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Holtest ABSOLUTE Borematic

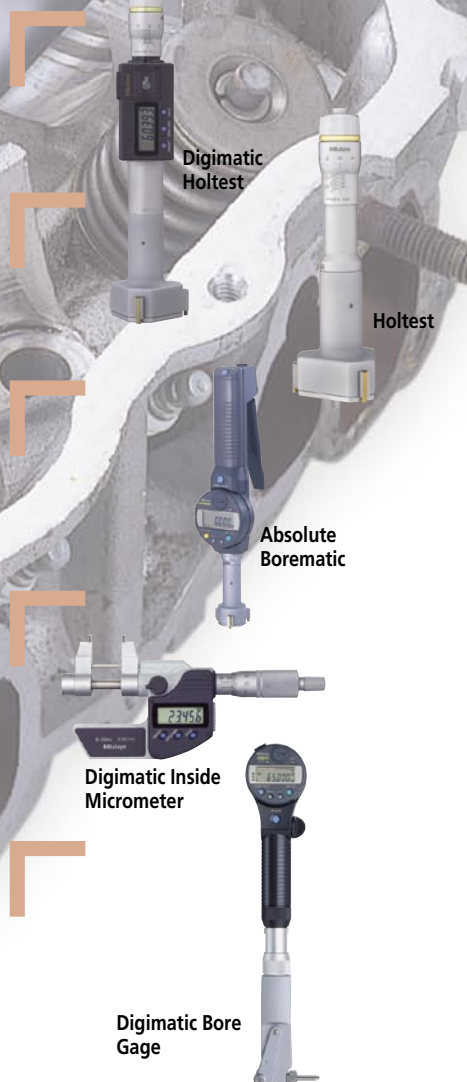


Inside Micrometer



Bore Gages

New Products



Digimatic Holtest

SERIES 468 — Three-Point Internal Micrometers

FEATURES

- Titanium-coated measuring pins (over 6mm range models) provide excellent durability and impact resistance and allow the instrument to measure right to the bottom of a blind hole.
- Large LCD readout.
- Functions available: Presetting, Zero-setting, Data hold, Data out put, Error alarm, Battery replacement alarm.
- With Ratchet Stop for constant force.
- Measurement can be taken closer to the bottom of the blind bore.
- Can measure deep holes by attaching an Extension rod (optional).
- Setting rings for origin point setting are optional.



468-131



468-138-10



468-144-10



Titanium coated contact points

DIMENSION AND MASS

Range	L
6 - 8mm	59
8 - 10mm	59
10 - 12mm	59
12 - 16mm	84
16 - 20mm	84
20 - 25mm	93
25 - 30mm	103.8
30 - 40mm	103.8
40 - 50mm	102.8
50 - 63mm	105.4
62 - 75mm	105.4
75 - 88mm	105.4
87 - 100mm	105.4
100 - 125mm	151.4
125 - 150mm	151.4
150 - 175mm	151.4
175 - 200mm	151.4
200 - 225mm	151.4
225 - 250mm	151.4
250 - 275mm	151.4
275 - 300mm	151.4

Unit: mm

Measuring a Blind Hole

The measuring pins held in the jaws permit measuring the diameter of a blind hole right down to the bottom.

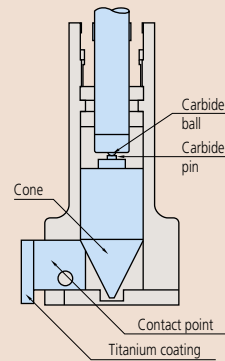
Range	a	b	c
2 - 6mm	—	—	2
6 - 12mm	2	—	2.5
12 - 20mm	0.3	5.6	3.5
20 - 30mm	0.3	8.3	5.2
30 - 50mm	0.3	13	10
50 - 100mm	0.3	17	14
100 - 300mm	12.4	21	13.8



(Refer to the page 9 for details.)

Technical Data

- Accuracy: Refer to the list of specifications.
 Resolution: 0.001mm, .00005"/0.001mm (models up to 4")
 or .0001"/0.001mm (models over 5")
 Contact point: Carbide or titanium coating*
*over 12mm/5" models
 Measuring method: Three-point method
 Display: LCD
 Battery: SR44 (1 pcs.), **938882**
 Battery life: Approx. 1.2 months under normal use



Function

- Zero-setting, Data hold, Automatic power ON/OFF, Data output, Preset, Function lock, Automatic power on/off, inch/mm conversion (inch/mm models)
 Alarm: Low voltage, Counting value composition error

Optional Accessory

- 05CZA662:** SPC cable (1m)
05CZA663: SPC cable (2m)
04AZB157: Mounting plate for stand
156-101: Stand
 — : Extension rod (Refer to the list of specifications.)
 — : Setting ring (See page 122.)



SPECIFICATIONS

Metric Individual		Inch/Metric Individual		with titanium coated contact points	
Range	Order No.	Range	Order No.	Accuracy*	Extension rod (optional)
6 - 8mm	468-161	.275" - .35"	468-261	±2µm (within 2µm)	100mm (952322)
8 - 10mm	468-162	.35" - .425"	468-262	±2µm (within 2µm)	100mm (952322)
10 - 12mm	468-163	.425" - .5"	468-263	±2µm (within 2µm)	100mm (952322)
12 - 16mm	468-164	.5" - .65"	468-264	±2µm (within 2µm)	150mm (952621)
16 - 20mm	468-165	.65" - .8"	468-265	±2µm (within 2µm)	150mm (952621)
20 - 25mm	468-166	.8" - 1"	468-266	±3µm (within 3µm)	150mm (952622)
25 - 30mm	468-167	1" - 1.2"	468-267	±3µm (within 3µm)	150mm (952622)
30 - 40mm	468-168	1.2" - 1.6"	468-268	±3µm (within 3µm)	150mm (952622)
40 - 50mm	468-169	1.6" - 2"	468-269	±3µm (within 3µm)	150mm (952622)
50 - 63mm	468-170	2" - 2.5"	468-270	±3µm (within 3µm)	150mm (952623)
62 - 75mm	468-171	2.5" - 3"	468-271	±3µm (within 3µm)	150mm (952623)
75 - 88mm	468-172	3" - 3.5"	468-272	±3µm (within 3µm)	150mm (952623)
87 - 100mm	468-173	3.5" - 4"	468-273	±3µm (within 3µm)	150mm (952623)
100 - 125mm	468-174	4" - 5"	468-274	±5µm (within 5µm)	150mm (952623)
125 - 150mm	468-175	5" - 6"	468-275	±5µm (within 5µm)	150mm (952623)
150 - 175mm	468-176	6" - 7"	468-276	±5µm (within 5µm)	150mm (952623)
175 - 200mm	468-177	7" - 8"	468-277	±5µm (within 5µm)	150mm (952623)
200 - 225mm	468-178	8" - 9"	468-278	±5µm (within 5µm)	150mm (952623)
225 - 250mm	468-179	9" - 10"	468-279	±5µm (within 5µm)	150mm (952623)
250 - 275mm	468-180	10" - 11"	468-280	±5µm (within 5µm)	150mm (952623)
275 - 300mm	468-181	11" - 12"	468-281	±5µm (within 5µm)	150mm (952623)

*Instrumental error excluding quantizing error (maximum error)

Complete-Unit Set

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

Metric		with titanium coated contact points		
Range	Order No.	Individual range	Setting rings included	Remarks
6 - 12mm	468-981	6-8, 8-10, 10-12mm	ø8mm, ø10mm	—
12 - 25mm	468-982	12-16, 16-20, 20-25mm	ø16mm, ø20mm	—
25 - 50mm	468-983	25-30, 30-40, 40-50mm	ø30mm, ø40mm	—
50 - 75mm	468-984	50-63, 62-75mm	ø62mm	—
75 - 100mm	468-985	75-88, 87-100mm	ø87mm	—

Inch/Metric		with titanium coated contact points		
Range	Order No.	Individual range	Setting rings included	Remarks
.275" - .5"	468-986	.275-.35", .35-.425", .425-.5"	.35" DIA., .425" DIA.	—
.5" - 1"	468-987	.5-.65", .65-.8", .8-1"	.65" DIA., .8" DIA.	—
1" - 2"	468-988	1-1.2", 1.2-1.6", 1.6-2"	1.2" DIA., 1.6" DIA.	—
2" - 3"	468-989	2-2.5", 2.5-3"	2.5" DIA.	—
3" - 4"	468-990	3-3.5", 3.5-4"	3.5" DIA.	—

Interchangeable-Head Set

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

Metric		with titanium coated contact points		
Range	Order No.	Individual range	Setting rings included	Remarks
6 - 12mm	468-971	6-8, 8-10, 10-12mm	ø8mm, ø10mm	with extension rod
12 - 20mm	468-972	12-16, 16-20mm	ø16mm.	with extension rod
20 - 50mm	468-973	20-25, 25-30, 30-40, 40-50mm	ø25mm, ø40mm	with extension rod
50 - 100mm	468-974	50-63, 62-75, 75-88, 87-100mm	ø62mm, ø87mm	with extension rod
100 - 200mm	468-975	100-125, 125-150, 150-175, 175-200mm	ø125mm, ø175mm	with extension rod

Inch/Metric		with titanium coated contact points		
Range	Order No.	Individual range	Setting rings included	Remarks
.275" - .5"	468-976	.275-.35", .35-.425", .425-.5"	.35" DIA., .425" DIA.	with extension rod
.5" - .8"	468-977	.5-.65", .65-.8"	.65" DIA.	with extension rod
.8" - 2"	468-978	.8-1", 1-1.2", 1.2-1.6", 1.6-2"	1" DIA., 1.6" DIA.	with extension rod
2" - 4"	468-979	2-2.5", 2.5-3", 3-3.5", 3.5-4"	2.5" DIA., 3.5" DIA.	with extension rod
4" - 8"	468-980	4-5", 5-6", 6-7", 7-8"	5" DIA., 7" DIA.	with extension rod



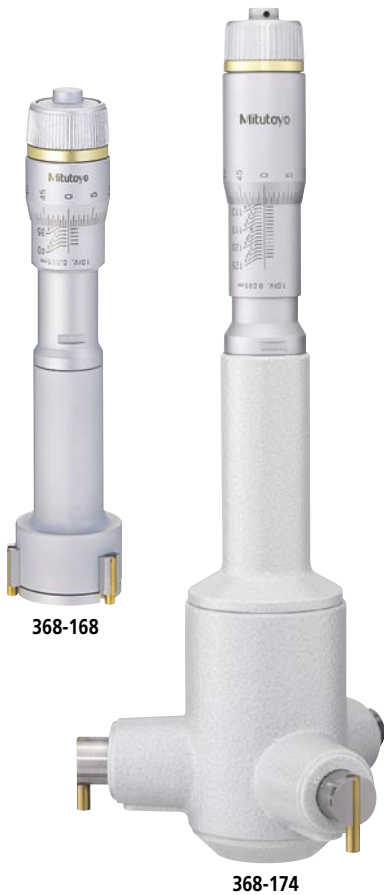
Holtest

SERIES 368 — Three-Point/Two-Point Internal Micrometers

These Holtests are versatile, self-centering three-point internal micrometers for the accurate and efficient direct-measurement of internal diameters. Three anvils, evenly spaced at 120° apart, contact the internal wall surfaces and find true alignment with the axis of the bore for accurate ID measurement.

FEATURES

- Titanium-coated measuring pins (over 12mm range models) provide excellent durability and impact resistance and allow the instrument to measure right to the bottom of a blind hole.
- Measurement can be taken closer to the bottom of the blind bore.
- Can measure deep holes using an Extension rod (optional) which is available on models over 6mm (.275") measuring range.
- With Ratchet Stop for constant force.
- Setting Rings for zero point adjustment are optional.



Two-point contact type



Titanium coated contact points (excluding models up to 12mm/.5")

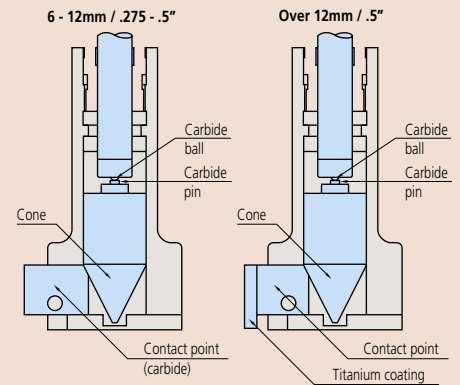


(Refer to the page 9 for details.)

Technical Data

Accuracy: Refer to the list of specifications.
 Graduation: 0.001mm, 0.005mm (models over 12mm),
 .0001" or .0002" (models over .5")

Range	Measuring method	Contact-point material
2 - 3mm .08 - .12"	Two-point method	Carbide
3 - 6mm .12 - .28"	Two-point method	Carbide
6 - 12mm .275 - .5"	Three-point method	Carbide
over 12mm over .5"	Three-point method	Titanium coating (1700-2000Hv)



Optional Accessory

- : Extension rod (Refer to the list of specifications.)
- : Setting ring (See page 122.)

DIMENSION

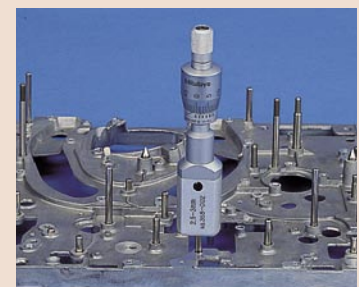
Unit: mm

Measuring a Blind Hole

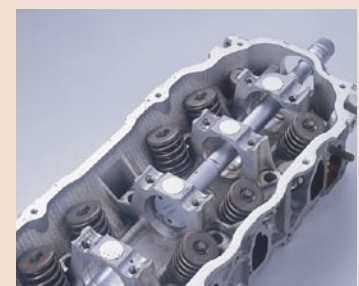
The measuring pins held in the jaws permit measuring the diameter of a blind hole right down to the bottom.

