

## Bore Gages

### Bore Gages SERIES 511 — for Blind Holes

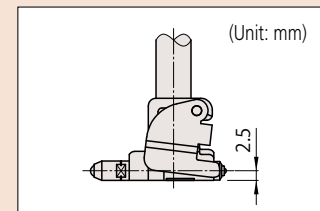
- Capable of ID (inside diameter) measurement close to the bottom of a hole.
- The contact point and anvil have a carbide ball tip that is highly durable and abrasion-resistant.
- Optional Extension Rods can be attached for measuring deep holes. (For details, refer to page C-49)



511-415

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

#### Measurement example



#### The dial protection cover, recommended indicators

Refer to page C-50.

## SPECIFICATIONS

### Metric

Order No.	Range (mm)	Stroke of contact point (mm)	Accuracy* (μm)	Repeatability* (μm)	Adjacent error* (μm)	Measuring force (N)	Guide force (N)	Content of set					Probing depth (mm)
								Bore gage	Dial indicator	Dial protection cover	Anvil	Washer	
511-415	15 - 35	1.2	4	1	1	4 or less	6 or less	511-415	Not supplied	Not supplied	11 pcs.	1 pc.	150
511-416	35 - 60							511-416					
511-417	50 - 150	1.2	4	1	1	5 or less	10 or less	511-417	2046AB (Graduation: 0.01 mm)	21DZA000	11 pcs.	1 pc.	150
511-425-20	15 - 35							511-415					
511-426-20	35 - 60	1.2	4	1	1	5 or less	10 or less	511-417	2109AB-10 (Graduation: 0.001 mm)	21DZA000	11 pcs.	1 pc.	150
511-427-20	50 - 150							511-416					
511-435-20	15 - 35	1.2	4	1	1	4 or less	6 or less	511-415	2109AB-10 (Graduation: 0.001 mm)	21DZA000	11 pcs.	1 pc.	150
511-436-20	35 - 60							511-416					
511-437-20	50 - 150	1.2	4	1	1	5 or less	10 or less	511-417	2109AB-10 (Graduation: 0.001 mm)	21DZA000	11 pcs.	1 pc.	150
511-438-20	15 - 35							511-416					

### Inch

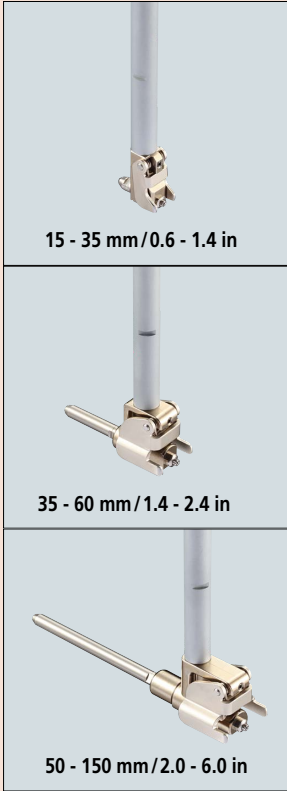
Order No.	Range (in)	Stroke of contact point (in)	Accuracy* (in)	Repeatability* (in)	Adjacent error* (in)	Measuring force (N)	Guide force (N)	Content of set					Probing depth (in)
								Bore gage	Dial indicator	Dial protection cover	Anvil	Washer	
511-418	0.6 - 1.4	0.047	0.00016	0.00004	0.00004	4 or less	6 or less	511-418	Not supplied	Not supplied	11 pcs.	1 pc.	6
511-419	1.4 - 2.4							511-419					
511-420	2.0 - 6.0	0.047	0.00016	0.00004	0.00004	5 or less	10 or less	511-420	2922AB (Graduation: 0.0005 in)	21DZA000	11 pcs.	1 pc.	6
511-428-20	0.6 - 1.4							511-418					
511-429-20	1.4 - 2.4	0.047	0.00016	0.00004	0.00004	5 or less	10 or less	511-419	2923AB-10 (Graduation: 0.0001 in)	21DZA000	11 pcs.	1 pc.	6
511-430-20	2.0 - 6.0							511-420					
511-438-20	0.6 - 1.4	0.047	0.00016	0.00004	0.00004	4 or less	6 or less	511-418	2923AB-10 (Graduation: 0.0001 in)	21DZA000	11 pcs.	1 pc.	6
511-439-20	1.4 - 2.4							511-419					
511-440-20	2.0 - 6.0	0.047	0.00016	0.00004	0.00004	5 or less	10 or less	511-420	2923AB-10 (Graduation: 0.0001 in)	21DZA000	11 pcs.	1 pc.	6
511-441-20	2.0 - 6.0							511-420					

\* Accuracy of the bore gage alone.

