

Bore Gages

Bore Gages SERIES 511 — for Small Holes

- These gages are designed to measure the diameters of very small holes.
- Select an indicator from the recommended dial indicators and Digimatic indicators. Please contact us for advice when using an indicator other than the recommended indicators.
- Customized products with a longer rod below the grip or with a carbide anvil are available upon request.



511-201

Note: The dial indicator and the dial protection cover are optional.

SPECIFICATIONS

Metric							
Order No.	Range (mm)	Stroke of contact point (mm)	Accuracy* (μm)	Repeatability* (μm)	Adjacent error* (μm)	Measuring force (N)	Guide force (N)
511-209	6 - 10	0.5	5	2	2	2 or less	—
511-201	10 - 18.5	0.6					6 or less
511-210-20	6 - 10	0.5	5	2	2	2 or less	—
511-203-20	10 - 18.5	0.6					6 or less
511-211-20	6 - 10	0.5	5	2	2	2 or less	—
511-204-20	10 - 18.5	0.6					6 or less

Order No.	Content of set					Probing depth (mm)
	Bore gage	Dial indicator	Dial protection cover	Anvil	Interchangeable Washer	
511-209	511-209	Not supplied	Not supplied	9 pcs.	Not supplied	50
511-201	511-201				1 pc.	100
511-210-20	511-209	2109AB-10 (Graduation: 0.001 mm)	21DZA000	9 pcs.	Not supplied	50
511-203-20	511-201				1 pc.	100
511-211-20	511-209	2046AB (Graduation: 0.01 mm)	21DZA000	9 pcs.	Not supplied	50
511-204-20	511-201				1 pc.	100

Inch							
Order No.	Range (in)	Stroke of contact point (in)	Accuracy* (in)	Repeatability* (in)	Adjacent error* (in)	Measuring force (N)	Guide force (N)
511-214	0.24 - 0.4	0.020	0.0002	0.00008	0.00008	2 or less	—
511-205	0.4 - 0.74	0.024					6 or less
511-212-20	0.24 - 0.4	0.020	0.0002	0.00008	0.00008	2 or less	—
511-206-20	0.4 - 0.74	0.024					6 or less
511-213-20	0.24 - 0.4	0.020	0.0002	0.00008	0.00008	2 or less	—
511-207-20	0.4 - 0.74	0.024					6 or less

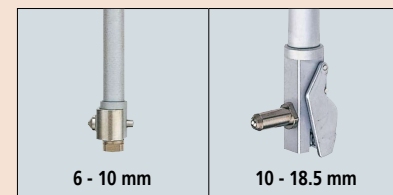
Order No.	Content of set					Probing depth (in)
	Bore gage	Dial indicator	Dial protection cover	Anvil	Interchangeable Washer	
511-214	511-214	Not supplied	Not supplied	9 pcs.	Not supplied	2
511-205	511-205				1 pc.	4
511-212-20	511-214	2923AB-10 (Graduation: 0.0001 in)	21DZA000	9 pcs.	Not supplied	2
511-206-20	511-205				1 pc.	4
511-213-20	511-214	2922AB (Graduation: 0.0005 in)	21DZA000	9 pcs.	Not supplied	2
511-207-20	511-205				1 pc.	4

* Accuracy of the bore gage alone.

