
Continuous Dial
Applicable Models
TM-1251f
(Measuring Range 1mm)



Measuring purpose
Graduation 0.001mm
One Revolution Dial Indicator
Applicable Models
TM-1200f
(Measuring Range 0.16mm)



Measuring purpose
Graduation 0.01mm
Applicable Models
TM-105
(Measuring Range 5mm)



Measuring purpose
Graduation 0.01mm
One Revolution Dial Indicator
Applicable Models
TM-102f
(Measuring Range 1mm)



Measuring purpose
Small Dial Indicators
Applicable Models
TM-36f
(Graduation 0.005mm
Measuring Range 3.5mm)
TM-37C
(Graduation 0.01mm
Measuring Range 3.5mm)



As to dial indicator installed to bore gauge, dial indicator with flat back is recommended. Lug back is standard for ordinary dial indicators but it will be with flat back by adding suffix "f" to the end of model name. TM-105 and TM-37C dial indicator is supplied with Flat back as standard.

SMALL TOOLS

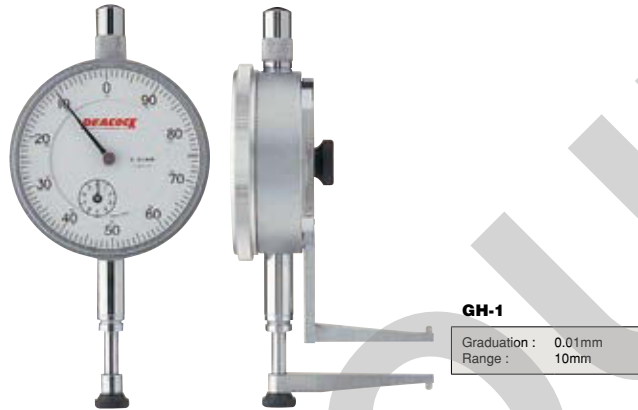
เครื่องมือวัดละเอียด

SINCE 1916
PEACOCK

เกจวัดรูแบบไดอัล Dial Hole Gauge

The Dial Hole Gauge is used for measurement of a bore diameter or groove width.

- Adjustable upper frame may be changed as desired, thus securing a wide measuring range.
- The contact point has an outer dia of 2 mm and a height of 2 mm. (R 1mm ball, M1.7 x 0.35mm.)



GH-1
Graduation : 0.01mm
Range : 10mm

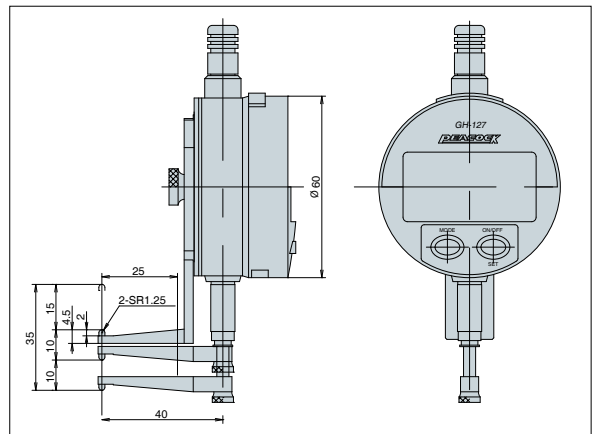
Order No.	Dial Gauge					Measurable bore ID (mm)	Measurable depth less than (mm)
	Graduation (mm)	Range (mm)	Accuracy (μm)	Reading	Measuring force less than (N)		
GH-1	0.01	10	±13	±100 - 50 - 0	1.4	10 ~ 50	25

เกจวัดรูแบบดิจิตอล Digital Hole Gauge



GH-127
Graduation : 0.01mm
Range : 10-35mm

Dimensions

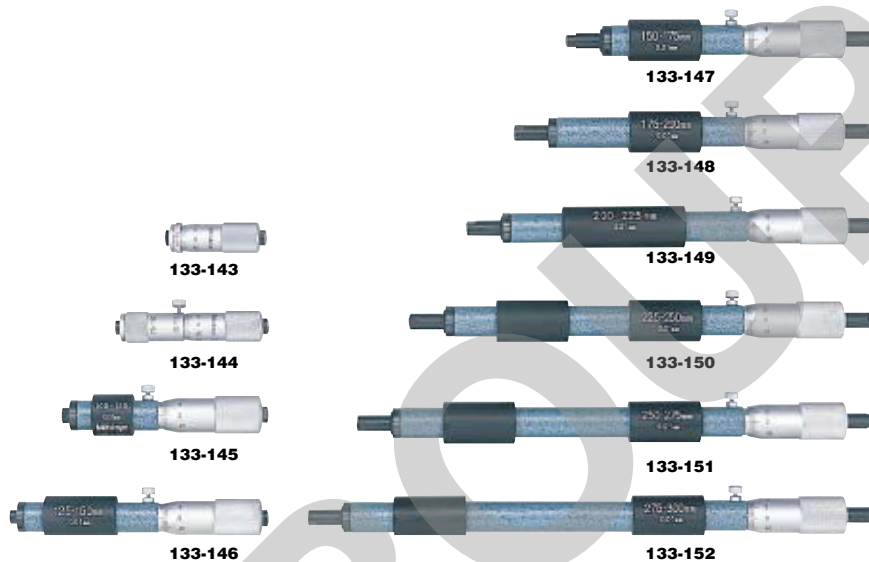


Order No.	Graduation (mm)	Accuracy (excluding quantized error)	Gauge installed	Range (mm)	Measurable bore ID (mm)	Measuring force	Measurable depth less than (mm)
GH-127	0.01	±0.02	DG-127	10-35	10-35	Less than 0.95N	25

ไมโครมิเตอร์วัดใน - แกนเดี่ยว

Tubular Inside Micrometer SERIES 133 - Single Rod Type

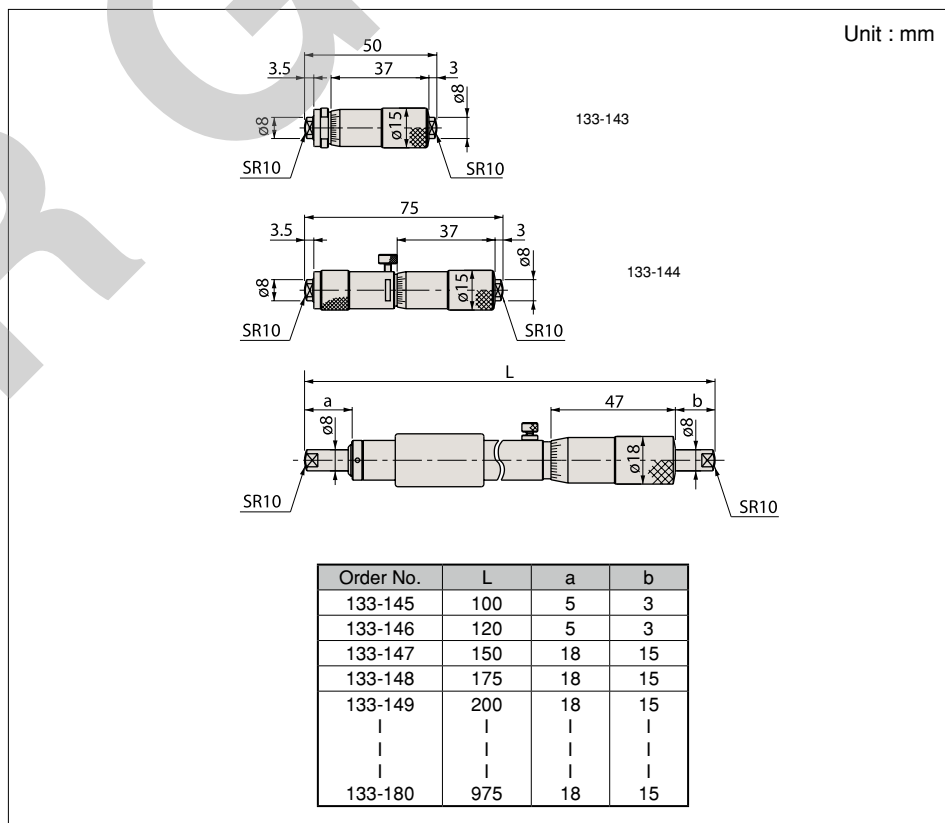
Optional accessories



FEATURE

- Standard single rod type inside micrometer.
- Carbide measuring faces.
- The sleeve is rotated to adjust the index line position when setting to a length standard.
- Setting ring (nominal size below 300mm), CERA Inside Micro Checker, and Gauge Block accessory set are provided as a reference gage for datum adjustment (refer to page C-056, C-021, and G-019-G-020, G015-G016 for details).

DIMENSIONS



Micrometer

ไมโครมิเตอร์

Inside

Measurement

เครื่องมือวัดภายใน

Calipers

คาร์ลิเปอร์

Height Gages

เกจวัดความสูง

Linear Height

เครื่องมือวัดความสูง

Depth Gages

เกจวัดความลึก

Gauge Blocks

เกจบล็อก

Reference Gages

เครื่องมืออ้างอิง

Indicators

อินดิเคเตอร์

Stands

ขาตั้ง

Holtest

โฮลเทส

Inside Micrometer

ไมโครมิเตอร์วัดใน

Bore Gages

บอร์เกจ

Other Gages

เกจอื่นๆ

Accessories

อุปกรณ์เสริม

SMALL TOOLS

เครื่องมือวัดละเอียด

Mitutoyo

Single Rod Type Inside Micrometer Set



133-902

Metric Micrometer set

Order No.	Range	Models included
133-901	50 - 150mm (4 heads/set)	133-143 133-144 133-145 133-146 with fitted case
133-902	50 - 300mm (10 heads/set)	133-143 133-144 133-145 133-146 133-147 133-148 133-149 133-150 133-151 133-152 with fitted case

Metric Individual

Order No.	Range	Graduation	Accuracy ¹
133-143	50 - 75mm		±3μm
133-144	75 - 100mm		±4μm
133-145	100 - 125mm		
133-146	125 - 150mm		
133-147	150 - 175mm		±5μm
133-148	175 - 200mm		
133-149	200 - 225mm		
133-150	225 - 250mm		
133-151	250 - 275mm		±6μm
133-152	275 - 300mm		
133-153	300 - 325mm		
133-154	325 - 350mm		±7μm
133-155	350 - 375mm		
133-156	375 - 400mm		
133-157	400 - 425mm		±8μm
133-158	425 - 450mm		
133-159	450 - 475mm		
133-160	475 - 500mm		±9μm
133-161	500 - 525mm		
133-162	525 - 550mm	0.01mm	
133-163	550 - 575mm		±10μm
133-164	575 - 600mm		
133-165	600 - 625mm		
133-166	625 - 650mm		±11μm
133-167	650 - 675mm		
133-168	675 - 700mm		
133-169	700 - 725mm		±12μm
133-170	725 - 750mm		
133-171	750 - 775mm		
133-172	775 - 800mm		±13μm
133-173	800 - 825mm		
133-174	825 - 850mm		
133-175	850 - 875mm		±14μm
133-176	875 - 900mm		
133-177	900 - 925mm		
133-178	925 - 950mm		±15μm
133-179	950 - 975mm		
133-180	975 - 1000mm		±16μm

Inside Micrometer
ไมโครมิเตอร์วัดใน

Micrometer
ไมโครมิเตอร์

Inside
Measurement
เครื่องมือวัดภายใน

Calipers
คาร์ลิเปอร์

Height Gages
เกจวัดความสูง

Linear Height
เครื่องมือวัดความสูง

Depth Gages
เกจวัดความลึก

Gauge Blocks
เกจบล็อก

Reference Gages
เครื่องมืออ้างอิง

Indicators
อินดิเคเตอร์

Stands
ขาตั้ง

Holtest
โฮลเทส

Inside Micrometer
ไมโครมิเตอร์วัดใน

Bore Gages
บอร์เกจ

Other Gages
เกจอื่นๆ

Accessories
อุปกรณ์เสริม

ไมโครมิเตอร์วัดใน - แกนต่อ

Tubular Inside Micrometer

SERIES 137, 337 - Extension Rod Type

IP65

www.tuv.com
ID 000021605

IP CODE

- Level 6 : Dust-proof.
Degree of protection against solid foreign objects.
No ingress of dust allowed.
- Level 5 : Protected against water jets.
Degree of protection against water.
Water projected in jets against the enclosure from any direction shall have no harmful effects.

Technical Data

Accuracy
±(3 + number of rods + maximum measurement length/50) μm (fraction rounded up)
Excluding quantizing error (only for Digimatic)



Functions

(for 337-101/301/302/102/303/304)

Zero-setting
Origin restoration
Data hold
2-point Preset
Function lock
Automatic power ON/OFF
Error alarm
Data output

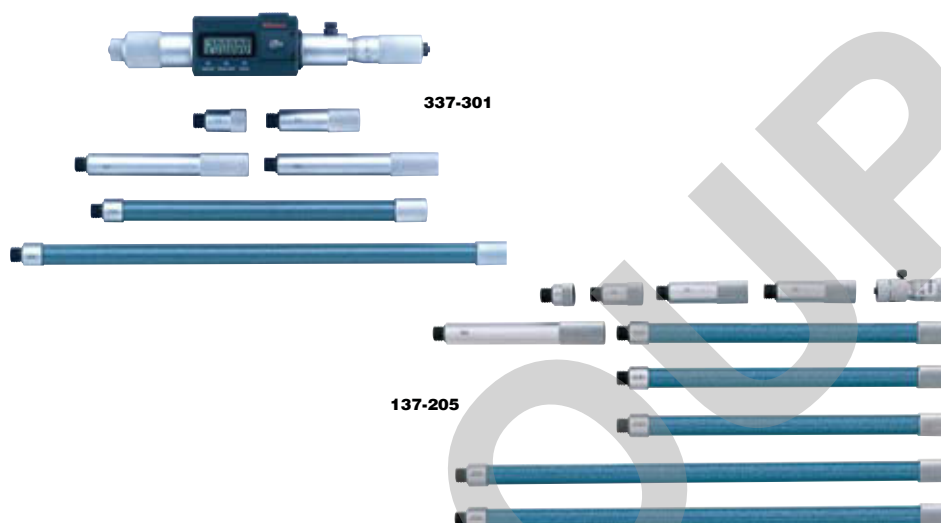
Battery and scale type

(for 337-101/301/302/102/303/304)

SR44 (1 pc), 938882, for initial operational checks (standard accessory)
Battery life: Approx. 1.2 years under normal use
Scale type: Electromagnetic induction-type rotary encoder

Optional accessories

Refer to page A-022 for details.
Connecting cables with IT/DP/MUX, etc.
1m: 05CZA662
2m: 05CZA663
USB Input Tool Direct (2m): 06AFM380B
Connecting cables for U-WAVE-T
For standard (160mm): 02AZD790B
For foot switch: 02AZE140B



FEATURE

- Wide range of inside measurements possible by combining extension rods and anvils with the micrometer head.
- Two types of measuring faces are available; with or without carbide tip. (No. 337-101/301/302/102/303/304 only available with carbide tip.)
- The sleeve is rotated to adjust the index line position when setting to a length standard.
- An inside length standard is required for accurately setting the micrometer.
- Order No. 337-101/301/302/102/303/304

features:

- IP65 (water-proof) protection level that enables use in the presence of cutting fluid.
- A large-character LCD display.
- Storage of 2 preset values for use when setting to an inside length standard.
- A function lock that prevents accidental changing of the reference setting during measurement.
- An output port for measurement data that enables inclusion in a statistical process control or networked measurement system. Refer to page A-002 for details.
- Ability to use Interface Input Tools that enable conversion of measurement data to keyboard signals that are then directly input to cells in off-the-shelf spreadsheet software such as Excel. Refer to page A-016 for details.

Metric

Order No.	Range	Resolution	Micrometer head stroke	Extension rods		Display unit
				Qty	Size	
Digimatic (LCD)						
337-101	200-225mm	0.001mm	25mm	-	-	200-225mm
337-301	200-1000mm			6	25, 50, 100(2pcs), 200, 300mm	
337-302	200-1500mm			7	25, 50, 100, 200, 300(3pcs)mm	

Inch / Metric

Order No.	Range	Resolution	Micrometer head stroke	Extension rods		Display unit
				Qty	Size	
Digimatic (LCD)						
337-102	8" - 9"	.0001"/	1"	-	-	8 - 9"
337-303	8" - 40"	0.001mm		6	1", 2", 4"(2pcs.), 8", 12"	
337-304	8" - 60"			7	1", 2", 4", 8", 12"(3pcs)	

Metric

Order No.	Range	Resolution	Micrometer head stroke	Extension rods		Display unit
				Qty	Size	
Analog						
137-201	50-150mm	0.01mm	13mm	3	13, 25, 50mm	50-63mm
137-202	50-300mm			5	13, 25, 50(2pcs.), 100mm	
137-203	50-500mm			6	13, 25, 50(2pcs.), 100, 200mm	
137-204	50-1000mm			8	13, 25, 50(2pcs.), 100, 200(2pcs.), 300mm	
137-205	50-1500mm			10	13, 25, 50(2pcs.), 100, 200(2pcs.), 300(2pcs.)mm	
Analog (with carbide measuring face)						
137-206	50-150mm	0.01mm	13mm	3	13, 25, 50mm	50-63mm
137-207	50-300mm			5	13, 25, 50(2pcs.), 100mm	
137-208	50-500mm			6	13, 25, 50(2pcs.), 100, 200mm	
137-209	50-1000mm			8	13, 25, 50(2pcs.), 100, 200(2pcs.), 300mm	
137-210	50-1500mm			10	13, 25, 50(2pcs.), 100, 200(2pcs.), 300(2pcs.)mm	

SMALL TOOLS

เครื่องมือวัดละเอียด

Mitutoyo

ไมโครมิเตอร์วัดใน - แกนต่อ

Tubular Inside Micrometers

SERIES 139, 339, 140 - Extension Pipe Type

MeasurLink[®] ENABLED

Data Management Software by Mitutoyo

IP 65



www.tuv.com
ID 000021605

Micrometer

ไมโครมิเตอร์

Inside Measurement
เครื่องมือวัดภายใน

Calipers

คาร์ลิเปอร์

Height Gages

เกจวัดความสูง

Linear Height

เครื่องมือวัดความสูง

Depth Gages

เกจวัดความลึก

Gauge Blocks

เกจบล็อก

Reference Gages

เครื่องมืออ้างอิง

Indicators

อินดิเคเตอร์

Stands

ขาตั้ง

Holtest

โฮลเทส

Inside Micrometer

ไมโครมิเตอร์วัดใน

Bore Gages

บอร์เกจ

Other Gages

เกจอื่นๆ

Accessories

อุปกรณ์เสริม



339-301



139-177



140-158

IP CODE

Level 6 : Dust-proof.
Degree of protection against solid foreign objects.
No ingress of dust allowed.

Level 5 : Protected against water jets.
Degree of protection against water.
Water projected in jets against the enclosure from any direction shall have no harmful effects.

Technical Data

Accuracy

339 series

±(3 + number of pipes + maximum measurement length/50)µm (fraction rounded up)

139 series

±(3 + number of pipes + maximum measurement length/50)µm (fraction rounded up)

140 series

±(7 + number of pipes + maximum measurement length/50)µm (fraction rounded up)

Excluding quantizing error (only for Digimatic)



Metric

Order No.	Range	Resolution	Micrometer head stroke	Extension rods		Display unit
				Qty	Size	
Digimatic (LCD)						
339-101	200-225mm	0.001mm	25mm	-	-	200-225mm
339-301	200-1000mm			5	25, 50, 100, 200, 400mm	
339-302	200-2000mm			7	25, 50, 100, 200(2pcs.), 400(3pcs)mm	

Inch / Metric

Order No.	Range	Resolution	Micrometer head stroke	Extension rods		Display unit
				Qty	Size	
Digimatic (LCD)						
339-102	8" - 9"	.0001"/ 0.001mm	1"	-	-	8 - 9"
339-303	8" - 40"			5	1", 2", 4", 8", 16"	
339-304	8" - 80"			7	1", 2", 4", 8"(2pcs.), 16"(3pcs.)	

Metric

Order No.	Range	Resolution	Micrometer head stroke	Extension rods		Display unit
				Qty	Size	
Analog						
139-173	100-500mm	0.01mm	25mm	4	25, 50, 100, 200mm	100-125mm
139-174	100-900mm			5	25, 50, 100, 200, 400mm	
139-175	100-1300mm			6	25, 50, 100, 200, 400mm(2pcs.)	
139-176	100-1700mm			7	25, 50, 100, 200, 400mm(3pcs.)	
139-177	100-2100mm		8	25, 50, 100, 200, 400mm(4pcs.)	1000-1050mm	
140-157	1000-2000mm		5	50, 100(2pcs.), 200, 500mm		
140-158	1000-3000mm		6	50, 100(2pcs.), 200, 500, 1000mm		
140-159	1000-4000mm		7	50, 100(2pcs.), 200, 500, 1000mm (2pcs.)		
140-160	1000-5000mm	8	50, 100(2pcs.), 200, 500, 1000mm (3pcs.)			

Functions

(for 339-101/301/302/102/303/304)

Zero-setting
Origin restoration
Data hold
Function lock
Automatic power ON/OFF
2-point Preset
Error alarm
Data output

Battery and scale type

(for 339-101/301/302/102/303/304)

SR44 (1 pc), **938882**, for initial operational checks (standard accessory)
Battery life: Approx. 1.2 years under normal use
Scale type: Electromagnetic induction-type rotary encoder

Optional accessories

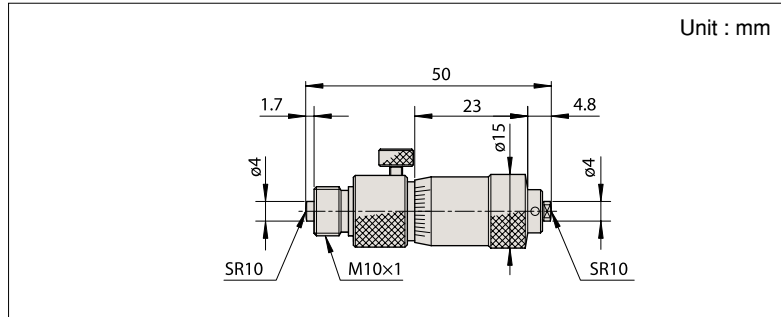
Refer to page A-022 for details.
Connecting cables with **IT/DP/MUX**, etc.
1m: **05CZA662**
2m: **05CZA663**
USB Input Tool Direct (2m): **06AFM380B**
Connecting cables for **U-WAVE-T**
For standard (160mm): **02AZD790B**
For foot switch: **02AZE140B**

ไมโครมิเตอร์วัดใน

Tubular Inside Micrometers

SERIES 137 - Extension Rod Type (main unit)

DIMENSIONS



FEATURE

- Micrometer head for Extension Rod Type inside micrometer.
- The sleeve is rotated to adjust the index line position when setting to a length standard.
- Setting ring and Gauge Block accessory set are provided as a reference gage for datum adjustment (refer to page C-056 and G-014-G-016 for details).

Metric

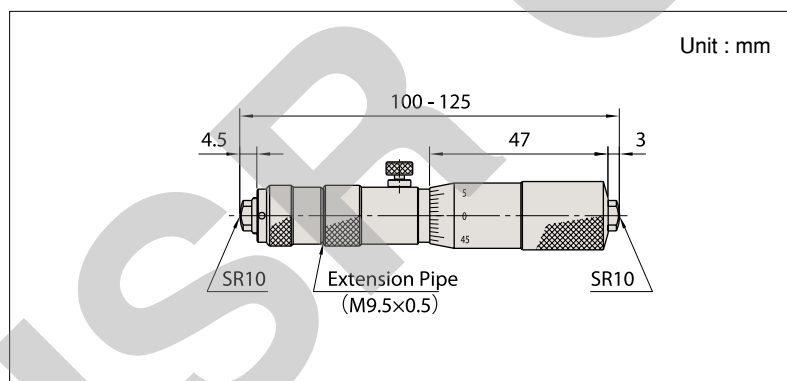
Order No.	Range	Graduation	Accuracy	Micrometer head stroke
137-011				
Carbide-tipped				
137-013	50 - 63mm	0.01mm	±3μm	13mm

ไมโครมิเตอร์วัดใน

Tubular Inside Micrometers

SERIES 139 - Extension Rod Type (main unit)

DIMENSIONS



FEATURE

- Micrometer head for Extension Pipe Type inside micrometer.
- The sleeve is rotated to adjust the index line position when setting to a length standard.
- Optional Setting Rings (nominal size below 300 mm), CERA Inside Micro Checker and Gauge Block Accessory Sets are available as reference gages for datum adjustment (refer to page C-056, C-021, and G-014-G-016 for details).

Metric

Order No.	Range	Graduation	Accuracy	Micrometer head stroke
139-001	100-125mm	0.01mm	±3μm	25mm

SMALL TOOLS

เครื่องมือวัดละเอียด

Mitutoyo

ไมโครมิเตอร์วัดใน

Inside Micrometers

SERIES 345, 145 — Caliper Type

MeasurLink[®] ENABLED

Data Management Software by Mitutoyo

Micrometer

ไมโครมิเตอร์



345-250-30

Inside Measurement

เครื่องมือวัดภายใน

Calipers

คาร์ลิเปอร์

Height Gages

เกจวัดความสูง

Linear Height

เครื่องมือวัดความสูง

Depth Gages

เกจวัดความลึก

Gauge Blocks

เกจบล็อก

Reference Gages

เครื่องมืออ้างอิง

Indicators

อินดิเคเตอร์

Stands

ขาตั้ง

Holtest

โฮลเทส

Inside Micrometer

ไมโครมิเตอร์วัดใน

Bore Gages

บอร์เกจ

Other Gages

เกจอื่นๆ

Accessories

อุปกรณ์เสริม



145-185



145-187

FEATURE

- Caliper type inside micrometer equipped with round pin or anvil type jaws, according to model.
- Carbide measuring faces.
- Equipped with a constant measuring-force device.

- Setting ring (nominal size below 300mm), CERA Inside Micro Checker (more than 50mm), and Gauge Block accessory set are provided as a reference gage for datum adjustment (refer to page C-056, C-021, and G-014 - G-016 for details).

Metric

Order No.	Range	Resolution	Accuracy*	Jaw	Mass
Digimatic (LCD)					
345-250-30	5 - 30mm	0.001mm	±5μm	Pin	320g
345-251-30	25 - 50mm		±6μm	Anvil	325g

* Excluding quantizing error

Inch / Metric

Order No.	Range	Resolution	Accuracy*	Jaw	Mass
Digimatic (LCD)					
345-350-30	.2" - 1.2"	.00005" /	±.00025"	Pin	320g
345-351-30	1" - 2"	0.001mm	±.0003"	Anvil	325g

* Excluding quantizing error

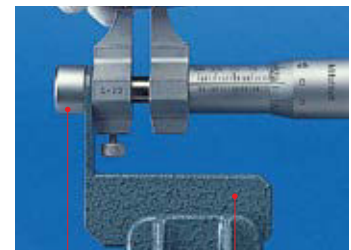
Metric

Order No.	Range	Resolution	Accuracy*	Jaw	Mass
Analog					
145-185	5 - 30mm	0.01mm	±5μm	Pin	130g
145-186	25 - 50mm		±6μm	Anvil	140g
145-187	50 - 75mm		±7μm	Anvil	160g
145-188	75 - 100mm		±8μm	Anvil	180g
145-189	100 - 125mm		±9μm	Anvil	210g
145-190	125 - 150mm			Anvil	230g
145-191	150 - 175mm		±10μm	Anvil	250g
145-192	175 - 200mm			Anvil	270g
145-217	200 - 225mm		±11μm	Anvil	310g
145-218	225 - 250mm			Anvil	330g
145-219	250 - 275mm		±12μm	Anvil	350g
145-220	275 - 300mm			Anvil	370g

* Excluding quantizing error



Accessories for 145-185/186/193/194 (optional)



Cap (No.300401) Holder (No.300400)

* This instrument requires the cap and the holder for mounting on a micrometer stand.