Note 1: A 10 mm (0.4 in) sub-anvil is supplied with 511-415/425-20/435-20/418/428-20/438-20 and a 50 mm (2 in) sub-anvil is supplied with 511-417/427-20/437-20/420/430-20/440-20.

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

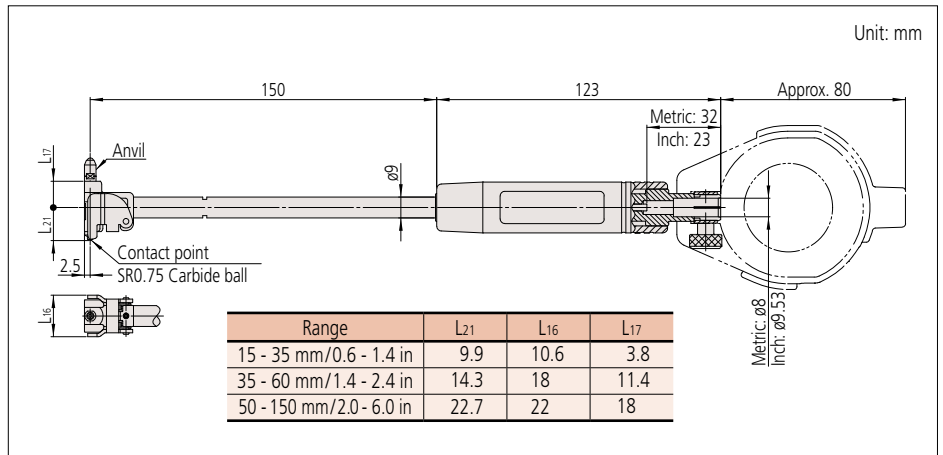


15 - 35 mm / 0.6 - 1.4 in

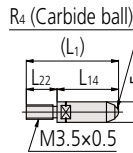
35 - 60 mm / 1.4 - 2.4 in

50 - 150 mm / 2.0 - 6.0 in

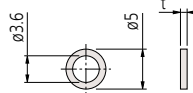
### DIMENSIONS



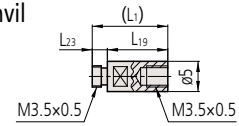
#### Anvil



#### Interchangeable washer

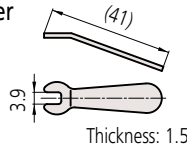


#### Sub-anvil

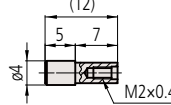


Note: It is not permissible to use a sub-anvil other than as supplied as a standard accessory, or widen a measuring range by using multiple sub-anvils. (The measurement accuracy in such cases is not guaranteed.)

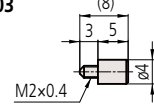
#### Spanner 204354



#### Washer holder 212202



#### Locking screw 212203



### Recommended Digimatic Indicators

Refer to page C-36.