Range	L	Range	L
2 - 2.5mm	12	40 - 50mm	102
2.5 - 3mm	12	50 - 63mm	105
3 - 4mm	22	62 - 75mm	105
4 - 5mm	22	75 - 88mm	105
5 - 6mm	22	87 - 100mm	105
6 - 8mm	59	100 - 125mm	161
8 - 10mm	59	125 - 150mm	161
10 - 12mm	59	150 - 175mm	161
12 - 16mm	82	175 - 200mm	161
16 - 20mm	82	200 - 225mm	161
20 - 25mm	94	225 - 250mm	161
25 - 30mm	94	250 - 275mm	161
30 - 40mm	102	275 - 300mm	161

Range	a	b	c
2 - 6mm	—	—	2
6 - 12mm	2	—	2.5
12 - 20mm	0.3	5.6	3.5
20 - 30mm	0.3	8.3	5.2
30 - 50mm	0.3	13	10
50 - 100mm	0.3	17	14
100 - 300mm	12.4	21	13.8



Using the optional extension rod



SPECIFICATIONS

Metric		Individual	Inch		Individual		with titanium coated contact points
Range	Order No.		Range	Order No.		Accuracy*	Extension Rod (optional)
2 - 2.5mm	368-001		.08" - .1"	368-021		±2µm (within 2µm)	—
2.5 - 3mm	368-002		.1" - .12"	368-022		±2µm (within 2µm)	—
3 - 4mm	368-003		.12" - .16"	368-023		±2µm (within 2µm)	—
4 - 5mm	368-004		.16" - .2"	368-024		±2µm (within 2µm)	—
5 - 6mm	368-005		.2" - .24"	368-025		±2µm (within 2µm)	—
—	—		.24" - .28"	368-026		±2µm (within 2µm)	—
6 - 8mm	368-101-10		.275" - .35"	368-201-10		±2µm (within 2µm)	100mm (952322)
8 - 10mm	368-102-10		.35" - .425"	368-202-10		±2µm (within 2µm)	100mm (952322)
10 - 12mm	368-103-10		.425" - .5"	368-203-10		±2µm (within 2µm)	100mm (952322)
12 - 16mm	368-164		.5" - .65"	368-264		±2µm (within 2µm)	150mm (952621)
16 - 20mm	368-165		.65" - .8"	368-265		±2µm (within 2µm)	150mm (952621)
20 - 25mm	368-166		.8" - 1"	368-266		±3µm (within 3µm)	150mm (952622)
25 - 30mm	368-167		1" - 1.2"	368-267		±3µm (within 3µm)	150mm (952622)
30 - 40mm	368-168		1.2" - 1.6"	368-268		±3µm (within 3µm)	150mm (952622)
40 - 50mm	368-169		1.6" - 2"	368-269		±3µm (within 3µm)	150mm (952622)
50 - 63mm	368-170		2" - 2.5"	368-270		±3µm (within 3µm)	150mm (952623)
62 - 75mm	368-171		2.5" - 3"	368-271		±3µm (within 3µm)	150mm (952623)
75 - 88mm	368-172		3" - 3.5"	368-272		±3µm (within 3µm)	150mm (952623)
87 - 100mm	368-173		3.5" - 4"	368-273		±3µm (within 3µm)	150mm (952623)
100 - 125mm	368-174		4" - 5"	368-274		±5µm (within 5µm)	150mm (952623)
125 - 150mm	368-175		5" - 6"	368-275		±5µm (within 5µm)	150mm (952623)
150 - 175mm	368-176		6" - 7"	368-276		±5µm (within 5µm)	150mm (952623)
175 - 200mm	368-177		7" - 8"	368-277		±5µm (within 5µm)	150mm (952623)
200 - 225mm	368-178		8" - 9"	368-278		±5µm (within 5µm)	150mm (952623)
225 - 250mm	368-179		9" - 10"	368-279		±5µm (within 5µm)	150mm (952623)
250 - 275mm	368-180		10" - 11"	368-280		±5µm (within 5µm)	150mm (952623)
275 - 300mm	368-181		11" - 12"	368-281		±5µm (within 5µm)	150mm (952623)

*Instrumental error (maximum error)

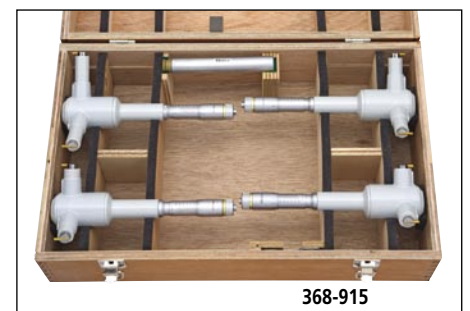
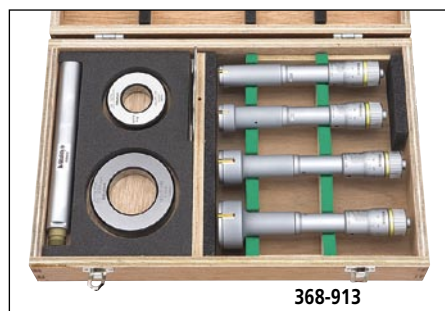
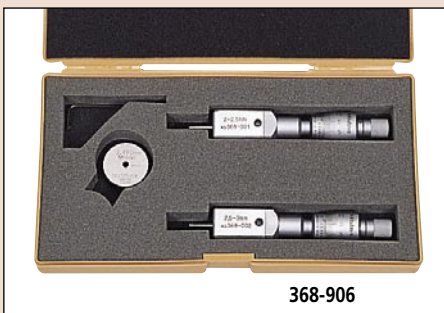
Complete-Unit Set

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

Metric		Individual range	Setting rings included	Remarks
Range	Order No.			
2 - 3mm	368-906	2-2.5, 2.5-3mm	ø2.5mm	—
3 - 6mm	368-907	3-4, 4-5, 5-6mm	ø4mm, ø5mm	—
6 - 12mm	368-901-10	6-8, 8-10, 10-12mm	ø8mm, ø10mm	with extension rod
12 - 20mm	368-912	12-16, 16-20mm	ø16mm	with extension rod
20 - 50mm	368-913	20-25, 25-30, 30-40, 40-50mm	ø25mm, ø40mm	with extension rod
50 - 100mm	368-914	50-63, 62-75, 75-88, 87-100mm	ø62mm, ø87mm	with extension rod
100 - 200mm	368-915	100-125, 125-150, 150-175, 175-200mm	ø125mm, ø175mm	with extension rod

Inch		Individual range	Setting rings included	Remarks
Range	Order No.			
.08" - .12"	368-926	.08-.1", .1-.12"	.1" DIA.	—
.12" - .28"	368-927	.12-.16", .16-.2", .2-.24", .24-.28"	.16" DIA., .24" DIA.	—
.275" - .5"	368-921-10	.275-.35", .35-.425", .425-.5"	.35" DIA., .5" DIA.	with extension rod
.5" - .8"	368-917	.5-.65", .65-.8"	.65" DIA.	with extension rod
.8" - 2"	368-918	.8-1", 1-1.2", 1.2-1.6", 1.6-2"	1" DIA., 1.6" DIA.	with extension rod
2" - 4"	368-919	2-2.5", 2.5-3", 3-3.5", 3.5-4"	2.5" DIA., 3.5" DIA.	with extension rod
4" - 8"	368-920	4-5", 5-6", 6-7", 7-8"	5" DIA., 7" DIA.	with extension rod

*.0001" graduation



Holtest (Type II)

SERIES 368 — Three-Point Internal Micrometers

FEATURES

- The Holtests (type II) have three contact points made of alloyed steel.
- Economy price.
- Measurement can be taken closer to the bottom of the blind bore.
- Can measure deep holes using an Extension Rod (optional).
- With Ratchet Stop for constant force.
- Setting Rings for zero point adjustment are optional.

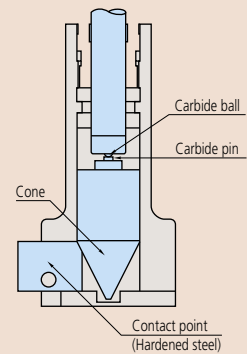


(Refer to the page 9 for details.)



Technical Data

Accuracy: Refer to the list of specifications.
 Graduation: 0.005mm or .0002"
 Measuring method: Three-point method
 Contact point: Hardened steel



Optional Accessory

- : Extension rod (Refer to the list of specifications.)
- : Setting ring (See page 122.)

DIMENSION AND MASS

Unit: mm

Range	L
12 - 16mm	82
16 - 20mm	82
20 - 25mm	94
25 - 30mm	94
30 - 40mm	102
40 - 50mm	102
50 - 63mm	105
62 - 75mm	105
75 - 88mm	105
87 - 100mm	105
100 - 125mm	161
125 - 150mm	161
150 - 175mm	161
175 - 200mm	161
200 - 225mm	161
225 - 250mm	161
250 - 275mm	161
275 - 300mm	161

Measuring a Blind Hole

The measuring pins held in the jaws permit measuring the diameter of a blind hole right down to the bottom.

Range	a	b
12 - 20mm	2.6	3.5
20 - 30mm	3.4	5.2
30 - 50mm	3.4	10
50 - 100mm	3.4	14
100 - 300mm	19.6	13.8

SPECIFICATIONS

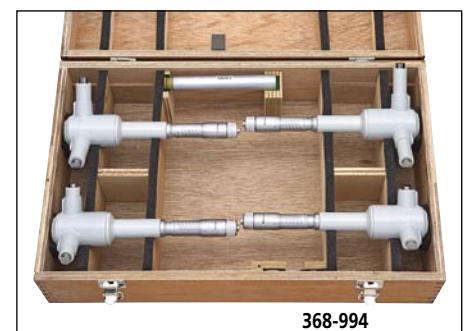
Metric		Individual	Inch		Individual	Accuracy	Extension Rod (optional)
Range	Order No.		Range	Order No.			
12 - 16mm	368-764		.5" - .65"	368-864		±2µm (within 2µm)	150mm (952621)
16 - 20mm	368-765		.65" - .8"	368-865		±2µm (within 2µm)	150mm (952621)
20 - 25mm	368-766		.8" - 1"	368-866		±3µm (within 3µm)	150mm (952622)
25 - 30mm	368-767		1" - 1.2"	368-867		±3µm (within 3µm)	150mm (952622)
30 - 40mm	368-768		1.2" - 1.6"	368-868		±3µm (within 3µm)	150mm (952622)
40 - 50mm	368-769		1.6" - 2"	368-869		±3µm (within 3µm)	150mm (952622)
50 - 63mm	368-770		2" - 2.5"	368-870		±3µm (within 3µm)	150mm (952623)
62 - 75mm	368-771		2.5" - 3"	368-871		±3µm (within 3µm)	150mm (952623)
75 - 88mm	368-772		3" - 3.5"	368-872		±3µm (within 3µm)	150mm (952623)
87 - 100mm	368-773		3.5" - 4"	368-873		±3µm (within 3µm)	150mm (952623)
100 - 125mm	368-774		4" - 5"	368-874		±5µm (within 5µm)	150mm (952623)
125 - 150mm	368-775		5" - 6"	368-875		±5µm (within 5µm)	150mm (952623)
150 - 175mm	368-776		6" - 7"	368-876		±5µm (within 5µm)	150mm (952623)
175 - 200mm	368-777		7" - 8"	368-877		±5µm (within 5µm)	150mm (952623)
200 - 225mm	368-778		8" - 9"	368-878		±5µm (within 5µm)	150mm (952623)
225 - 250mm	368-779		9" - 10"	368-879		±5µm (within 5µm)	150mm (952623)
250 - 275mm	368-780		10" - 11"	368-880		±5µm (within 5µm)	150mm (952623)
275 - 300mm	368-781		11" - 12"	368-881		±5µm (within 5µm)	150mm (952623)

Complete-Unit Set

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

Metric				
Range	Order No.	Individual range	Setting rings included	Remarks
12 - 20mm	368-991	12-16, 16-20mm	ø16mm	with extension rod
20 - 50mm	368-992	20-25, 25-30, 30-40, 40-50mm	ø25mm, ø40mm	with extension rod
50 - 100mm	368-993	50-63, 62-75, 75-88, 87-100mm	ø62mm, ø87mm	with extension rod
100 - 200mm	368-994	100-125, 125-150, 150-175, 175-200mm	ø125mm, ø175mm	with extension rod

Inch				
Range	Order No.	Individual range	Setting rings included	Remarks
.5" - .8"	368-995	.5-.65", .65-.8"	.65" DIA.	with extension rod
.8" - 2"	368-996	.8-1", 1-1.2", 1.2-1.6", 1.6-2"	1" DIA., 1.6" DIA.	with extension rod
2" - 4"	368-997	2-2.5", 2.5-3", 3-3.5", 3.5-4"	2.5" DIA., 3.5" DIA.	with extension rod
4" - 8"	368-998	4-5", 5-6", 6-7", 7-8"	5" DIA., 7" DIA.	with extension rod



Borematic

SERIES 568 — ABSOLUTE Digimatic Snap-Open Bore Gages

The Borematic enables the operator to take measurements more accurately and more quickly than ever before. One the origin point is set with the ORIGIN button, the Borematic retains the setting for the entire battery life. Therefore no longer repeated origin setting (presetting) is necessary.

FEATURES

- Titanium-coated measuring pins (models over 12mm range) provide excellent durability and impact resistance and allow the instrument to measure right to the bottom of a blind hole.
- Large LCD digits of 8.5mm height for error-free reading.
- 330-degree rotatable display unit for easy reading at any angle.
- GO/NO-GO judgment function.
- The ABSOLUTE linear encoder eliminates the fear of over-speed errors.
- With SPC data output.
- Setting rings for origin point setting are optional.
- Can measure deep holes by attaching an optional extension rod.
- Measurement can be taken closer to the bottom of a blind bore.



Titanium coated contact points (*-10" suffix models only)

DIMENSION

Unit: mm

Measuring a Blind Hole

The measuring pins held in the jaws permit measuring the diameter of a blind hole right down to the bottom.

Range	L
6 - 12mm	83
12 - 20mm	53
20 - 30mm	59
30 - 50mm	67
50 - 125mm	75

() : 50-125mm model

Range	a	b	c
6 - 12mm	2	—	2.5
12 - 20mm	0.3	5.6	3.5
20 - 30mm	0.3	8.3	5.2
30 - 50mm	0.3	13	10
50 - 125mm	0.3	17	14



(Refer to the page 9 for details.)



Absolute System Patented by MITUTOYO

(Refer to the page 9 for details.)