Battery and scale type (for 345-250-30/251-30/350-30/351-30)

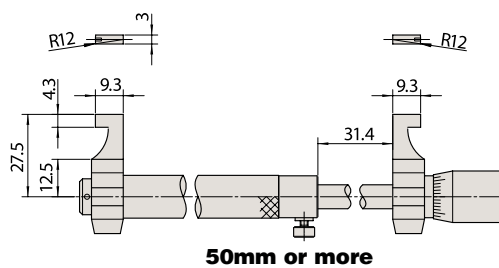
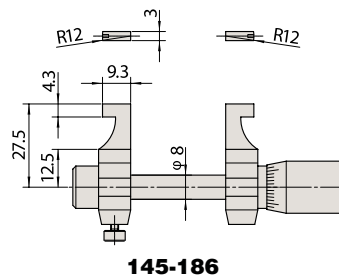
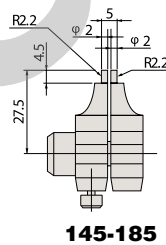
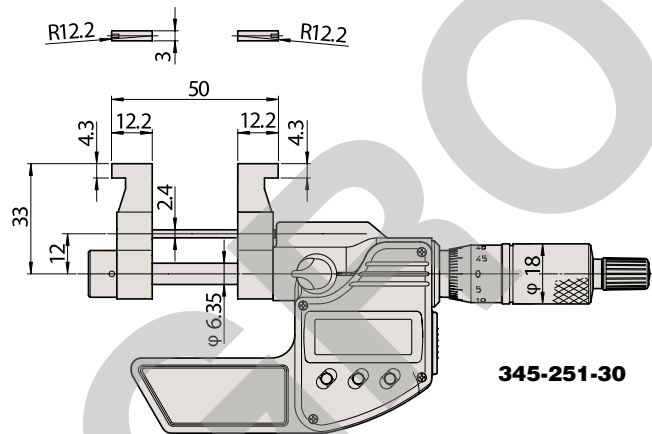
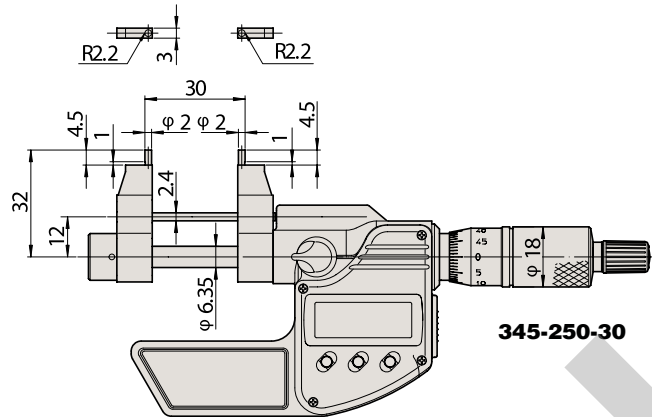
SR44 (1 pc), **938882**, for initial operational checks (standard accessory)
 Battery life: Approx. 2.4 years under normal use
 Scale type: Electromagnetic induction-type rotary encoder

Optional accessories

Refer to page A-022 for details
 Connecting cables for Input Tool/ Digimatic Mini-Processor, etc.
 1m: **05CZA662**
 2m: **05CZA663**
 USB Input Tool Direct (2m): **06AFM380B**
 Connecting cables for **U-WAVE-T**
 For standard (160mm): **02AZD790B**
 For foot switch: **02AZE140B**

DIMENSIONS

Unit : mm



Micrometer
ไมโครมิเตอร์

Inside
Measurement
เครื่องมือวัดภายใน

Calipers
คาร์สิเปอร์

Height Gages
เกจวัดความสูง

Linear Height
เครื่องมือวัดความสูง

Depth Gages
เกจวัดความลึก

Gauge Blocks
เกจบล็อก

Reference Gages
เครื่องมืออ้างอิง

Indicators
อินดิเคเตอร์

Stands
ขาตั้ง

Holtest
โฮลเทส

Inside Micrometer
ไมโครมิเตอร์วัดใน

Bore Gages
บอร์เกจ

Other Gages
เกจอื่นๆ

Accessories
อุปกรณ์เสริม

SMALL TOOLS

เครื่องมือวัดละเอียด

Mitutoyo

ไมโครมิเตอร์วัดใน - เปลี่ยนแกน

Inside Micrometers

SERIES 141 - Interchangeable Rod Type

Micrometer

ไมโครมิเตอร์

Inside Measurement
เครื่องมือวัดภายใน

Calipers

คาร์ลิเปอร์

Height Gages

เกจวัดความสูง

Linear Height

เครื่องมือวัดความสูง

Depth Gages

เกจวัดความลึก

Gauge Blocks

เกจบล็อก

Reference Gages

เครื่องมืออ้างอิง

Indicators

อินดิเคเตอร์

Stands

ขาตั้ง

Holtest

โฮลเทส

Inside Micrometer

ไมโครมิเตอร์วัดใน

Bore Gages

บอร์เกจ

Other Gages

เกจอื่นๆ

Accessories

อุปกรณ์เสริม



141-101

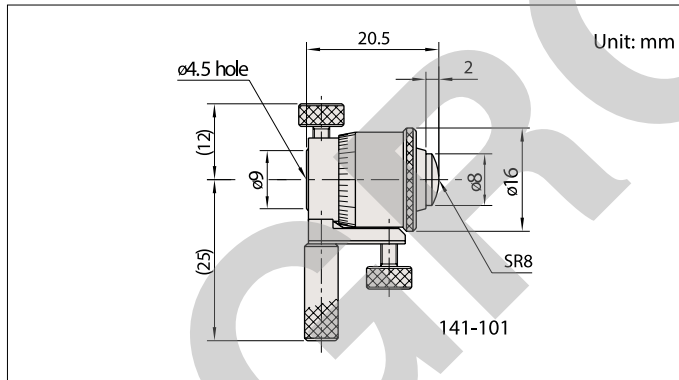
When using one of the extension rods supplied (Measuring range 25 to 32mm)



When using one of the extension rods supplied (Measuring range 43 to 50mm)



DIMENSIONS



Unit: mm

Technical Data

Accuracy
 $\pm(6+\text{maximum measurement length}/50)\mu\text{m}$
(fraction rounded up)



FEATURE

- Wide range of inside diameter measurements possible by combining one or more interchangeable rods.
- Each interchangeable rod is marked with its measuring range.
- For models supplied with more than one interchangeable rod, the full measuring range is achieved by combining spacing collars with the rods.
- Both micrometer head and rods are satinchrome finished throughout.
- The sleeve is rotated to adjust the index line position when setting to a length standard.
- Setting ring (nominal size below 300mm), CERA Inside Micro Checker, and Gauge Block accessory set are provided as a reference gage for datum adjustment (refer to page C-056, C-021, and G-014 - G-016 for details).

Metric

Order No.	Range	Graduation	Micrometer head stroke	Remarks
141-001 / 141-003*	25 - 32mm			-
141-101 / 141-103*	25 - 50mm		7mm	with 2 rods
141-025 / 141-027*	50 - 63mm			-
141-205 / 141-211*	50 - 200mm	0.01mm	13mm	with 3 rods
141-206 / 141-212*	50 - 300mm			with 5 rods
141-009 / 141-011*	200 - 225mm			-
141-117	200 - 500mm		25mm	with 3 rods
141-118	200 - 1000mm			with 8 rods

* with carbide measuring face

เครื่องมือตรวจสอบไมโครมิเตอร์วัดใน Inside Micro Checker SERIES 515



Application

– The two auxiliary gauge blocks are held against the appropriate measuring blocks by the support clamps, which also provide accurate location for the inside micrometer by means of the V-grooved extensions.



Optional accessories

• Wooden box
For 515-585: 602160
For 515-586: 602163

Standard accessory set

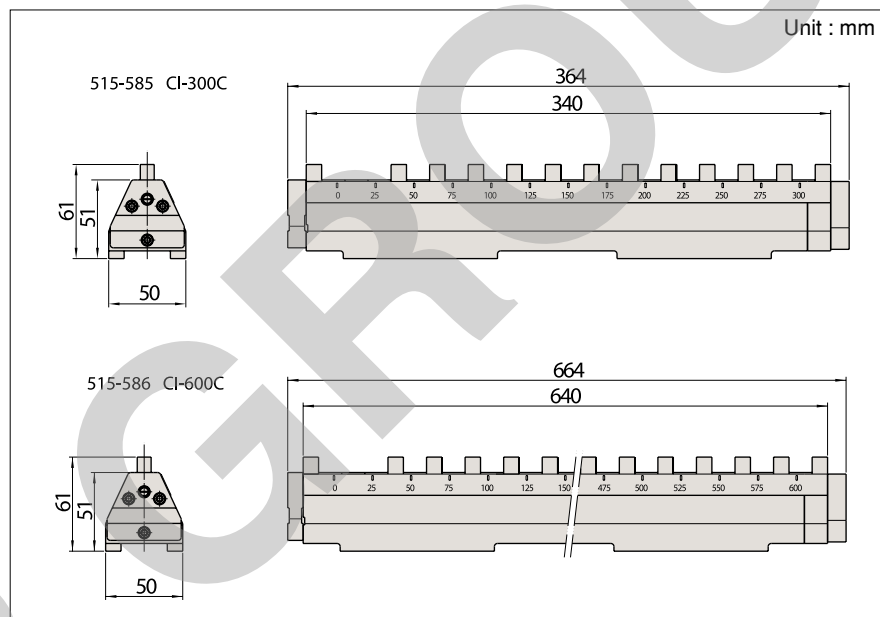


Support clamps **940286*** Pair
Auxiliary block 10mm 2pcs.
Collar **602195** 2pcs.
Clamp screwdriver **600324** 1pc.
* Order No. is equivalent to a pair (2pcs.)



DIMENSIONS

Unit : mm



Order No.	Length to check	Block pitch accuracy
515-585	25 - 300mm	$\pm(1+L/150) \mu\text{m}$ L : Length to check (mm)
515-586	25 - 600mm	

Please note that the bottom surface and the contact faces are not perpendicular to each other.

SMALL TOOLS

เครื่องมือวัดละเอียด

SINCE 1916
PEACOCK

เกจวัดในแบบไดอัล Dial Inside Gauge

- Capable of continuously measuring comparatively large bores or inside wall surface with a given measuring force using flexibility of the dial gauge.

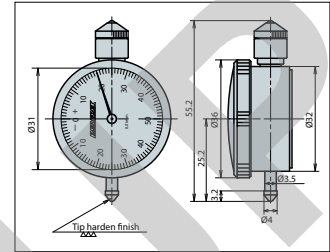


● Extension rods 6pcs.
(5, 10, 20, 40, 80, 140 mm)
Replace the extension rods
according to a measuring
range.

U-1

Graduation : 0.01mm
Range : 50-350mm
(Measuring range of dial gauge: 5mm)

Outer dimension



With Magnetic Base

The gauge proper can be secured to the measuring position by the magnet base.



U2HA

Graduation : 0.01mm
Range : 66-80mm
(Measuring range of dial gauge: 4mm)

U2HB

Graduation : 0.01mm
Range : 80-92mm
(Measuring range of dial gauge: 4mm)

U2FA

Graduation : 0.01mm
Range : 92-110mm
(Measuring range of dial gauge: 5mm)

U2FB

Graduation : 0.01mm
Range : 110-120mm
(Measuring range of dial gauge: 5mm)



U3HA

Graduation : 0.01mm
Range : 66-80mm
(Measuring range of dial gauge: 4mm)

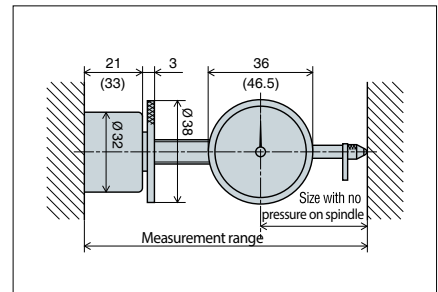
U3HB

Graduation : 0.01mm
Range : 80-92mm
(Measuring range of dial gauge: 4mm)

• with shorter pointer

• with shorter pointer

Dimensions (※) are U2FA • U2FB)



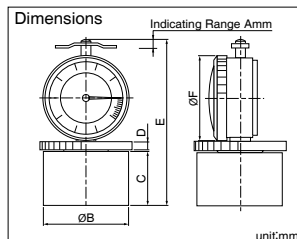
(unit: μm)

Order No.	Graduation (mm)	Range (mm)	Reading	Indication error					Magnetic Power (kg)	Measuring force less than (N)
				1/10 revolution (Adjacent error)	1/2 revolution	1 revolution	2 revolutions	Whole measuring range		
U-1	0.001	50 ~ 350	0 - 50 - 0	9	-	±13	-	±20	-	2.0
U2HA	0.001	66 ~ 80	0 - 50 - 0	9	-	±13	-	±15		1.4
U2HB	0.001	80 ~ 92	0 - 50 - 0	9	-	±13	-	±15		1.4
U2FA	0.001	92 ~ 110	0 - 50 - 0	9	-	±13	-	±20	8 ~ 10kg	2.0
U2FB	0.001	110 ~ 120	0 - 50 - 0	9	-	±13	-	±20		2.0
U3HA	0.01	66 ~ 80	0 - 50 - 0	9	-	±13	-	±20		1.4
U3HB	0.01	80 ~ 92	0 - 50 - 0	9	-	±13	-	±20		1.4

เกจวัดในแบบไดอัล

Crankshaft Deflection Gauge with magnet

• Small type which can be fixed to measuring position by magnet.



Dimension Table :

Order No.	A	B	C	D	E	F
TM-104YS	4	35	22	4.5	68.5	35
TM-106YS	5	32	32	7	102.3	47

**TM-106YS**

Graduation 0.01mm
Measuring Range 99~113mm

**TM-104YS**

Graduation 0.01mm
Measuring Range 65~82mm

Order No.	Graduation (mm)	Measuring Range (mm)	Indicating Range of Dial Indicator (mm)	Dial Gauge Error (μ m)	Holding Power (N)	Weight (g)
TM-104YS	0.1	65~82	4	± 15	100	230
TM-106YS	0.1	99~113	5	± 15	100	330

SMALL TOOLS

เครื่องมือวัดละเอียด

Mitutoyo

บอร์เกจ

ABSOLUTE Borematic

SERIES 568 - ABSOLUTE DIGIMATIC SNAP-OPEN BORE GAGES

MeasurLink® ENABLED
Data Management Software by Mitutoyo



ABSOLUTE™

Technical Data

Resolution: 0.001mm or .00005"/0.001mm
Display: LCD
Response speed: Infinite
Battery: SR44 (1 pc), **938882**,
for initial operational checks
(standard accessory)
Battery life: Approx. 5,000 hours in continuous use
Scale type: Electrostatic capacitance type absolute
encoder

Functions

GO/NO-GO judgment
GO/NO-GO judgment zoom
2-Point Preset
Zero-setting
Data hold, Error alarm
Low battery voltage alert
Data output
Function Lock
330° rotary display
inch/mm conversion (inch/mm models)

Optional accessories

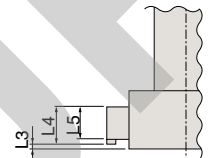
Refer to page A-022 for details
USB Input Tool Direct (2m): 06AFM380F
Connecting cables for **U-WAVE-T**
For standard (160mm): **02AZD790F**
For foot switch: **02AZE140F**

FEATURE

- A snap-type digital display, inside-diameter measuring instrument allows quick and easy measurement with lever operation.
- Titanium-coated measuring pins provide excellent durability and impact resistance and allow the instrument to measure right to the bottom of a blind hole.
- Three-Point contact measuring head enables highly repeatable measurement data to be obtained.
- The ABSOLUTE linear encoder eliminates overspeed errors.

- GO/NO-GO judgment function.
- Dual HOLD function buttons, optimally located, enable high operability.
- 330-degree rotatable display unit for easy reading at any angle.
- Measurement can be made close to the bottom of a blind hole.

Range (mm)	L3 (mm)	L4 (mm)	L5 (mm)
6 - 12	2 or below	-	2.5
12 - 20		5.6	3.5
20 - 30	0.3 or below	8.3	5.2
30 - 50		13.0	10
50 - 125		17.0	14



- Can measure deep holes by attaching an optional extension rod.



Extension rod (optional)

- Digimatic output port enables inclusion in a statistical process control or networked measurement system. (Refer to page A-002 for details.)
- Interface Input Tools are available that enable the conversion of measurement data to keyboard signals that are then directly input to cells in off-the-shelf spreadsheet software such as Excel. (Refer to page A-016 for details.)
- Interchangeable-Head Bore Gages are available in part sets and full sets.
- For details of Setting rings, refer to page C-056.



Large LCD

Character height of 11mm (1.5 times the character area of conventional 8.5mm products)



Actual size

Three large buttons

The three large-button design employed by ID-N/ID-B, the ABSOLUTE coolant proof Digimatic indicators, enables easier and simpler operation.



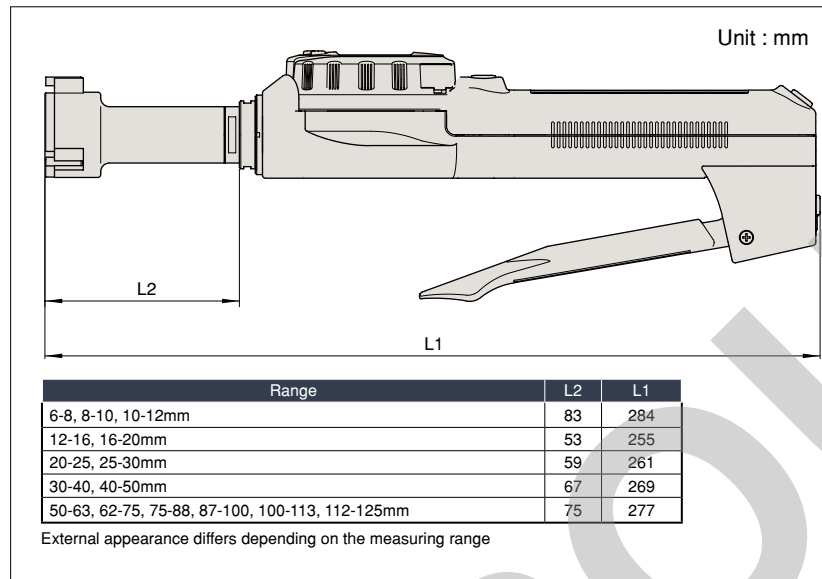
- Power ON/OFF
- Switches between the ABS (absolute) and INC (incremental) measurement modes
- Parameter setup mode
- Tolerance judgment setting
- Function lock setting

Function locking

Ensures reliability of measurement by locking the settings to prevent preset function settings from being changed by mistake.



DIMENSIONS



Metric Individual

Order No.	Range*2	Accuracy*1	Mass	Optional Accessories *2	
				Extension rod	SPC cable
568-361	6-8mm		480g	952322	
568-362	8-10mm		485g	(100mm)	
568-363	10-12mm	±5μm (within 5μm)			
568-364	12-16mm		475g	952621	
568-365	16-20mm		480g	(150mm)	
568-366	20-25mm		540g	905338	
568-367	25-30mm		555g	(1mm)	
568-368	30-40mm		565g	(150mm)	
568-369	40-50mm		610g	905409	
568-370	50-63mm		730g	(2mm)	
568-371	62-75mm	±6μm (within 6μm)	740g		
568-372	75-88mm		790g	952623	
568-373	87-100mm		800g	(150mm)	
568-374	100-113mm		900g		
568-375	112-125mm		910g		

Inch / Metric Individual

Order No.	Range*2	Accuracy*1	Mass	Optional Accessories *2	
				Extension rod	SPC cable
568-461	.275"-.35"		480g	952322	
568-462	.35"-.425"		485g	(100mm)	
568-463	.425"-.5"	±.00025"			
568-464	.5"-.65"	(within .00025")	475g	952621	
568-465	.65"-.8"		480g	(150mm)	
568-466	.8"-1"		540g	905338	
568-467	1"-1.2"		555g	(1mm)	
568-468	1.2"-1.6"		565g	(150mm)	
568-469	1.6"-2"		610g	905409	
568-470	2"-2.5"	±.0003"	730g	(2mm)	
568-471	2.5"-3"	(within .0003")	740g		
568-472	3"-3.5"		790g	952623	
568-473	3.5"-4"		800g	(150mm)	
568-474	4"-4.5"		900g		
568-475	4.5"-5"		910g		

*1 Excluding quantizing error

Instrumental error excluding quantizing error (maximum error)

*2 The measurement range cannot be enlarged by measuring heads that are not standard-supplied (the accuracy is not guaranteed).

Note: Setting rings are optional.

Micrometer

ไมโครมิเตอร์

Inside Measurement

เครื่องมือวัดภายใน

Calipers

คาร์ลิสเปอร์

Height Gages

เกจวัดความสูง

Linear Height

เครื่องมือวัดความสูง

Depth Gages

เกจวัดความลึก

Gauge Blocks

เกจบล็อก

Reference Gages

เครื่องมืออ้างอิง

Indicators

อินดิเคเตอร์

Stands

ขาตั้ง

Holtest

โฮลเทส

Inside Micrometer

ไมโครมิเตอร์วัดใน

Bore Gages

บอร์เกจ

Other Gages

เกจอื่นๆ

Accessories

อุปกรณ์เสริม

SMALL TOOLS

เครื่องมือวัดละเอียด

Mitutoyo

Interchangeable - Head Bore Gage Sets

Each set includes one display unit with interchangeable measuring heads of the sizes specified.

Metric

Order No.	Range	Content of Set
568-924	6 - 12mm	Display Unit 1pc
		Measuring head
		6 - 8mm 1pc
		8 - 10mm 1pc
		10 - 12mm 1pc
		Attachment 1pc
		Setting ring (ø8, ø10) 1pc each
568-925	12 - 25mm	Spanner 3pcs
		Display Unit 1pc
		Measuring head
		12 - 16mm 1pc
		16 - 20mm 1pc
		20 - 25mm 1pc
		Attachment 1pc
568-926	25 - 50mm	Setting ring (ø16, ø20) 1pc each
		Spanner 2pcs
		Display Unit 1pc
		Measuring head
		25 - 30mm 1pc
		30 - 40mm 1pc
		40 - 50mm 1pc
568-927	50 - 100mm	Attachment 1pc
		Setting ring (ø30, ø40) 1pc each
		Spanner 2pcs
		Display Unit 1pc
		Measuring head
		50 - 63mm 1pc
		62 - 75mm 1pc
		75 - 88mm 1pc
		87 - 100mm 1pc
		Attachment 1pc
		Setting ring (ø62, ø87) 1pc each
		Spanner 2pcs

Inch / Metric

Order No.	Range	Content of Set
568-928	.275" - .5"	Display Unit 1pc
		Measuring head
		.275 - .35" 1pc
		.35 - .425" 1pc
		.425 - .5" 1pc
		Attachment 1pc
		Setting ring (.35" DIA, .425" DIA) 1pc each
568-929	.5" - 1"	Spanner 3pcs
		Display Unit 1pc
		Measuring head
		.5 - .65" 1pc
		.65 - .8" 1pc
		.8 - 1" 1pc
		Attachment 1pc
568-930	1" - 2"	Setting ring (.65" DIA, .8" DIA) 1pc each
		Spanner 2pcs
		Display Unit 1pc
		Measuring head
		1 - 1.2" 1pc
		1.2 - 1.6" 1pc
		1.6 - 2" 1pc
568-936	2" - 4"	Attachment 1pc
		Setting ring (1.2" DIA, 1.6" DIA) 1pc each
		Spanner 2pcs
		Display Unit 1pc
		Measuring head
		2 - 2.5" 1pc
		2.5 - 3" 1pc
		3 - 3.5" 1pc
		3.5 - 4" 1pc
		Attachment 1pc
		Setting ring (2.5" DIA, 3.5" DIA) 1pc each
		Spanner 2pcs

Non-Interchangeable-Head Snap-Open Bore Gage Sets

Each set includes complete gages (display units and measuring heads for each size).

Metric

Order No.	Range	Content of Set
568-955	6 - 12mm	Display Unit 1pc
		6 - 8mm 1pc
		8 - 10mm 1pc
		10 - 12mm 1pc
		Setting ring (ø8, ø10) 1pc each
		Spanner 3pcs
568-956	12 - 25mm	Display Unit 1pc
		12 - 16mm 1pc
		16 - 20mm 1pc
		20 - 25mm 1pc
		Setting ring (ø16, ø20) 1pc each
		Spanner 2pcs
568-957	25 - 50mm	Display Unit 1pc
		25 - 30mm 1pc
		30 - 40mm 1pc
		40 - 50mm 1pc
		Setting ring (ø30, ø40) 1pc each
		Spanner 2pcs
568-958	50 - 75mm	Display Unit 1pc
		50 - 63mm 1pc
		62 - 75mm 1pc
		Setting ring (ø62) 1pc
		Spanner 2pcs
568-959	75 - 100mm	Display Unit 1pc
		75 - 88mm 1pc
		87 - 100mm 1pc
		Setting ring (ø87) 1pc
		Spanner 2pcs

Inch / Metric

Order No.	Range	Content of Set
568-965	.275" - .5"	Display Unit 1pc
		.275 - .35" 1pc
		.35 - .425" 1pc
		.425 - .5" 1pc
		Setting ring (.35" DIA, .425" DIA) 1pc each
		Spanner 3pcs
568-966	.5" - 1"	Display Unit 1pc
		.5 - .65" 1pc
		.65 - .8" 1pc
		.8 - 1" 1pc
		Setting ring (.65" DIA, .8" DIA) 1pc each
		Spanner 2pcs
568-967	1" - 2"	Display Unit 1pc
		1 - 1.2" 1pc
		1.2 - 1.6" 1pc
		1.6 - 2" 1pc
		Setting ring (1.2" DIA, 1.6" DIA) 1pc each
		Spanner 2pcs
568-968	2" - 3"	Display Unit 1pc
		2 - 2.5" 1pc
		2.5 - 3" 1pc
		Setting ring (2.5" DIA) 1pc
		Spanner 2pcs
568-969	3" - 4"	Display Unit 1pc
		3 - 3.5" 1pc
		3.5 - 4" 1pc
		Setting ring (3.5" DIA) 1pc
		Spanner 2pcs



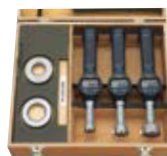
568-924



568-955



568-926

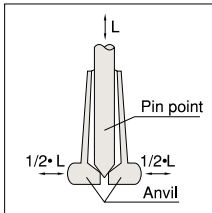


568-957



568-959

บอร์เกจ - สำหรับรูขนาดเล็กมาก

**Bore Gages
SERIES 526 - for Extra Small Holes****Measurement principle****Setting Rings (Metric models)**

Nominal size

- Order No. 526-170-11 etc.
177-220: 1.0 mm
177-222: 1.1 mm
177-225: 1.2 mm
177-227: 1.3 mm
177-230: 1.4 mm
- Order No. 526-160-11 etc.
177-236: 1.75 mm
177-239: 2.00 mm
177-242: 2.25 mm
177-208: 2.50 mm
177-246: 2.75 mm
177-248: 3.00 mm
177-250: 3.25 mm
177-252: 3.50 mm
177-255: 3.75 mm
- Order No. 526-150-11 etc.
177-204: 4.0 mm
177-257: 4.5 mm
177-205: 5.0 mm
177-263: 5.5 mm
177-267: 6.0 mm
177-271: 6.5 mm
177-275: 7.0 mm

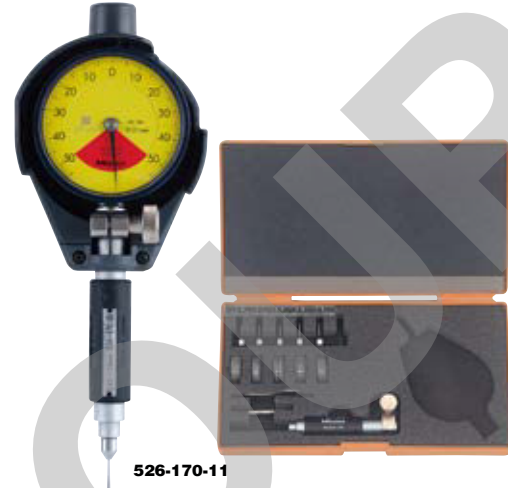
Setting Rings (Inch models)

Nominal size

- Order No. 526-175-11 etc.
177-350: 0.040 in
177-351: 0.045 in
177-352: 0.050 in
177-353: 0.055 in
177-354: 0.060 in
- Order No. 526-165-11 etc.
177-355: 0.07 in
177-356: 0.08 in
177-357: 0.09 in
177-358: 0.10 in
177-359: 0.11 in
177-360: 0.12 in
177-361: 0.13 in
177-362: 0.14 in
177-363: 0.15 in
- Order No. 526-155-11 etc.
177-364: 0.16 in
177-365: 0.18 in
177-366: 0.20 in
177-367: 0.22 in
177-368: 0.24 in
177-369: 0.26 in
177-370: 0.28 in

FEATURE

- These gages are designed to measure the diameters of very small holes. The radial displacement of the split-ball anvil is converted to axial displacement of the measuring rod, which is shown on the dial indicator.
- Alternative indicators may be used in place of those recommended*.
- Some indicators and protection covers cannot be used with these bore gages. Contact a Mitutoyo sales office if considering the use of dial or digimatic indicators other than the recommended models.
- An optional stand (215-120-10) is available for efficient measurement of multiple small holes. Refer to page C-030 for details.