### STANDARD ACCESSORIES

Bore gage (Main body)	Anvil								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 ( ) Using 10 mm / 0.4 in Sub-Anvil	1	21DZA376A	15 mm (25 mm) / 0.59 in (0.98 in)	4.5			2	212127	0.5 mm / 0.02 in	21DAA563	2.5	10 mm / 0.4 in
	2	21DZA376B	16 mm (26 mm) / 0.63 in (1.02 in)	5.5			3					
	3	21DZA376C	17 mm (27 mm) / 0.67 in (1.06 in)	6.5			4					
	4	21DZA376D	18 mm (28 mm) / 0.71 in (1.10 in)	7.5			5					
	5	21DZA376E	19 mm (29 mm) / 0.75 in (1.14 in)	8.5			6					
	6	21DZA376F	20 mm (30 mm) / 0.79 in (1.18 in)	9.5	2.5		7					
	7	21DZA376G	21 mm (31 mm) / 0.83 in (1.22 in)	10.5			8					
	8	21DZA376H	22 mm (32 mm) / 0.87 in (1.26 in)	11.5			9					
	9	21DZA376J	23 mm (33 mm) / 0.91 in (1.30 in)	12.5			10					
	10	21DZA376L	24 mm (34 mm) / 0.94 in (1.34 in)	13.5			11					
	11	21DZA376M	25 mm (35 mm) / 0.98 in (1.38 in)	14.5			12					
511-416 511-419	1	21DZA404A	35 mm / 1.38 in	17.5			10	212127 212128 212129 212130	0.5 mm / 0.02 in 1.0 mm / 0.04 in 2.0 mm / 0.08 in 3.0 mm / 0.12 in			
	2	21DZA404B	40 mm / 1.57 in	22.5			15					
	3	21DZA404C	45 mm / 1.77 in	27.5			20					
	4	21DZA404D	50 mm / 1.97 in	32.5	7.5	SR1.5	25					
	5	21DZA404E	55 mm / 2.17 in	37.5			30					
	6	21DZA404F	60 mm / 2.36 in	42.5			35					
511-417 511-420 ( ) Using 50 mm / 2 in Sub-Anvil	1	21DZA404A	50 mm (100 mm) / 1.97 in (3.94 in)	17.5			10	212127 212128 212129 212130	0.5 mm / 0.02 in 1.0 mm / 0.04 in 2.0 mm / 0.08 in 3.0 mm / 0.12 in	21DAA596	7.5	50 mm / 2 in
	2	21DZA404B	55 mm (105 mm) / 2.17 in (4.13 in)	22.5			15					
	3	21DZA404C	60 mm (110 mm) / 2.36 in (4.33 in)	27.5			20					
	4	21DZA404D	65 mm (115 mm) / 2.56 in (4.53 in)	32.5			25					
	5	21DZA404E	70 mm (120 mm) / 2.76 in (4.72 in)	37.5			30					
	6	21DZA404F	75 mm (125 mm) / 2.95 in (4.92 in)	42.5	7.5	SR1.5	35					
	7	21DZA404G	80 mm (130 mm) / 3.15 in (5.12 in)	47.5			40					
	8	21DZA404H	85 mm (135 mm) / 3.35 in (5.31 in)	52.5			45					
	9	21DZA404J	90 mm (140 mm) / 3.54 in (5.51 in)	57.5			50					
	10	21DZA404L	95 mm (145 mm) / 3.74 in (5.71 in)	62.5			55					
	11	21DZA404M	100 mm (150 mm) / 3.94 in (5.91 in)	67.5			60					

## Bore Gages

### Bore Gages SERIES 511 — ABSOLUTE Digimatic Bore Gages

- These ABSOLUTE Digimatic bore gages are exclusively designed for inside diameter measurement.
- ABS (ABSOLUTE) type bore gages are not subject to overspeed error.
- Up to four Extension Rods (optional) can be connected for measuring at the bottom of a hole 2 m deep.
- The display and grip can be rotated up to 320° and the display can be inclined up to 90°, so that it is easily readable from any direction.
- The minimum value holding function provides easy measurement of hole diameter.



511-501



## SPECIFICATIONS

Metric		
Order No.	511-501	511-502
Range	45 - 100 mm	100 - 160 mm
Stroke of contact point	1.2 mm	
Resolution	0.001 mm	
Wide range accuracy*1	0.003 mm or less	
Adjacent error	0.002 mm or less	
Repeatability	0.002 mm or less	
Measuring force	5 N or less	
Guide force	10 N or less	
Battery	SR44 (2 pcs.), <b>938882</b> For initial operational checks (standard accessory)	
Battery life*2	Approx. 2,000 hours under normal use.	
Scale type	ABSOLUTE electrostatic linear encoder	
Sampling frequency*3	50 times/s	
Dust / Water protection level*4	IP53 (IEC60529/JIS D0207, C0920)	
Display	<ul style="list-style-type: none"> <li>• 7 segments 6 digits decimal numeric with minus sign, in/mm</li> <li>• Tolerance judge indication</li> <li>• Analog indication</li> </ul>	
Net weight	500 g	570 g