Technical Data

Accuracy: Refer to the list of specifications.
 Resolution: 0.001mm or .00005"/0.001mm
 Contact point: Carbide or titanium coating*
 (*over 12mm/.5" models)
 Measuring method: Three-point method
 Display: LCD
 Battery: SR44 (1 pc.) (938882)
 Battery life: Approx. 1 year

Functions

Zero-setting, Preset, GO/NO-GO judgment, Data hold, Power ON/OFF, Data output, inch/mm conversion (inch/mm models)

Optional Accessory

- 937387: SPC cable (1m)
- 965013: SPC cable (2m)
- 952322: Extension rod for 6 - 12mm (.275" - .500") gages
- 952621: Extension rod for 12 - 20mm (.50" - .80") gages
- 952622: Extension rod for 20 - 50mm (.8" - 2.0") gages
- 952623: Extension rod for 50 - 125mm (2.0" - 5.0") gages
- : Setting ring (See page 122.)



Interchangeable-Contact Head Set



568-971

Complete-Unit Set



568-983-10

SPECIFICATION

Metric Individual		
Range	Order No.	Accuracy*
6 - 8mm	568-331	±5µm (within 5µm)
8 - 10mm	568-332	±5µm (within 5µm)
10 - 12mm	568-333	±5µm (within 5µm)
12 - 16mm	568-334-10	±5µm (within 5µm)
16 - 20mm	568-335-10	±5µm (within 5µm)
20 - 25mm	568-336-10	±6µm (within 6µm)
25 - 30mm	568-337-10	±6µm (within 6µm)
30 - 40mm	568-338-10	±6µm (within 6µm)
40 - 50mm	568-339-10	±6µm (within 6µm)
50 - 63mm	568-340-10	±6µm (within 6µm)
62 - 75mm	568-341-10	±6µm (within 6µm)
75 - 88mm	568-342-10	±6µm (within 6µm)
87 - 100mm	568-343-10	±6µm (within 6µm)
100 - 113mm	568-344-10	±6µm (within 6µm)
112 - 125mm	568-345-10	±6µm (within 6µm)
50 - 75mm	568-346-10	±6µm (within 6µm)
75 - 100mm	568-347-10	±6µm (within 6µm)
100 - 125mm	568-348-10	±6µm (within 6µm)

*Instrumental error excluding quantizing error (maximum error)

Inch/Metric Individual		
Range	Order No.	Accuracy
.275" - .350"	568-431	±.00025" (within .00025")
.350" - .425"	568-432	±.00025" (within .00025")
.425" - .500"	568-433	±.00025" (within .00025")
.50" - .65"	568-434-10	±.00025" (within .00025")
.65" - .80"	568-435-10	±.00025" (within .00025")
.8" - 1.0"	568-436-10	±.0003" (within .0003")
1.0" - 1.2"	568-437-10	±.0003" (within .0003")
1.2" - 1.6"	568-438-10	±.0003" (within .0003")
1.6" - 2.0"	568-439-10	±.0003" (within .0003")
2.0" - 2.5"	568-440-10	±.0003" (within .0003")
2.5" - 3.0"	568-441-10	±.0003" (within .0003")
3.0" - 3.5"	568-442-10	±.0003" (within .0003")
3.5" - 4.0"	568-443-10	±.0003" (within .0003")
4.0" - 4.5"	568-444-10	±.0003" (within .0003")
4.5" - 5.0"	568-445-10	±.0003" (within .0003")
2.0" - 3.0"	568-446-10	±.0003" (within .0003")
3.0" - 4.0"	568-447-10	±.0003" (within .0003")
4.0" - 5.0"	568-448-10	±.0003" (within .0003")

Complete-Unit Set

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

Metric Individual				
Range	Order No.	Individual range	Setting rings included	Remarks
6 - 12mm	568-981	6-8, 8-10, 10-12mm	ø8mm, ø10mm	
12 - 25mm	568-982-10	12-16, 16-20, 20-25mm	ø16mm, ø20mm	
25 - 50mm	568-983-10	25-30, 30-40, 40-50mm	ø30mm, ø40mm	
50 - 75mm	568-984-10	50-63, 62-75mm	ø62mm	
75 - 100mm	568-985-10	75-88, 87-100mm	ø87mm	
50 - 100mm	568-986-10	50-75*, 75-100mm*	ø62mm, ø82mm	

*interchangeable contact points (4 sets)

Inch Individual				
Range	Order No.	Individual range	Setting rings included	Remarks
.275" - .5"	568-987	.275-.35", .35-.425", .425-.5"	ø.35" DIA, ø.425" DIA	
.5" - 1"	568-988-10	.5-.65", .65-.8", .8-1"	ø.65" DIA, ø.8" DIA	
1" - 2"	568-989-10	1-1.2", 1.2-1.6", 1.6-2"	ø1.2" DIA, ø1.6" DIA	
2" - 3"	568-990-10	2-2.5", 2.5-3"	ø2.5" DIA	
3" - 4"	568-991-10	3-3.5", 3.5-4"	ø3.5" DIA	
2" - 4"	568-992-10	2-3"*, 3-4"*	ø2.5" DIA, ø3.5" DIA	

*interchangeable contact points (4 sets)

Interchangeable-Head Set

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

Metric Individual				
Range	Order No.	Individual range	Setting rings included	Remarks
6 - 12mm	568-971	6-8, 8-10, 10-12mm	ø8mm, ø10mm	
12 - 25mm	568-972-10	12-16, 16-20, 20-25mm	ø16mm, ø20mm	
25 - 50mm	568-973-10	25-30, 30-40, 40-50mm	ø25mm, ø40mm	
50 - 100mm	568-975-10	50-63, 62-75, 75-88, 87-100mm	ø62mm, ø87mm	
50 - 100mm	568-976-10	50-75*, 75-100mm*	ø62mm, ø82mm	

*interchangeable contact points (4 sets)

Inch Individual				
Range	Order No.	Individual range	Setting rings included	Remarks
.275" - .5"	568-987	.275-.35", .35-.425", .425-.5"	ø.35" DIA, ø.425" DIA	
.5" - 1"	568-988-10	.5-.65", .65-.8", .8-1"	ø.65" DIA, ø.8" DIA	
1" - 2"	568-989-10	1-1.2", 1.2-1.6", 1.6-2"	ø1.2" DIA, ø1.6" DIA	
3" - 4"	568-991-10	2-2.5", 2.5-3", 3-3.5", 3.5-4"	ø2.5" DIA, ø3.5" DIA	
2" - 4"	568-992-10	2-3"*, 3-4"*	ø2.5" DIA, ø3.5" DIA	

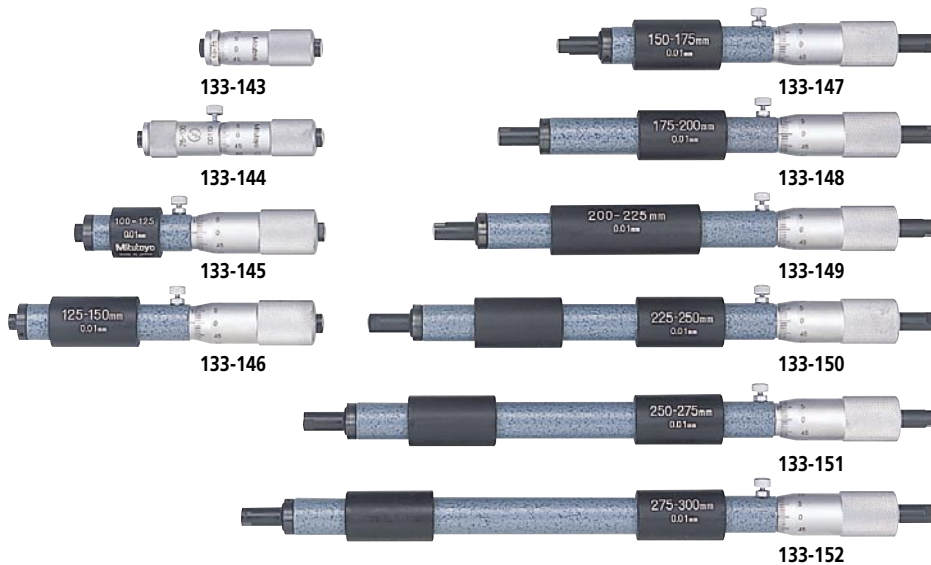
*interchangeable contact points (4 sets)

Tubular Inside Micrometers

SERIES 133 — Single Rod Type

FEATURES

- With locking clamp.
- Zero point can be readjusted by twisting the micrometer head sleeve. A key wrench is supplied.
- Clear, crisp graduations on the satin chrome finished micrometer head.
- Carbide-tipped measuring faces.

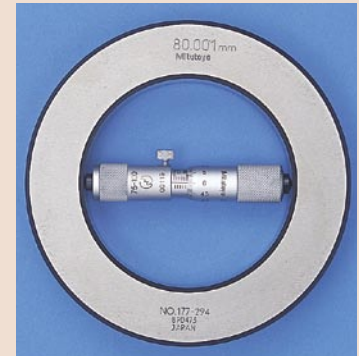


Technical Data

Accuracy: Refer to the list of specifications.
Graduation: 0.01mm or .001"

Optional Accessory

Setting ring (See page 122.)

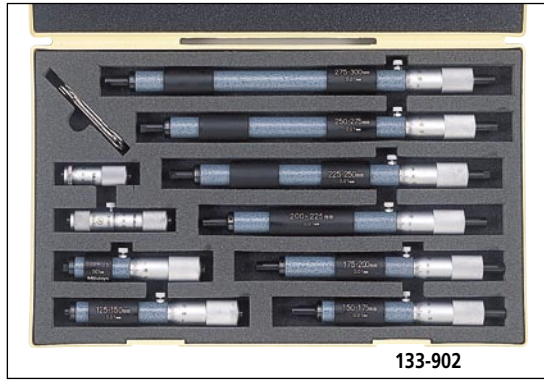


SPECIFICATIONS

Metric	Individual	
Range	Order No.	Accuracy
50 - 75mm	133-143	±3µm
75 - 100mm	133-144	±4µm
100 - 125mm	133-145	±5µm
125 - 150mm	133-146	±5µm
150 - 175mm	133-147	±5µm
175 - 200mm	133-148	±5µm
200 - 225mm	133-149	±5µm
225 - 250mm	133-150	±6µm
250 - 275mm	133-151	±6µm
275 - 300mm	133-152	±6µm
300 - 325mm	133-153	±7µm
325 - 350mm	133-154	±7µm
350 - 375mm	133-155	±7µm
375 - 400mm	133-156	±8µm
400 - 425mm	133-157	±8µm
425 - 450mm	133-158	±8µm
450 - 475mm	133-159	±9µm
475 - 500mm	133-160	±9µm
500 - 525mm	133-161	±9µm
525 - 550mm	133-162	±10µm
550 - 575mm	133-163	±10µm
575 - 600mm	133-164	±10µm
600 - 625mm	133-165	±11µm
625 - 650mm	133-166	±11µm
650 - 675mm	133-167	±11µm
675 - 700mm	133-168	±12µm

Metric	Individual	
Range	Order No.	Accuracy
700 - 725mm	133-169	±12µm
725 - 750mm	133-170	±12µm
750 - 775mm	133-171	±13µm
775 - 800mm	133-172	±13µm
800 - 825mm	133-173	±13µm
825 - 850mm	133-174	±14µm
850 - 875mm	133-175	±14µm
875 - 900mm	133-176	±14µm
900 - 925mm	133-177	±15µm
925 - 950mm	133-178	±15µm
950 - 975mm	133-179	±15µm
975 - 1000mm	133-180	±16µm

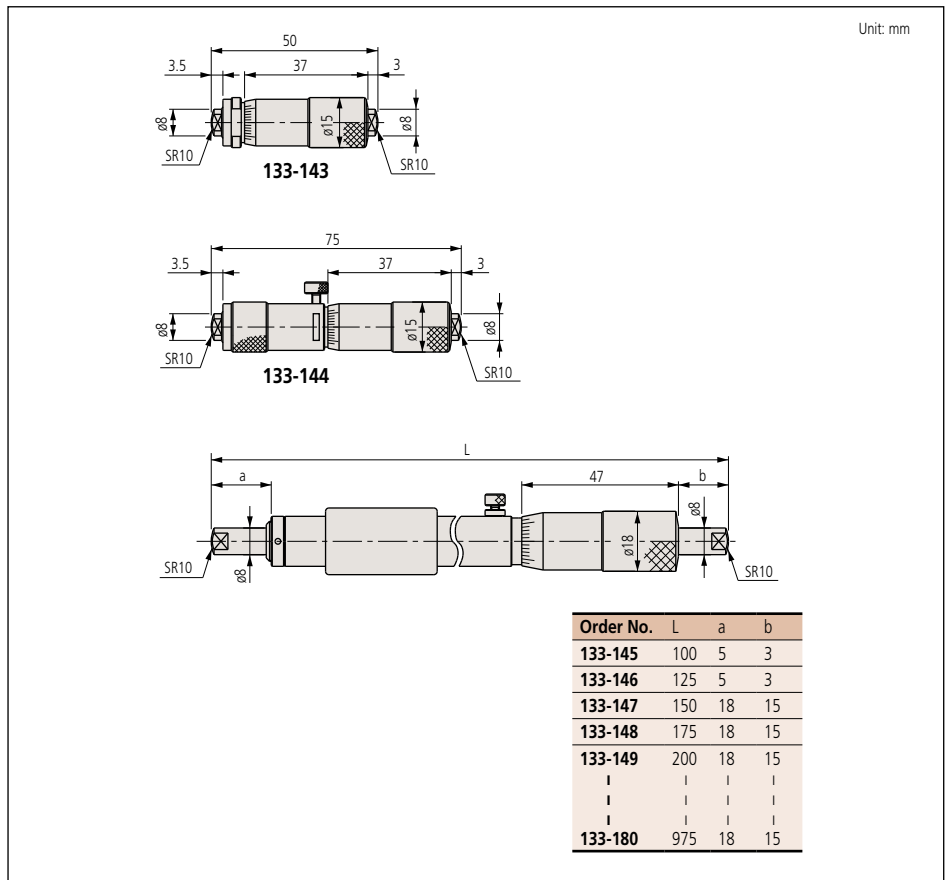
Inch	Individual	
Range	Order No.	Accuracy
2" - 3"	133-223	±.00015"
3" - 4"	133-224	±.0002"
4" - 5"	133-225	±.00025"
5" - 6"	133-226	±.00025"
6" - 7"	133-227	±.00025"
7" - 8"	133-228	±.00025"
8" - 9"	133-229	±.00025"
9" - 10"	133-230	±.0003"
10" - 11"	133-231	±.0003"
11" - 12"	133-232	±.0003"



Metric			Micrometer set		
Range	Order No.	Assortment of micrometers	Range	Order No.	Assortment of micrometers
50 - 150mm (4 mikes/set)	133-901	<ul style="list-style-type: none"> • 133-143, 133-144, 133-145, 133-146 • with fitted case 	50 - 300mm (10 mikes/set)	133-902	<ul style="list-style-type: none"> • 133-143, 133-144, 133-145, 133-146, 133-147, 133-148, 133-149, 133-150, 133-151, 133-152 • with fitted case

Inch			Micrometer set		
Range	Order No.	Assortment of micrometers	Range	Order No.	Assortment of micrometers
2" - 6" (4 mikes/set)	133-903	<ul style="list-style-type: none"> • 133-223, 133-224, 133-225, 133-226 • with fitted case 	2" - 12" (10 mikes/set)	133-904	<ul style="list-style-type: none"> • 133-223, 133-224, 133-225, 133-226, 133-227, 133-228, 133-229, 133-230, 133-231, 133-232 • with fitted case

DIMENSION



Inside Micrometers

SERIES 141 — Interchangeable Rod Type

FEATURES

- Wide range of ID measurements with interchangeable rods.
- Each interchangeable rod is marked with its measuring range.
- The sizes of interchangeable rods can be adjusted with spacing collars.
- Both micrometer head and furnished rods are satin-chrome finished throughout.