Measurement example



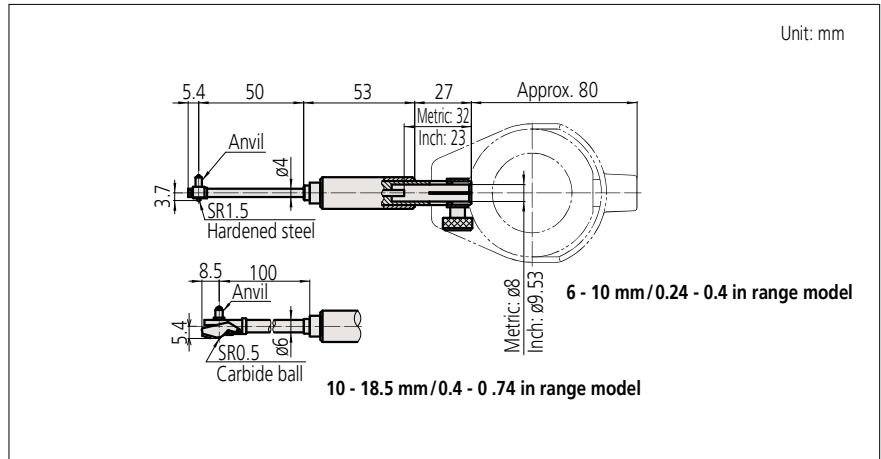
Contact Points



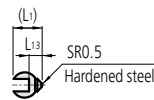
The dial protection cover, recommended indicators

Refer to page C-50.

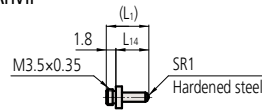
DIMENSIONS



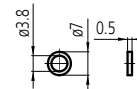
511-209/511-214
Anvil



511-201/511-205
Anvil



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



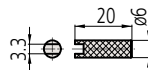
204355

STANDARD ACCESSORIES

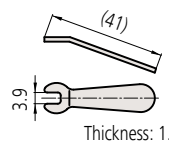
Bore gage (Main body)	Anvil					Interchangeable Washer Order No.	Spanner Order No.
	Marked No.	Order No.	Indication of measuring size	L ₁	L ₁₃		
511-209 511-214	1	952168	6.0 mm/0.24 in	4.7	1.2	Not supplied	206709
	2	952169	6.5 mm/0.26 in	5.3	1.7		
	3	952170	7.0 mm/0.28 in	5.8	2.2		
	4	952414	7.5 mm/0.30 in	6.3	2.7		
	5	952415	8.0 mm/0.32 in	6.8	3.2		
	6	952416	8.5 mm/0.34 in	7.3	3.7		
	7	952417	9.0 mm/0.36 in	7.8	4.2		
	8	952418	9.5 mm/0.38 in	8.3	4.7		
	9	952419	10.0 mm/0.40 in	8.8	5.2		

Bore gage (Main body)	Anvil					Interchangeable Washer Order No.	Spanner Order No.
	Marked No.	Order No.	Indication of measuring size	L ₁	L ₁₄		
511-201 511-205	1	204356	10 mm/0.40 in	3.8	2	204355	204354
	2	204357	11 mm/0.44 in	4.8	3		
	3	204358	12 mm/0.48 in	5.8	4		
	4	204359	13 mm/0.52 in	6.8	5		
	5	204360	14 mm/0.56 in	7.8	6		
	6	204361	15 mm/0.60 in	8.8	7		
	7	204362	16 mm/0.64 in	9.8	8		
	8	204363	17 mm/0.68 in	10.8	9		
	9	204364	18 mm/0.72 in	11.8	10		

Spanner
206709



204354



Unit: mm

Bore Gages

Bore Gages SERIES 511

- This series includes models for highly accurate measurement of $\varnothing 18$ to 400 mm inside diameters.
- The contact point and anvil have a carbide ball tip that is highly durable and abrasion-resistant.
- The grip minimizes the variation of indicator values by reducing heat transfer from the operator's hand.
- Optional extension rods are available for measuring deep holes. Customized products with a longer rod below the grip are also available upon request.



511-702

Note: The dial indicator and the dial protection cover are optional.