**526-170-11**

* The dial indicator and the protection cover are optional.

Metric

Order No.	Range	Accuracy	Repeatability	Bore gage	Dial indicator	Dial protection cover	Setting ring
526-170-10	0.95 - 1.55mm	4 μm		526-170-10			
526-160-10	1.50 - 4.00mm	4 μm		526-160-10	Not supplier	Not supplied	
526-150-10	3.70 - 7.30mm	6 μm		526-150-10			
526-172-10	0.95 - 1.55mm	4 μm		526-17010	2109SB-10 (Graduation 0.001mm)	21DZA000	Not supplier
526-162-10	1.50 - 4.00mm	4 μm		526-160-10			
526-152-10	3.70 - 7.30mm	6 μm		526-150-10			
526-173-10	0.95 - 1.55mm	4 μm		526-170-10			
526-163-10	1.50 - 4.00mm	4 μm		526-160-10	2046SB (Graduation 0.01mm)	21DZA000	
526-153-10	3.70 - 7.30mm	6 μm	1 μm	526-150-10			
526-170-11	0.95 - 1.55 mm	4 μm		526-170-10			
526-160-11	1.50 - 3.95 mm	4 μm		526-160-10	Not supplier	Not supplied	
526-150-11	3.70 - 7.30 mm	6 μm		526-150-10			
526-172-11	0.95 - 1.55 mm	4 μm		526-170-10			
526-162-11	1.50 - 3.95 mm	4 μm		526-160-10	2109SB-10 (Graduation 0.001mm)	21DZA000	Not supplier
526-152-11	3.70 - 7.30 mm	6 μm		526-150-10			
526-173-11	0.95 - 1.55 mm	4 μm		526-170-10			
526-163-11	1.50 - 3.95 mm	4 μm		526-160-10	2046SB (Graduation 0.01mm)	21DZA000	
526-153-11	3.70 - 7.30 mm	6 μm		526-150-10			

Micrometer

ไมโครมิเตอร์

Inside Measurement

เครื่องมือวัดภายใน

Calipers

คาร์ลิสเปอร์

Height Gages

เกจวัดความสูง

Linear Height

เครื่องมือวัดความสูง

Depth Gages

เกจวัดความลึก

Gauge Blocks

เกจบล็อก

Reference Gages

เครื่องมืออ้างอิง

Indicators

อินดิเคเตอร์

Stands

ขาตั้ง

Holtest

โฮลเทส

Inside Micrometer

ไมโครมิเตอร์วัดใน

Bore Gages

บอร์เกจ

Other Gages

เกจอื่นๆ

Accessories

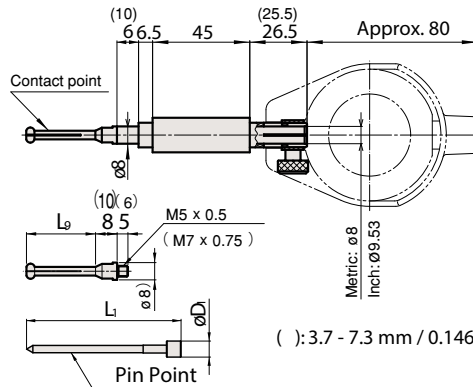
อุปกรณ์เสริม

เครื่องมีอวดละเอียด

Mitutoyo

DIMENSIONS

Unit: mm



(): 3.7 - 7.3 mm / 0.146-0.287 in range model

STANDARD ACCESSORIES

Bore gage (Main body)	Anvil				Pin point		
	Marked No.	Order No.	Measuring rang	L9	L1	øD1	Order No.
526-170-10 526-175-10	1.0	21DAA601A	0.95 - 1.15 mm/0.037 - 0.045 in	11.5	27.5	2.5	201435
	1.1	21DAA601B	1.07 - 1.25 mm/0.042 - 0.049 in				
	1.2	21DAA601C	1.17 - 1.35 mm/0.046 - 0.053 in				
	1.3	21DAA601D	1.27 - 1.45 mm/0.050 - 0.057 in				
	1.4	21DAA601E	1.37 - 1.55 mm/0.054 - 0.061 in				
526-160-10 526-165-10	1.75	21DAA602A	1.50 - 1.90 mm/0.059 - 0.075 in	17.5	33.8	3.5	201436
	2.00	21DAA602B	1.80 - 2.20 mm/0.071 - 0.087 in				
	2.25	21DAA602C	2.05 - 2.45 mm/0.081 - 0.096 in				
	2.50	21DAA602D	2.30 - 2.70 mm/0.091 - 0.106 in				
	2.75	21DAA602E	2.55 - 2.95 mm/0.100 - 0.116 in				
	3.00	21DAA602F	2.80 - 3.20 mm/0.110 - 0.126 in				
	3.25	21DAA602G	3.05 - 3.45 mm/0.120 - 0.136 in				
	3.50	21DAA602H	3.30 - 3.70 mm/0.130 - 0.146 in				
	3.75	21DAA602J	3.55 - 3.95 mm/0.140 - 0.156 in				
526-150-10 526-155-10	4.0	21DAA603A	3.7 - 4.3 mm/0.146 - 0.169 in	32	53	5.5	201438
	4.5	21DAA603B	4.2 - 4.8 mm/0.165 - 0.189 in				
	5.0	21DAA603C	4.7 - 5.3 mm/0.185 - 0.209 in				
	5.5	21DAA603D	5.2 - 5.8 mm/0.205 - 0.228 in				
	6.0	21DAA603E	5.7 - 6.3 mm/0.224 - 0.248 in				
	6.5	21DAA603F	6.2 - 6.8 mm/0.244 - 0.268 in				
	7.0	21DAA603G	6.7 - 7.3 mm/0.264 - 0.287 in				

Note: Pin point and contact point are consumable parts. Please replace them with new one when degrading of accuracy, operation, or measuring range.

Optional Accessories

– : Dial indicator (See Chapter F)
21DZA000: Dial protection cover
215-120-10: Stand for small holes

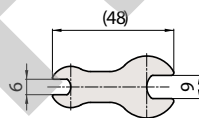
Recommended Dial Indicators (see Chapter F)

Metric models: 2046SB (0.01 mm)
2972TB (0.01 mm - One-revolution type)
2109SB-10 (0.001 mm)
2900SB-10 (0.001 mm - One-revolution type)
Inch models: 2922SB (0.0005 in)
2977TB (0.0005 in - One-revolution type)
2923SB-10 (0.0001 in)
2910 SB-10 (0.0001 in - One-revolution type)

Recommended Digimatic Indicators (see Chapter F)

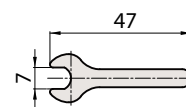
Metric models: **543-310B** (ID-C112GXB: 0.001 mm)
Inch models: **543-312B** (ID-C112GEXB: 0.001 mm/0.00005 in)
Note: Indicators equipped with rubber bellows, such as water-proof types, cannot be used.

**Spanner
No.210188**



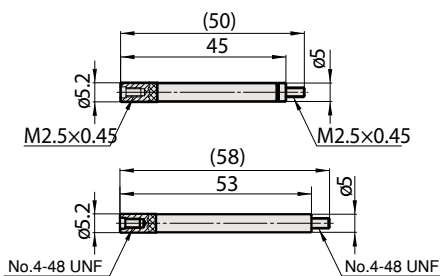
Thickness: 1.5

No.102148



Thickness: 1.5

Extension rod
21AAA259E

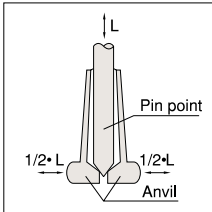


(): 3.7 - 7.3 mm / 0.146-0.287 in range model

Bore gage	Spanner	Extension rod
526-170-10	210188	21AAA259E
526-160-10		
526-150-10	102148	
526-175-10	210188	213634
526-165-10		
526-155-10	102148	

* This is a standard accessory to be attached between the spindle of the indicator (dial indicator, etc.) and the contact point. This is not a component for extending the measuring length.

บอร์เกจ - สำหรับรูเล็กมาก

**Bore Gages
SERIES 526 - for Extra Small Holes****Measurement principle****Optional Accessories**

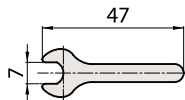
- : Dial indicator (See Chapter F)
- 21DZA000**: Dial protection cover
- : Setting ring (See page C-058)
- 215-120-10**: Stand for small holes

**Recommended dial indicators
(see Chapter F)**

- Metric models: **2046SB** (0.01mm)
2972TB (0.01mm - One-revolution type)
2109SB-10 (0.001mm)
2900SB-10 (0.001mm - One-revolution type)
 Inch models: **2922SB** (.0005")
2977TB (.0005" - One-revolution type)
2923SB-10 (.0001")
2910SB-10 (.0001" - One-revolution type)

**Recommended digimatic indicators
(see Chapter F)**

- Metric models: **543-310B** (ID-C112GXB, 0.001mm)
 Inch models: **543-312B** (ID-C112GEXB, 0.001mm/.00005")
 * Indicators equipped with rubber bellows, such as waterproof types, cannot be used.

**Spanner
No.102148**

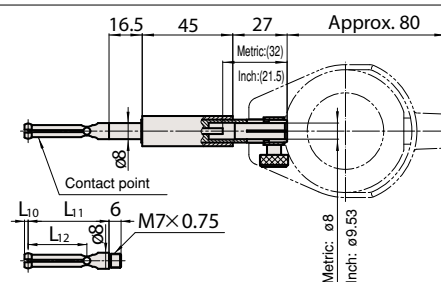
Thickness: 1.

**526-101**

* The dial indicator and the protection cover are optional.

Metric

Order No.	Range	Accuracy	Repeatability	Bore gage	Dial indicator	Dial protection cover	Setting ring
526-101	7-10mm	4 μm	2 μm	526-101			Not supplier
526-102	10-18mm	6 μm		526-102	Not supplier	Not supplier	
526-124	7-10mm	4 μm		526-101	2109SB-10	21DZA000	
526-125	10-18mm	6 μm		526-102	(Graduation 0.001mm)		
526-126	7-10mm	4 μm		526-101	2046SB	21DZA000	
526-127	10-18mm	6 μm		526-102	(Graduation 0.01mm)		

DIMENSIONS

Unit: mm

STANDARD ACCESSORIES

Bore gage (Main body)	Marked No.	Order No.	Measuring rang	Anvil			Spanner Part No.
				L10	L11	L12	
526-101 526-103	1	102469	7.0 - 7.5 mm/0.28 - 0.30 in	1.8	40	29.2	102148
	2	102470	7.5 - 8.0 mm/0.30 - 0.32 in				
	3	102471	8.0 - 8.5 mm/0.32 - 0.34 in				
	4	102472	8.5 - 9.0 mm/0.34 - 0.36 in				
	5	102473	9.0 - 9.5 mm/0.36 - 0.38 in				
	6	102474	9.5 - 10.0 mm/0.38 - 0.40 in				
526-102 526-104	1	102454	10 - 11 mm/0.40 - 0.44 in	2.1	46	38	102148
	2	102455	11 - 12 mm/0.44 - 0.48 in				
	3	102456	12 - 13 mm/0.48 - 0.52 in				
	4	102457	13 - 14 mm/0.52 - 0.56 in				
	5	102458	14 - 15 mm/0.56 - 0.60 in				
	6	102459	15 - 16 mm/0.60 - 0.64 in				
	7	102460	16 - 17 mm/0.64 - 0.68 in				
	8	102461	17 - 18 mm/0.68 - 0.72 in				

Setting rings are not supplied.

Please purchase them separately if necessary. For details, refer to page C-47.

Note: Contact point is consumable part. Please replace it with new one when degrading of accuracy, operation, or measuring range.

Micrometer

ไมโครมิเตอร์

Inside

Measurement

เครื่องมือวัดภายใน

Calipers

คาร์ลิสเปอร์

Height Gages

เกจวัดความสูง

Linear Height

เครื่องมือวัดความสูง

Depth Gages

เกจวัดความลึก

Gauge Blocks

เกจบล็อก

Reference Gages

เครื่องมืออ้างอิง

Indicators

อินดิเคเตอร์

Stands

ขาตั้ง

Holtest

โฮลเทส

Inside Micrometer

ไมโครมิเตอร์วัดใน

Bore Gages

บอร์เกจ

Other Gages

เกจอื่นๆ

Accessories

อุปกรณ์เสริม

SMALL TOOLS

เครื่องมือวัดละเอียด

Bore Gages
บอร์เกจ

Mitutoyo

ฐานจับยึดบอร์เกจ Bore Gage Stand SERIES 215

Micrometer

ไมโครมิเตอร์

Inside Measurement

เครื่องมือวัดภายใน

Calipers

คาร์ลิเปอร์

Height Gages

เกจวัดความสูง

Linear Height

เครื่องมือวัดความสูง

Depth Gages

เกจวัดความลึก

Gauge Blocks

เกจบล็อก

Reference Gages

เครื่องมืออ้างอิง

Indicators

อินดิเคเตอร์

Stands

ขาตั้ง

Holtest

โฮลเทส

Inside Micrometer

ไมโครมิเตอร์วัดใน

Bore Gages

บอร์เกจ

Other Gages

เกจอื่นๆ

Accessories

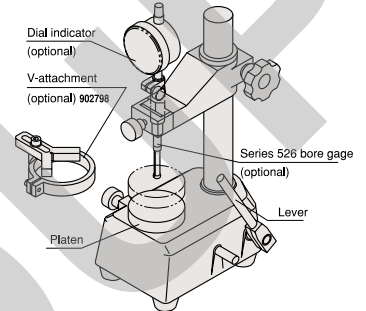
อุปกรณ์เสริม



215-120-10

Operating method

Pulling the lever forwards moves the platen upwards and the instrument goes into measurement mode. The V-attachment aids positioning the workpiece on the platen and is useful when measuring a large number of the same size of workpiece.



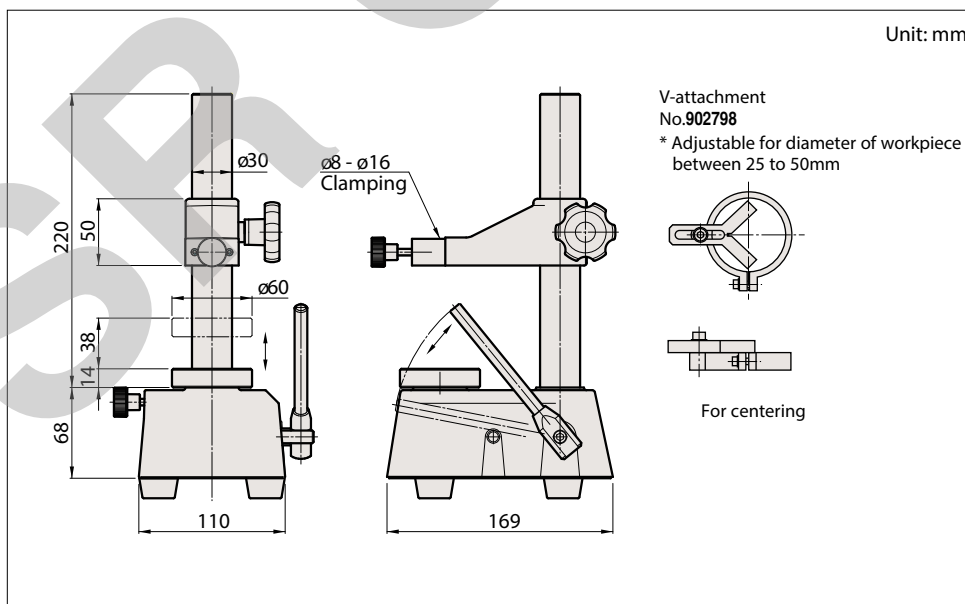
Optional Accessories

V-attachment: 902798

FEATURE

- Optimal for efficient measurement of multiple small holes with a bore gage (series 526).

DIMENSIONS



Order No.	Measuring table displacement	Measuring table
215-120-10	38mm	Flat measuring table (Ø 60mm)

SERIES 511 - for Small Holes

6 - 10mm	10 - 18.5mm
---	--

Accuracy:	Metric models: 5µm Inch models: .0002"
Repeatability:	Metric models: 2µm Inch models: .00008"
Adjacent error:	Metric models: 2µm Inch models: .00008"

– : Dial indicator (See Chapter F)
21DZA000: Dial protection cover

Metric models: **2046SB** (0.01mm)
2972TB (0.01mm - One-revolution type)
2109SB-10 (0.001mm)
2900SB-10 (0.001mm - One-revolution type)
2922SB (.0005")
Inch models: **2977TB** (.0005" - One-revolution type)
2923SB-10 (.0001")
2910SB-10 (.0001" - One-revolution type)

Metric models: **543-310B** (ID-C112GXB: 0.001mm)
Inch models: **543-312B**
(ID-C112GEXB: 0.001mm/.00005")

* Indicators equipped with rubber bellows, such as waterproof types, cannot be used.

- These gages are designed to measure the diameters of very small holes.
- Alternative indicators may be used in place of those recommended*.

* Some indicators and protection covers cannot be used with these bore gages. Contact a Mitutoyo sales office if considering the use of dial or digimatic indicators other than the recommended models.

Order No.	Range	Stroke of contact point	Measuring force	Guide force	Content of set					Probing depth
					Bore gage	Dial indicator	Dial protection cover	Anvil	Interchangeable Washer	
511-209	6-10mm	0.5mm	2N or Less	-	511-209	Not supplied	Not supplied	9pcs.	Not supplied	50mm
511-201	10-18.5mm	0.6mm		6N or Less	511-201				1pc.	100mm
511-210	6-10mm	0.5mm	2N or Less	-	511-209	2109SB-10	21DZA000	9pcs.	Not supplied	50mm
511-203	10-18.5mm	0.6mm		6N or Less	511-201	(Graduation 0.001mm)			1pc.	100mm
511-211	6-10mm	0.5mm	2N or Less	-	511-209	2046SB	21DZA000	9pcs.	Not supplied	50mm
511-204	10-18.5mm	0.6mm		6N or Less	511-201	(Graduation 0.01mm)			1pc.	100mm

Micrometer
ไมโครมิเตอร์

Inside Measurement
เครื่องมือวัดภายใน

Calipers
คาร์ลิเปอร์

Height Gages

เกจวัดความสูง

Linear Height

เครื่องมือวัดความสูง

Depth Gages

เกจวัดความลึก

Gauge Blocks
เกจบล็อก

Reference Gages

เครื่องมืออ้างอิง

Indicators
อินดิเคเตอร์

Stands
ขาตั้ง

Holtest
โฮลเทส

Inside Micrometer
ไมโครมิเตอร์วัดใน

Bore Gages
บอร์เกจ

Other Gages

เกจอื่นๆ

Accessories
อุปกรณ์เสริม

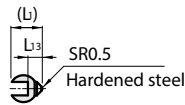
SMALL TOOLS

เครื่องมือวัดละเอียด

Mitutoyo

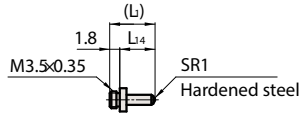
511-209/511-214

Anvil



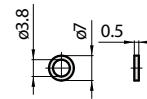
511-201/511-205

Anvil



Interchangeable washer

(Supplied only with 511-201/511-205)



No.204355

Micrometer

ไมโครมิเตอร์

STANDARD ACCESSORIES

Bore gage (Main body)	Marked No.	Part No.	Content of set			Interchangeable Washer	Spanner
			Indication of measuring size	L1	L13	Parts No.	Part No.
511-209	1	952168	6.0mm/.24"	4.7	1.2	Not supplied	206709
	2	952169	6.5mm/.26"	5.3	1.7		
	3	952170	7.0mm/.28"	5.8	2.2		
	4	952414	7.5mm/.30"	6.3	2.7		
511-214	5	952415	8.0mm/.32"	6.8	3.2		
	6	952416	8.5mm/.34"	7.3	3.7		
	7	952417	9.0mm/.36"	7.8	4.2		
	8	952418	9.5mm/.38"	8.3	4.7		
	9	952419	10.0mm/.40"	8.8	5.2		

Bore gage (Main body)	Marked No.	Part No.	Content of set			Interchangeable Washer	Spanner
			Indication of measuring size	L1	L13	Parts No.	Part No.
511-201*	1	204356	10mm/.40"	3.8	2	204355	204354
	2	204357	11mm/.44"	4.8	3		
	3	204358	12mm/.48"	5.8	4		
511-205	4	204359	13mm/.52"	6.8	5		
	5	204360	14mm/.56"	7.8	6		
	6	204361	15mm/.60"	8.8	7		
Indicators	7	204362	16mm/.64"	9.8	8		
	8	204363	17mm/.68"	10.8	9		
	9	204364	18mm/.72"	11.8	10		

* Equipped with an anvil fixing plate.

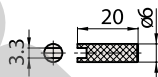
Stands

ขาตั้ง

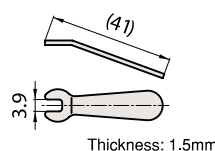
Holtest

โฮลเทส

Spanner
No.206709



No.204354



Thickness: 1.5mm

Bore Gages

บอร์เกจ

Other Gages

เกจอื่นๆ

Accessories

อุปกรณ์เสริม

บอร์เกจ

Bore Gages
SERIES 511

FEATURE

- Longer plunger stroke with no effect on accuracy.
- Carbide is used for the contact point ensuring high durability and wear resistance.
- This model reduces the influence of heat from the operator's hand by 50% by increasing the grip size and making the grip hollow-structured, thereby retaining high-accuracy measurement.
- Alternative indicators may be used in place of those recommended*.
 - * Some indicators and protection covers cannot be used with these bore gages. Contact a Mitutoyo sales office if considering the use of dial or digimatic indicators other than the recommended models.
- Optional extension rods can be attached for measuring deep holes. (For details, refer to page C-063.)
- A Bore Gage Checker and a range of Setting Rings are available to aid in accurately setting a gage before making a measurement.

(For details, refer to pages C-046 and C-056.)



511-703

511-702

Dial indicators and protection covers are optional.

Metric

Order No.	Range	Stroke of contact point	Measuring force	Guide force	Content of set							Probing depth	
					Bore gage	Dial indicator	Dial protection cover	Anvil	Interchangeable Washer	Sub-Anvil	Spanner		
511-701	18-35mm	1.2mm	4N or lest	6N or lest	511-701	Not supplied	Not supplied	9pcs.	2pcs.	Not supplied	1pc.	100mm	
511-702	35-60mm				511-702			6pcs.					
511-703	50-150mm		5N or lest	10N or lest	511-703			11pcs.	4pcs.	1pc.	Not supplied	150mm	
511-704	100-160mm				511-704			13pcs.					
511-705	160-250mm				511-705			6pcs.	7pcs.				
511-706	250-400mm	1.6mm	6N or lest	15N or lest	511-706			5pcs.		1pc.		250mm	
511-721	18-35mm				511-701			9pcs.	2pcs.	1pc.			
511-722	35-60mm		4N or lest	6N or lest	511-702			6pcs.		Not supplied		150mm	
511-723	50-150mm				511-703			11pcs.	4pcs.	1pc.			
511-724	100-160mm		5N or lest	10N or lest	511-704		2109SB-10 (Graduation 0.001mm)	13pcs.		Not supplied	Not supplied	250mm	
511-725	160-250mm				511-705			6pcs.	7pcs.				
511-726	250-400mm				511-706			5pcs.		1pc.			
511-711	18-35mm	1.2mm	4N or lest	6N or lest	511-701	2046SB (Graduation 0.01mm)	21DZA000	9pcs.	2pcs.	Not supplied	1pc.	100mm	
511-712	35-60mm				511-702			6pcs.					
511-713	50-150mm		5N or lest	10N or lest	511-703			11pcs.	4pcs.	1pc.		150mm	
511-714	100-160mm				511-704			13pcs.		Not supplied	Not supplied		
511-715	160-250mm				511-705			6pcs.	7pcs.				
511-716	250-400mm	1.6mm	6N or lest	15N or lest	511-706			5pcs.		1pc.		250mm	
511-921					511-701								
511-922	18-150mm		-	-	-		511-702	2109SB-10	21DZA000	-	-	-	-
511-925-10							511-703	543-310B					

Notes: 1) A 50 mm sub-anvil is supplied with 511-703, and a 75 mm sub-anvil is supplied with 511-706.

2) A 2 in sub-anvil is supplied with 511-733, and a 3 in sub-anvil is supplied with 511-736.

3) It is not permissible to use a sub-anvil other than as supplied as a standard accessory, or widen a measuring range by using multiple sub-anvils.
(The measurement accuracy in such cases is not guaranteed.)