Inch		
Order No.	511-521	511-522
Range	1.8 - 4.0 in	4.0 - 6.5 in
Stroke of contact point	0.048 in/1.2 mm	
Resolution	0.00005 in/0.001 mm	
Wide range accuracy*1	0.0001 in/0.003 mm or less	
Adjacent error	0.00008 in/0.002 mm or less	
Repeatability	0.0001 in/0.002 mm or less	
Measuring force	5 N or less	
Guide force	10 N or less	
Battery	SR44 (2 pcs.), <b>938882</b> For initial operational checks (standard accessory)	
Battery life*2	Approx. 2,000 hours under normal use.	
Scale type	ABSOLUTE electrostatic linear encoder	
Sampling frequency*3	50 times/s	
Dust / Water protection level*4	IP53 (IEC60529/JIS D0207, C0920)	
Display	<ul style="list-style-type: none"> <li>• 7 segments 6 digits decimal numeric with minus sign, in/mm</li> <li>• Tolerance judge indication</li> <li>• Analog indication</li> </ul>	
Net weight	500 g	570 g

\*1 A quantizing error is excluded.

\*2 When the usage time per day is eight hours.

\*3 If the contact point detecting speed is over 50 μm/s, the peak value may not be displayed correctly.

\*4 The level indicated is valid only if the output connector cap is installed.

### Measurement example



### Function

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

### Extension Rod (optional)

250 mm (10 in): **21DZA089**

500 mm (20 in): **21DZA081**

Up to four extension rods can be joined, and a maximum length of 2 m is allowed.

### Optional Accessories

Order No.	Type	description
<b>905338</b>	F	Connecting cable (1 m)
<b>905409</b>	F	Connecting cable (2 m)
<b>06AFM380F</b>	F	USB Input Tool Direct (2 m)
<b>02AZD790F</b>	F	Connecting cables for <b>U-WAVE-T</b> (160 mm)
<b>02AZE140F</b>	F	Connecting cables for <b>U-WAVE-T</b> For foot switch

## Gauge Blocks and Block Sets for Setting the Origin or Master Value (optional)

- Typical application



- Rectangular gauge blocks

Note: Available only for **511-501/521**  
**516-118-10**  
**516-118-60** with calibration certificate

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

\* Equivalent to JIS B 7506 Grade 0

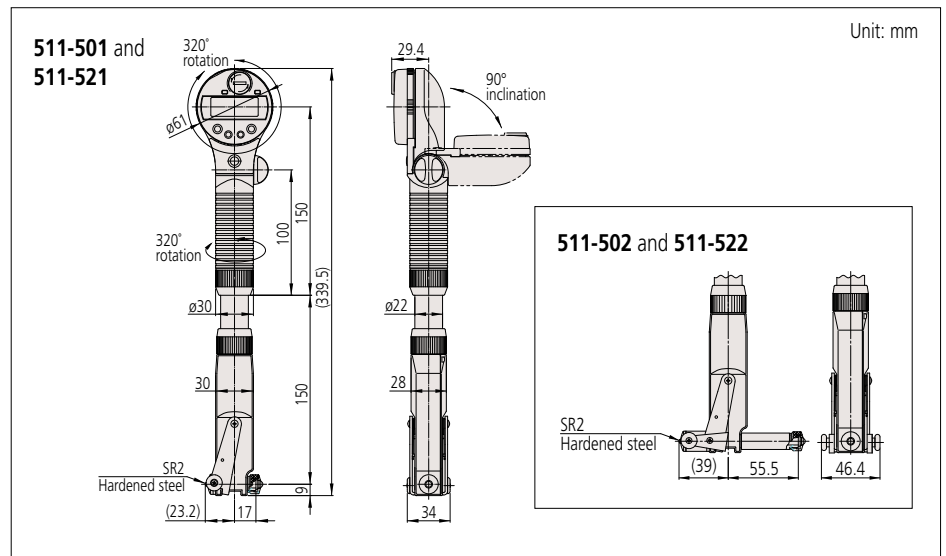
- Square gauge blocks

Note: Available only for **511-501/521**  
**516-119-10**  
**516-119-60** with calibration certificate