SPECIFICATIONS

Metric

Order No.	Range (mm)	Stroke of contact point (mm)	Accuracy* (μm)	Repeatability* (μm)	Adjacent error* (μm)	Measuring force (N)	Guide force (N)
511-701	18 - 35	1.2	2	0.5	1	4 or less	6 or less
511-702	35 - 60						
511-703	50 - 150	1.6					
511-704	100 - 160						
511-705	160 - 250						
511-706	250 - 400						
511-721-20	18 - 35	1.2	2	0.5	1	4 or less	6 or less
511-722-20	35 - 60						
511-723-20	50 - 150	1.6					
511-724-20	100 - 160						
511-725-20	160 - 250						
511-726-20	250 - 400						
511-711-20	18 - 35	1.2	2	0.5	1	4 or less	6 or less
511-712-20	35 - 60						
511-713-20	50 - 150	1.6					
511-714-20	100 - 160						
511-715-20	160 - 250						
511-716-20	250 - 400						
511-921-20	18 - 150	See SPECIFICATIONS of 511-701/702/703					
511-922-20							
511-925-10							

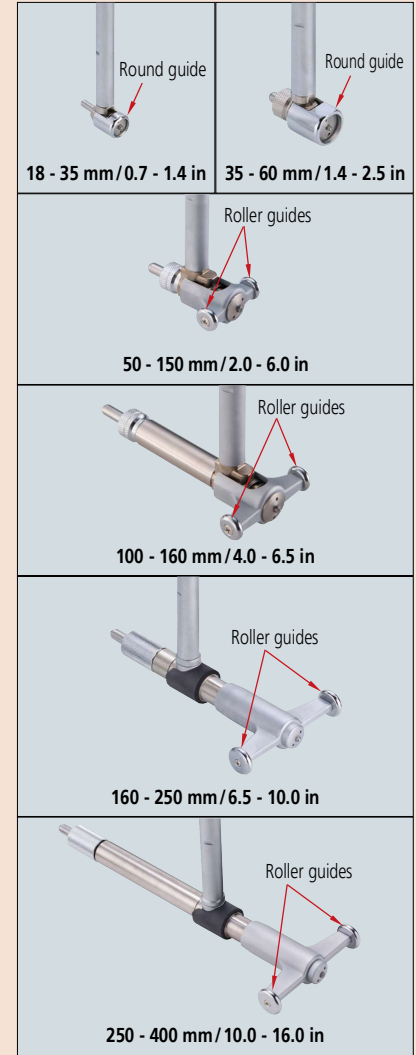
Order No.	Content of set								Probing depth (mm)
	Bore gage	Dial indicator	Dial protection cover	Anvil	Interchangeable Washer	Sub-Anvil	Spanner		
511-701	511-701	Not supplied	Not supplied	9 pcs.	2 pcs.	Not supplied	1 pc.	100	
511-702	511-702			6 pcs.					
511-703	511-703			11 pcs.	4 pcs.	1 pc.			
511-704	511-704			13 pcs.	Not supplied	Not supplied			
511-705	511-705			6 pcs.					
511-706	511-706			5 pcs.	7 pcs.	1 pc.	250		
511-721-20	511-701	2109AB-10 (Graduation: 0.001 mm)	21DZA000	9 pcs.	2 pcs.	Not supplied	1 pc.	100	
511-722-20	511-702			6 pcs.					
511-723-20	511-703			11 pcs.	4 pcs.	1 pc.			
511-724-20	511-704			13 pcs.	Not supplied	Not supplied			
511-725-20	511-705			6 pcs.					
511-726-20	511-706			5 pcs.	7 pcs.	1 pc.	250		
511-711-20	511-701	2046AB (Graduation: 0.01 mm)	21DZA000	9 pcs.	2 pcs.	Not supplied	1 pc.	100	
511-712-20	511-702			6 pcs.					
511-713-20	511-703			11 pcs.	4 pcs.	1 pc.			
511-714-20	511-704			13 pcs.	Not supplied	Not supplied			
511-715-20	511-705			6 pcs.					
511-716-20	511-706			5 pcs.	7 pcs.	1 pc.	250		
511-921-20	Set of	2046AB	21DZA000	See SPECIFICATIONS of 511-701/702/703					
511-922-20	511-701/	2109AB-10							
511-925-10	702/703	543-310B							

* Accuracy of the bore gage alone.

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

Note 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.)

Contact Points



Extension Rod

Refer to page C-49.

The dial protection cover, recommended indicators

Refer to page C-50.

Setting rings

Refer to pages C-52 to C-55.