141-101



When using the extension rod



Technical Data

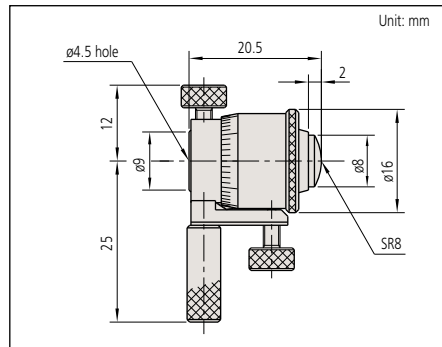
Accuracy: $\pm(6+L/50)\mu\text{m}^*$
^{*} L = Maximum measuring length (mm)
 Fraction rounded up
 Graduation: 0.01mm or .001"

Optional Accessory

— : Setting ring (See page 122.)



DIMENSION



SPECIFICATIONS

Metric

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

*with carbide tipped face

Inch

Range	Order No.	Travel of micrometer head	Remarks
1" - 1.25"	141-002 / 141-004*	.25"	—
1" - 2"	141-102 / 141-104*	.25"	with 2 rods
2" - 2.5"	141-026 / 141-028*	.5"	—
2" - 8"	141-208 / 141-214*	.5"	with 3 rods
2" - 12"	141-233 / 141-215*	.5"	with 5 rods
8" - 9"	141-010 / 141-012*	1"	—
4" - 20"	141-121	1"	with 3 rods
4" - 40"	141-122	1"	with 8 rods

*with carbide tipped face



Digimatic Tubular Inside Micrometers

SERIES 337 — Extension Rod Type / SERIES 339 — Extension Pipe Type

FEATURES

- Wide range of ID measurements by combining extension rods (pipes) and anvils with the micrometer head.
- The 339 series uses highly-durable extension pipes.
- Carbide-tipped measuring faces.



337-201



339-291

Technical Data

Accuracy: $\pm(3+n+L/50)\mu\text{m}^*$
 Excluding quantizing error
 *n = Number of rod, L = Maximum measuring length (mm), Fraction rounded up
 Resolution: 0.001mm or .0001"/0.001mm
 Display: LCD
 Battery: SR44 (1 pcs.), **938882**
 Battery life: Approx. 8 months under normal use

Function

Zero-setting, Preset, Data hold, Automatic power ON/OFF, Data output, inch/mm conversion (inch/mm models)
 Alarm: Low voltage, Counting value composition error

Optional Accessory

937387: SPC cable (1m)
965013: SPC cable (2m)
 _____: Setting ring (See page 122.)



Metric — Extension rod type

Range	Order No.	Travel of micrometer head	Extension rods
200 - 1000mm	337-201	25mm	25mm, 50mm, 100mm (2 pcs.), 200mm, 300mm
200 - 1500mm	337-202	25mm	25mm, 50mm, 100mm, 200mm, 300mm (3 pcs.)

Inch/Metric — Extension rod type

Range	Order No.	Travel of micrometer head	Extension rods
8" - 40"	337-203	1"	1", 2", 4" (2 pcs.), 8", 12"
8" - 60"	337-204	1"	1", 2", 4", 8", 12" (3 pcs.)

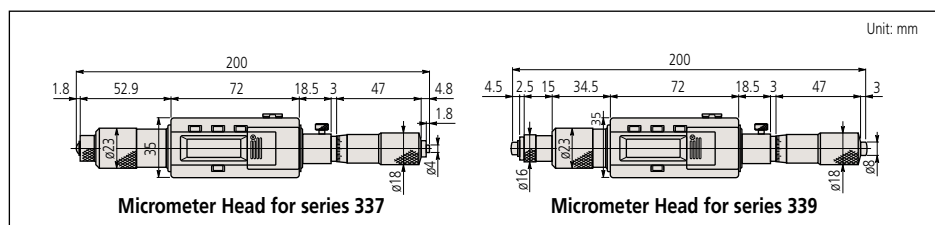
Metric — Extension pipe type

Range	Order No.	Travel of micrometer head	Extension pipes
200 - 1000mm	339-291	25mm	25mm, 50mm, 100mm, 200mm, 400mm
200 - 2000mm	339-292	25mm	25mm, 50mm, 100mm, 200mm (2 pcs.), 400mm (3 pcs.)

Inch/Metric — Extension pipe type

Range	Order No.	Travel of micrometer head	Extension pipes
8" - 40"	339-293	1"	1", 2", 4", 8", 16"
8" - 80"	339-294	1"	1", 2", 4", 8" (2 pcs.), 16" (3 pcs.)

DIMENSION



Tubular Inside Micrometers

SERIES 137 — Extension Rod Type, SERIES 139 — Extension Pipe Type, SERIES 140 — Extension Pipe Type

FEATURES

- Wide range of ID measurements by combining extension rods (pipes) and anvils with the micrometer head.
- Carbide-tipped measuring faces are available. (series 137)
- The 139 and 140 series use highly-durable/ large-diameter extension pipes.



137-205



139-177

SPECIFICATIONS

Metric — Extension rod type

Range	Order No.	Travel of micrometer head	Extension rods
50 - 63mm	137-011 / 137-013*	13mm	—
50 - 150mm	137-201 / 137-206*	13mm	13mm, 25mm, 50mm
50 - 300mm	137-202 / 137-207*	13mm	13mm, 25mm, 50mm (2 pcs.), 100mm
50 - 500mm	137-203 / 137-208*	13mm	13mm, 25mm, 50mm (2 pcs.), 100mm, 200mm
50 - 1000mm	137-204 / 137-209*	13mm	13mm, 25mm, 50mm (2 pcs.), 100mm, 200mm (2 pcs.), 300mm
50 - 1500mm	137-205 / 137-210*	13mm	13mm, 25mm, 50mm (2 pcs.), 100mm, 200mm (3 pcs.), 300mm (2 pcs.)

*with carbide tipped face

Inch — Extension rod type

Range	Order No.	Travel of micrometer head	Extension rods
2" - 2.5"	137-012 / 137-014*	.5"	—
2" - 6"	137-211 / 137-216*	.5"	.5", 1", 2"
2" - 12"	137-212 / 137-217*	.5"	.5", 1", 2" (2 pcs.), 4"
2" - 20"	137-213 / 137-218*	.5"	.5", 1", 2" (2 pcs.), 4", 8"
2" - 40"	137-214 / 137-219*	.5"	.5", 1", 2" (2 pcs.), 4", 8" (2 pcs.), 12"
2" - 60"	137-215 / 137-220*	.5"	.5", 1", 2" (2 pcs.), 4", 8" (3 pcs.), 12" (2 pcs.)

*with carbide tipped face

Technical Data

Accuracy:

- Series 137, 139: $\pm(3+n+L/50)\mu\text{m}^*$
 - Series 140: $\pm(7+n+L/50)\mu\text{m}^*$
- *n = Number of rod, L = Maximum measuring length (mm), Fraction rounded up

Graduation: 0.01mm or .001"

Optional Accessory

— : Setting ring (See page 122.)

Metric Extension pipe type

Range	Order No.	Travel of micrometer head	Extension pipes
100 - 125mm	139-001	25mm	—
100 - 500mm	139-173	25mm	25mm, 50mm, 100mm, 200mm
100 - 900mm	139-174	25mm	25mm, 50mm, 100mm, 200mm, 400mm
100 - 1300mm	139-175	25mm	25mm, 50mm, 100mm, 200mm, 400mm (2 pcs.)
100 - 1700mm	139-176	25mm	25mm, 50mm, 100mm, 200mm, 400mm (3 pcs.)
100 - 2100mm	139-177	25mm	25mm, 50mm, 100mm, 200mm, 400mm (4 pcs.)
1000 - 2000mm	140-157	50mm	50mm, 100mm (2 pcs.), 200mm, 500mm
1000 - 3000mm	140-158	50mm	50mm, 100mm (2 pcs.), 200mm, 500mm, 1000mm
1000 - 4000mm	140-159	50mm	50mm, 100mm (2 pcs.), 200mm, 500mm, 1000mm (2 pcs.)
1000 - 5000mm	140-160	50mm	50mm, 100mm (2 pcs.), 200mm, 500mm, 1000mm (3 pcs.)

Inch Extension pipe type

Range	Order No.	Travel of micrometer head	Extension pipes
4" - 5"	139-002	1"	—
4" - 20"	139-178	1"	1", 2", 4", 8"
4" - 36"	139-179	1"	1", 2", 4", 8", 16"
4" - 52"	139-180	1"	1", 2", 4", 8", 16" (2 pcs.)
4" - 68"	139-181	1"	1", 2", 4", 8", 16" (3 pcs.)
4" - 84"	139-182	1"	1", 2", 4", 8", 16" (4 pcs.)
40" - 80"	140-161	2"	2", 4" (2 pcs.), 8", 20"
40" - 120"	140-162	2"	2", 4" (2 pcs.), 8", 20", 40"
40" - 160"	140-163	2"	2", 4" (2 pcs.), 8", 20", 40" (2 pcs.)
40" - 200"	140-164	2"	2", 4" (2 pcs.), 8", 20", 40" (3 pcs.)

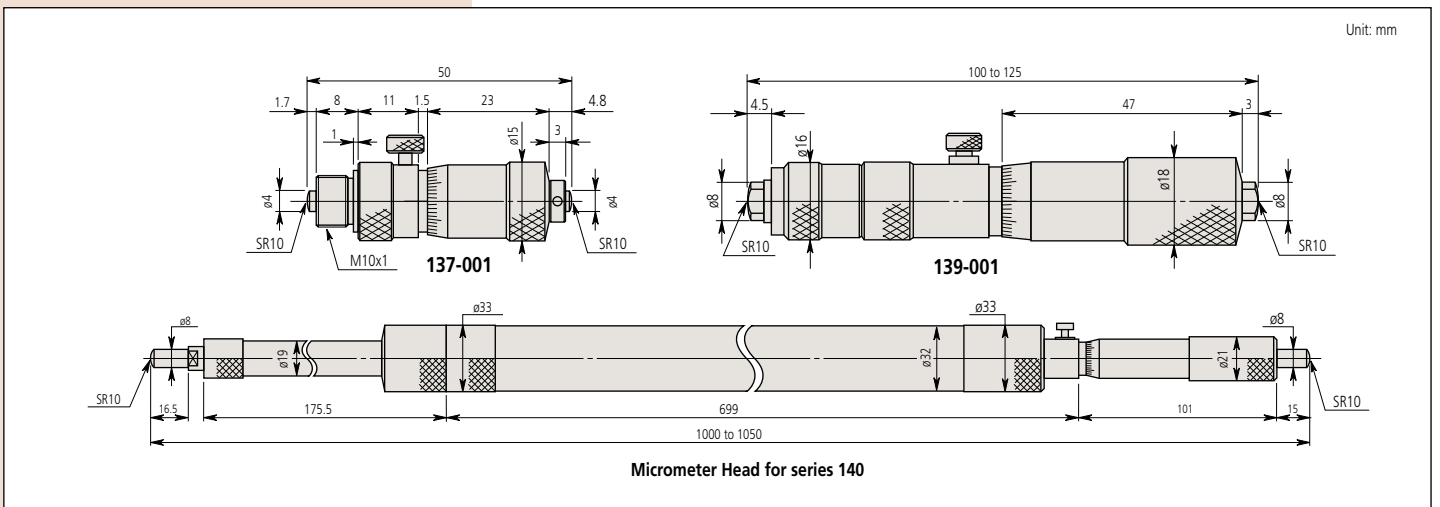


137-011



139-001

DIMENSION

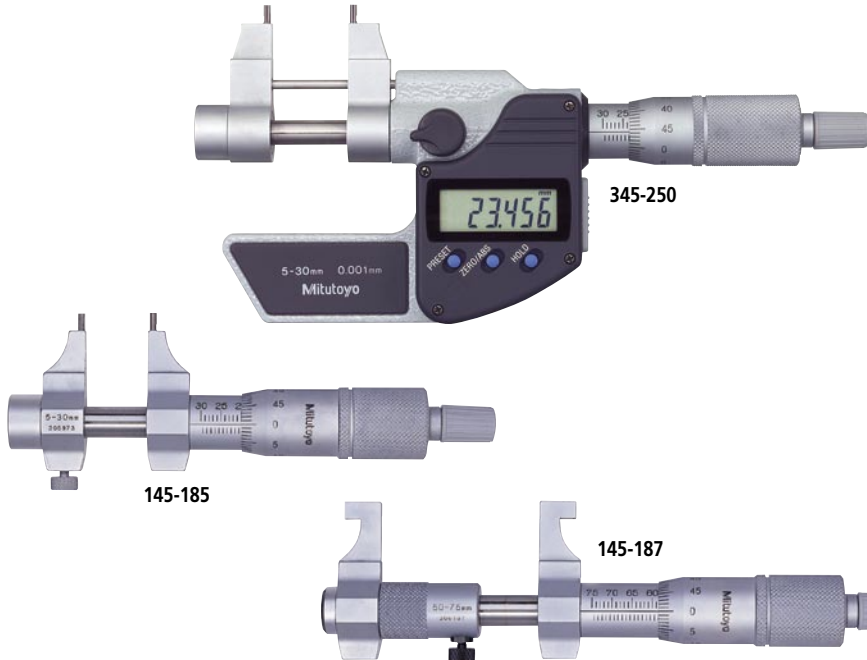


Inside Micrometers

SERIES 345, 145 — Caliper Type

FEATURES

- Caliper type jaws are made of high-grade, tool steel.
- Locking clamp for positive locking of spindle.
- Satin-chrome finished.
- A special holder is available to be used with Mitutoyo Micrometer Stand.