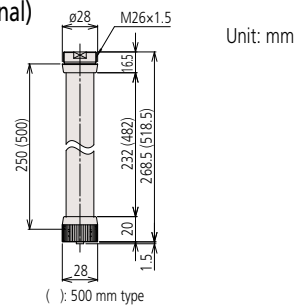
Description*	Order No.	Qty	
Nominal length (mm)	1	<b>614611-021</b>	1
	2	<b>614612-021</b>	1
	3	<b>614613-021</b>	1
	5	<b>614615-021</b>	1
	10	<b>614671-021</b>	1
	20	<b>614672-021</b>	1
	30	<b>614673-021</b>	1
40	<b>614674-021</b>	1	
Flat jaw	<b>619072</b>	1 pair (2 pcs.)	
Tie rod 3 in	<b>619062</b>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

\* Equivalent to JIS B 7506 Grade 0

## DIMENSIONS



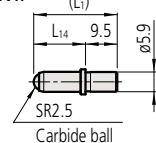
### Extension rod (optional)



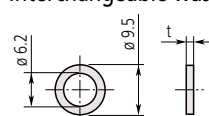
## STANDARD ACCESSORIES

Bore gage	Anvil					Interchangeable washer	
	(Main body)	Marked No.	Order No.	Indication of measuring size	L <sub>1</sub> (mm)	L <sub>14</sub> (mm)	Order No.
<b>511-501</b> <b>511-521</b>	1	<b>21DZA232A</b>	45 mm/1.8 in	15	5.5	<b>205457</b> <b>205458</b> <b>205459</b> <b>205460</b>	0.5 mm/0.02 in 1.0 mm/0.04 in 2.0 mm/0.08 in 3.0 mm/0.12 in
	2	<b>21DZA232B</b>	50 mm/2.0 in	20	10.5		
	3	<b>21DZA232C</b>	55 mm/2.2 in	25	15.5		
	4	<b>21DZA232D</b>	60 mm/2.4 in	30	20.5		
	5	<b>21DZA232E</b>	65 mm/2.6 in	35	25.5		
	6	<b>21DZA232F</b>	70 mm/2.8 in	40	30.5		
	7	<b>21DZA232G</b>	75 mm/3.0 in	45	35.5		
	8	<b>21DZA232H</b>	80 mm/3.2 in	50	40.5		
	9	<b>21DZA232J</b>	85 mm/3.4 in	55	45.5		
	10	<b>21DZA232L</b>	90 mm/3.6 in	60	50.5		
	11	<b>21DZA232M</b>	95 mm/3.8 in	65	55.5		
	12	<b>21DZA232N</b>	100 mm/4.0 in	70	60.5		
<b>511-502</b> <b>511-522</b>	1	<b>21DZA232A</b>	100 mm/4.0 in	15	5.5	<b>205457</b> <b>205458</b> <b>205459</b> <b>205460</b>	0.5 mm/0.02 in 1.0 mm/0.04 in 2.0 mm/0.08 in 3.0 mm/0.12 in
	2	<b>21DZA232B</b>	105 mm/4.2 in	20	10.5		
	3	<b>21DZA232C</b>	110 mm/4.4 in	25	15.5		
	4	<b>21DZA232D</b>	115 mm/4.6 in	30	20.5		
	5	<b>21DZA232E</b>	120 mm/4.8 in	35	25.5		
	6	<b>21DZA232F</b>	125 mm/5.0 in	40	30.5		
	7	<b>21DZA232G</b>	130 mm/5.2 in	45	35.5		
	8	<b>21DZA232H</b>	135 mm/5.4 in	50	40.5		
	9	<b>21DZA232J</b>	140 mm/5.6 in	55	45.5		
	10	<b>21DZA232L</b>	145 mm/5.8 in	60	50.5		
	11	<b>21DZA232M</b>	150 mm/6.0 in	65	55.5		
	12	<b>21DZA232N</b>	155 mm/6.2 in	70	60.5		
	13	<b>21DZA232P</b>	160 mm/6.4 in	75	65.5		