Micrometer

ไมโครมิเตอร์

Inside

Measurement

เครื่องมือวัดภายใน

Calipers

คาร์ลิสเปอร์

Height Gages

เกจวัดความสูง

Linear Height

เครื่องมือวัดความสูง

Depth Gages

เกจวัดความลึก

Gauge Blocks

เกจบล็อก

Reference Gages

เครื่องมืออ้างอิง

Indicators

อินดิเคเตอร์

Stands

ขาตั้ง

Holtest

โฮลเทส

Inside Micrometer

ไมโครมิเตอร์วัดใน

Bore Gages

บอร์เกจ

Other Gages

เกจอื่นๆ

Accessories

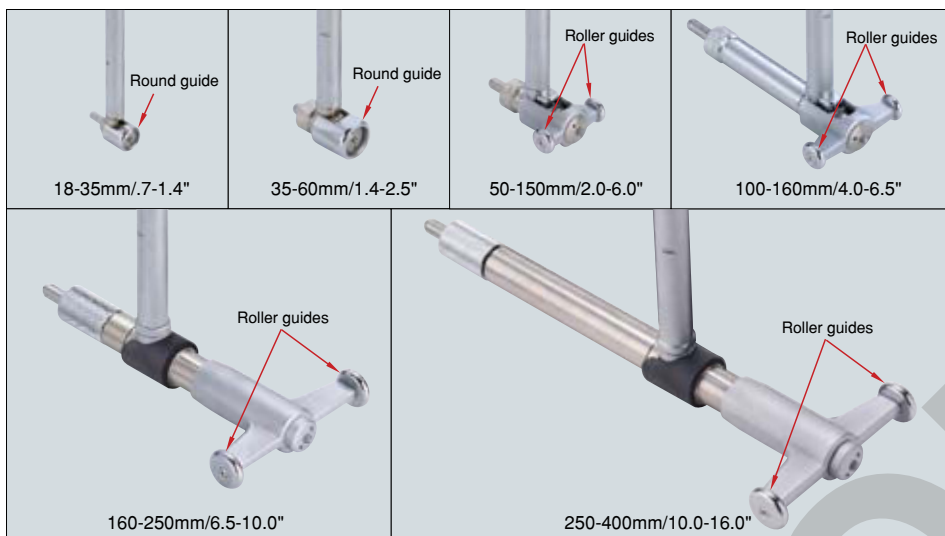
อุปกรณ์เสริม

เครื่องมีวัดละเอียด

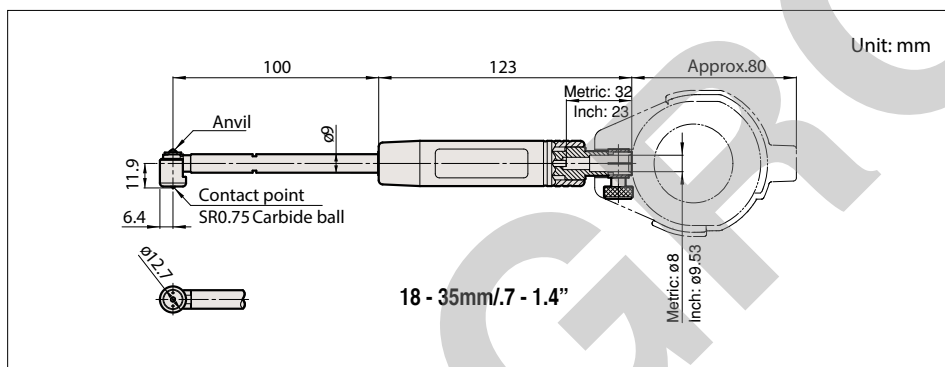
Bore Gages
บอร์เกจ

Mitutoyo

CONTACT POINTS

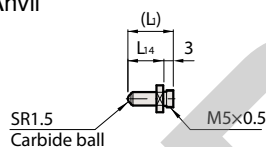


DIMENSIONS

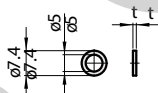


Unit: mm

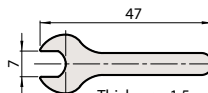
Anvil



Interchangeable washer



Spanner
102148



STANDARD ACCESSORIES

Bore gage (Main body)	Anvil					Interchangeable Washer		Spanner
	Marked No.	Order No.	Indication of measuring size	L1	L14	Parts No.	t	Part No.
511-701 511-731	1	21DZA213A	18mm/.71"	5.5	2.5	205623 205624	0.5mm/.02" 1.0mm/.04"	102148
	2	21DZA213B	20mm/.79"	7.5	4.5			
	3	21DZA213C	22mm/.87"	9.5	6.5			
	4	21DZA213D	24mm/.94"	11.5	8.5			
	5	21DZA213E	26mm/1.02"	13.5	10.5			
	6	21DZA213F	28mm/1.10"	15.5	12.5			
	7	21DZA213G	30mm/1.18"	17.5	14.5			
	8	21DZA213H	32mm/1.26"	19.5	16.5			
	9	21DZA213J	34mm/1.34"	21.5	18.5			

A carbide ball is used for the contact point. It is more abrasion resistant than a hardened steel ball and, as its surface is smoother than that of a carbide tip, the workpiece is less liable to be marked.

Comparison of abrasion resistance

Hardened steel ball
(conventional model)

Carbide ball
(current model)



Abrasion depth: 0.1 mm
750 HV or more



Abrasion depth: 0.001 mm
1350 HV or more

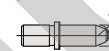
Inspection method

- Load a 0.5 N weight on the anvil, and slide for 1,000 m on abrasive paper of 9 μ m (#2000) particle size.

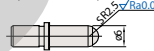
Comparison of marks on the workpiece

Carbide tip
(conventional model)

Carbide ball
(current mode)



Result of contour measurement



Result of contour measurement

Depth: 1 μm or less

Vertical magnification: 2,
Horizontal magnification:

Inspection method

- Load a 4 N weight on the anvil, and slide on the aluminum plate back and forth for 20 times.



The grip is highly resistant to heat transfer from the operator's hand.

Technical Data

Accuracy:	Metric models 2µm Inch models .00008"
Repeatability:	Metric models 0.5µm Inch models .00002"
Adjacent error:	Metric models 1µm Inch models .00004"

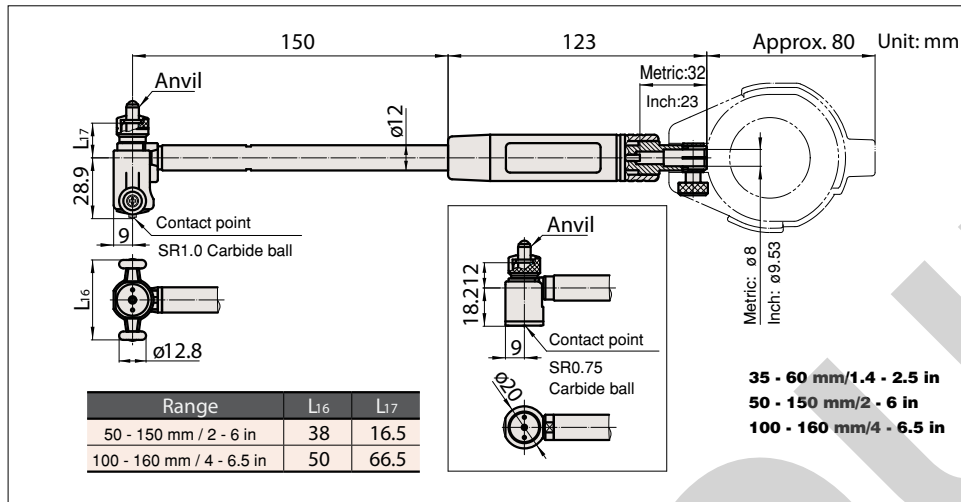
Optional Accessories

–: Dial indicator (See Chapter F)
21DZA000: Dial protection cover

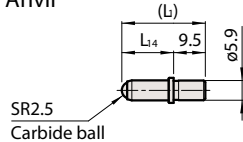
Recommended dial indicators (see Chapter F)

Metric models: **2046SB** (0.01mm)
2972TB (0.01mm - One revolution type)
2109SB-10 (0.001mm)
2900SB-10 (0.001mm - One-revolution type)
2922SB (.0005")
Inch models: **2977TB** (.0005" - One-revolution type)
2923SB-10 (.0001")
2910SB-10 (.0001" - One-revolution type)

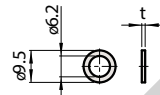
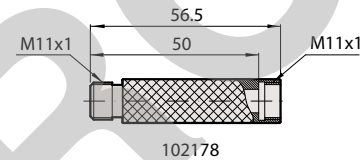
DIMENSIONS



Anvil



Interchangeable washer

Sub-anvil
(Supplied only for 511-703/733)

102178

Note: It is not permissible to use a sub-anvil other than as supplied as a standard accessory, or widen a measuring range by using multiple sub-anvils. (The measurement accuracy in such cases is not guaranteed.)

STANDARD ACCESSORIES

Bore gage (Main body)	Marked No.	Part No.	Anvil			Interchangeable Washer		Sub-Anvil Part No.
			Indication of measuring size	L1	L14	Parts No.	t	
511-702	1	21DZA232A	35mm/1.38"	15	5.5			
	2	21DZA232B	40mm/1.57"	20	10.5			
	3	21DZA232C	45mm/1.77"	25	15.5			
	4	21DZA232D	50mm/1.97"	30	20.5			
	5	21DZA232E	55mm/2.17"	35	25.5			
	6	21DZA232F	60mm/2.36"	40	30.5			
511-703 511-733 () Used 50mm/2" Sub-Anvil	1	21DZA232A	50mm (100mm)/1.97"(3.94")	15	5.5			102178 (50mm/2")
	2	21DZA232B	55mm (105mm)/2.17"(4.13")	20	10.5			
	3	21DZA232C	60mm (110mm)/2.36"(4.33")	25	15.5			
	4	21DZA232D	65mm (115mm)/2.55"(4.53")	30	20.5			
	5	21DZA232E	70mm (120mm)/2.74"(4.72")	35	25.5			
	6	21DZA232F	75mm (125mm)/2.93"(4.92")	40	30.5			
	7	21DZA232G	80mm (130mm)/3.12"(5.12")	45	35.5			
	8	21DZA232H	85mm (135mm)/3.31"(5.31")	50	40.5	205457	0.5mm/.02"	
	9	21DZA232J	90mm (140mm)/3.50"(5.51")	55	45.5	205458	1.0mm/.04"	
	10	21DZA232L	95mm (145mm)/3.69"(5.71")	60	50.5	205459	2.0mm/.08"	
	11	21DZA232M	100mm (150mm)/3.88"(5.91")	65	55.5	205460	3.0mm/.12"	
511-704 511-734	1	21DZA232A	100mm/3.94"	15	5.5			
	2	21DZA232B	105mm/4.13"	20	10.5			
	3	21DZA232C	110mm/4.33"	25	15.5			
	4	21DZA232D	115mm/4.53"	30	20.5			
	5	21DZA232E	120mm/4.72"	35	25.5			
	6	21DZA232F	125mm/4.92"	40	30.5			
	7	21DZA232G	130mm/5.12"	45	35.5			
	8	21DZA232H	135mm/5.31"	50	40.5			
	9	21DZA232J	140mm/5.51"	55	45.5			
	10	21DZA232L	145mm/5.71"	60	50.5			
	11	21DZA232M	150mm/5.91"	65	55.5			
	12	21DZA232N	155mm/6.10"	70	60.5			
	13	21DZA232P	160mm/6.30"	75	65.5			

Micrometer

ไมโครมิเตอร์

Inside
Measurement

เครื่องมือวัดภายใน

Calipers

คาลิเปอร์

Height Gages

เกจวัดความสูง

Linear Height

เครื่องมือวัดความสูงเชิงเส้น

Depth Gages

เกจวัดความลึก

Gauge Blocks

เกจบล็อก

Reference Gages

เครื่องมืออ้างอิง

Indicators

อินดิเคเตอร์

Stands

ขาตั้ง

Holtest

โฮลเทส

Inside Micrometer

ไมโครมิเตอร์วัดใน

Bore Gages

บอร์เกจ

Other Gages

เกจอื่นๆ

Accessories

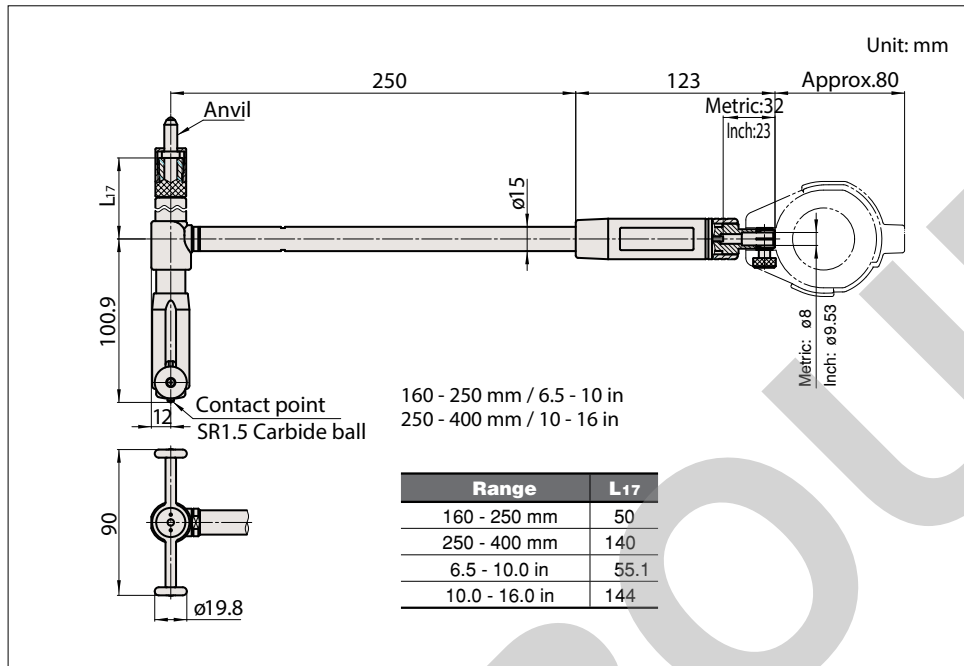
อุปกรณ์เสริม

SMALL TOOLS

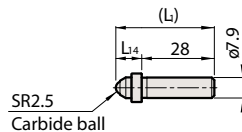
เครื่องมือวัดละเอียด

Mitutoyo

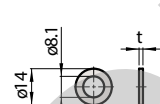
DIMENSIONS



Anvil

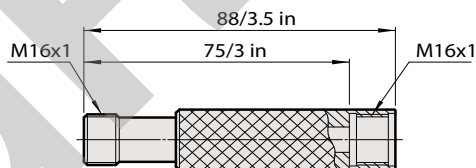


Interchangeable washer



Sub-anvil

Supplied only for 511-706 (202974) and 511-736 (202975)



202974(511-706)
202975(511-736)

Notes: It is not permissible to use a sub-anvil other than as supplied as a standard accessory, or widen a measuring range by using multiple sub-anvils. (The measurement accuracy in such cases is not guaranteed.)

STANDARD ACCESSORIES

Bore gage (Main body)	Content of set						Interchangeable Washer		Sub-Anvil	
	Marked No.	Part No.	Indication of measuring size	L1	L14	Parts No.	t		Part No.	
Bore Gages	1	21DZA241A	160 mm/6.50 in	38	10					
	2	21DZA241B	175 mm/7.09 in	53	25					
	3	21DZA241C	190 mm/7.68 in	68	40	205467	0.5mm/.02"			
	4	21DZA241D	205 mm/8.27 in	83	55	205461	1.0mm/.04"			
	5	21DZA241E	220 mm/8.86 in	98	70	205462	2.0mm/.08"			
	6	21DZA241F	235 mm/9.45 in	113	85	205463	3.0mm/.12"			
Other Gages	1	21DZA241A	250 mm (325 mm)/10.00 in (13.00 in)	38	10	205464	4.0mm/.16"			
	2	21DZA241B	265 mm (340 mm)/10.59 in (13.59 in)	53	25	205465	5.0mm/.20"			Metric: 202974 (75mm)
	3	21DZA241C	280 mm (355 mm)/11.18 in (14.18 in)	68	40	205466	6.0mm/.24"			Inch: 202975 (3.0")
	4	21DZA241D	295 mm (370 mm)/11.77 in (14.77 in)	83	55					
	5	21DZA241E	310 mm (385 mm)/12.36 in (15.36 in)	98	70					
	6	21DZA241F								
Accessories	1	21DZA241A								
	2	21DZA241B								
	3	21DZA241C								
	4	21DZA241D								
	5	21DZA241E								
	6	21DZA241F								

บอร์เกจ - ขาสั้น

Bore Gages

SERIES 511 - Short Leg Type



511-761



511-763

Dial indicators and protection covers are optional.

FEATURE

- Compact and lightweight due to the short length below the grip.
- Longer plunger stroke with no affect on accuracy.
- Carbide contact point ensuring high durability and wear resistance.
- This model reduces the influence of heat from the operator's hand by 50% by increasing the grip size and making the grip hollow-structured, thereby retaining high-accuracy measurement.
- Alternative indicators may be used in place of those recommended*.
 - * Some indicators and protection covers cannot be used with these bore gages. Contact a Mitutoyo sales office if considering the use of dial or digimatic indicators other than the recommended models.
- A Bore Gage Checker and a range of Setting Rings are available to aid in accurately setting a gage before making a measurement. (For details, refer to pages C-046 and C-056.)

Metric

Order No.	Range	Stroke of contact point	Measuring force	Guide force	Content of set							Probing depth
					Bore gage	Dial indicator	Dial protection cover	Anvil	Interchangeable Washer	Sub-Anvil	Spanner	
511-761	18-35mm	1.2mm	4N or less	6N or less	511-761	Not supplied	Not supplied	9pcs.	2pcs.	Not supplied	1pc	50mm
511-762	35-60mm				511-762			6pcs.				
511-763	50-150mm	1.6mm	5N pr less	10N or less	511-763			11pcs.	4pcs.	1pc	Not supplied	
511-764	100-160mm				511-764	2109SB-10 (Graduation 0.001mm)	21DZA000	13pcs.		Not supplied		
511-771	18-35mm	1.2mm	4N or less	6N or less	511-761			9pcs.	2pcs.	Not supplied	1pc	50mm
511-772	35-60mm				511-762			6pcs.				
511-773	50-150mm	1.6mm	5N pr less	10N or less	511-763			11pcs.	4pcs.	1pc	Not supplied	
511-774	100-160mm				511-764			13pcs.		Not supplied		
511-766	18-35mm	1.2mm	4N or less	6N or less	511-761	2046SB (Graduation 0.01mm)	21DZA000	9pcs.	2pcs.	Not supplied	1pc	50mm
511-767	35-60mm				511-762			6pcs.				
511-768	50-150mm	1.6mm	5N pr less	10N or less	511-763			11pcs.	4pcs.	1pc	Not supplied	
511-769	100-160mm				511-764			13pcs.		Not supplied		

Micrometer

ไมโครมิเตอร์

Inside

Measurement

เครื่องมือวัดภายใน

Calipers

คาร์ลิสเปอร์

Height Gages

เกจวัดความสูง

Linear Height

เครื่องมือวัดความสูง

Depth Gages

เกจวัดความลึก

Gauge Blocks

เกจบล็อก

Reference Gages

เครื่องมืออ้างอิง

Indicators

อินดิเคเตอร์

Stands

ขาตั้ง

Holtest

โฮลเทส

Inside Micrometer

ไมโครมิเตอร์วัดใน

Bore Gages

บอร์เกจ

Other Gages

เกจอื่นๆ

Accessories

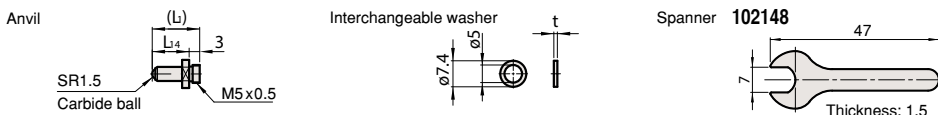
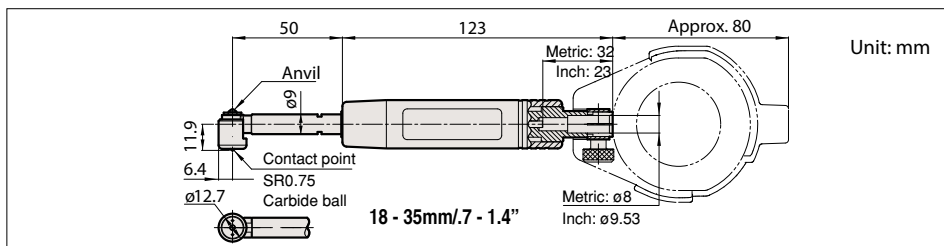
อุปกรณ์เสริม

SMALL TOOLS

เครื่องมือวัดละเอียด

Mitutoyo

DIMENSIONS



Technical Data

Accuracy: Metric models 2µm
Inch models .00008"
Repeatability: Metric models 0.5µm
Inch models .00002"
Adjacent error: Metric models 1µm
Inch models .00004"

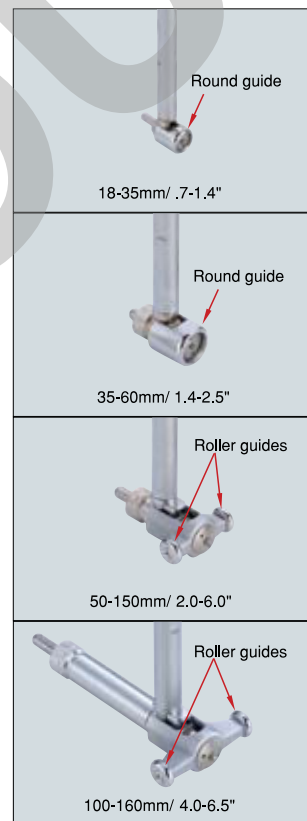
Optional Accessories

—: Dial indicator (See Chapter F)
21DZA000: Dial protection cover

Recommended dial indicators (see Chapter F)

Metric models: **2046SB** (0.01mm)
2972TB (0.01mm - One-revolution type)
2109SB-10 (0.001mm)
2900SB-10 (0.001mm - One-revolution type)
2922SB (.0005")
Inch models: **2977TB** (.0005" - One-revolution type)
2923SB-10 (.0001")
2910SB-10 (.0001" - One-revolution type)

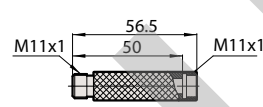
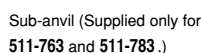
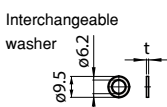
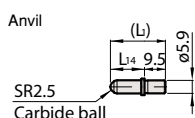
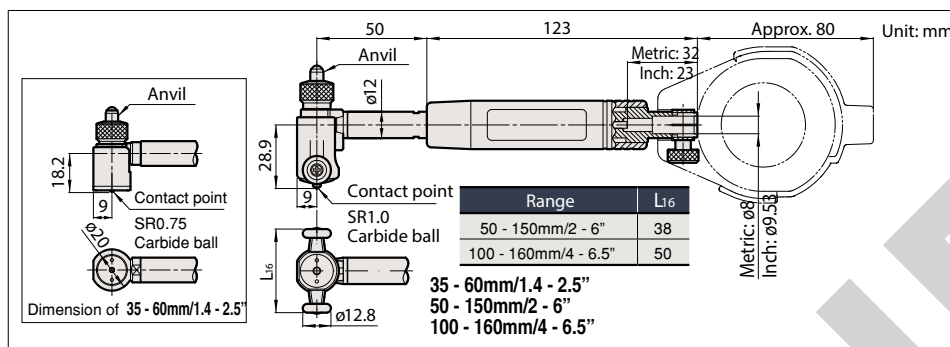
Contact Points



STANDARD ACCESSORIES

Bore gage (Main body)	Content of set					Interchangeable Washer		Spanner
	Marked No.	Part No.	Indication of measuring size	L1	L14	Parts No.	t	
511-761 511-781	1	21DZA213A	18mm/.17"	5.5mm/.22"	2.5mm/.10"	205623 205624	0.5mm/.02" 1.0mm/.04"	102148
	2	21DZA213B	20mm/.79"	7.5mm/.30"	4.5mm/.18"			
	3	21DZA213C	22mm/.87"	9.5mm/.37"	6.5mm/.26"			
	4	21DZA213D	24mm/.94"	11.5mm/.45"	8.5mm/.33"			
	5	21DZA213E	26mm/1.02"	13.5mm/.53"	10.5mm/.41"			
	6	21DZA213F	28mm/1.10"	15.5mm/.61"	12.5mm/.49"			
	7	21DZA213G	30mm/1.18"	17.5mm/.69"	14.5mm/.57"			
	8	21DZA213H	32mm/1.26"	19.5mm/.77"	16.5mm/.65"			
	9	21DZA213J	34mm/1.34"	21.5mm/.85"	18.5mm/.73"			

DIMENSIONS



No.102178

Notes: It is not permissible to use a sub-anvil other than as supplied as a standard accessory, or widen a measuring range by using multiple sub-anvils. (The measurement accuracy in such cases is not guaranteed.)

STANDARD ACCESSORIES

Bore gage (Main body)	Content of set					Interchangeable Washer		Sub-Anvil			
	Marked No.	Part No.	Indication of measuring size	L1	L14	Parts No.	t	Part No.			
511-702 511-782	1	21DZA232A	35mm/1.38"	15	5.5						
	2	21DZA232B	40mm/1.57"	20	10.5						
	3	21DZA232C	45mm/1.77"	25	15.5						
	4	21DZA232D	50mm/1.97"	30	20.5						
	5	21DZA232E	55mm/2.17"	35	25.5						
	6	21DZA232F	60mm/2.36"	40	30.5						
511-703 511-783 () Used 50mm/2" Sub-Anvil	1	21DZA232A	50mm (100mm)/1.97"(3.94")	15	5.5						102178 (50mm/2")
	2	21DZA232B	55mm (105mm)/2.17"(4.13")	20	10.5						
	3	21DZA232C	60mm (110mm)/2.36"(4.33")	25	15.5						
	4	21DZA232D	65mm (115mm)/2.55"(4.53")	30	20.5						
	5	21DZA232E	70mm (120mm)/2.74"(4.72")	35	25.5						
	6	21DZA232F	75mm (125mm)/2.93"(4.92")	40	30.5						
	7	21DZA232G	80mm (130mm)/3.12"(5.12")	45	35.5						
	8	21DZA232H	85mm (135mm)/3.31"(5.31")	50	40.5						
	9	21DZA232J	90mm (140mm)/3.50"(5.51")	55	45.5						
	10	21DZA232L	95mm (145mm)/3.69"(5.71")	60	50.5						
	11	21DZA232M	100mm (150mm)/3.88"(5.91")	65	55.5						
511-704 511-784	1	21DZA232A	100mm/3.94"	15	5.5						
	2	21DZA232B	105mm/4.13"	20	10.5						
	3	21DZA232C	110mm/4.33"	25	15.5						
	4	21DZA232D	115mm/4.53"	30	20.5						
	5	21DZA232E	120mm/4.72"	35	25.5						
	6	21DZA232F	125mm/4.92"	40	30.5						
	7	21DZA232G	130mm/5.12"	45	35.5						
	8	21DZA232H	135mm/5.31"	50	40.5						
	9	21DZA232J	140mm/5.51"	55	45.5						
	10	21DZA232L	145mm/5.71"	60	50.5						
	11	21DZA232M	150mm/5.91"	65	55.5						
	12	21DZA232N	155mm/6.10"	70	60.5						
	13	21DZA232P	160mm/6.30"	75	65.5						

Micrometer

ไมโครมิเตอร์

Inside

Measurement

เครื่องมือวัดภายใน

Calipers

คาร์ทีเปอร์

Height Gages

เกจวัดความสูง

Linear Height

เครื่องมือวัดความสูง

Depth Gages

เกจวัดความลึก

Gauge Blocks

เกจบล็อก

Reference Gas

เครื่องวัด

Indicators

ฉันทิเศเศอ

Stands

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ขาตั้ง

Holtest

โกลาหล

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Inside Microme

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Bore Gas

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Other G

SMALL TOOLS

เครื่องมือวัดละเอียด

Mitutoyo

บอร์เกจ พร้อมหัวไมโครมิเตอร์

Bore Gages

SERIES 511 - with Micrometer Head



Dial indicators and protection covers are optional.