Technical Data

Accuracy: Refer to the list of specifications.
(excluding quantizing error for digital models)
Resolution*: 0.01mm or .00005"/0.001mm
Graduation**: 0.01mm or .001"
Measuring faces: Carbide tipped
Display*: LCD
Battery*: SR44 (1 pc.), **938882**
Battery life*: Approx. 8 months under normal use
*Digital models **Analog models

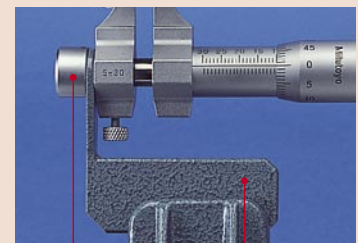
Function of Digital Model

Zero-setting, Preset, Data hold, Automatic power ON/OFF,
Data output, inch/mm conversion (inch/mm models)
Alarm: Low voltage, Counting value composition error

Optional Accessory

05CZA662: SPC cable with data switch (1m)
05CZA663: SPC cable with data switch (2m)
: Setting ring (See page 122.)

For **145-185, 145-186, 145-193, 145-194**



Cap (300401)

Holder (300400)

SPECIFICATIONS

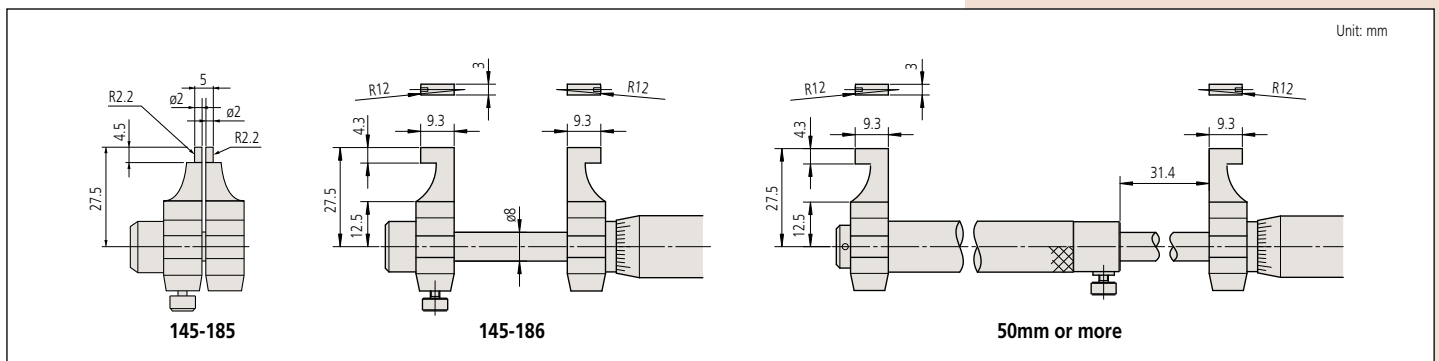
Metric	Order No.	Accuracy
5 - 30mm	345-250	±5μm
25 - 50mm	345-251	±6μm

Inch/Metric	Order No.	Accuracy
.2" - 1.2"	345-350	±.00025"
1" - 2"	345-351	±.0003"

Metric	Order No.	Accuracy
5 - 30mm	145-185	±5μm
25 - 50mm	145-186	±6μm
50 - 75mm	145-187	±7μm
75 - 100mm	145-188	±8μm
100 - 125mm	145-189	±9μm
125 - 150mm	145-190	±9μm
150 - 175mm	145-191	±10μm
175 - 200mm	145-192	±10μm
200 - 225mm	145-217	±11μm
225 - 250mm	145-218	±11μm
250 - 275mm	145-219	±12μm
275 - 300mm	145-220	±12μm

Inch	Order No.	Accuracy
.2" - 1.2"	145-193	±.00025"
1" - 2"	145-194	±.0003"
2" - 3"	145-195	±.00035"
3" - 4"	145-196	±.0004"

DIMENSION



Unit: mm



(Refer to the page 9 for details.)

Inside Micro Checker

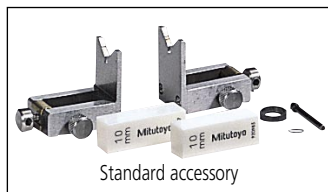
SERIES 515

FEATURES

- The Inside Micro Checker is designed to efficiently check the zero point of a tubular inside micrometer.
- Each measuring block is made of zirconia-based ceramic and it is free from deterioration and dimensional changes over time.



515-585



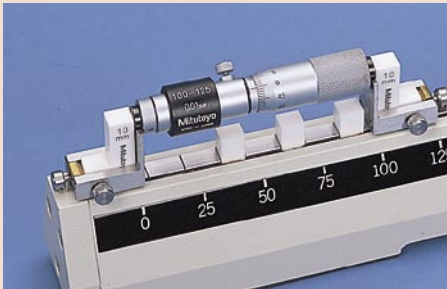
Standard accessory

Technical Data

Block pitch accuracy: $\pm(0.001+L/150000)$ mm*
 *L = Length to check (mm)

Optional Accessory

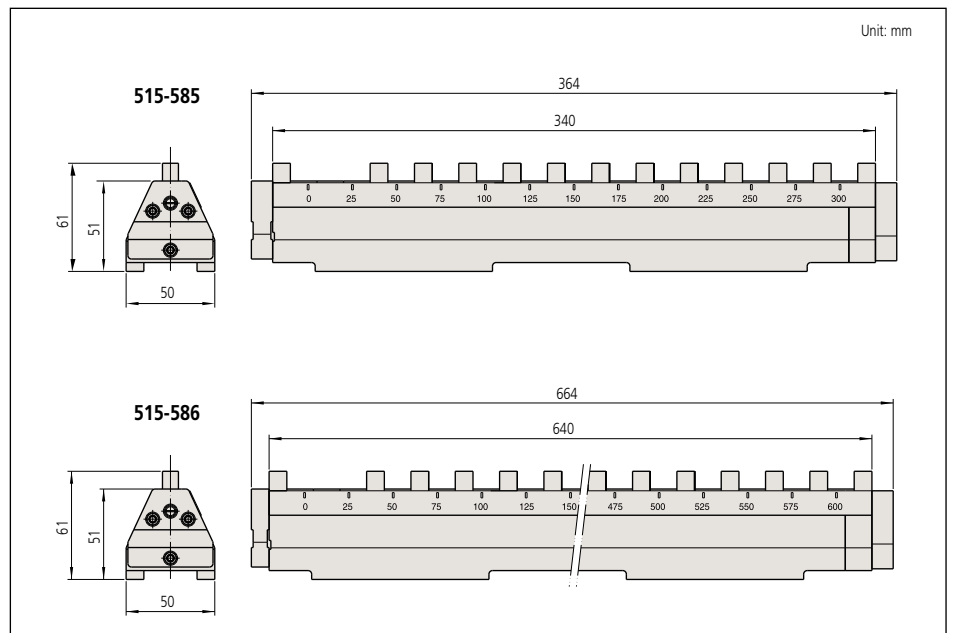
- 602160:** Wooden case for 300mm Inside Micro Checker
602163: Wooden case for 600mm Inside Micro Checker



SPECIFICATIONS

Range	Order No.	Length to check
300mm	515-585	25, 50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300mm
600mm	515-586	25, 50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400, 425, 450, 475, 500, 525, 550, 575, 600mm

DIMENSION



Bore Gages

SERIES 526 — for Extra Small Holes

These Bore Gages measure diameters of small holes. The radial displacement of split-ball contact is converted to axial displacement of measuring rod, which is shown on the dial indicator.

FEATURES

- Optional stand (215-120M) is available for efficient measurement of multiple small holes.



526-172



526-127

SPECIFICATIONS

Metric		
Range	Order No.	Probe depth (D)
0.95 - 1.55mm	526-172*	11.5mm
1.5 - 4mm	526-162*	17.5, 22.5mm
3.7 - 7.3mm	526-152*	32mm
7 - 10mm	526-124	56mm
10 - 18mm	526-125	62mm
0.95 - 1.55mm	526-173*	11.5mm
1.5 - 4mm	526-163*	17.5, 22.5mm
3.7 - 7.3mm	526-153*	32mm
7 - 10mm	526-126	56mm
10 - 18mm	526-127	62mm

Inch		
Range	Order No.	Probe depth (D)
.037" - .061"	526-176*	.45"
.06" - .155"	526-166*	.68", .88"
.145" - .29"	526-156*	1.25"
.3" - .4"	526-122	2.2"
.4" - .7"	526-123	2.4"
.3" - .4"	526-119	2.2"
.4" - .7"	526-120	2.4"

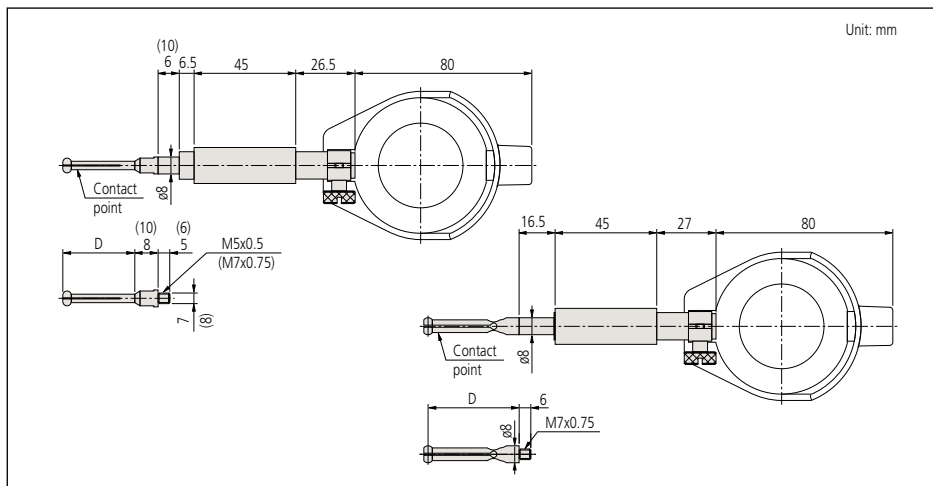
*Provided with setting rings

.0001" graduation (w/ 29235B-10) .0005" graduation (w/ 29225B)

*Provided with setting rings

0.001mm graduation (w/ 21095B-10) 0.01mm graduation (w/ 20465B)

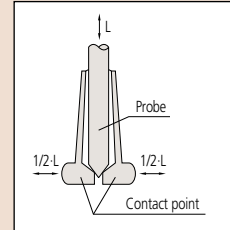
DIMENSION



Technical Data

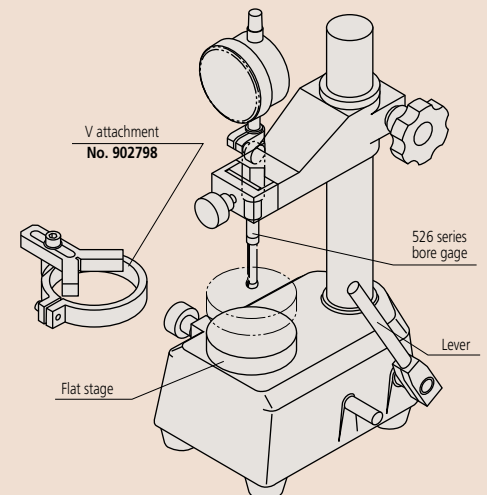
Accuracy: 4µm
 Repeatability: 2µm
 Graduation: 0.01mm, 0.001mm, .0005" or .00001"

Contact Point



Optional Accessory

Setting ring (See page 122.)
 215-120M: Bore gage stand



Bore Gages

SERIES 511 — for Small Holes

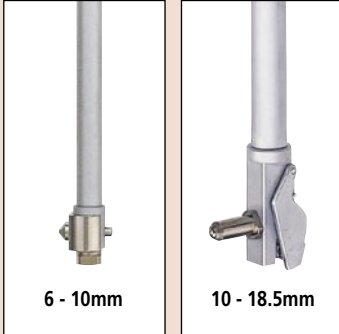
FEATURES

- Its interchangeable anvils are made of alloyed steel.
- The dial indicator is fully protected by a rugged cover.

Technical Data

Accuracy: 5µm
 Repeatability: 2µm
 Graduation: 0.01mm, 0.001mm, .0005 or .0001"

Contact Point



6 - 10mm

10 - 18.5mm

Optional Accessory

Setting ring (See page 122.)