### Anvil



### Interchangeable washer



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* ( $\mu\text{m}$ )	Repeatability* ( $\mu\text{m}$ )	Adjacent error* ( $\mu\text{m}$ )	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					4 or less	6 or less	
511-703	50 - 150	1.6	2	0.5	1	5 or less	10 or less	
511-704	100 - 160					5 or less	10 or less	
511-705	160 - 250					6 or less	15 or less	
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					4 or less	6 or less	
511-723-20	50 - 150	1.6	2	0.5	1	5 or less	10 or less	
511-724-20	100 - 160					5 or less	10 or less	
511-725-20	160 - 250					6 or less	15 or less	
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					4 or less	6 or less	
511-713-20	50 - 150	1.6	2	0.5	1	5 or less	10 or less	
511-714-20	100 - 160					5 or less	10 or less	
511-715-20	160 - 250					6 or less	15 or less	
511-716-20	250 - 400							
511-921-20	18 - 150	See SPECIFICATIONS of 511-701/702/703						
511-922-20								
511-925-10								

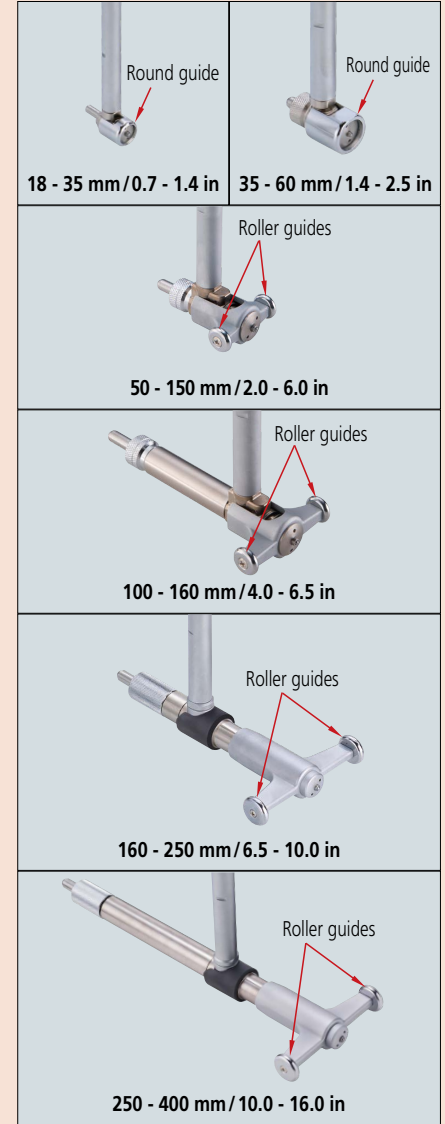
Order No.	Bore gage	Dial indicator	Dial protection cover	Content of set				Spanner	Probing depth (mm)
				Anvil	Interchangeable Washer	Sub-Anvil			
511-701	511-701	Not supplied	Not supplied	9 pcs.	2 pcs.	Not supplied	1 pc.	100	
511-702	511-702			6 pcs.					
511-703	511-703			11 pcs.	4 pcs.	1 pc.	Not supplied	150	
511-704	511-704			13 pcs.					
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.	Not supplied	150	
511-724-20	511-704			13 pcs.					
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.	Not supplied	150	
511-714-20	511-704			13 pcs.					
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.

## Recommended Digimatic Indicators (see Chapter F)

- Metric type:  
**543-310B-10 (ID-C112GXB2):** 0.001 mm
- Inch type:  
**543-312B (ID-C112GEXB):** 0.001 mm/0.00005 in



- The ID measurement can be performed easily since the minimum value is detected automatically.
- Up to three combinations of master value and tolerance value can be set.
- Nine measurement results (maximum) can be saved and recalled from memory (when no external device is connected). Refer to page F-12 for details.