FEATURE

- Micrometer head is attached to the anvil for accurate dimensional setting.
- Longer plunger stroke with no affect on accuracy.
- Carbide is used for the contact point ensuring high durability and wear resistance.
- This model reduces the influence of heat from the operator's hand by 50% by increasing the grip size and making the grip hollow-structured, thereby retaining high-accuracy measurement.
- Wide measuring range with sub-anvils.
- Alternative indicators may be used in place of those recommended*.
* Some indicators and protection covers cannot be used with these bore gages. Contact a Mitutoyo sales office if considering the use of dial or digimatic indicators other than the recommended models.
- Optional extension rods can be attached for measuring deep holes. (For details, refer to page C-063.)
- A Bore Gage Checker and a range of Setting Rings are available to aid in accurately setting a gage before making a measurement. (For details, refer to pages C-046 and C-056.)

Metric

	Order No.	Range	Stroke of contact point	Measuring force	Guide force	Content of set						Probing depth
						Bore gage	Dial indicator	Dial protection cover	Micrometer head	Sub-Anvil	Spanner	
Holtest ไฮเลส	511-803	60-100mm	1.6mm	5N or less	10N or less	511-803	Not supplied	Not supplied	1pc.	2pcs.	3pcs.	150mm
	511-804	100-160mm				511-804				3pcs.		
Inside Micrometer ไมโครมิเตอร์วัดใน	511-805	150-250mm		6N or less	15N or less	511-805				4pcs.	2pcs.	250mm
	511-806	250-400mm				511-806				3pcs.		
	511-807	400-600mm				511-807				2pcs.		
Bore Gages บอร์เกจ	511-808	600-800mm	1.6mm	20N or less		511-808	2109SB-10 (Graduation 0.001mm)	21DZA000	1pc.	2pcs.		
	511823	60-100mm				511-803				2pcs.	3pcs.	
	511-824	100-160mm				511-804				3pcs.		
Other Gages เกจอื่นๆ	511-825	150-250mm		6N or less	15N or less	511-805				4pcs.	2pcs.	250mm
	511-826	250-400mm				511-806				3pcs.		
	511-827	400-600mm				511-807				2pcs.		
	511-828	600-800mm				511-808				2pcs.		
Accessories อุปกรณ์เสริม	511-813	60-100mm	1.6mm	5N or less	10N or less	511-803	2046SB (Graduation 0.01mm)	21DZA000	1pc.	2pcs.	3pcs.	150mm
	511-814	100-160mm				511-804				3pcs.		
	511-815	150-250mm		6N or less	15N or less	511-805				4pcs.	2pcs.	250mm
	511-816	250-400mm				511-806				3pcs.		
	511-817	400-600mm				511-807				2pcs.		
	511-818	600-800mm				511-808				2pcs.		

Notes: 1) Storage boxes for **511-807/808/837/838** models are made of wood. The boxes of other models are made of plastic.
2) It is not permissible to expand measuring range using sub-anvils other than as supplied as standard accessories.
(The measurement accuracy in such cases is not guaranteed.)

Technical Data

Accuracy: Metric models 2µm
Inch models .00008"
Repeatability: Metric models 0.5µm
Inch models .00002"
Adjacent error: Metric models 1µm
Inch models .00004"

Optional Accessories

—: Dial indicator (See Chapter F)
21DZA000: Dial protection cover

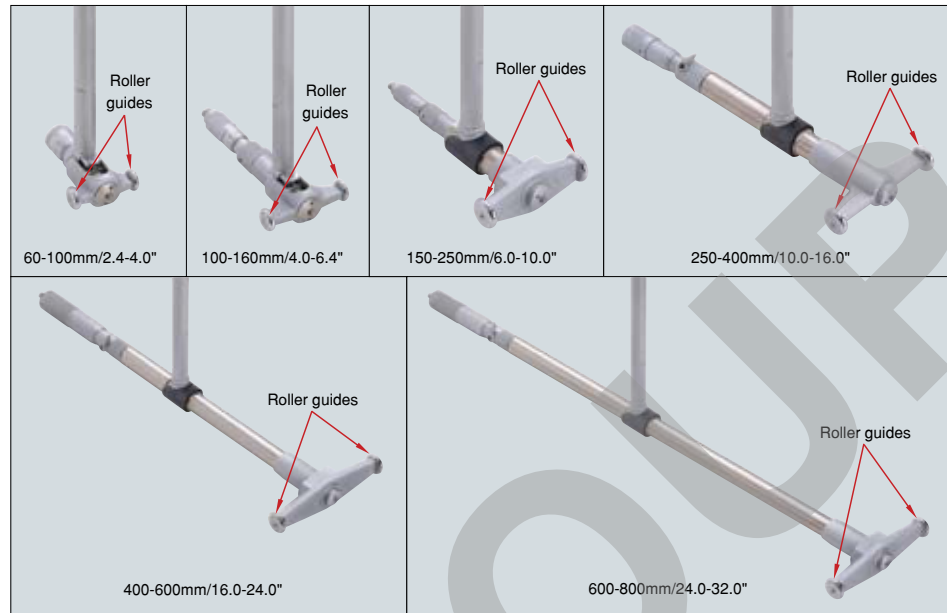
Recommended dial indicators
(see Chapter F)

Metric models: **2046SB** (0.01mm)
2972TB (0.01mm - One-revolution type)
2109SB-10 (0.001mm)
2900SB-10 (0.001mm - One-revolution type)
2922SB (.0005")
Inch models: **2977TB** (.0005" - One-revolution type)
2923SB-10 (.0001")
2910SB-10 (.0001" - One-revolution type)

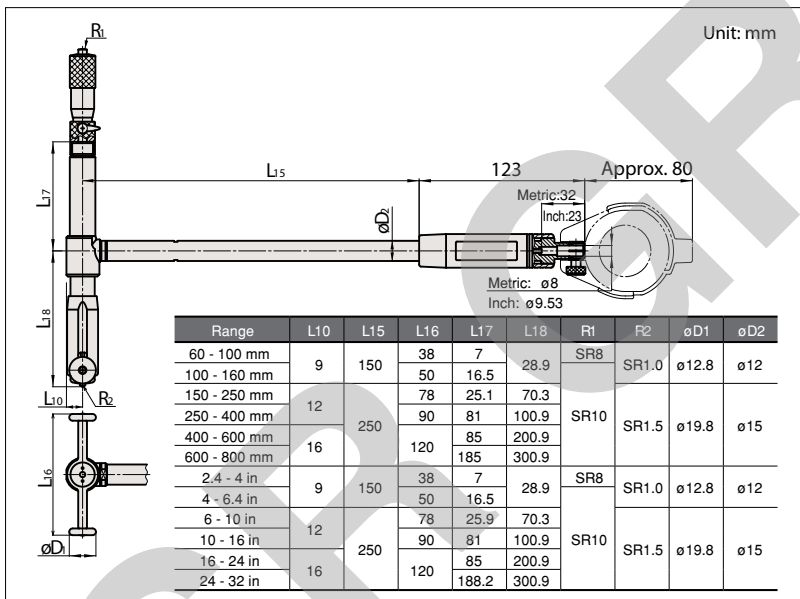
Recommended digimatic indicators
(see Chapter F)

Metric models: **543-310B** (ID-C112GXB: 0.001mm)
Inch models: **543-312B** (ID-C112GEXB:
0.001mm/.00005")
* Indicators equipped with rubber bellows, such as
waterproof types, cannot be used.

Contact Point



DIMENSIONS



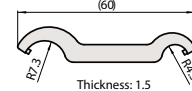
Sub-anvil



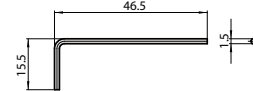
Notes: It is not permissible to use a sub-anvil other than as supplied as a standard accessory, or widen a measuring range by using multiple sub-anvils. (The measurement accuracy in such cases is not guaranteed.)

Spanner

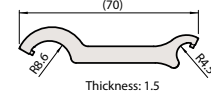
301336



202863



200154



STANDARD ACCESSORIES

Bore gage (Main body)	Micrometer head			Sub-Anvil				Spanner	
	Part No.	Stroke	Screw size	Marked No.	Part No.	L1	L19	Part No.	
511-803	21DZA267	10mm	M11x1	10mm	208892	15mm	10mm	301336 (2pcs.)	
				20mm	208894	25mm	20mm	202863 (1pcs.)	
511-804	21DZA268	13mm	M11x1	10mm	208892	15mm	10mm	301336 (2pcs.)	
				20mm	208894 (2pcs.)	25mm	20mm		
511-805	21DZA268	13mm	M11x1	10mm	208892	15mm	10mm	301336 (2pcs.)	
				20mm	208894 (2pcs.)	25mm	20mm		
511-806	953118	25mm	M16x1	25mm	208926	35mm	25mm	200154 (2pcs.)	
				50mm	208928 (2pcs.)	60mm	50mm		
511-807	953120	50mm	M16x1	50mm	208928	60mm	50mm	200154 (2pcs.)	
				100mm	208932	110mm	100mm		
511-808	953120	50mm	M16x1	50mm	208928	60mm	50mm	200154 (2pcs.)	
				100mm	208932	110mm	100mm		

Micrometer

ไมโครมิเตอร์

Inside
Measurement

เครื่องมือวัดภายใน

Calipers

คาลิเปอร์

Height Gages

เกจวัดความสูง

Linear Height

เครื่องมือวัดความสูง

Depth Gages

เกจวัดความลึก

Gauge Blocks

เกจบล็อก

Reference Gages

เครื่องมืออ้างอิง

Indicators

อินดิเคเตอร์

Stands

ขาตั้ง

Holtest

โฮลเทส

Inside Micrometer

ไมโครมิเตอร์วัดใน

Bore Gages

บอร์เกจ

Other Gages

เกจอื่นๆ

Accessories

อุปกรณ์เสริม

SMALL TOOLS

เครื่องมือวัดละเอียด

Mitutoyo

บอร์เกจ สำหรับรูตัน

Bore Gages

SERIES 511 - for Blind Holes

FEATURE

- Capable of ID (inside diameter) measurement close to the bottom of a hole.
- Carbide contact point ensuring high durability and wear resistance.
- Grip is large and hollow to reduce effect of body heat on high-accuracy measurements.
- Alternative indicators may be used in place of those recommended*.
- * Some indicators and protection covers cannot be used with these bore gages. Contact a Mitutoyo sales office if considering the use of dial or digimatic indicators other than the recommended models.
- Optional extension rods can be attached for measuring deep holes. (For details, refer to page C-063.)
- A Bore Gage Checker and a range of Setting Rings are available to aid in accurately setting a gage before making a measurement. (For details, refer to pages C-046 and C-058.)

Micrometer

ไมโครมิเตอร์

Inside Measurement

เครื่องมือวัดภายใน

Calipers

คาร์ลิเปอร์

Height Gages

เกจวัดความสูง

Linear Height

เครื่องมือวัดความสูง

Depth Gages

เกจวัดความลึก

Gauge Blocks

เกจบล็อก

Reference Gages

เครื่องมืออ้างอิง

Indicators

อินดิเคเตอร์

Stands

ขาตั้ง

Holtest

โฮลเทส

Inside Micrometer

ไมโครมิเตอร์วัดใน

Bore Gages

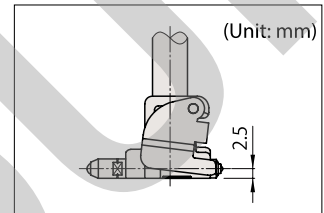
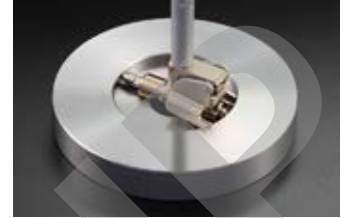
บอร์เกจ

Other Gages

เกจอื่นๆ

Accessories

อุปกรณ์เสริม



Technical Data

Accuracy: Metric models 4μm
Inch models .00016"
Repeatability: Metric models 1μm
Inch models .00004"
Adjacent error: Metric models 1μm
Inch models .00004"

Optional Accessories

—: Dial indicator (See Chapter F)
21DZA000: Dial protection cover

Recommended dial indicators (see Chapter F)

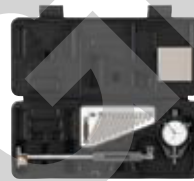
Metric models: **2046SB** (0.01mm)
2972TB (0.01mm - One-revolution type)
2109SB-10 (0.001mm)
2900SB-10 (0.001mm - One-revolution type)
2922SB (.0005")
Inch models: **2977TB** (.0005" - One-revolution type)
2923SB-10 (.0001")
2910SB-10 (.0001" - One-revolution type)

Recommended digimatic indicators (see Chapter F)

Metric models: **543-310B** (ID-C112GXB: 0.001mm)
Inch models: **543-312B** (ID-C112GEXB: 0.001 mm/.00005")
* Indicators equipped with rubber bellows, such as waterproof types, cannot be used.



511-416



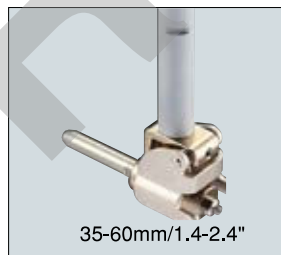
511-417

Dial indicators and protection covers are optional.

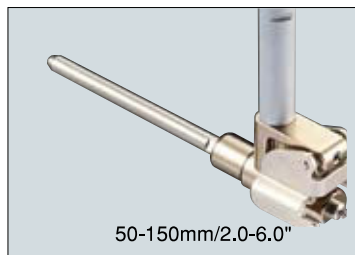
Contact Point



15-35mm/6-1.4"



35-60mm/1.4-2.4"



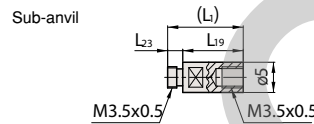
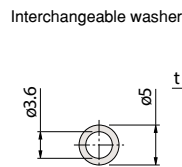
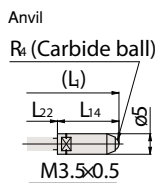
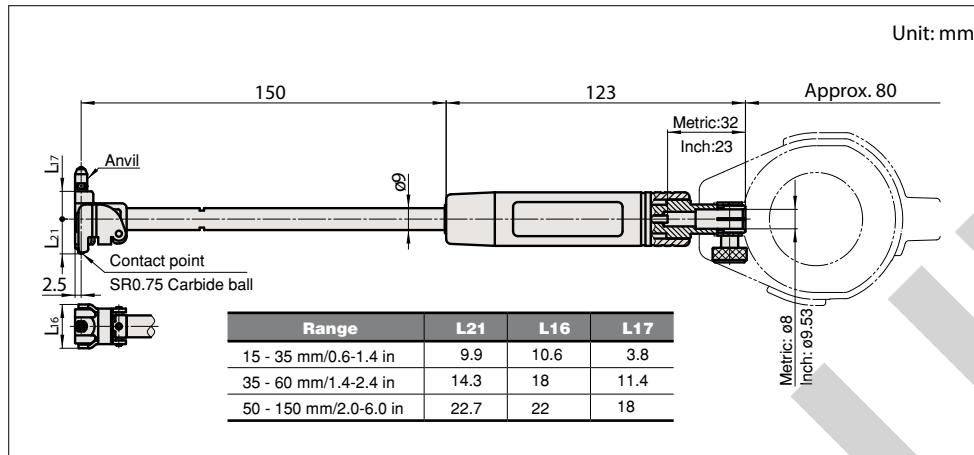
50-150mm/2.0-6.0"

Metric

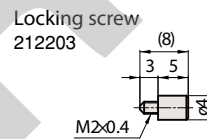
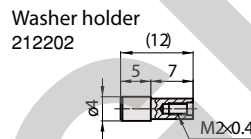
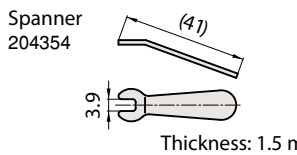
Order No.	Range	Stroke of contact point	Measuring force	Guide force	Content of set					Probing depth
					Bore gage	Dial indicator	Dial protection cover	Anvil	Washer	
511-415	15 - 35mm	1.2mm	4N or less	6N or less	511-415	Not supplied	Not supplied	11 pcs.	1 pc.	150 mm
511-416	35 - 60mm				511-416			6 pcs.	4 pcs.	
511-417	50 - 150mm				511-417			11 pcs.		
511-425	15 - 35mm	1.2mm	4N or less	6N or less	511-415	2046SB (Graduation : 0.01mm)	21DZA000	11 pcs.	1 pc.	150 mm
511-426	35 - 60mm				511-416			6 pcs.	4 pcs.	
511-427	50 - 150mm				511-417			11 pcs.		
511-435	15 - 35mm	1.2mm	4N or less	6N or less	511-415	2109SB-10 (Graduation : 0.001mm)	21DZA000	11 pcs.	1 pc.	150mm
511-436	35 - 60mm				511-416			6 pcs.	4 pcs.	
511-437	50 - 150mm				511-417			11 pcs.		

Notes: 1) A 10 mm (0.4 in) sub-anvil is supplied with 511-415/425/435/418/428/438 and a 50 mm (2 in) sub-anvil is supplied with 511-417/427/437/420/430/440.
2) It is not permissible to use a sub-anvil other than as supplied as a standard accessory, or widen a measuring range by using multiple sub-anvils.
(The measurement accuracy in such cases is not guaranteed.)

DIMENSIONS



Notes: It is not permissible to use a sub-anvil other than as supplied as a standard accessory, or widen a measuring range by using multiple sub-anvils. (The measurement accuracy in such cases is not guaranteed.)



Thickness: 1.5 mm

STANDARD ACCESSORIES

Bore gage (Main body)	Content of set							Interchangeable Washer		Sub-Anvil					
	Marked No.	Order No.	Indication of measuring size	L1	L22	R4	L14	Order No.	t	Order No.	L23	L19			
511-415 511-418 () Used 10mm/.4" Sub-Anvil	1	21DZA376A	15mm(25mm)/.59"(1.98")	4.5	2.5	SR1	2	212127	0.5mm/.02"	21DAA563	2.5	10mm/.4"			
	2	21DZA376B	16mm(26mm)/.63"(1.02")	5.5			3								
	3	21DZA376C	17mm(27mm)/.67"(1.06")	6.5			4								
	4	21DZA376D	18mm(28mm)/.71"(1.10")	7.5			5								
	5	21DZA376E	19mm(29mm)/.75"(1.14")	8.5			6								
	6	21DZA376F	20mm(30mm)/.79"(1.18")	9.5			7								
	7	21DZA376G	21mm(31mm)/.83"(1.22")	10.5	7.5	SR1.5	8	212128	1.0mm/.04"	21DAA596	7.5	50mm/2"			
	8	21DZA376H	22mm(32mm)/.87"(1.26")	11.5			9								
	9	21DZA376J	23mm(33mm)/.91"(1.30")	12.5			10								
	10	21DZA376L	24mm(34mm)/.94"(1.34")	13.5			11								
	11	21DZA376M	25mm(35mm)/.98"(1.38")	14.5			12								
511-416 511-419 () Used 50mm/2" Sub-Anvil	1	21DZA404A	35mm/1.38"	17.5	7.5	SR1.5	10	212127	0.5mm/.02"	212128	1.0mm/.04"	212129	2.0mm/.08"	212130	3.0mm/.12"
	2	21DZA404B	40mm/1.57"	22.5			15								
	3	21DZA404C	45mm/1.77"	27.5			20								
	4	21DZA404D	50mm/1.97"	32.5			25								
	5	21DZA404E	55mm/2.17"	37.5			30								
	6	21DZA404F	60mm/2.36"	42.5			35								
511-417 511-420 () Used 50mm/2" Sub-Anvil	1	21DZA404A	50mm(100mm)/1.97"(3.94")	17.5	7.5	SR1.5	10	212127	0.5mm/.02"	212128	1.0mm/.04"	212129	2.0mm/.08"	212130	3.0mm/.12"
	2	21DZA404B	55mm(105mm)/2.17"(4.13")	22.5			15								
	3	21DZA404C	60mm(110mm)/2.36"(4.33")	27.5			20								
	4	21DZA404D	65mm(115mm)/2.56"(4.53")	32.5			25								
	5	21DZA404E	70mm(120mm)/2.76"(4.72")	37.5			30								
	6	21DZA404F	75mm(125mm)/2.95"(4.92")	42.5			35								
	7	21DZA404G	80mm(130mm)/3.15"(5.12")	47.5	7.5	SR1.5	40	212130	3.0mm/.12"	21DAA596	7.5	50mm/2"			
	8	21DZA404H	85mm(135mm)/3.35"(5.31")	52.5			45								
	9	21DZA404J	90mm(140mm)/3.54"(5.51")	57.5			50								
	10	21DZA404L	95mm(145mm)/3.74"(5.71")	62.5			55								
	11	21DZA404M	100mm(150mm)/3.94"(5.91")	67.5			60								

SMALL TOOLS

เครื่องมือวัดละเอียด

Mitutoyo

บอร์เกจ

Bore Gages

SERIES 511 - ABSOLUTE Digimatic Bore Gages

MeasurLink® ENABLED
Data Management Software by Mitutoyo

ABSOLUTE™

Micrometer

ไมโครมิเตอร์

Inside Measurement
เครื่องมือวัดภายใน

Calipers

คาร์ลิเปอร์

Height Gages

เกจวัดความสูง

Linear Height

เครื่องมือวัดความสูง

Depth Gages

เกจวัดความลึก

Gauge Blocks

เกจบล็อก

Reference Gages

เครื่องมืออ้างอิง

Indicators

อินดิเคเตอร์

Stands

ขาตั้ง

Holtest

โฮลเทส

Inside Micrometer

ไมโครมิเตอร์วัดใน

Bore Gages

บอร์เกจ

Other Gages

เกจอื่นๆ

Accessories

อุปกรณ์เสริม



FEATURE

- These ABSOLUTE Digimatic bore gages are exclusively designed for inside diameter measurement.
- Up to four extension rods (250mm or 500mm) can be used for measuring at the bottom of a hole 2m deep.
- ABS (ABSOLUTE) type bore gages are not subject to overspeed error.
- The display and grip can be rotated up to 320 degrees and the display can be inclined up to 90 degrees, so that it is easily readable from any direction.

- The minimum value holding function provides easy measurement of hole diameter.
- Setting the Bore Gage to a master value using a gauge block set allows quick and accurate setting.
- A Bore Gage Checker and a range of Setting Rings are available to aid in accurately setting a gage before making a measurement.

(For details, refer to pages C-046 and C-056.)

Technical Data

Accuracy: Metric models 3µm
Inch models .00012"
Repeatability: Metric models 2µm
Inch models .00008"
Adjacent error: Metric models 2µm
Inch models .00008"
Battery: SR44 (2 pc), **938882**, for initial operational checks (standard accessory)
Battery life: Approx. 2000 hours under normal use.
LCD character height 8.5mm
Display: ABSOLUTE electrostatic linear encoder
Scale type:

Max. response speed: Unlimited

Function

Preset function
Master value registration (3 values at maximum)
Tolerance judgment
Upper/lower limit registration (3 values at maximum)
Minimum value holding
Data output
Display rotation (320°)
Display inclination (90°, 7 steps)
Low battery alarm display
Error display

Optional Accessories

- 21DZA089**: Extension rod 250 mm (10")
- 21DZA081**: Extension rod 500 mm (20")
- Up to four extension rods can be joined, and the maximum length 2m is allowed.
- Refer to page A-012 for details
- Connecting cables for Input Tool/ Digimatic Mini-Processor, etc.
- SPC Cable:
No.905338 (1m)
No.905409 (2m)
- USB Input Tool Direct (2m): **06ADV380F**
- Connecting Cables for **U-WAVE-T** (160mm):
No.02AZD790F
- For footswitch (**02AZE140F**)
- USB Keyboard Signal Conversion Type Communication Conversion Type:**264-016**
- RS-232C Communication Conversion Type IT-007R: **264-007**
- Refer to page A-005
- Digimatic Mini-Processor DP-1VA LOGGER: **264-505E**

Example of connection

Using four 500 mm extension rods

Metric

	Order No.	Range	Stroke of contact point	Measuring force	Guide force	Resolution	Content of set			Probing depth
							Anvil	Interchangeable washer	Battery (SR44)	
Bore Gages	511-501	45-100mm	1.2mm	5N or less	10N or less	0.001mm	12pcs.	4pcs.	2pcs.	150mm
Other Gages	511-502	100-160mm					13pcs.	4pcs.	2pcs.	

Notes: 1) The correct peak value may not be displayed if the anvil's speed exceeds 50 µm/s.

2) IP53 indicates resistance to dust and dripping water, but only applies when the connector cap is in place.