511-204

SPECIFICATIONS

Metric

Range	Order No.	Probe depth
6 - 10mm	511-210	50mm
10 - 18.5mm	511-203	100mm
6 - 10mm	511-211	50mm
10 - 18.5mm	511-204	100mm

0.001mm graduation
(w/ 21095B-10)

0.01mm graduation
(w/ 20465B)

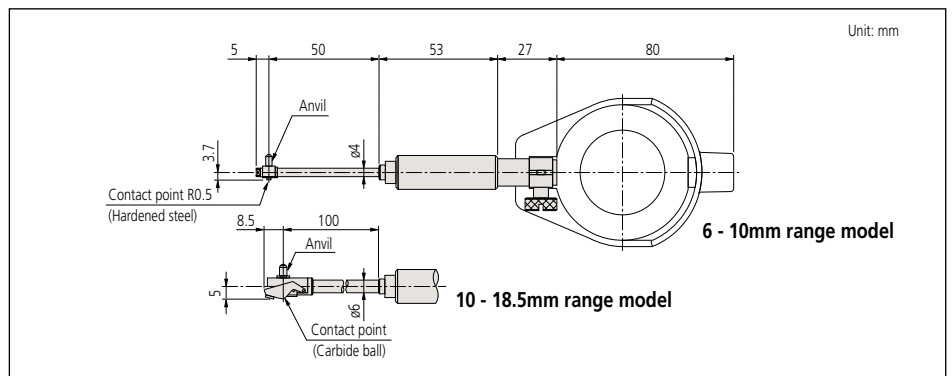
Inch

Range	Order No.	Probe depth
.24" - .4"	511-212	2"
.4" - .74"	511-206	4"
.24" - .4"	511-213	2"
.4" - .74"	511-207	4"

.0001" graduation
(w/ 29235B-10)

.0005" graduation
(w/ 29225B)

DIMENSION



Bore Gages

SERIES 511

Mitutoyo offers a complete selection of Bore Gages, all of them with interchangeable anvils and necessary accessories to perform close tolerance ID measurements.



511-173

FEATURES

- Most popular Bore Gages.
- Carbide-tipped contact points for durability.
- The dial indicator is fully protected by a rugged cover.
- Optional extension rods can be attached for measuring deep holes.
- Economy Bore Gage Sets are also available.

SPECIFICATIONS

Metric		Individual
Range	Order No.	Probe depth
18 - 35mm	511-167	100mm
35 - 60mm	511-168	150mm
50 - 100mm	511-169	150mm
50 - 150mm	511-170	150mm
100 - 160mm	511-178	150mm
160 - 250mm	511-179	250mm
250 - 400mm	511-180	250mm
18 - 35mm	511-171	100mm
35 - 60mm	511-172	150mm
50 - 100mm	511-173	150mm
50 - 150mm	511-174	150mm
100 - 160mm	511-175	150mm
160 - 250mm	511-176	250mm
250 - 400mm	511-177	250mm

Inch		Individual
Range	Order No.	Probe depth
.7" - 1.4"	511-163	4"
1.4" - 2.5"	511-164	6"
2" - 4"	511-165	6"
2" - 6"	511-166	6"
4" - 6.5"	511-187	6"
6.5" - 10"	511-188	10"
10" - 16"	511-189	10"
.7" - 1.4"	511-159	4"
1.4" - 2.5"	511-160	6"
2" - 4"	511-161	6"
2" - 6"	511-162	6"
4" - 6.5"	511-184	6"
6.5" - 10"	511-185	10"
10" - 16"	511-186	10"

Metric		Bore Gage Sets
Range	Order No.	Number of probes
18 - 150mm	511-902	3
18 - 150mm	511-901	3

Inch		Bore Gage Sets
Range	Order No.	Number of probes
.7" - 6"	511-912	3
.7" - 6"	511-911	3

0.001mm graduation
(w/ 21095B-10)

0.01mm graduation
(w/ 20465B)

.0001" graduation
(w/ 29235B-10)

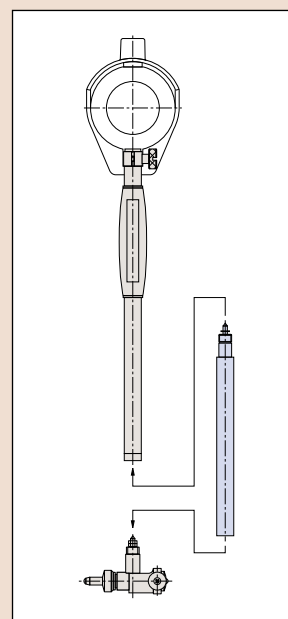
.0005" graduation
(w/ 29225B)

Technical Data

Accuracy: 5µm
Repeatability: 2µm
Graduation: 0.01mm, 0.001mm, .0005 or .0001"

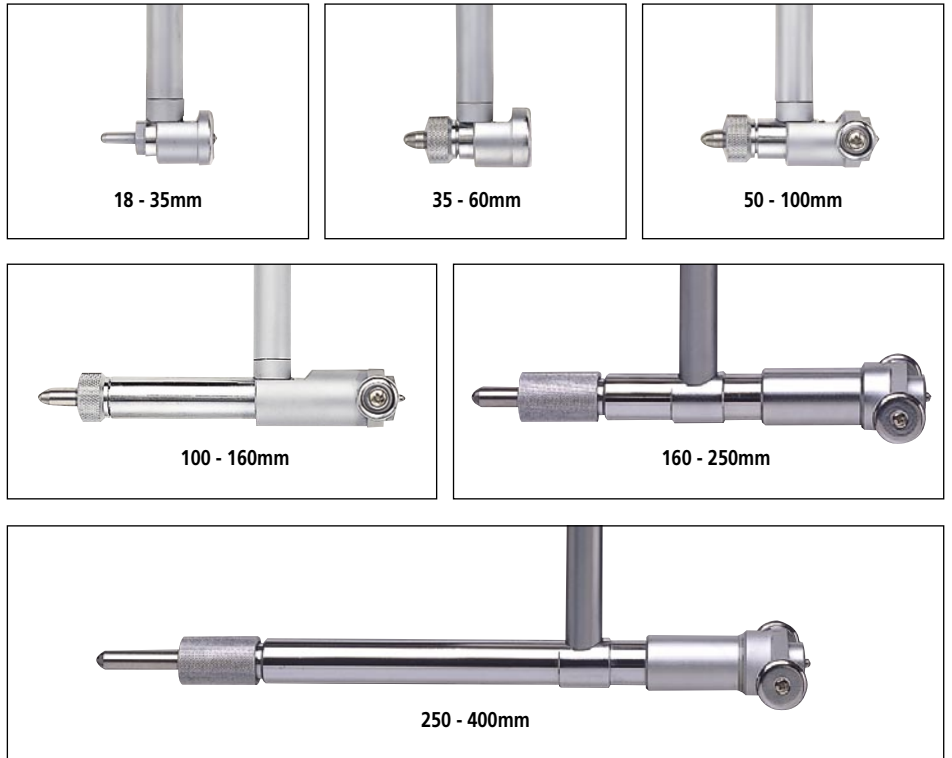
Optional Accessory

- 953549:** 125mm Extension rod for 18-35mm (.7"-1.4") models
- 953552:** 125mm Extension rod for 35-160mm (1.4"-6.5") models
- 953557:** 125mm Extension rod for 160-400mm (6.5"-16") models
- 953550:** 250mm Extension rod for 18-35mm (.7"-1.4") models
- 953553:** 250mm Extension rod for 35-160mm (1.4"-6.5") models
- 952361:** 250mm Extension rod for 160-400mm (6.5"-16") models
- 953551:** 500mm Extension rod for 18-35mm (.7"-1.4") models
- 953554:** 500mm Extension rod for 35-160mm (1.4"-6.5") models
- 953558:** 500mm Extension rod for 160-400mm (6.5"-16") models
- 953555:** 750mm Extension rod for 35-160mm (1.4"-6.5") models
- 953559:** 750mm Extension rod for 160-400mm (6.5"-16") models
- 953556:** 1000mm Extension rod for 35-160mm (1.4"-6.5") models
- 953560:** 1000mm Extension rod for 160-400mm (6.5"-16") models

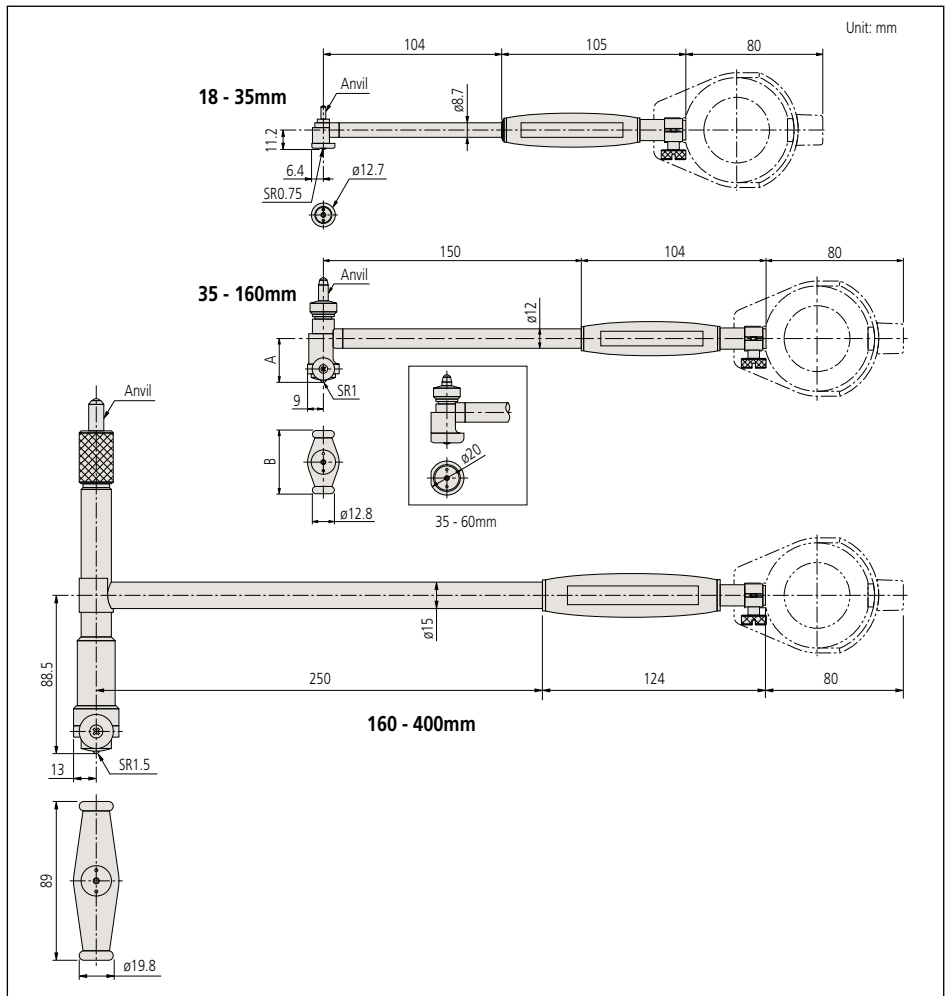


Setting ring (See page 122.)

Contact Point



DIMENSION



Bore Gages

SERIES 511 — Short Leg Type

FEATURES

- Compact and lightweight because of the short length below the grip.
- Carbide-tipped contact point for durability.



511-461

SPECIFICATIONS

Metric		
Range	Order No.	Probe depth
18 - 35mm	511-471	50mm
35 - 60mm	511-472	50mm
50 - 100mm	511-473	50mm
50 - 150mm	511-474	50mm
100 - 160mm	511-475	50mm
18 - 35mm	511-461	50mm
35 - 60mm	511-462	50mm
50 - 100mm	511-463	50mm
50 - 150mm	511-464	50mm
100 - 160mm	511-465	50mm

Inch		
Range	Order No.	Probe depth
.7" - 1.4"	511-491	2"
1.4" - 2.5"	511-492	2"
2" - 4"	511-493	2"
2" - 6"	511-494	2"
4" - 6.5"	511-495	2"
.7" - 1.4"	511-481	2"
1.4" - 2.5"	511-482	2"
2" - 4"	511-483	2"
2" - 6"	511-484	2"
4" - 6.5"	511-485	2"

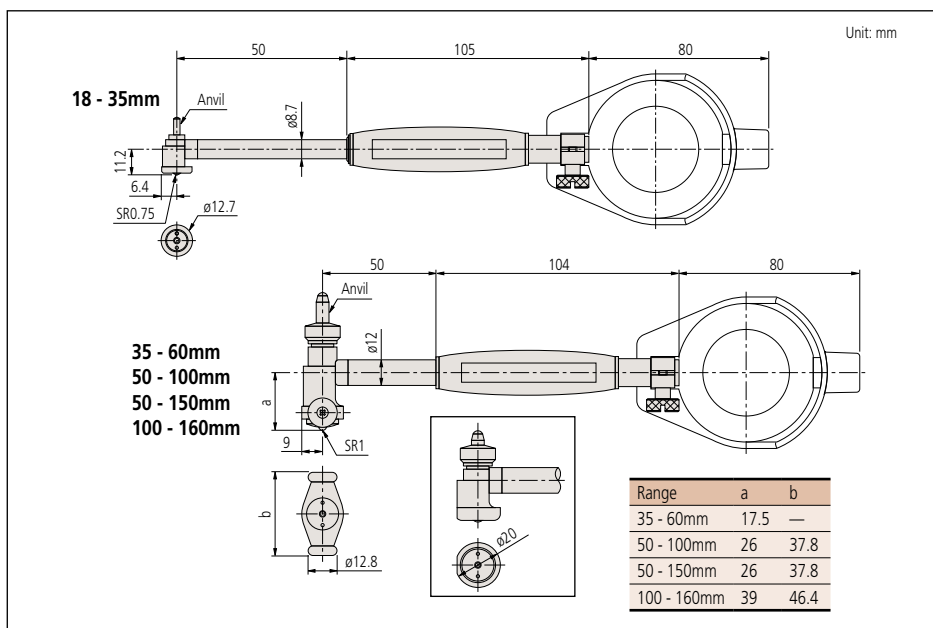
0.001mm graduation
(w/ 2109SB-10)

0.01mm graduation
(w/ 2046SB)

.0001" graduation
(w/ 2923SB-10)

.0005" graduation
(w/ 2922SB)

DIMENSION



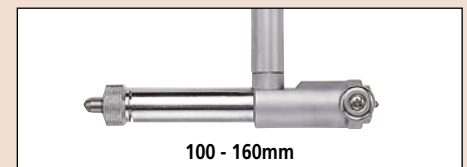
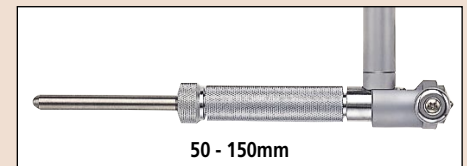
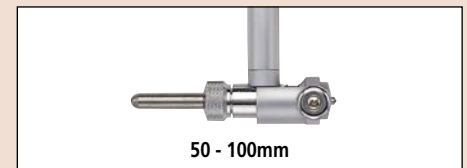
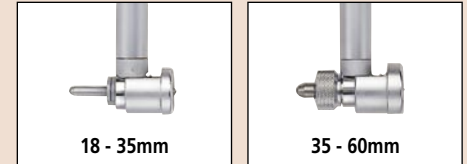
Technical Data

Accuracy: 5µm

Repeatability: 2µm

Graduation: 0.01mm, 0.001mm, .0005 or .0001"

Contact Point



Optional Accessory

— : Setting ring (See page 122.)

Bore Gages

SERIES 511 — for Blind Holes

FEATURES

- Can measure ID at position close to the bottom of blind holes.

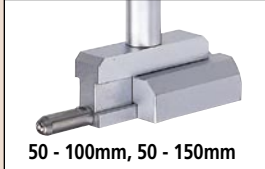
Technical Data

Accuracy: 5µm
 Repeatability: 2µm
 Graduation: 0.01mm, 0.001mm, .0005 or .0001"

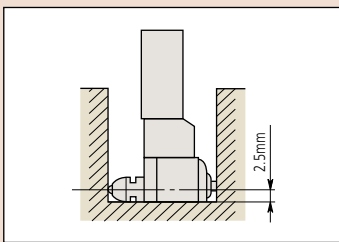
Contact Point



15 - 35mm



50 - 100mm, 50 - 150mm



Optional Accessory

— : Setting ring (See page 122.)



511-412

SPECIFICATIONS

Metric		
Range	Order No.	Probe depth
15 - 35mm	511-421	150mm
35 - 60mm	511-422	150mm
50 - 100mm	511-423	150mm
50 - 150mm	511-424	150mm
15 - 35mm	511-411	150mm
35 - 60mm	511-412	150mm
50 - 100mm	511-413	150mm
50 - 150mm	511-414	150mm

Inch		
Range	Order No.	Probe depth
.6" - 1.4"	511-441	6"
1.4" - 2.4"	511-442	6"
2" - 4"	511-443	6"
2" - 6"	511-444	6"
.6" - 1.4"	511-431	6"
1.4" - 2.4"	511-432	6"
2" - 4"	511-433	6"
2" - 6"	511-434	6"

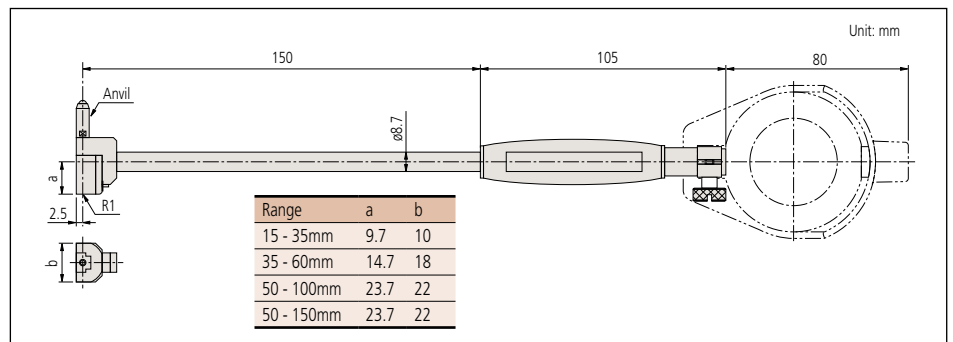
0.001mm graduation (w/ 21095B-10)

0.01mm graduation (w/ 20465B)

.0001" graduation (w/ 29235B-10)

.0005" graduation (w/ 29225B)

DIMENSION



Bore Gages

SERIES 511 — with Micrometer Head

FEATURES

- Interchangeable anvil is attached to a micrometer head for accurate dimensional setting.
- Wide measuring range with sub-anvils.
- Carbide ball contact point for durability.
- Extension rods (optional) can be attached for measuring deep holes.
- Optional Setting Rings offer the best method of zero-setting Bore Gages.



511-334

SPECIFICATIONS

Metric		
Range	Order No.	Probe depth
35 - 60mm	511-343	150mm
60 - 100mm	511-333	150mm
100 - 160mm	511-311	150mm
150 - 250mm	511-313	250mm
250 - 400mm	511-315	250mm
400 - 600mm	511-317	250mm
600 - 800mm	511-327	250mm
35 - 60mm	511-344	150mm
60 - 100mm	511-334	150mm
100 - 160mm	511-312	150mm
150 - 250mm	511-314	250mm
250 - 400mm	511-316	250mm
400 - 600mm	511-318	250mm
600 - 800mm	511-328	250mm

0.001mm graduation
(w/ 21095B-10)

0.01mm graduation
(w/ 20465B)

Inch		
Range	Order No.	Probe depth
1.4" - 2.5"	511-346	6"
2.4" - 4"	511-336	6"
4" - 6.4"	511-326	6"
6" - 10"	511-320	10"
10" - 16"	511-322	10"
16" - 24"	511-324	10"
24" - 32"	511-330	10"
1.4" - 2.5"	511-345	6"
2.4" - 4"	511-335	6"
4" - 6.4"	511-325	6"
6" - 10"	511-319	10"
10" - 16"	511-321	10"
16" - 24"	511-323	10"
24" - 32"	511-329	10"

.0001" graduation
(w/ 29235B-10)

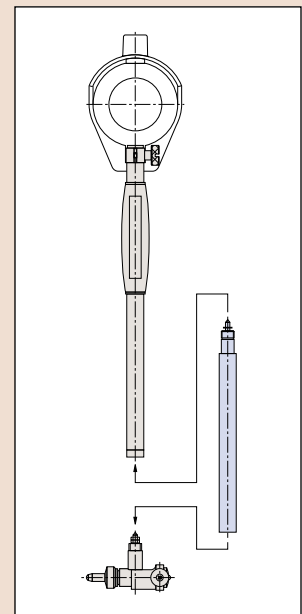
.0005" graduation
(w/ 29225B)

Technical Data

Accuracy: 5µm
 Repeatability: 2µm
 Graduation: 0.01mm, 0.001mm, .0005 or .0001"

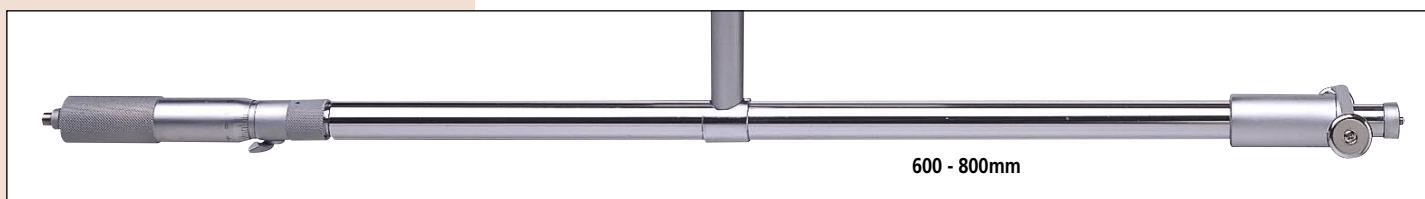
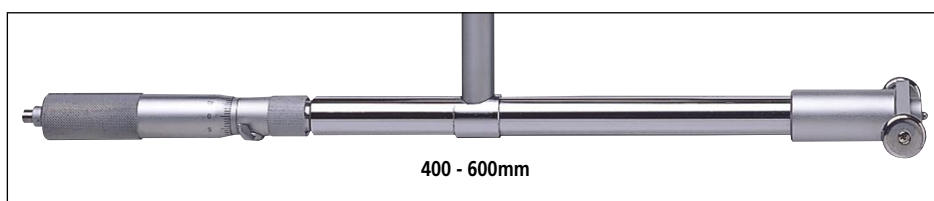
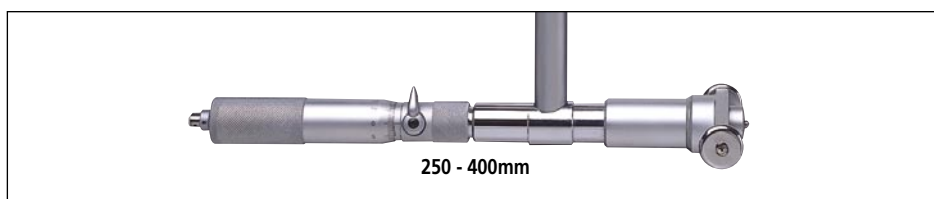
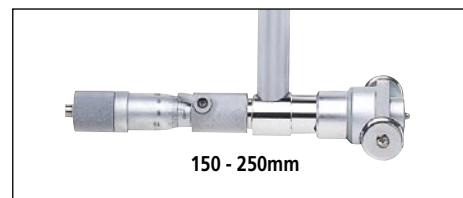
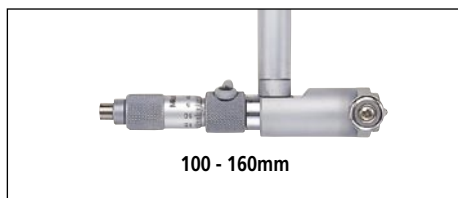
Optional Accessory

- 953549:** 125mm Extension rod for 18-35mm (.7"-1.4") models
- 953552:** 125mm Extension rod for 35-160mm (1.4"-6.5") models
- 953557:** 125mm Extension rod for 160-400mm (6.5"-16") models
- 953550:** 250mm Extension rod for 18-35mm (.7"-1.4") models
- 953553:** 250mm Extension rod for 35-160mm (1.4"-6.5") models
- 952361:** 250mm Extension rod for 160-400mm (6.5"-16") models
- 953551:** 500mm Extension rod for 18-35mm (.7"-1.4") models
- 953554:** 500mm Extension rod for 35-160mm (1.4"-6.5") models
- 953558:** 500mm Extension rod for 160-400mm (6.5"-16") models
- 953555:** 750mm Extension rod for 35-160mm (1.4"-6.5") models
- 953559:** 750mm Extension rod for 160-400mm (6.5"-16") models
- 953556:** 1000mm Extension rod for 35-160mm (1.4"-6.5") models
- 953560:** 1000mm Extension rod for 160-400mm (6.5"-16") models

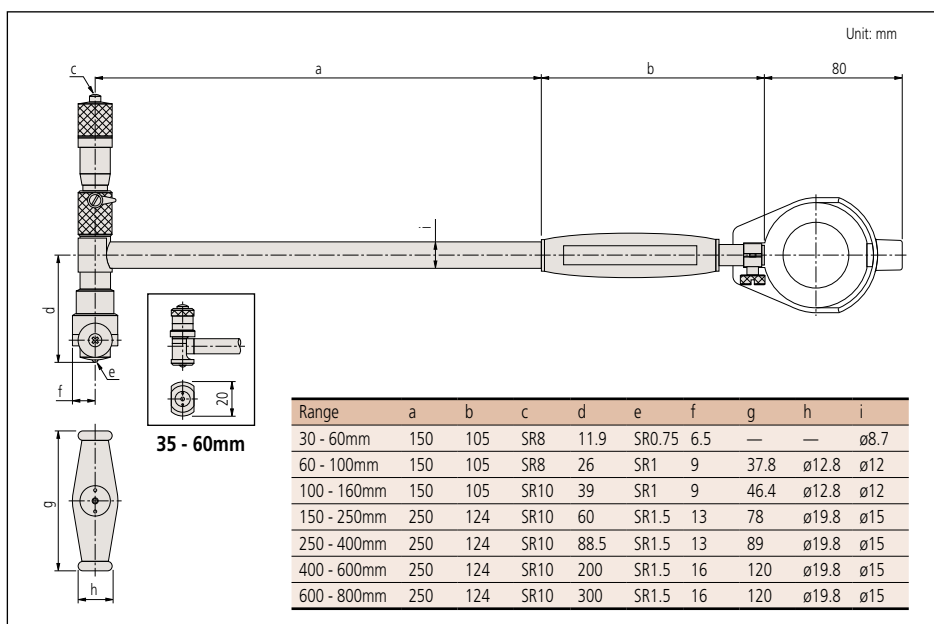


Setting ring (See page 122.)

Contact Point



DIMENSION



ABSOLUTE Digimatic Bore Gage

SERIES 511

This ABSOLUTE Digimatic bore gages are exclusively designed for ID measurement.



511-521

FEATURES

- The minimum value holding function provides the easy of detection of hole diameter.



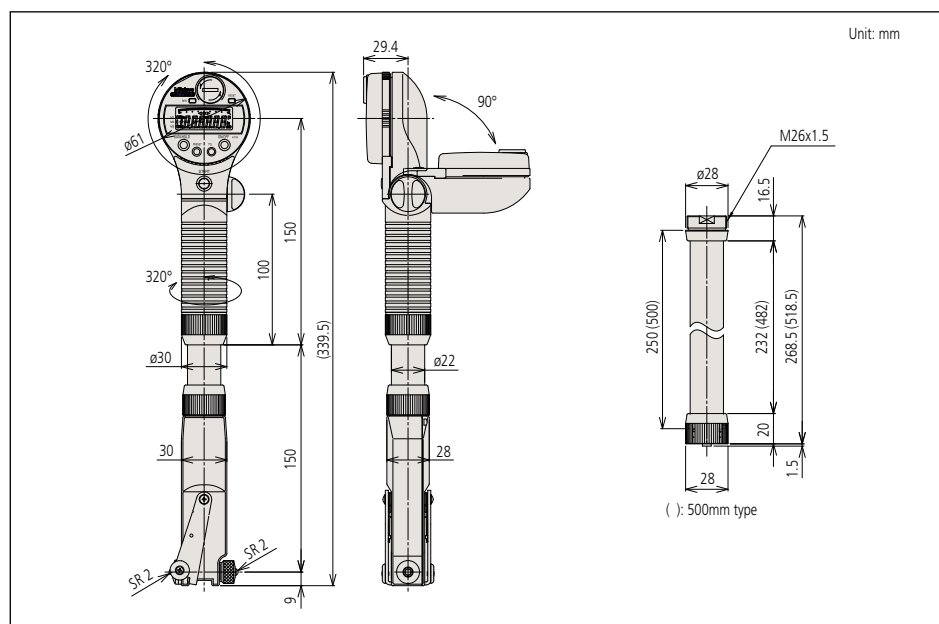
- Up to three sets of master value and upper/lower tolerance value can be memorized.
- An analog bar indicator is integrated to enhance the intuition in reading.
- GO/±NG judgment is performed by setting the upper and lower tolerances.
- Up to four rods (250mm or 500mm) can be used.