Gauge blocks and block sets for setting the origin or master value (optional)

Usage example



Rectangular gauge blocks

* Available only for 511-501/521

516-118-10**516-118-60** with calibration certificate

Description	Order No.	Qty
Nominal length (mm)	1 611611-021	1
	2 611612-021	1
	3 611613-021	1
	5 611615-021	1
	10 611671-021	1
	20 611672-021	1
	30 611673-021	1
Flat jaw	40 611674-021	1
	630030	1 pair (2pcs)
Holder 160 mm	619004	1
Certificate of inspection		1

*Equivalent to JIS B 7506 Grade 0

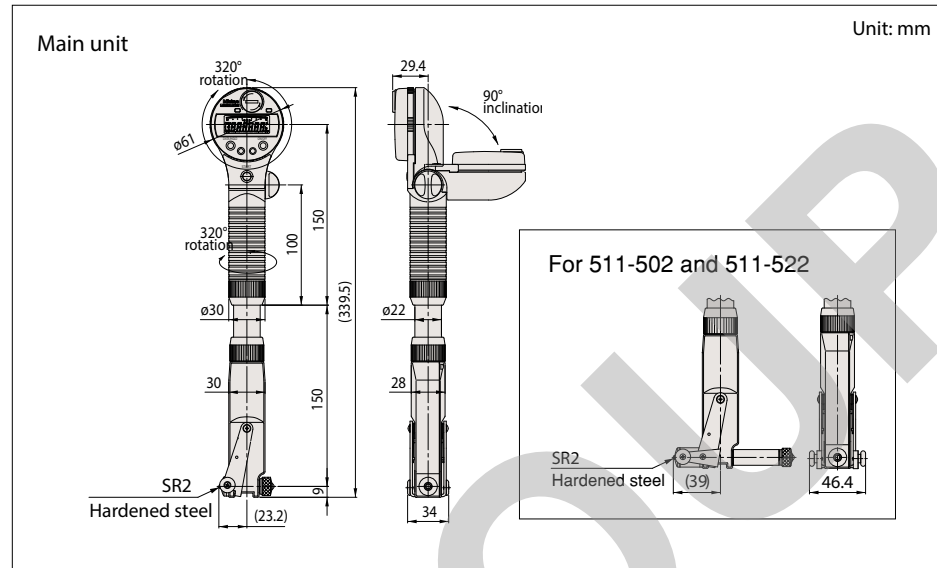
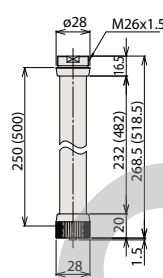
Rectangular gauge blocks

* Available only for 511-501/521

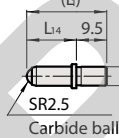
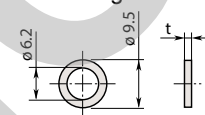
516-119-10**516-119-60** with calibration certificate

Description	Order No.	Qty
Nominal length (mm)	1 614611-021	1
	2 614612-021	1
	3 614613-021	1
	5 614615-021	1
	10 614671-021	1
	20 614672-021	1
	30 614673-021	1
Flat jaw	40 614674-021	1
	619072	1 pair (2pcs)
Tie rod 3"	619062	1
Tie rod 2 1/4"	619063	1
Tie rod 1 1/2"	619064	1
Flat head screw 1 1/4"	619057	2
Flat head screw 5/8"	619058	2
Certificate of inspection		1

*Equivalent to JIS B 7506 Grade 0

DIMENSIONS**Extension rod**

() : 500mm type

Anvil**Interchangeable washer****STANDARD ACCESSORIES**

Bore gage (Main body)	Marked No.	Part No.	Content of set			Interchangeable Washer	
			Indication of measuring size	L1	L14	Parts No.	t
511-501 511-521	1	21DAZ232A	45mm/1.8"	15	5.5		
	2	21DAZ232B	50mm/2.0"	20	10.5		
	3	21DAZ232C	55mm/2.2"	25	15.5		
	4	21DAZ232D	60mm/2.4"	30	20.5		
	5	21DAZ232E	65mm/2.6"	35	25.5	205457	0.5mm/.02"
	6	21DAZ232F	70mm/2.8"	40	30.5	205458	1.0mm/.04"
	7	21DAZ232G	75mm/3.0"	45	35.5	205459	2.0mm/.08"
	8	21DAZ232H	80mm/3.2"	50	40.5	205460	3.0mm/.12"
	9	21DAZ232J	85mm/3.4"	55	45.5		
	10	21DAZ232L	90mm/3.6"	60	50.5		
	11	21DAZ232M	95mm/3.8"	65	55.5		
	12	21DAZ232N	100mm/4.0"	70	60.5		
511-502 511-522	1	21DAZ232A	100mm/4.0"	15	5.5		
	2	21DAZ232B	105mm/4.2"	20	10.5		
	3	21DAZ232C	110mm/4.4"	25	15.5		
	4	21DAZ232D	115mm/4.6"	30	20.5		
	5	21DAZ232E	120mm/4.8"	35	25.5	205457	0.5mm/.02"
	6	21DAZ232F	125mm/5.0"	40	30.5	205458	1.0mm/.04"
	7	21DAZ232G	130mm/5.2"	45	35.5	205459	2.0mm/.08"
	8	21DAZ232H	135mm/5.4"	50	40.5	205460	3.0mm/.12"
	9	21DAZ232J	140mm/5.6"	55	45.5		
	10	21DAZ232L	145mm/5.8"	60	50.5		
	11	21DAZ232M	150mm/6.0"	65	55.5		
	12	21DAZ232N	155mm/6.2"	70	60.5		
	13	21DAZ232P	160mm/6.4"	75	65.5		

Micrometer

ไมโครมิเตอร์

Inside Measurement

เครื่องมือวัดภายใน

Calipers

คาลิเปอร์

Height Gages

เกจวัดความสูง

Linear Height

เครื่องมือวัดความสูง

Depth Gages

เกจวัดความลึก

Gauge Blocks

เกจบล็อก

Reference Gages

เครื่องมืออ้างอิง

Indicators

อินดิเคเตอร์

Stands

ขาตั้ง

Holtest

โฮลเทส

Inside Micrometer

ไมโครมิเตอร์วัดใน

Bore Gages

บอร์เกจ

Other Gages

เกจอื่นๆ

Accessories

อุปกรณ์เสริม

SMALL TOOLS

เครื่องมือวัดละเอียด

Mitutoyo

ตัวเช็คบอร์เกจ

**Bore Gages Checker
SERIES 515**

Bore Gages

บอร์เกจ

Micrometer

ไมโครมิเตอร์

Inside Measurement

เครื่องมือวัดภายใน

Calipers

คาร์ลิเปอร์

Height Gages

เกจวัดความสูง

Linear Height

เครื่องมือวัดความสูง

Depth Gages

เกจวัดความลึก

Gauge Blocks

เกจบล็อก

Reference Gages

เครื่องมืออ้างอิง

Indicators

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Stands

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Holtest

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Inside Micrometer

ไมโครมิเตอร์วัดใน

Bore Gages

บอร์เกจ

Other Gages

เกจอื่นๆ

Accessories

อุปกรณ์เสริม



515-590

Standard configuration: Stand
Attachment A, B, C 1pc. for each
Parallel jaw (2 pcs.)

Usage example



Technical Data

Flatness of parallel jaw
0.5μm (Parallelism 1μm)

Standard accessories

Parallel jaw 2 pcs.	630030
Attachment A	940088
Attachment B	940089
Attachment C	940090

FEATURE

- The Bore Gage Checker allows easy setting of dial bore gages with ranges of 18mm (.7") through 400mm (16") using gauge blocks.

Order No.	Probing depth
515-590	18 - 400mm (.7" - 16")

อุปกรณ์เสริมสำหรับบอร์เกจ

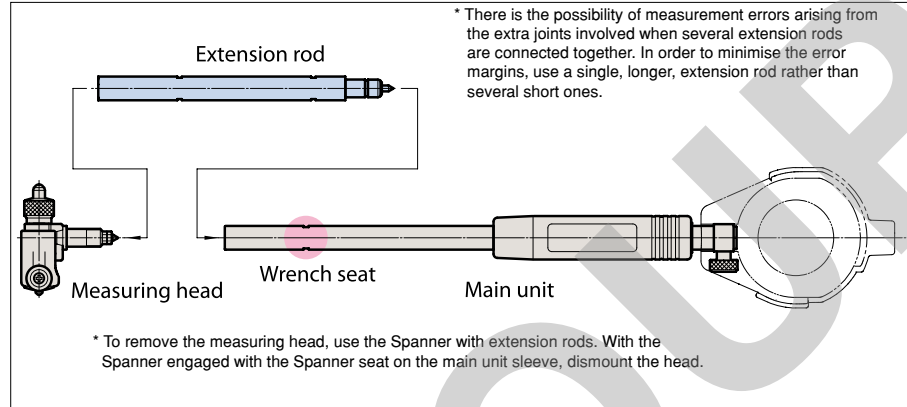
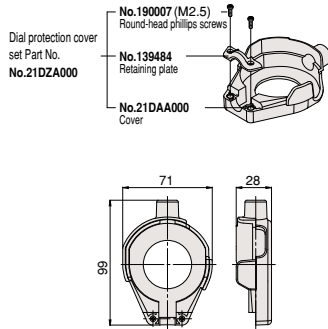
Extension rod

SERIES 511 - Accessories for Bore Gage

Protection cover

- Both the flat backplate of a dial indicator and backplate with a lug can be attached to a protection cover.

Note: It can also be attached to Digimatic Indicators (543-310B, 543-312B).



FEATURE

- Extension rods (optional) are available to assist in deep-hole measurement.
- If two or more extension rods are connected together, measurement errors may occur due to flexure of the rod assembly. Therefore it is best to use no more than a single extension rod.
- The extension rod length is available up to 1000mm.
- Can not be connected to the products with special sizes or special specifications.
- When using a 500mm (or longer) extension rod, use the bore gage in an upright position.
- The accuracy and security of the assembly should be confirmed after connecting a rod.

Metric

Applicable model	Extension rod length					Extension rod diameter	Spanner part No.
Order No.	125m	250m	500m	750m	1000m		
511-701/511-731							
511-415/511-418	953549	953550	953551	-	-	Ø9mm	102148
511-416/511-419							
511-417/511-420							
511-702/511-732							
511-703/511-733							
511-704/511-734	953552	953553	953554	953555	953556	Ø12mm	212556
511-803/511-833							
511-804/511-834							
511-705/511-735							
511-706/511-736							
511-805/511-835	953557	952361	953558	953559	953560	Ø15mm	212556
511-806/511-836							
511-807/511-837							
511-808/511-838							

Note: 1) If an extension rod is attached, the measuring accuracy may degrade due to factors such as rod deflection.
2) Spanner is supplied as standard.

Micrometer

ไมโครมิเตอร์

Inside Measurement

เครื่องมือวัดภายใน

Calipers

คาร์ลเปอร์

Height Gages

เกจวัดความสูง

Linear Height

เครื่องมือวัดความสูง

Depth Gages

เกจวัดความลึก

Gauge Blocks

เกจบล็อก

Reference Gages

เครื่องมืออ้างอิง

Indicators

อินดิเคเตอร์

Stands

ขาตั้ง

Holtest

โฮลเทส

Inside Micrometer

ไมโครมิเตอร์วัดใน

Bore Gages

บอร์เกจ

Other Gages

เกจอื่นๆ

Accessories

อุปกรณ์เสริม

SMALL TOOLS

เครื่องมือวัดละเอียด

SINCE 1916
PEACOCK

เกจวัดกระบอกสูบ - รุ่น CC

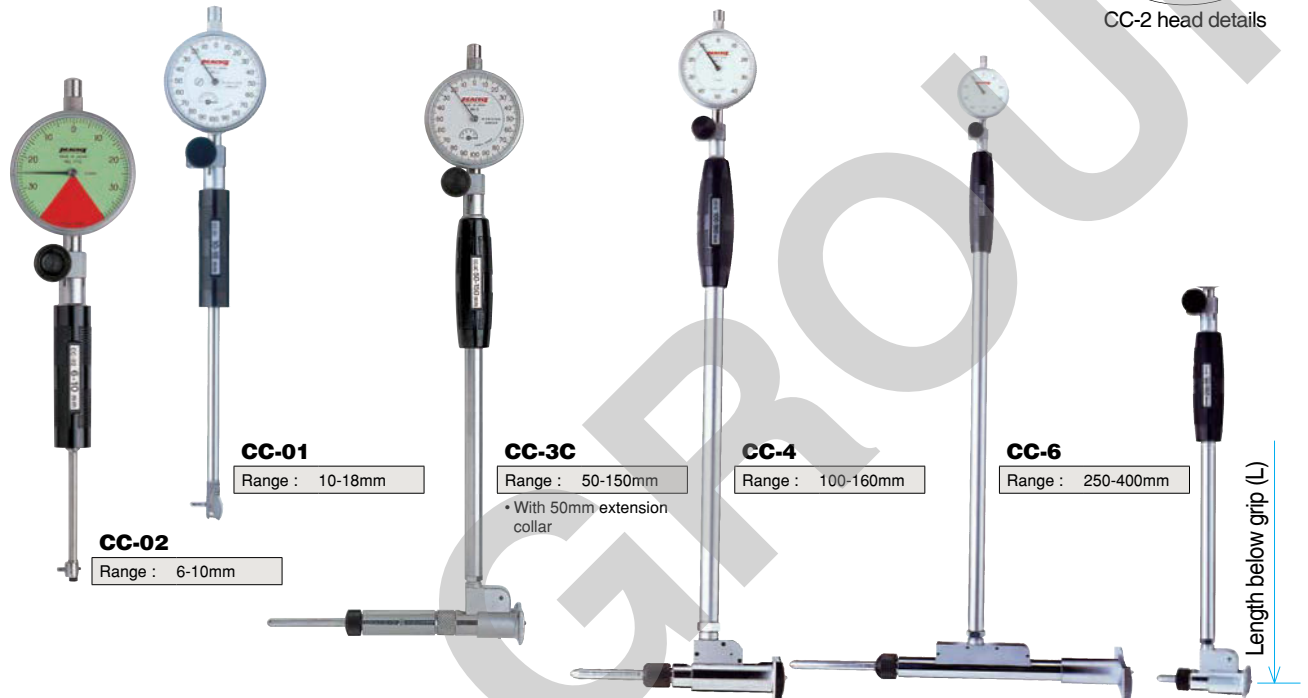
Standard Cylinder Gauges - CC Series

Peacock offers a complete line of Dial Bore Gauges with interchangeable anvils and necessary accessories to perform close tolerance measurements of holes, taper and roundness.

- Dial gauge mounting knob is very simple of and sure avoiding demerit of collet-system.
- The contact point is tungsten carbide ball.
- The standard ball tipped at the replacement rod is made of steel.
The sintered hard-alloy ball is also available to tip.
- Wide range accuracy.....5µm or less
Adjacent error.....2µm or less
Repeated accuracy.....2µm or less
- Effective measuring range is 0.5 mm (CC-02 CC-01)
- Effective measuring range is 1.2 mm (CC-1 to CC-6)



CC-2 head details



CC-2 complete set

Order No.	Range (mm)	Length below grip (mm)	Number of Feelers (mm)	Thickness of Washers (mm)
CC-02	6 ~ 10	50	Intervals 0.5 mm x 9	-
CC-01	10 ~ 18	100	Intervals 1 mm x 9	0.5 mm
CC-1	18 ~ 35	150	Intervals 2 mm x 9	0.5, 1 mm each
CC-2	35 ~ 60	150	Intervals 5 mm x 6	0.5, 1, 2, 3 mm each
CC-3	50 ~ 100	150	Intervals 5 mm x 11	0.5, 1, 2, 3 mm each
CC-3C	50 ~ 150	150	Intervals 5 mm x 11	0.5, 1, 2, 3 mm each
CC-4	100 ~ 160	250	Intervals 10 mm x 7	1, 2, 3, 4 mm each
CC-5	160 ~ 250	250	Intervals 10 mm x 10	1, 2, 3, 4 mm each
CC-6	250 ~ 400	400	Intervals 10 mm x 16	1, 2, 3, 4 mm each

※ Dial gauge is not furnished and supplied only on request. Suitable dial gauges are 17Z, 57B (0.01mm) and 15Z, 5F (0.001mm).

List of special length below grip (available on request)

Order No.	L=50 (mm)	L=100 (mm)	L=200 (mm)	L=300 (mm)	L=400 (mm)	L=500 (mm)	L=600 (mm)	L=700 (mm)	L=800 (mm)	L=900 (mm)	L=1000 (mm)	L=1500 (mm)	L=2000 (mm)
CG-01	○	Standard	○	○	-	-	-	-	-	-	-	-	-
CG-1	CC-1S	○	○	○	○	○	-	-	-	-	-	-	-
CG-2	CC-2S	○	○	○	○	○	○	○	○	○	○	○	○
CG-3	CC-3S	○	○	○	○	○	○	○	○	○	○	○	○
CG-3C	CC-3CS	○	○	○	○	○	○	○	○	○	○	○	○
CG-4	○	○	○	○	○	○	○	○	○	○	○	○	○
CG-5	○	○	○	○	○	○	○	○	○	○	○	○	○
CG-6	○	○	○	○	Standard	○	○	○	○	○	○	○	○

○ More than L=600mm for CC-2 can not measure from 35 to 44mm and can measure from 45 to 60mm ID.

เกจวัดกระบอกสูบ - รุ่น S

Short Size Cylinder Gauges - S Series

This is a compact cylinder gauge with a length below grip of 50 mm.

It is used when a standard item is too long to measure the object or a shorter length of below grip is required for conveniently.

Specifications are same as standard model.

**CC-1S**

Range : 18-35mm

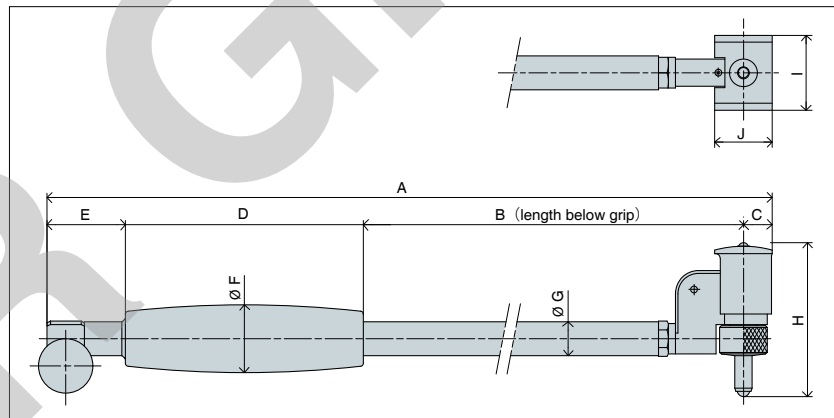
**CC-2S**

Range : 35-60mm

**CC-3CS**

Range : 50-150mm

• With 50mm extension collar



Order No.	A	B	C	D	E	F	G	H	I	J
CC-1	249	150	5.75	70	23	20	10	18 ~ 35	13	11.5
CC-2	251.5	150	8.5	70	23	20	10	35 ~ 60	22	17
CC-3	253	150	9	70	23	20	10	50 ~ 100	30	18
CC-3C	253	150	9	70	23	20	10	50 ~ 150	30	18
CC-4	370	250	12	85	23	25	13	100 ~ 160	50	24
CC-5	391.5	0251.5	14	100	26	25	16	160 ~ 250	70	28
CC-6	540	400	14	100	26	25	16	250 ~ 400	100	28
CC-1S	150	50	5.75	70	23	20	10	18 ~ 35	13	11.5
CC-2S	151.5	50	8.5	70	23	20	10	35 ~ 60	22	17
CC-3S	152	50	9	70	23	20	10	50 ~ 100	30	18
CC-3CS	152	50	9	70	23	20	10	50 ~ 150	30	18

Micrometer

ไมโครมิเตอร์

Inside Measurement

เครื่องมือวัดภายใน

Calipers

คาร์ลิสเปอร์

Height Gages

เกจวัดความสูง

Linear Height

เครื่องมือวัดความสูง

Depth Gages

เกจวัดความลึก

Gauge Blocks

เกจบล็อก

Reference Gages

เครื่องมืออ้างอิง

Indicators

อินดิเคเตอร์

Stands

ขาตั้ง

Holtest

โฮลเทส

Inside Micrometer

ไมโครมิเตอร์วัดใน

Bore Gages

บอร์เกจ

Other Gages

เกจอื่นๆ

Accessories

อุปกรณ์เสริม

SMALL TOOLS

เครื่องมือวัดละเอียด

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เกจวัดกระบอกสูบ (สำหรับรูตัน) - รุ่น CG

Cylinder Gauges (Blind Hole Type) - CG Series

If using a CC type cylinder gauge for blind hole bore diameter, its guide plate interrupt the measurement at a point deeper than "T", as shown in the figure below.

In such case, the CG type with modified guide plate is suitable for measurement of the diameter to the point as deep as "t".

- Wide range accuracy...5µm or less
- Adjacent error.....2µm or less
- Repeated accuracy.....2µm or less
- Effective measuring range is 0.5 mm (CG-01)
- Effective measuring range is 1.2 mm (CG-1 to CG-6)

Micrometer

ไมโครมิเตอร์

Inside Measurement

เครื่องมือวัดภายใน

Calipers

คาร์ลิเปอร์

Height Gages

เกจวัดความสูง

Linear Height

เครื่องมือวัดความสูง

Depth Gages

เกจวัดความลึก

Gauge Blocks

เกจบล็อก

Reference Gages

เครื่องมืออ้างอิง

Indicators

อินดิเคเตอร์

Stands

ขาตั้ง

Holtest

โฮลเทส

Inside Micrometer

ไมโครมิเตอร์วัดใน

Bore Gages

บอร์เกจ

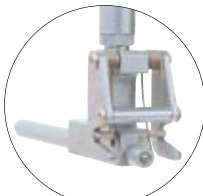
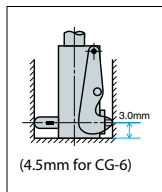
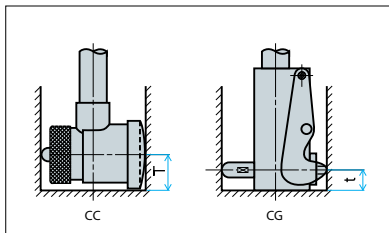
Other Gages

เกจอื่นๆ

Accessories

อุปกรณ์เสริม

Applied Example



CG-2 head details



CG-4

Range : 100-160mm



CG-01

Range : 10-18mm

• Blind hole type

3mm

CG-01: Measuring depth is 5mm in case of measuring from 10 to 11mm. From 12 to 18mm, the measuring depth is 3mm.



CG-1

Range : 18-35mm



CG-3

Range : 50-100mm

Order No.	Range (mm)	Length below grip (mm)	Number of Feelers (mm)	Thickness of Washers (mm)
CG-01	10 ~ 18	100	Intervals 1 mm x 9	0.5 mm each
CG-1	18 ~ 35	150	Intervals 2 mm x 9	0.5, 1 mm each
CG-2	35 ~ 60	150	Intervals 5 mm x 6	0.5, 1, 2, 3 mm each
CG-3	50 ~ 100	150	Intervals 5 mm x 11	0.5, 1, 2, 3 mm each
CG-3C	50 ~ 150	150	Intervals 5 mm x 11	0.5, 1, 2, 3 mm each
CG-4	100 ~ 160	250	Intervals 10 mm x 7	1, 2, 3, 4 mm each
CG-5	160 ~ 250	250	Intervals 10 mm x 10	1, 2, 3, 4 mm each
CG-6	250 ~ 400	400	Intervals 10 mm x 16	1, 2, 3, 4 mm each

※ Dial gauge is not furnished and supplied only on request. Suitable dial gauges are 17Z, 57B (0.01mm) and 15Z, 5F (0.001mm).

※ CG-3C includes 50 mm extension collar.

※ In general, it is the range from the origin, that is the position where the plunger is pushed in by 0.1 mm, to the position where the plunger is pushed in further by 1.2 mm.

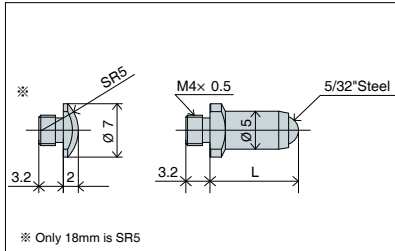
● List of special length below grip (available on request)

Order No.	L=50 (mm)	L=100 (mm)	L=150 (mm)	L=200 (mm)	L=250 (mm)	L=300 (mm)	L=400 (mm)	L=500 (mm)	L=600 (mm)	L=700 (mm)	L=800 (mm)	L=900 (mm)	L=1000 (mm)
CG-01	○	Standard	○	○	○	○							
CG-1	○	○	Standard	○	○	○	○	○					
CG-2	○	○	Standard	○	○	○	○	○	○	○	○	○	○
CG-3	○	○	Standard	○	○	○	○	○	○	○	○	○	○
CG-3C	○	○	Standard	○	○	○	○	○	○	○	○	○	○
CG-4	○	○	○	○	Standard	○	○	○	○	○	○	○	○
CG-5	○	○	○	○	Standard	○	○	○	○	○	○	○	○
CG-6	○	○	○	○	○	○	Standard	○	○	○	○	○	○

เกจวัดกระบอกสูบ

Dimensions for Feeler and Washer for Cylinder Gauges

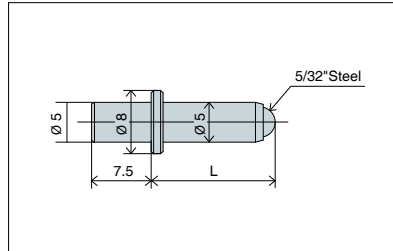
CC-1 Feeler



※ Only 18mm is SR5

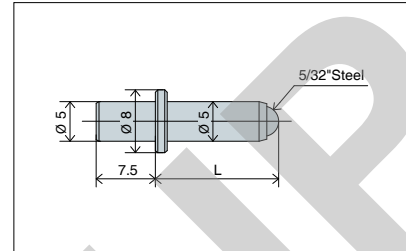
Order No.	Size (mm)	L (mm)
CC-1 Feeler	*18	2
	20	4
	22	6
	24	8
	26	10
	28	12
	30	14
	32	16
	34	18

CC-2 Feeler



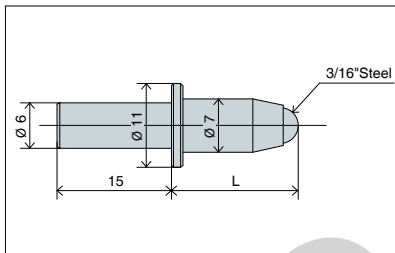
Order No.	Size (mm)	L (mm)
CC-2 Feeler	35	5
	40	10
	45	15
	50	20
	55	25
	60	30

CC-3•3C Feeler



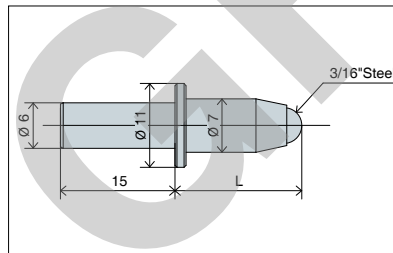
Order No.	Size (mm)	L (mm)
CC-3 Feeler	50	5
	55	10
	60	15
	65	20
	70	25
	75	30
	80	35
	85	40
	90	45
	95	50
	100	55

CC-4 Feeler



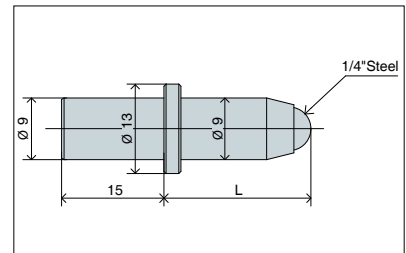
Order No.	Size (mm)	L (mm)
CC-4 Feeler	100	10
	110	20
	120	30
	130	40
	140	50
	150	60
	160	70

CC-5 Feeler



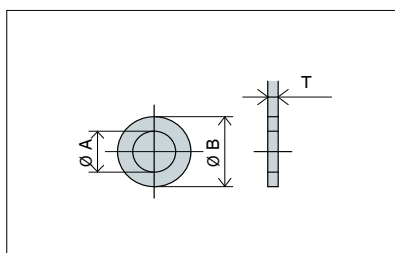
Order No.	Size (mm)	L (mm)
CC-5 Feeler	160	10
	170	20
	180	30
	190	40
	200	50
	210	60
	220	70
	230	80
	240	90
	250	100

CC-6 Feeler



Order No.	Size (mm)	L (mm)
CC-6 Feeler	250	10
	260	20
	270	30
	280	40
	290	50
	300	60
	310	70
	320	80
	330	90
	340	100
	350	110
	360	120
	370	130
	380	140
	390	150
	400	160

CC-1~6 Washer



Order No.	T (mm)	A (mm)	B (mm)
CC-1	0.5, 1	4.1	7
CC-2	1, 2, 3	5.1	8
CC-3 • 3C	1, 2, 3	5.1	8
CC-4	1, 2, 3, 4	6.1	10
CC-5	1, 2, 3, 4	6.1	10
CC-6	1, 2, 3, 4	9.1	13

Micrometer

ไมโครมิเตอร์

Inside Measurement

เครื่องมือวัดภายใน

Calipers

คาร์ลิสเปอร์

Height Gages

เกจวัดความสูง

Linear Height

เครื่องมือวัดความสูง

Depth Gages

เกจวัดความลึก

Gauge Blocks

เกจบล็อก

Reference Gages

เครื่องมืออ้างอิง

Indicators

อินดิเคเตอร์

Stands

ขาตั้ง

Holtest

โฮลเทส

Inside Micrometer

ไมโครมิเตอร์วัดใน

Bore Gages

บอร์เกจ

Other Gages

เกจอื่นๆ

Accessories

อุปกรณ์เสริม

SMALL TOOLS

เครื่องมือวัดละเอียด

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เกจวัดกระบอกสูบ

Cylinder Gauges - CC • CG • R Series

Do you have any trouble when measuring internal diameter?

If so, we offer more radii of Contact Point & Feeler for Cylinder Gauges "R" Series.

- Wide range accuracy...5μm or less
- Adjacent error.....2μm or less
- Repeated accuracy.....2μm or less

Specifications for CC-"R" series

Order No.	Range (mm)	Length below grip (mm)	Number of Feelers (mm)	Thickness of Washers (mm)	Extension collar
CC-01R	10 ~ 18	100	Intervals 0.5mm x 9	0.5mm	-
CC-1R	18 ~ 35	150	Intervals 2 mm x 9	0.5, 1 mm each	-
CC-2R	35 ~ 60	150	Intervals 5 mm x 6	1, 2, 3 mm each	-
CC-3R	50 ~ 100	150	Intervals 5 mm x 11	1, 2, 3 mm each	-
CC-3CR	50 ~ 150	150	Intervals 5 mm x 11	1, 2, 3 mm each	50mm

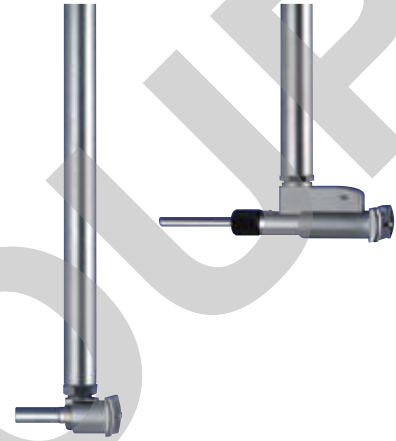
Specifications for CG-"R" series

Order No.	Range (mm)	Length below grip (mm)	Number of Feelers (mm)	Thickness of Washers (mm)	Extension collar
CG-01R	10 ~ 18	100	Intervals 0.5mm x 9	0.5mm	-
CG-1R	18 ~ 35	150	Intervals 2 mm x 9	0.5, 1 mm each	-
CG-2R	35 ~ 60	150	Intervals 5 mm x 6	0.5, 1, 2, 3 mm each	-
CG-3R	50 ~ 100	150	Intervals 5 mm x 11	0.5, 1, 2, 3 mm each	-
CG-3CR	50 ~ 150	150	Intervals 5 mm x 11	0.5, 1, 2, 3 mm each	50mm

Note: CG-01, in case 10~11mm measurement, the measuring depth is 5mm but 11~18mm is 3mm measuring depth.

CC-1R

CC-3R

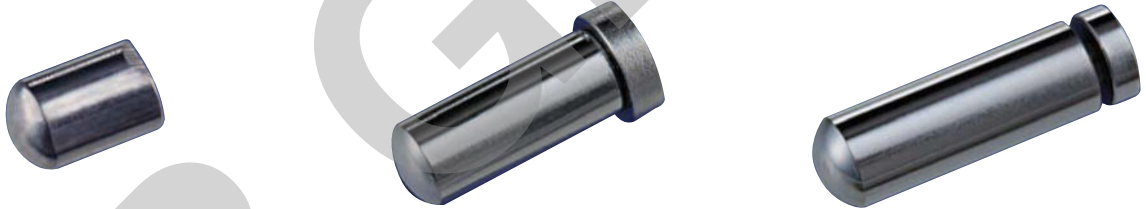


Contact Point Hv700±50 (Tip heat treatment and hardened)

CC-01R
CG-01R

CC-1R • CG-1R • CG-2R
CG-3R • CG-3CR

CC-2R • CC-3R
CC-3CR



Feeler Hv700±50 (Tip heat treatment and hardened)

CC-01R
CG-01R

CC-1R

CC-2R • CC-3R
CC-3CR



Feeler Hv700±50 (Tip heat treatment and hardened)

CG-1R

CG-2R • CG-3R
CG-3CR



"R" Series Cylinder Gauges can be made Special Production as following:

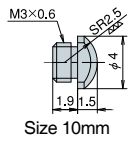
1. Long Size of Length below grip Cylinder Gauge
2. Short Size of Length below grip Cylinder Gauge
3. Short Size of the overall length Cylinder Gauge
4. L-shaped Cylinder Gauge



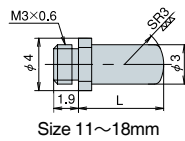
เกจวัดกระบอกสูบ

Dimensions for Feeler and Washer for R series Cylinder Gauges:

CC-01R Feeler



Size 10mm

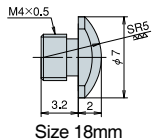


Size 11~18mm

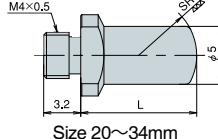
Size (mm)	L (mm)
10	1.5
11	2.5
12	3.5
13	4.5
14	5.5

Size (mm)	L (mm)
15	6.5
16	7.5
17	8.5
18	9.5

CC-1R Feeler



Size 18mm

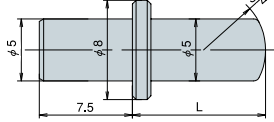


Size 20~34mm

Size (mm)	L (mm)
18	2
20	4
22	6
24	8
26	10

Size (mm)	L (mm)
28	12
30	14
32	16
34	18

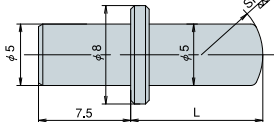
CC-2R Feeler



Size (mm)	L (mm)
35	5
40	10
45	15

Size (mm)	L (mm)
50	20
55	25
60	30

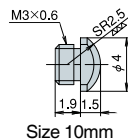
CC-3R • CC-3CR Feeler



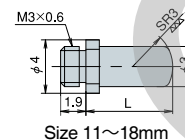
Size (mm)	L (mm)
50	5
55	10
60	15
65	20
70	25
75	30

Size (mm)	L (mm)
80	35
85	40
90	45
95	50
100	55

CG-01R Feeler



Size 10mm

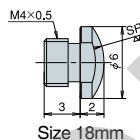


Size 11~18mm

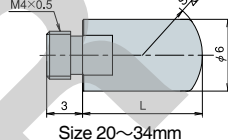
Size (mm)	L (mm)
10	1.5
11	2.5
12	3.5
13	4.5
14	5.5

Size (mm)	L (mm)
15	6.5
16	7.5
17	8.5
18	9.5

CG-1R Feeler



Size 18mm

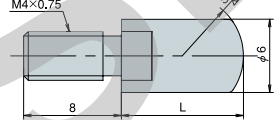


Size 20~34mm

Size (mm)	L (mm)
18	2
20	4
22	6
24	8
26	10

Size (mm)	L (mm)
28	12
30	14
32	16
34	18

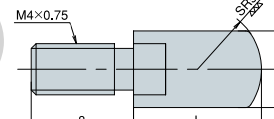
CG-2R Feeler



Size (mm)	L (mm)
35	5
40	10
45	15

Size (mm)	L (mm)
50	20
55	25
60	30

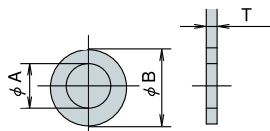
CG-3R • CG-3CR Feeler



Size (mm)	L (mm)
50	5
55	10
60	15
65	20
70	25
75	30

Size (mm)	L (mm)
80	35
85	40
90	45
95	50
100	55

R type Washer



Order No.	T	A	B
CC01-R	0.5	3.1	4.5
CC-1R	0.5 • 1	4.1	7
CC-2R	1 • 2 • 3	5.1	8
CC-3R • CC-3CR	1 • 2 • 3	5.1	8
CG01-R	0.5	3.1	4.5
CG-1R	0.5 • 1	4.1	5
CG-2R	0.5 • 1 • 2 • 3	4.1	6
CG-3R • CG-3CR	0.5 • 1 • 2 • 3	4.1	6

Micrometer
ไมโครมิเตอร์Inside
Measurement
เครื่องมือวัดภายในCalipers
คาลิเปอร์Height Gages
เกจวัดความสูงLinear Height
เครื่องมือวัดความสูงDepth Gages
เกจวัดความลึกGauge Blocks
เกจบล็อกReference Gages
เครื่องมืออ้างอิงIndicators
อินดิเคเตอร์Stands
ขาตั้งHoltest
โฮลเทสInside Micrometer
ไมโครมิเตอร์วัดในBore Gages
บอร์เกจOther Gages
เกจอื่นๆAccessories
อุปกรณ์เสริม

SMALL TOOLS

เครื่องมือวัดละเอียด

SINCE 1916
PEACOCK

เกจวัดกระบอกสูบ

Cylinder Gauges for Measuring Spline and Internal Gears

Easy and precise measurement of an OVER PIN DIAMETER, LARGE and SMALL diameter of SPLINE by our custom-manufactured Cylinder Gauges.

- Measuring OVER PIN diameter...Please specify diameters of over pin and balls.
- Measuring Large/Small diameter of the SPLINE...we will add a guide plate for accurate measurement by the shape of your work-piece.

Micrometer

ไมโครมิเตอร์

Inside Measurement

เครื่องมือวัดภายใน

Calipers

คาร์ลิเปอร์

Height Gages

เกจวัดความสูง

Linear Height

เครื่องมือวัดความสูง

Depth Gages

เกจวัดความลึก

Gauge Blocks

เกจบล็อก

Reference Gages

เครื่องมืออ้างอิง

Indicators

อินดิเคเตอร์

Stands

ขาตั้ง

Holtest

โฮลเทส

Inside Micrometer

ไมโครมิเตอร์ใน

Bore Gages

บอร์เกจ

Other Gages

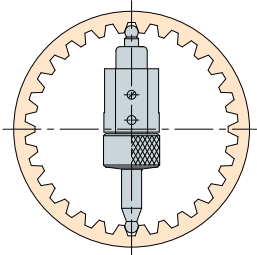
เกจอื่นๆ

Accessories

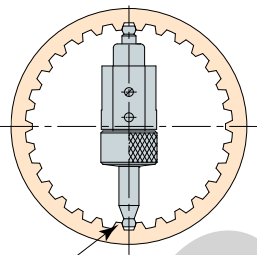
อุปกรณ์เสริม

Measuring OVER PIN Diameter

- Please specify diameters of Over pin and Balls.



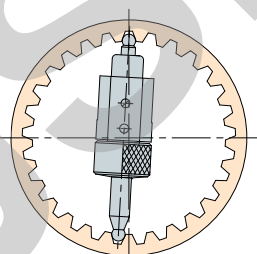
Even tooth



Cut both tips of the balls.

Even tooth

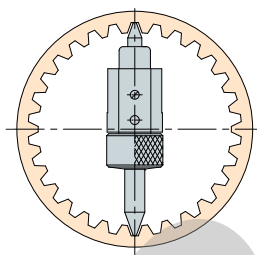
- We cut both tips of the balls when interference with Large diameter.



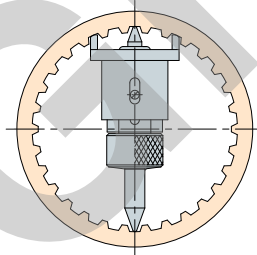
Odd tooth

Measuring Large Diameter

- Please specify large diameter (ϕD), width and height of face.
(We design contact points that do not touch either gear surface.)

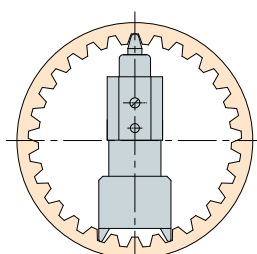


Even tooth



Even tooth

- In case the root diameter is wide, we will add guide plate.

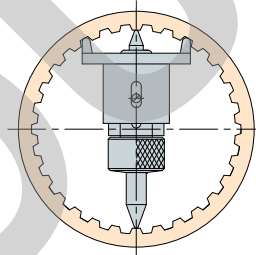


Odd tooth

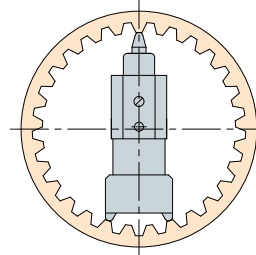
- If the root of the face is not in the symmetry, the measurement points will across at any position. This is the reference of measurement by set a Master.

Measuring Small Diameter

- Please specify small diameter and height of face.
(We design contact point guides on both sides of contact point.)



Even tooth



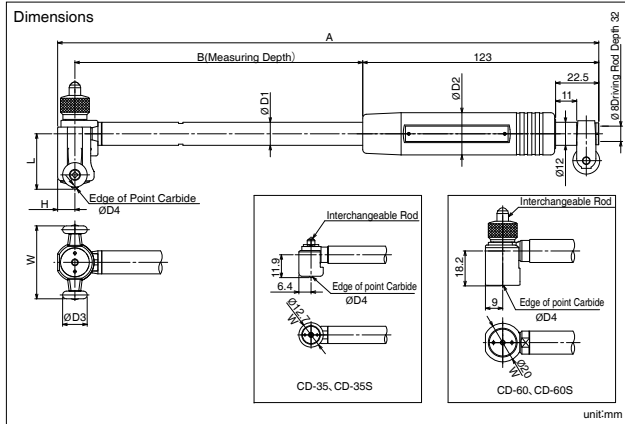
Odd tooth

- If the root of the face is not in the symmetry, the measurement points will across at any position. This is the reference of measurement by set a Master.

กรณีสนใจสินค้ากรุณาติดต่อสอบถามทางบริษัทของเรา หรือพนักงานขายของเรา

บอร์เกจ (CD Type)
Bore Gauge (CD type)

- Compliance with JIS B 7515A.
- Anvil and Contact point are using the carbide ball.
- The measuring depth can be extend using the extension rod to measure a deep hole.



Dimension Table : Standard

Order No.	A	B	L	H	W2	OD1	OD2	OD3	OD4
CD-35	229.4	100	11.9	6.4	0.127	9	22	-	1.5
CD-60	282	150	18.2	9	0.20	12	22	-	1.5
CD-150	282	150	28.9	9	38	12	22	12.8	2
CD-160	282	150	28.9	9	50	12	22	12.8	2
CD-250	385	250	100.9	12	90	15	25	19.8	3
CD-400	385	250	100.9	12	90	15	25	19.8	3

Dimension Table : Short size

Order No.	A	B	L	H	W	ØD1	ØD2	ØD3	ØD4
CD-35S	179.4	50	11.9	3.4	Ø12.7	9	22	-	1.5
CD-60S	182	50	18.2	9	Ø20	12	22	-	1.5
CD-150S	182	50	28.9	9	38	12	22	12.8	2
CD-160S	182	50	28.9	9	50	12	22	12.8	2
CD-250S	285	150	100.9	12	90	15	25	19.8	3
CD-400S	285	150	100.9	12	90	15	25	19.8	3



CD-150
Measuring Range 50~150mm

CD-35S
Short size
Measuring Range 18~35mm

	Order No.	Measuring Range (mm)	Probe Depth (mm)	Effective Measuring Range (mm)	Total Range Error (μm)	Adjacent Error (μm)	Repeatability (μm)	Measuring Force	Guide Support Force	Number of Anvils	Number of Washers	Sub Anvil	Weight (g)
Standard type	CD-35	18-35	100	1.2	2	1	0.5	4N or less	6N or less	Incream 9pcs./2mm	2	-	160
	CD-60	35-60	150							Incream 6pcs./5mm	4	-	230
	CD-150	50-150	150	1.6				5N or less	10N or less	Incream 11pcs./5mm	4	50	250
	CD-160	100-160	150							Incream 13pcs./5mm	4	-	310
	CD-250	160-250	250	6N or less				15N or less	Incream 6pcs./15mm	7	-	680	
	CD-400	250-400	250						Incream 5pcs./15mm	7	75	775	
Short type	CD-35S	18-35	50	1.2	2	1	0.5	4N or less	6N or less	Incream 9pcs./2mm	2	-	150
	CD-60S	35-60	50							Incream 6pcs./5mm	4	-	210
	CD-150S	50-150	50	1.6				5N or less	10N or less	Incream 11pcs./5mm	4	50	230
	CD-160S	100-160	50							Incream 13pcs./5mm	4	-	290
	CD-250S	160-250	150	6N or less				15N or less	Incream 6pcs./15mm	7	-	630	
	CD-400S	250-400	150						Incream 5pcs./15mm	7	75	720	

Micrometer
ไมโครมิเตอร์

Inside Measurement
เครื่องมือวัดภายใน

Calipers
คาร์ลิเปอร์

Height Gages
เกจวัดความสูง

Linear Height
เครื่องมือวัดความสูง

Depth Gages

เกจวัดความลึก

Gauge Blocks

เกจบล็อก

Reference Gages

เครื่องมืออ้างอิง

Indicators
อินดิเคเตอร์

Stands
ขาตั้ง

Holtest
โฮลเทส

Inside Micrometer

ไมโครมิเตอร์วัดใน

Bore Gages
บอร์เกจ

Other Gages

เกจอื่นๆ

Accessories

อุปกรณ์เสริม

SMALL TOOLS

เครื่องมือวัดละเอียด

TECLOCK

บอร์เกจ (CD Type) สำหรับรูตื้น

Bore Gauge (CD type) for shallow hole



Micrometer

ไมโครมิเตอร์

Inside Measurement
เครื่องมือวัดภายใน

Calipers
คาร์ลิเปอร์

Height Gages
เกจวัดความสูง

Linear Height
เครื่องมือวัดความสูง

Depth Gages
เกจวัดความลึก

Gauge Blocks
เกจบล็อก

Reference Gages
เครื่องมืออ้างอิง

Indicators
อินดิเคเตอร์

Stands
ขาตั้ง

Holtest
โฮลเทส

Inside Micrometer
ไมโครมิเตอร์วัดใน

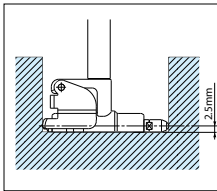
Bore Gages
บอร์เกจ

Other Gages
เกจอื่นๆ

Accessories
อุปกรณ์เสริม

CD-35F

Measuring Range 15~35mm



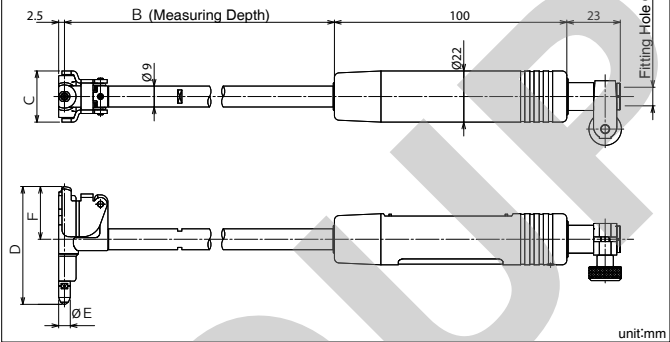
Internal measurement is possible at the position from shallow hole bottom by 2.5mm.

CD-35F

CD-60F

CD-150F

Dimensions



Dimension Table

Order No.	A	B	C	D	E	F
CD-35F	275.5	150	10.6	15.7	5	10
CD-60F	275.5	150	18	35.7	5	14.3
CD-150F	275.5	150	22	50.7	5	22.7
CD-35FS	175.5	50	10.6	15.7	5	10
CD-60FS	175.5	50	18	35.7	5	14.3
CD-150FS	175.5	50	22	50.7	5	22.7

Order No.	Measuring Range (mm)	Effective Measuring Range (mm)	Total Range Error (μm)	Adjacent Error (μm)	Repeatability (μm)	Anvil (pcs.)	Weight (g)
CD-35F	15~35	1.2	4	1	1	11	180
CD-60F	35~60	1.2	4	1	1	6	200
CD-150F	50~150	1.2	4	1	1	11	210
CD-35FS	15~35	1.2	4	1	1	11	140
CD-60FS	35~60	1.2	4	1	1	6	160
CD-150FS	50~150	1.2	4	1	1	11	170

บอร์เกจ (CN Type) สำหรับรูเล็ก

Bore Gauge (CN type) for small hole

• These are bore gauges for small holes of which internal diameter is 18.5mm and high accuracy measuring is possible as well as standard type bore gauges.



CN-10

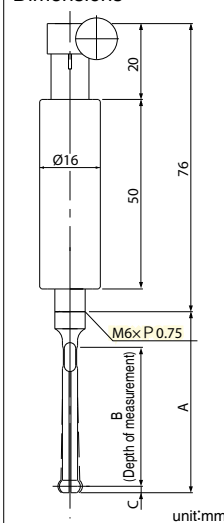
Measuring Range 6~10mm



CN-18

Measuring Range 10~18.5mm

Dimensions



Dimension Table

Order No.	A	B	C	D
CN-10	80	49	5.4	4
CN-18	80	100	8.5	6

Order No.	Measuring Range (mm)	Effective Measuring Range (mm)	Total Range Error (μm)	Adjacent Error (μm)	Repeatability (μm)	Weight (g)
CN-10	6~10	0.5	5	2	2	70
CN-18	10~18.5	0.6	5	2	2	80

อะไหล่

Parts - Interchangeable Rods (Anvils), Washers and Extension Rods

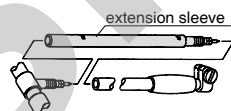
Order No.			Interchangeable rods (anvils)													Washers						
			No.1	No.2	No.3	No.4	No.5	No.6	No.7	No.8	No.9	No.10	No.11	No.12	No.13	0.5mm	1mm	2mm	3mm	4mm	5mm	6mm
CN-10	NML		6	6.5	7	7.5	8	8.5	9	9.5	10											
	Code No.		ZJ-300	ZJ-301	ZJ-302	ZJ-303	ZJ-304	ZJ-305	ZJ-306	ZJ-307	ZJ-308											
CN-18	NML		10	11	12	13	14	15	16	17	18											
	Code No.		ZJ-310	ZJ-311	ZJ-312	ZJ-313	ZJ-314	ZJ-315	ZJ-316	ZJ-317	ZJ-318					ZJ-343						
CD-35	NML		18	20	22	24	26	28	30	32	34											
CD-35S	Code No.		ZJ-350	ZJ-351	ZJ-352	ZJ-353	ZJ-354	ZJ-355	ZJ-356	ZJ-357	ZJ-358					ZJ-382	ZJ-382					
CD-60	NML		35	40	45	50	55	60														
CD-60S	Code No.		ZJ-360	ZJ-361	ZJ-362	ZJ-363	ZJ-364	ZJ-365														
CD-150	NML		50	55	60	65	70	75	80	85	90	95	100									
	Code No.		ZJ-360	ZJ-361	ZJ-362	ZJ-363	ZJ-364	ZJ-365	ZJ-366	ZJ-367	ZJ-368	ZJ-369	ZJ-370									
	NML	50	100	105	110	115	120	125	130	135	140	145	150									
	Code No.	ZJ-379	ZJ-360	ZJ-361	ZJ-362	ZJ-363	ZJ-364	ZJ-365	ZJ-366	ZJ-367	ZJ-368	ZJ-369	ZJ-370									
CD-160	NML		100	105	110	115	120	125	130	135	140	145	150	155	160							
CD-160S	Code No.		ZJ-360	ZJ-361	ZJ-362	ZJ-363	ZJ-364	ZJ-365	ZJ-366	ZJ-367	ZJ-368	ZJ-369	ZJ-370	ZJ-371	ZJ-372							
CD-250	NML		160	175	190	205	220	235														
CD-250S	Code No.		ZJ-373	ZJ-374	ZJ-375	ZJ-376	ZJ-377	ZJ-378														
CD-400	NML		250	265	280	295	310															
	Code No.		ZJ-373	ZJ-374	ZJ-375	ZJ-376	ZJ-377									ZJ-388	ZJ-389	ZJ-390	ZJ-391	ZJ-392	ZJ-393	ZJ-394
	NML	75	325	340	355	370	385															
	Code No.	ZJ-380	ZJ-373	ZJ-374	ZJ-375	ZJ-376	ZJ-377															
CD-35F	NML		15	16	17	18	19	20	21	22	23	24	25									
	Code No.		ZJ-319	ZJ-320	ZJ-321	ZJ-322	ZJ-323	ZJ-324	ZJ-325	ZJ-326	ZJ-327	ZJ-328	ZJ-329									
	NML	10mm	(25)	26	27	28	29	30	31	32	33	34	35									
	Code No.	ZJ-341	(ZJ-319)	ZJ-320	ZJ-321	ZJ-322	ZJ-323	ZJ-324	ZJ-325	ZJ-326	ZJ-327	ZJ-328	ZJ-329									
CD-60F	NML		35	40	45	50	55	60														
CD-60FS	Code No.		ZJ-330	ZJ-331	ZJ-332	ZJ-333	ZJ-334	ZJ-335														
CD-150F	NML		50	55	60	65	70	75	80	85	90	95	100									
	Code No.		ZJ-330	ZJ-331	ZJ-332	ZJ-333	ZJ-334	ZJ-335	ZJ-336	ZJ-337	ZJ-338	ZJ-339	ZJ-340									
	NML	50	(100)	105	110	115	120	125	130	135	140	145	150									
	Code No.	ZJ-342	(ZJ-330)	ZJ-331	ZJ-332	ZJ-333	ZJ-334	ZJ-335	ZJ-336	ZJ-337	ZJ-338	ZJ-339	ZJ-340									

Extension Sleeves

Length (mm)	CD-35 CD-35F~CD-150F	CD-60~CD-160	CD-250 ~ CD-400
125	ZJ-400	ZJ-403	ZJ-408
250	ZJ-401	ZJ-404	ZJ-409
500	ZJ-402	ZJ-405	ZJ-410
750	-	ZJ-406	ZJ-411
1000	-	ZJ-407	ZJ-412
Extension sleeve dia. (mm)	Ø8.7	Ø12	Ø15
Spanner	ZZ-018		ZZ-019

Can not be used for CN-10, 18, 35F, 60F, 150F.

In case that deep holes are measured which can not be measured with standard bore gauges, measuring depth is to be extended by extension rod outer cylinder.



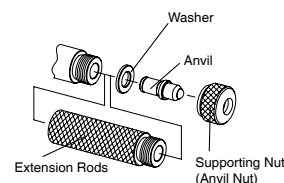
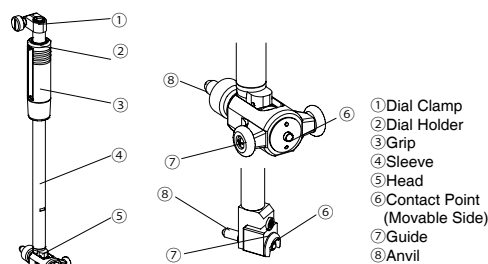
As error may occur due to deflection, only 1 extension rod should be adopted.

Dial Gauge Protection Cover (ZY-094)



Dial indicator protection cover (ZY-094).
Protection cover for bore gauge.
It can not be used for CC type.

Parts Names



Extension Rods and Washer Set

Code No.	Order No.
ZJ-918	CN-10
ZJ-919	CN-18
ZJ-920	CN-35F
ZJ-921	CN-60F
ZJ-922	CN-150F
ZJ-923	CD-35
ZJ-924	CD-60
ZJ-925	CD-15
ZJ-926	CD-160
ZJ-927	CD-250
ZJ-928	CD-400

Can also be used to
CN type of old products.

SMALL TOOLS

เครื่องมือวัดละเอียด

Mitutoyo

ริงเกจ

Setting Rings

SERIES 177 - Accessories for inside Micrometers, Holtest and Dial Bore Gages

Steel Setting Rings

Micrometer
ไมโครมิเตอร์

Inside
Measurement
เครื่องมือวัดภายใน

Calipers
คาร์ลิเปอร์

Height Gages
เกจวัดความสูง

Linear Height
เครื่องมือวัดความสูง

Depth Gages
เกจวัดความลึก

Gauge Blocks
เกจบล็อก

Reference Gages
เครื่องมืออ้างอิง

Indicators
อินดิเคเตอร์

Stands
ขาตั้ง

Holtest
โฮลเทส

Inside Micrometer
ไมโครมิเตอร์วัดใน

Bore Gages
บอร์เกจ

Other Gages
เกจอื่นๆ

Accessories
อุปกรณ์เสริม



177-146



177-300

Suffix

177-*-12:** With Inspection Certificate
(provides a record of the calibrated diameter)

177-*-62:** With Inspection Certificate
(provides a record of the calibrated diameter)
and Calibration Certificate

177-*-82:** With Inspection Certificate
(provides a record of the calibrated diameter),
Calibration Certificate, and Traceability System Chart

Notes:

- 1) The Inspection Certificate is not a substitute for a calibration certificate as it is undated.
- 2) A more detailed inspection certificate describing roundness and cylindricity is available on request.