SPECIFICATIONS

Metric		
Range	Order No.	Probe depth
45 - 100mm	511-501	150mm
100 - 160mm	511-502	150mm

Inch/Metric		
Range	Order No.	Probe depth
1.8 - 4"	511-521	6"
4 - 6.4"	511-522	6"

DIMENSION



ABSOLUTE[®]

Absolute System Patented by MITUTOYO

(Refer to the page 9 for details.)

Technical Data

Resolution: 0.001mm or .0005"/0.001mm
 Display: LCD
 Battery: SR44 (1 pc.) (938882)
 Battery life: Approx. el: Conforming to IP53

Functions

Origin-set, Zero-Setting, Presetting, Power on/off, inch/mm conversion (inch/mm type only), Data output, GO/±NG tolerance judgment

Alarm: Low battery voltage, scale contamination, overflow error, tolerance limit setting error

Optional Accessory

- 21DZA089: Extension rod 250 mm (10")
- 21DZA081: Extension rod 500 mm (20")
- 516-118-10: Origin setup metric rectangular gauge block set
- 516-119-10: Origin setup metric square gauge block set
- 905338: SPC cable (1m)
- 905409: SPC cable (2m)
- : Setting ring (See page 122.)



Origin setup gauge block set



Example: using four extension rods.

Dial Bore Gages

SERIES 545 — Rugged, Production-Line Tools

FEATURES

- Carbide-tipped contact point for excellent durability.
- Wide range of measurements with interchangeable Anvil Extensions (screw-in type).
- Carbide-tipped anvil is optional (901484).
- Two guide pins ensure high repeatability of measurements.
- Easy zero adjustment because the Dial Bore Gage can stand upright.
- Optional interchangeable rods provide a variety of probe depths.



Technical Data

Graduation: 0.01mm, 0.001mm, .0005 or .0001"

Optional Accessory

- 901484: Carbide-tipped anvil
- 901529: Interchangeable rod (Probe depth: 85mm)
- 901530: Interchangeable rod (Probe depth: 115mm)
- 901940: Interchangeable rod (Probe depth: 150mm)
- 901531: Interchangeable rod (Probe depth: 265mm)
- 901532: Interchangeable rod (Probe depth: 315mm)
- 901533: Interchangeable rod (Probe depth: 390mm)



— : Setting ring (See page 122.)



545-1055



545-1145

SPECIFICATIONS

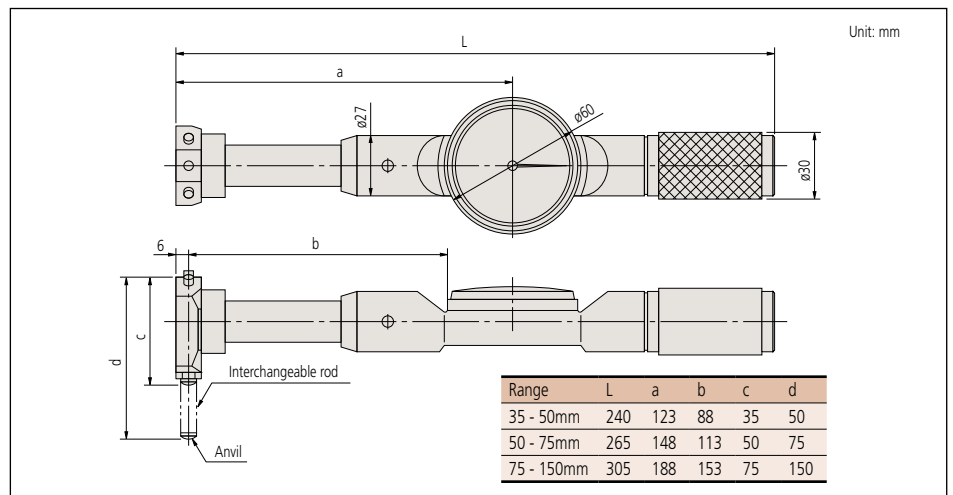
Metric		
Range	Order No.	Probe depth
35 - 50mm	545-1145	85mm
50 - 75mm	545-1155	115mm
75 - 150mm	545-1165	150mm
35 - 50mm	545-1045	85mm
50 - 75mm	545-1055	115mm
75 - 150mm	545-1065	150mm

□ 0.001mm graduation □ 0.01mm graduation

Inch		
Range	Order No.	Probe depth
1.475" - 2.075"	545-1345	3.5"
1.975" - 3.075"	545-1355	4.5"
2.975" - 6.075"	545-1365	6"
1.475" - 2.075"	545-1245	3.5"
1.975" - 3.075"	545-1255	4.5"
2.975" - 6.075"	545-1265	6"

□ .0001" graduation □ .0005" graduation

DIMENSION

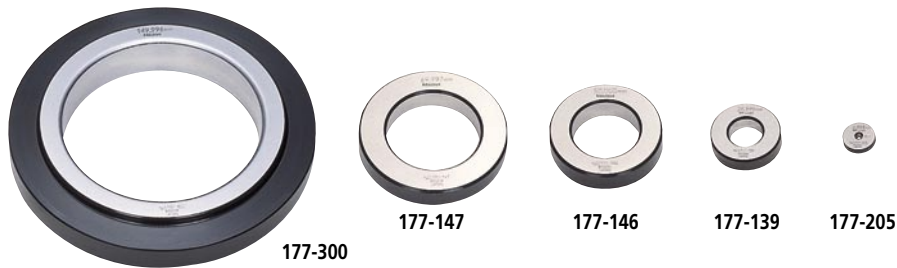


Setting Ring

SERIES 177 — Accessories for Inside Micrometers, Holtest and Dial Bore Gages

FEATURES

- Used for quick zero adjustment of dial bore gages, Holtest, and inside micrometers.
- Actual inside diameter is marked on each ring.



SPECIFICATION

Setting Rings

Metric		
Size	Order No.	Accuracy
1mm	177-220	±1.5µm
1.1mm	177-222	±1.5µm
1.2mm	177-225	±1.5µm
1.3mm	177-227	±1.5µm
1.4mm	177-230	±1.5µm
1.75mm	177-236	±1.5µm
2mm	177-239	±1.5µm
2.25mm	177-242	±1.5µm
2.5mm	177-208	±1.5µm
2.75mm	177-246	±1.5µm
3mm	177-248	±1.5µm
3.25mm	177-250	±1.5µm
3.5mm	177-252	±1.5µm
3.75mm	177-255	±1.5µm
4mm	177-204	±1.5µm
4.5mm	177-257	±1.5µm
5mm	177-205	±1.5µm
5.5mm	177-263	±1.5µm
6mm	177-267	±1.5µm
6.5mm	177-271	±1.5µm
7mm	177-275	±1.5µm
8mm	177-125	±1.5µm
10mm	177-126	±1.5µm
12mm	177-284	±1.5µm
14mm	177-132	±1.5µm

Size	Order No.	Accuracy
16mm	177-177	±1.5µm
17mm	177-133	±1.5µm
20mm	177-286	±1.5µm
25mm	177-139	±1.5µm
30mm	177-288	±1.5µm
35mm	177-140	±1.5µm
40mm	177-290	±1.5µm
45mm	177-178	±1.5µm
50mm	177-146	±1.5µm
60mm	177-292	±1.5µm
62mm	177-314	±1.5µm
70mm	177-147	±1.5µm
75mm	177-316	±1.5µm
80mm	177-294	±1.5µm
87mm	177-318	±1.5µm
90mm	177-148	±1.5µm
100mm	177-296	±1.5µm
125mm	177-298	±2.5µm
150mm	177-300	±2.5µm
175mm	177-302	±2.5µm
200mm	177-304	±2.5µm
225mm	177-306	±2.5µm
250mm	177-308	±2.5µm
275mm	177-310	±2.5µm
300mm	177-312	±2.5µm

Inch		
Size	Order No.	Accuracy
.1"	177-209	±.00006"
.16"	177-206	±.00006"
.24"	177-207	±.00006"
.275"	177-281	±.00006"
.35"	177-179	±.00006"
.425"	177-283	±.00006"
.50"	177-180	±.00006"
.60"	177-181	±.00006"
.65"	177-182	±.00006"
.70"	177-183	±.00006"
.80"	177-287	±.00006"
1.0"	177-184	±.00006"
1.2"	177-289	±.00006"
1.4"	177-185	±.00006"
1.6"	177-291	±.00006"
1.8"	177-186	±.00006"
2.0"	177-187	±.00006"
2.4"	177-293	±.00006"
2.5"	177-315	±.00006"
2.8"	177-188	±.00006"
3.0"	177-317	±.00006"
3.2"	177-295	±.00006"
3.5"	177-319	±.00006"
3.6"	177-189	±.00006"
4.0"	177-297	±.00006"
5.0"	177-299	±.00010"
6.0"	177-301	±.00010"
7.0"	177-303	±.00010"
8.0"	177-305	±.00010"
9.0"	177-307	±.00010"
10.0"	177-309	±.00010"
11.0"	177-311	±.00010"
12.0"	177-313	±.00010"

Technical Data

Tolerance between the nominal size and the actual diameter:

- ±0.01mm for ø1 - 45mm setting rings
- ±0.02mm for ø50 - 300mm setting rings
- ±.0004" for .1" - 1.8" DIA. setting rings
- ±.0008" for 2" - 12" DIA. setting rings

- Cylindricity:
- 1.0µm for ø1 - 60mm setting rings
 - 1.5µm for ø62 - 90mm setting rings
 - 2.0µm for ø100 - 150mm setting rings
 - 2.5µm for ø175 - 225mm setting rings
 - 3.0µm for ø250 - 300mm setting rings
 - .00004" for .1" - 2.4" DIA. setting rings
 - .00006" for 2.5" - 3.6" DIA. setting rings
 - .00008" for 4" - 6" DIA. setting rings
 - .00010" for 7" - 9" DIA. setting rings
 - .00012" for 10" - 12" DIA. setting rings

Ceramic Setting Ring

SERIES 177 — Accessories for Inside Micrometers, Holtest and Dial Bore Gages

FEATURES

- Ceramic Setting Rings are also available. No more anticorrosion treatment is required when handling Ceramic Setting Rings normally, resulting in simple maintenance and storage.



Technical Data

Tolerance between the nominal size and the actual diameter:
 $\pm 0.01\text{mm}$ for $\varnothing 1 - 45\text{mm}$ setting rings
 $\pm 0.0004''$ for $.1'' - 1.8''$ DIA. setting rings

Cylindricity: $1.0\mu\text{m}$ for $\varnothing 1 - 45\text{mm}$ setting rings
 $.00004''$ for $.1'' - 1.8''$ DIA. setting rings

Ceramic Setting Rings

Metric			Inch		
Size	Order No.	Accuracy	Size	Order No.	Accuracy
4mm	177-418	$\pm 1.5\mu\text{m}$	.16"	177-518	$\pm 0.00006''$
6mm	177-420	$\pm 1.5\mu\text{m}$	.24"	177-520	$\pm 0.00006''$
8mm	177-423	$\pm 1.5\mu\text{m}$	.275"	177-522	$\pm 0.00006''$
10mm	177-424	$\pm 1.5\mu\text{m}$	.35"	177-523	$\pm 0.00006''$
12mm	177-425	$\pm 1.5\mu\text{m}$	.425"	177-524	$\pm 0.00006''$
16mm	177-427	$\pm 1.5\mu\text{m}$	.5"	177-525	$\pm 0.00006''$
20mm	177-429	$\pm 1.5\mu\text{m}$	.65"	177-527	$\pm 0.00006''$
25mm	177-430	$\pm 1.5\mu\text{m}$	.8"	177-529	$\pm 0.00006''$
30mm	177-431	$\pm 1.5\mu\text{m}$	1"	177-530	$\pm 0.00006''$
35mm	177-432	$\pm 1.5\mu\text{m}$	1.2"	177-531	$\pm 0.00006''$
40mm	177-433	$\pm 1.5\mu\text{m}$	1.4"	177-532	$\pm 0.00006''$
45mm	177-434	$\pm 1.5\mu\text{m}$	1.6"	177-533	$\pm 0.00006''$
			1.8"	177-534	$\pm 0.00006''$

Bore Gage Zero Checker

SERIES 515

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



SPECIFICATIONS

Order No.	Applicable range
515-590	18 - 400mm (.7" - 16")



RM-120 Ring Master

Ring Gage Measuring Machine

FEATURES

- The laser holoscale incorporated in the RM-120 eliminates the need for a reference gauge block set and reference ring gages.
- Probe change is not required for the entire measuring range.
- Enhanced repeatability and lower measuring force achieved with the air bearing on the probe carriage guide.
- Workpiece alignment is easy to perform with the specially designed measuring table which is capable of moving, tilting, elevating, and 90 degree rotating.
- The model with an analog meter will further facilitate workpiece positioning.



565-201

SPECIFICATIONS

Model No.	RM-120
Range	ID: 6mm - 120mm
Resolution	0.0001mm (0.1 μ m)
Accuracy (20°C)	$\pm(0.03+5D/1000)\mu$ m D = Measuring internal diameter (mm)
Repeatability ($\pm 2\sigma$)	$\pm 0.2\mu$ m
Measuring unit	Laser Holoscale
Measuring force	Approx. 0.2N
Workpiece size	OD: 20mm to 200mm Thickness: Up to 40mm
Ambient temperature	20°C $\pm 0.5^\circ$ C
Air requirement	400KPa
Air consumption	Approx. 30 liters per minute
Dimensions (W x D x H)	720 x 500 x 880mm