CERA Setting Rings



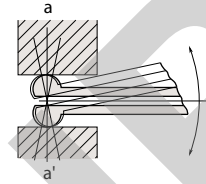
177-429



177-432

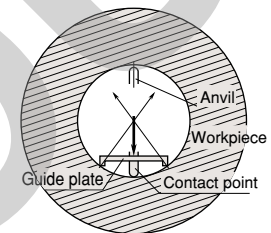
How to read the indicated value

Series 526



The 526 series has a gage head with high curvature. Alignment with the diameter (a-a') is achieved by rotating the gage head in the direction indicated by the arrow, and the reading is the maximum value read from the dial indicator.

Series 511

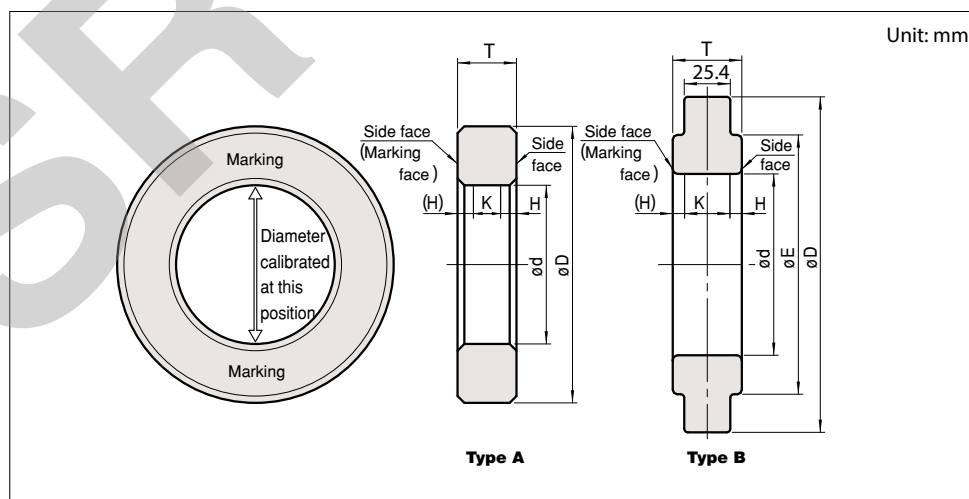


The 511 series provides a guide plate to align the setting ring diameter with the measurement axis of the bore gage.

FEATURE

- Used for quick and accurate setting of dial bore gages, Holtest, and inside micrometers.

DIMENSIONS



STEEL SETTING RINGS

Metric

Order No.	Nominal	Dimensions (mm)			Type	Accuracy				
		OD	OE	T		Tolerance between the nominal size the actual diameter (μm)	Uncertainty of marked diameter value (μm) ^{*2}	Roundness/Cylindricity (μm) ^{*2}	Distance from the side face H (mm)	Size of warranted calibration surface K (mm)
177-220	1mm	20	-	4	A	±10	±1.5	1	1.6	0.8
177-222	1.1mm	20	-	4	A	±10	±1.5	1	1.6	0.8
177-225	1.2mm	20	-	4	A	±10	±1.5	1	1.6	0.8
177-227	1.3mm	20	-	4	A	±10	±1.5	1	1.6	0.8
177-230	1.4mm	20	-	4	A	±10	±1.5	1	1.6	0.8
177-236	1.75mm	25	-	5	A	±10	±1.5	1	1.6	1.8
177-239	2mm	25	-	5	A	±10	±1.5	1	1.6	1.8
177-242	2.25mm	25	-	5	A	±10	±1.5	1	1.6	1.8
177-208	2.5mm	25	-	7	A	±10	±1.5	1	1.7	3.6
177-246	2.75mm	25	-	7	A	±10	±1.5	1	1.7	3.6
177-248	3mm	25	-	7	A	±10	±1.5	1	1.7	3.6
177-250	3.25mm	25	-	7	A	±10	±1.5	1	1.7	3.6
177-252	3.5mm	25	-	7	A	±10	±1.5	1	1.7	3.6
177-255	3.75mm	25	-	7	A	±10	±1.5	1	1.7	3.6
177-204	4mm	25	-	7	A	±10	±1.5	1	1.7	3.6
177-257	4.5mm	25	-	7	A	±10	±1.5	1	1.7	3.6
177-205	5mm	25	-	7	A	±10	±1.5	1	1.7	3.6
177-263	5.5mm	25	-	7	A	±10	±1.5	1	1.7	3.6
177-267	6mm	25	-	7	A	±10	±1.5	1	1.7	3.6
177-271	6.5mm	25	-	7	A	±10	±1.5	1	1.7	3.6
177-275	7mm	32	-	10	A	±10	±1.5	1	1.7	3.6
177-125	8mm	32	-	10	A	±10	±1.5	1	2.0	6.0
177-279	9mm	32	-	10	A	±10	±1.5	1	2.0	6.0
177-126	10mm	32	-	10	A	±10	±1.5	1	2.0	6.0
177-284	12mm	32	-	10	A	±10	±1.5	1	2.0	6.0
177-132	14mm	38	-	10	A	±10	±1.5	1	2.0	6.0
177-177	16mm	45	-	10	A	±10	±1.5	1	2.0	6.0

CERA SETTING RINGS

Metric

Order No.	Nominal	Dimensions (mm)			Type	Accuracy				
		OD	OE	T		Tolerance between the nominal size the actual diameter (μm)	Uncertainty of marked diameter value (μm) ^{*2}	Roundness/Cylindricity (μm) ^{*2}	Distance from the side face H (mm)	Size of warranted calibration surface K (mm)
177-418	4mm	25	-	7	A	±10	±1.5	1	1.7	3.6
177-420	6mm	25	-	7	A	±10	±1.5	1	1.7	3.6
177-423	8mm	32	-	10	A	±10	±1.5	1	2.0	6.0
177-424	10mm	32	-	10	A	±10	±1.5	1	2.0	6.0
177-425	12mm	32	-	10	A	±10	±1.5	1	2.0	6.0
177-427	16mm	45	-	10	A	±10	±1.5	1	2.0	6.0
177-429	20mm	45	-	10	A	±10	±1.5	1	2.0	6.0
177-430	25mm	53	-	15	A	±10	±1.5	1	3.2	8.6
177-431	30mm	71	-	15	A	±10	±1.5	1	3.2	8.6
177-432	35mm	71	-	15	A	±10	±1.5	1	3.2	8.6
177-433	40mm	71	-	15	A	±10	±1.5	1	3.2	8.6
177-434	45mm	85	-	15	A	±10	±1.5	1	3.2	8.6

Order No.	Nominal	Dimensions (mm)			Type	Accuracy				
		OD	OE	T		Tolerance between the nominal size the actual diameter (μm)	Uncertainty of marked diameter value (μm) ^{*2}	Roundness/Cylindricity (μm) ^{*2}	Distance from the side face H (mm)	Size of warranted calibration surface K (mm)
177-133	17mm	45	-	10	A	±10	±1.5	1	2.0	6.0
177-285	18mm	45	-	10	A	±10	±1.5	1	2.0	6.0
177-286	20mm	45	-	10	A	±10	±1.5	1	2.0	6.0
177-139	25mm	53	-	15	A	±10	±1.5	1	3.2	8.6
177-288	30mm	71	-	15	A	±10	±1.5	1	3.2	8.6
177-140	35mm	71	-	15	A	±10	±1.5	1	3.2	8.6
177-290	40mm	71	-	15	A	±10	±1.5	1	3.2	8.6
177-178	45mm	85	-	15	A	±20	±1.5	1	3.2	8.6
177-146	50mm	85	-	20	A	±20	±1.5	1	3.7	12.6
177-292	60mm	112	-	20	A	±20	±1.5	1	3.7	12.6
177-314	62mm	112	-	20	A	±20	±1.5	1.5	3.7	12.6
177-147	70mm	112	-	20	A	±20	±1.5	1.5	3.7	12.6
177-316	75mm	125	-	25	A	±20	±1.5	1.5	4.2	16.6
177-294	80mm	125	-	25	A	±20	±1.5	1.5	4.2	16.6
177-318	874mm	140	-	25	A	±20	±1.5	1.5	4.2	16.6
177-148	90mm	140	-	25	A	±20	±1.5	1.5	4.2	16.6
177-296	100mm	160	-	25	A	±20	±1.5	2	4.2	27.5
177-298	125mm	210	168		B	±20	±2.5	2	5.3	27.5
177-300	150mm	235	187		B	±20	±2.5	2	5.3	27.5
177-302	175mm	260	215		B	±20	±2.5	2.5	5.3	27.5
177-304	200mm	311	244	38.1	B	±20	±2.5	2.5	5.3	27.5
177-306	225mm	337	264	(25.4)	B	±20	±2.5	2.5	5.3	27.5
177-308	250mm	362	290		B	±20	±2.5	3	5.3	27.5
177-310	275mm	413	321		B	±20	±2.5	3	5.3	27.5
177-312	300mm	438	340		B	±20	±2.5	3	5.3	27.5

*1 Actual diameter is marked in 0.001 mm increments.
(Dimension measuring position is the center of the height T.)

*2 Cylindricity is defined as per JIS B 0621 Definitions and designations of geometrical deviations, Section 4.4 "Cylindricity." Cylindricity is measured using three cross-sections between the top and bottom face of a ring, namely, close to the face near each sides and the center.

Micrometer

ไมโครมิเตอร์

Inside Measurement

เครื่องมือวัดภายใน

Calipers

คาร์ลิเปอร์

Height Gages

เกจวัดความสูง

Linear Height

เครื่องมือวัดความสูง

Depth Gages

เกจวัดความลึก

Gauge Blocks

เกจบล็อก

Reference Gages

เครื่องมืออ้างอิง

Indicators

อินดิเคเตอร์

Stands

ขาตั้ง

Holttest

โฮลเทส

Inside Micrometer

ไมโครมิเตอร์วัดใน

Bore Gages

บอร์เกจ

Other Gages

เกจอื่นๆ

Accessories

อุปกรณ์เสริม

SMALL TOOLS

เครื่องมือวัดละเอียด

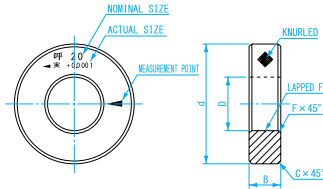
JSR Group Seiki

ริงเกจเหล็ก

STEEL RING GAUGE

Master gauge for internal diameter measurement. A wide range of sizes are in stock while custom size ring gauge is also available upon request.

SUB-ZERO Treatment (Cryogenic hardened) for improved durability



USE

• As a master gauge for "0" adjustment of measuring instruments such as bore gauge, inside micrometer, dial caliper, etc.

MATERIAL

• Alloy tool steel

FEATURES

• Provided with inspection report

Micrometer

ไมโครมิเตอร์

Inside

Measurement

เครื่องมือวัดภายใน

Calipers

คาร์ลิเปอร์

Height Gages

เกจวัดความสูง

Linear Height

เครื่องมือวัดความสูง

Depth Gages

เกจวัดความลึก

Gauge Blocks

เกจบล็อก

Reference Gages

เครื่องมืออ้างอิง

Indicators

อินดิเคเตอร์

Stands

ขาตั้ง

Holtest

โฮลเทส

Inside Micrometer

ไมโครมิเตอร์วัดใน

Bore Gages

บอร์เกจ

Other Gages

เกจอื่นๆ

Accessories

อุปกรณ์เสริม

SPECIFICATIONS

Size (mm)	Step (mm)	Out of Roundness (μm)	Out of Cylindricity (μm)	Tolerance (μm)	Handness (HV)
1 to less than 30	0.1 step	0.5	0.5	±1.0	653
30 to less than 50		0.8	0.8	±1.5	
50 to less than 60					
60 to less than 80	0.5 step	1.0	1.0	±2.0	772
80 to less than 100					
100 to less than 200	5.0 step	2.0	2.0	±5.0	

- Surface roughness: Within Ra0.1μm
- Squareness: 0.05/0100
- Parallelism: Within 0.015mm

<Standard Size List>

Size (mm)	Step (mm)	Handness (HV)
1 to less than 50	0.1 step	1.0 • 1.1 • 1.2 • 1.3 • 1.4 • 1.5 • 1.6 • 1.7 • 1.8 • 1.9 • 2.0 2.1 • 2.2 • 2.3 • 2.4 • 2.5 • 2.6 • 2.7 50.0
50 to less than 100	0.5 step	50.5 • 51.0 • 51.5 • 52.0 • 52.5 • 53.0 • 53.5 54.0 • 54.5 • 55.0 • 55.5 • 56.0 • 56.5 • 57.0 57.5 100.0
100 to less than 200	5.0 step	105.0 • 110.0 • 115.0 • 120.0 • 125.0 • 130.0 • 135.0 • 140.0 • 145.0 • 150.0 • 155.0 • 160.0 • 165.0 200.0

SIZE LIST

※Reference value

Size (mm)	Step (mm)	Out of Roundness (μm)	Out of Cylindricity (μm)	Tolerance (μm)	Handness (HV)
1 to less than 2.5		4			10g
2.5 to less than 5	22	5	0.4	0.3	10g
5 to less than 10	32	8	0.8		50g
10 to less than 15	38	10		0.5	80g
15 to less than 20	45	12	1.2		100g
20 to less than 25	53	14			200g
25 to less than 32	63	16	1.5	1.0	300g
32 to less than 40	71	18			400g
40 to less than 50	85	20			600~700g
50 to less than 60	100				0.9~1.1kg
60 to less than 70	112		2.0		1.1~1.3kg
70 to less than 80	125	24			1.4~1.6kg
80 to less than 90	140				1.7~1.9kg
90 to less than 100	160			1.5	2.3~2.6kg
100 to less than 110	180	30			3.7~4.1kg
110 to less than 120	190	35			4.7~5.1kg
120 to less than 130	200				5.0~5.5kg
130 to less than 140	210	38	2.4		5.7~6.3kg
140 to less than 160	230				6.6~8.2kg
160 to less than 180	260	40		2.0	8.6~10kg
180 to less than 200	280				9.4~11kg

ริงเกจเหล็กชุด

STEEL RING GAUGE SET

Ring gauge set consist of frequently-used sizes

SUB-ZERO TREATMENT (Cryogenic hardened) LAPPED FINISH



Order No.	Sk Code	Normal size	Pieces per set
RG-1	400001	1.0, 1.5, 2.0, 2.5, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0, 9.0, 10.0	12
RG-2	400002	11.0, 12.0, 13.0, 14.0, 15.0, 16.0, 17.0, 18.0, 19.0, 20.0, 22.0, 24.0	12
RG-3	400003	25.0, 26.0, 27.0, 28.0, 30.0, 32.0, 34.0, 35.0, 36.0, 37.0, 38.0, 40.0	12
RG-4	400004	42.0, 44.0, 45.0, 46.0, 47.0, 48.0, 50.0	7
RG-5	400005	52.0, 54.0, 55.0, 56.0, 58.0, 60.0, 65.0	7
RG-6	400006	68.0, 70.0, 75.0, 80.0	4
RG-7	400007	85.0, 90.0, 95.0, 100.0	4

ริงเกจเหล็กแบบมีตัวเช็ครอยสึก

STEEL RING GAUGE WITH MAINTENANCE LINE

Maintenance line series ring gauge now available

MATERIAL

• Alloy tool steel

FEATURES

- Maintenance line on steel ring gauge allows easy checking for gauge wear-out
- When line disappears, wear is more than 1μm
- Available for sizes: 15~50mm (1mm step)



ริงเกจเหล็กขนาดใหญ่

STEEL RING GAUGE LARGE SIZE

Up to 520mm manufacturable. Custom size ring gauge is also available upon request.

SUB-ZERO TREATMENT (Cryogenic hardened) for improved durability**■ Provided with aluminum case****USE**

• Alloy tool steel

FEATURES

• Provided with inspection report

SPECIFICATIONS

Size (mm)	Step (mm)	Out of Roundness (μm)	Out of Cylindricity (μm)	Tolerance (μm)	Hardness (HV)
200 to less 230	5.0 step			±7.0	653
230 to less 300					
300 to less 400	10.0	5.0	5.0	±8.0	772
400 to less 500	step			±9.0	
500 to less 520				±10.0	

• Surface roughness: Within Ra0.2μm

• Squareness: 0.1/0450

• Parallelism: Within 0.025mm

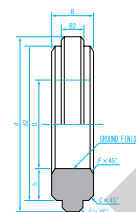
SIZE LIST

※Reference value

Size D (mm)	Outside Diameter (mm)		Thickness (mm)		h (mm)	Chamfering for outside diameter C (mm) *	Chamfering for inside diameter F (mm) *	Remarks	Weight (kg)
	d	d2	B	B2					
200 to less than 230	310	250 ~ 270	45		20				9 ~ 10
230 to less than 260	340	280 ~ 300							11 ~ 14
260 to less than 290	370	310 ~ 330							11 ~ 13
290 to less than 320	400	340 ~ 360							12 ~ 14
320 to less than 360	440	380 ~ 410		25		2.0	2.5	NOT Knurled	14 ~ 16
360 to less than 400	480	420 ~ 450							15 ~ 18
400 to less than 450	540	460 ~ 500			25				19 ~ 24
450 to less than 500	600	510 ~ 550	50						23 ~ 29
500 to less than 520	660	560 ~ 600							27 ~ 33

Order No.	Size (mm)
420500	205.0
421000	210.0
421500	215.0
422000	220.0
422500	225.0
423000	230.0
424000	240.0
425000	250.0
426000	260.0
427000	270.0
428000	280.0
429000	290.0
430000	300.0
431000	310.0
432000	320.0
433000	330.0
434000	340.0
435000	350.0

Order No.	Size (mm)
436000	360.0
437000	370.0
438000	380.0
439000	390.0
440000	400.0
441000	410.0
442000	420.0
443000	430.0
444000	440.0
445000	450.0
446000	460.0
447000	470.0
448000	480.0
449000	490.0
450000	500.0
451000	510.0
452000	520.0

**Micrometer**

ไมโครมิเตอร์

Inside Measurement

เครื่องมือวัดภายใน

Calipers

คาร์ลิสเปอร์

Height Gages

เกจวัดความสูง

Linear Height

เครื่องมือวัดความสูง

Depth Gages

เกจวัดความลึก

Gauge Blocks

เกจบล็อก

Reference Gages

เครื่องมืออ้างอิง

Indicators

อินดิเคเตอร์

Stands

ขาตั้ง

Holtest

โฮลเทส

Inside Micrometer

ไมโครมิเตอร์วัดใน

Bore Gages

บอร์เกจ

Other Gages

เกจอื่นๆ

Accessories

อุปกรณ์เสริม

SMALL TOOLS

เครื่องมือวัดละเอียด

SK Metal Seiki

ริงเกจคาร์ไบด์

CARBIDE RING GAUGE

Inner ring made of carbide, highly-durable material
LAPPED FINISH

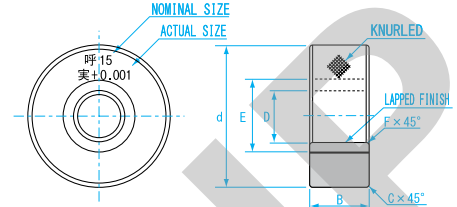


MATERIAL

• Steel with carbide insert

FEATURES

- Durable and long life
- The coefficient of thermal expansion is small
- Available for sizes: 15~50mm (1mm step) (1/2 of steel, $5 \times 10^{-6} K^{-1}$), so better tolerates temperature changes
- Less likely to be damaged due to high hardness
- Economical- Frequent periodic calibration not required
- Provided with inspection report



SPECIFICATIONS

Size (mm)	Step (mm)	Out of Roundness / Cylindricity (μm)	Tolerance (μm)	Hardness (HV)
1 to less than 30	-	0.5	±1	1200
30 to less than 50	-	0.8	±1.5	

- Surface roughness: Within Ra0.1μm
- Squareness: 0.05/Ø100
- Parallelism: Within 0.015mm

SIZE LIST

※Reference value

Size (mm)	Diameter of Carbide part E(mm)	Outside Diameter d (mm)	Thickness B (mm)	Chamfering for outside Diameter C(mm)*	Chamfering for inside Diameter F(mm)*
1 to less than 2.5	8	22	4	0.4	0.3
2.5 to less than 5	11	32	5	0.8	0.5
5 to less than 10	16	32	8	1.2	1.0
10 to less than 15	21	38	10	1.5	1.0
15 to less than 20	28	45	12	2.0	1.0
20 to less than 25	33	53	14	2.0	1.0
25 to less than 32	40	63	16	2.0	1.0
32 to less than 40	50	71	18	2.0	1.0
40 to less than 50	60	85	20	2.0	1.0

ริงเกจเซรามิก

CERAMIC RING GAUGE

Made of highly-durable material. Less affected by thermal expansion as well as free from rust.
LAPPED FINISH

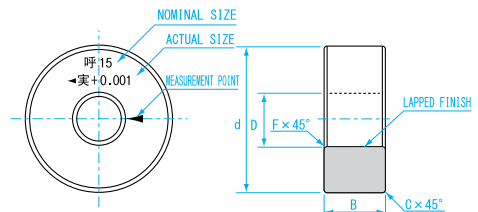


MATERIAL

• Ceramics

FEATURES

- Ceramic material is less susceptible to abrasion and aged deterioration than steel
- Free from rust and corrosion, and easy maintenance
- Non-magnetic body
- Does not deform with damage, resists scratches and forming burrs
- Lightweight and easy handling
- Size is laser marked
- Provided with inspection report



SPECIFICATIONS

Size (mm)	Step (mm)	Out of Roundness / Cylindricity (μm)	Tolerance (μm)
1 to less than 30	50 step	0.5	±1
30 to less than 50	50 step	0.8	±1.5

- Surface roughness: Within Ra0.1μm
- Squareness: 0.05/Ø100
- Parallelism: Within 0.015mm

SIZE LIST

※Reference value

Size (mm)	Outside Diameter d (mm)	Thickness B (mm)	Chamfering for outside Diameter C(mm)*	Chamfering for inside Diameter F(mm)*
3 to less than 10	32	8	0.8	0.5
10 to less than 15	38	10	1.2	1.0
15 to less than 20	45	12	1.5	1.0
20 to less than 25	53	14	2.0	1.0
25 to less than 32	63	16	2.0	1.0
32 to less than 40	71	18	2.0	1.0
40 to less than 50	85	20	2.0	1.0

Material Data

List	Material	Ceramic (Zircon)
Gravity	-	5.5 ~ 6.0
Hardness	HV	1100 ~ 1300
Bending Strength	MPa	4 ~ 8
Young's modulus	GPa	180 ~ 240
Coefficient of thermal expansion	10 ⁻⁶ /K	8 ~ 10.5
Heat conductivity	W/m·K	2 ~ 3.4

ริงเกจ

RING GAUGE WITH PROTECTIVE COVER

No-Slip and Easy to Handle, will increase productivity

LAPPED FINISH

MATERIAL

- Protective Cover: Anodized Aluminum
- Gauge: Steel / Carbide / Ceramic

FEATURES

- A ring gauge embedded in Aluminum Protective Cover
- Covered gauge is easier to handle with dirty hands Less susceptible to thermal expansion when holding a gauge by hand
- Less susceptible to thermal expansion when holding a gauge by hand
- Protects from chipping when dropped
- Provided with inspection report

SPECIFICATIONS

Size (mm)	Step (mm)	Out of Roundness/ Cylindricity (μm)	Tolerance (μm)
1 to less than 2 (Steel & Carbide only)	1mm step	0.5	±1.0
2 to less than 30			
30 to less than 50			

- Surface roughness: Within Ra0.1μm
- Squareness: 0.05/0100
- Parallelism: Within 0.015mm

CARBIDE RING GAUGE
(with Protective Cover)STEEL RING GAUGE
(with Protective Cover)CERAMIC RING GAUGE
(with Protective Cover)

Micrometer

ไมโครมิเตอร์

Inside
Measurement

เครื่องมือวัดภายใน

Calipers

คาร์ลิสเปอร์

Height Gages

เกจวัดความสูง

Linear Height

เครื่องมือวัดความสูง

Depth Gages

เกจวัดความลึก

Gauge Blocks

เกจบล็อก

Reference Gages

เครื่องมืออ้างอิง

Indicators

อินดิเคเตอร์

Stands

ขาตั้ง

Holtest

โฮลเทส

Inside Micrometer

ไมโครมิเตอร์วัดใน

Bore Gages

บอร์เกจ

Other Gages

เกจอื่นๆ

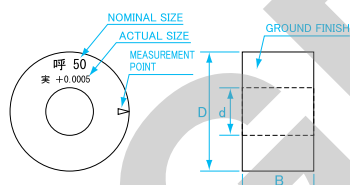
Accessories

อุปกรณ์เสริม

ริงเกจเหล็ก

STEEL RING GAUGE OD MODEL

Available from 40-400mm. Simple calibration or 0 adjustment of outside measuring instrument.



USE

- For quick calibration of micrometer

MATERIAL

- Alloy tool steel

FEATURES

- Custom sizes are available up to 400
- Size range: 40-400mm
- Provided with inspection report

SPECIFICATIONS

- Hardness: HV653-772

SPECIFICATIONS

Size D (mm)	Step (mm)	OD tolerance (μm)	Out of Roundness (μm)	Out of Cylindricity (μm)	Thickness (mm)	Hole Dimeter (mm)
40 to less than 50	10.0 Step	±3	1.5	1.5	30	20
50 to less than 70		±5	2.5	2.5		30
70 to less than 100						40
100 to less than 150						50
150 to less than 200		±10	5	5		80
200 to less than 300						160
300 to less than 350						200
350 to less than 375						250
375 to less than 400						

SMALL TOOLS

เครื่องมือวัดละเอียด

SK Metal Seiki

ริงเกจพิเศษ หรือทำตามแบบ

SPECIAL SHAPE- MULTIPLE-STEP GAUGE

※ Sample image



Customer Designs Available
Please contact us for inquiry

USE

- For quick calibration of micrometers (0-25mm)

MATERIAL

- Alloy tool steel

FEATURES

- OD pitch: 5*10*15*20*25mm Integrated type gauge

Micrometer

ไมโครมิเตอร์

Inside Measurement

เครื่องมือวัดภายใน

Calipers

คาร์ลิเปอร์

Height Gages

เกจวัดความสูง

Linear Height

เครื่องมือวัดความสูง

Depth Gages

เกจวัดความลึก

Gauge Blocks

เกจบล็อก

Reference Gages

เครื่องมืออ้างอิง

Indicators

อินดิเคเตอร์

Stands

ขาตั้ง

Holtest

โฮลเทส

Inside Micrometer

ไมโครมิเตอร์วัดใน

Bore Gages

บอร์เกจ

Other Gages

เกจอื่นๆ

Accessories

อุปกรณ์เสริม

ริงเกจพิเศษ หรือทำตามแบบ

SPECIAL SHAPE- MULTIPLE-STEP GAUGE / OD MODEL



※ Sample image

Customer Designs Available

Please contact us for inquiry

USE

- For calibration or 0 adjustment

MATERIAL

- Alloy tool steel

FEATURES

- Size combination is arranged on request

ริงเกจพิเศษ หรือทำตามแบบ

SPECIAL SHAPE - STEP GAUGE / INNER MODEL



※ Sample image

Customer Designs Available

Please contact us for inquiry

USE

- For 0 adjustment of dial bore gauge

MATERIAL

- Alloy tool steel

FEATURES

- Size combination is arranged on request

ริงเกจพิเศษ หรือทำตามแบบ

SPECIAL SHAPE- CUT OUT



※ Sample image

Customer Designs Available

Please contact us for inquiry

MATERIAL

- Alloy tool steel

FEATURES

- The special shape allows to hold the ring gauge with a fixture to prevent the gauge from moving