## Anvil

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)



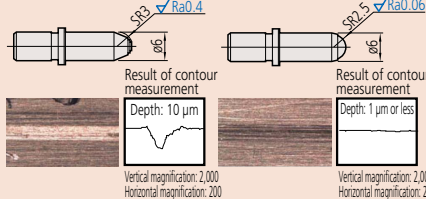
Abrasion depth: 0.1 mm 750 HV or more      Abrasion depth: 0.001 mm 1350 HV or more

### Inspection method

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

### Comparison of marks on the workpiece

Carbide tip (conventional model)      Carbide ball (current model)



### Inspection method

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

## SPECIFICATIONS

Inch							
Order No.	Range (in)	Stroke of contact point (in)	Accuracy* (in)	Repeatability* (in)	Adjacent error* (in)	Measuring force (N)	Guide force (N)
511-731	0.7 - 1.4	0.047	0.00008	0.00002	0.00004	4 or less	6 or less
511-732	1.4 - 2.5					5 or less	10 or less
511-733	2.0 - 6.0					6 or less	15 or less
511-734	4.0 - 6.5	0.063	0.00008	0.00002	0.00004	4 or less	6 or less
511-735	6.5 - 10.0					5 or less	10 or less
511-736	10.0 - 16.0					6 or less	15 or less
511-751-20	0.7 - 1.4	0.047	0.00008	0.00002	0.00004	4 or less	6 or less
511-752-20	1.4 - 2.5					5 or less	10 or less
511-753-20	2.0 - 6.0					6 or less	15 or less
511-754-20	4.0 - 6.5	0.063	0.00008	0.00002	0.00004	4 or less	6 or less
511-755-20	6.5 - 10.0					5 or less	10 or less
511-756-20	10.0 - 16.0					6 or less	15 or less
511-741-20	0.7 - 1.4	0.047	0.00008	0.00002	0.00004	4 or less	6 or less
511-742-20	1.4 - 2.5					5 or less	10 or less
511-743-20	2.0 - 6.0					6 or less	15 or less
511-744-20	4.0 - 6.5	0.063	0.00008	0.00002	0.00004	4 or less	6 or less
511-745-20	6.5 - 10.0					5 or less	10 or less
511-746-20	10.0 - 16.0					6 or less	15 or less
511-931-20	0.7 - 6.0	See SPECIFICATIONS of 511-731/732/733					
511-932-20							
511-935-10							

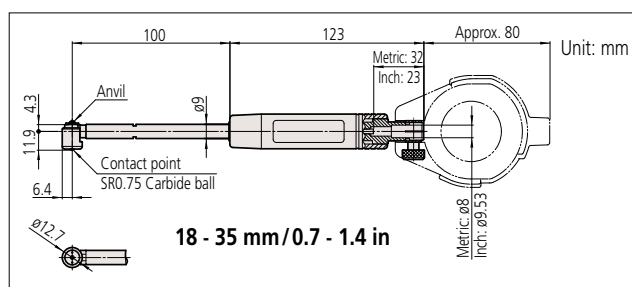
Order No.	Content of set									
	Bore gage	Dial indicator	Dial protection cover	Anvil	Interchangeable Washer	Sub-Anvil	Spanner	Probing depth (in)		
511-731	511-731	Not supplied	Not supplied	9 pcs.	2 pcs.	Not supplied	1 pc.	4		
511-732	511-732			6 pcs.	4 pcs.	1 pc.	Not supplied	6		
511-733	511-733			11 pcs.						
511-734	511-734			13 pcs.						
511-735	511-735			6 pcs.	7 pcs.	1 pc.	10			
511-736	511-736			5 pcs.	2923AB-10 (Graduation: 0.0001 in)	21DZA000		Not supplied	6	
511-751-20	511-731	9 pcs.	2 pcs.	Not supplied						1 pc.
511-752-20	511-732	6 pcs.	4 pcs.	1 pc.			Not supplied			10
511-753-20	511-733	11 pcs.								
511-754-20	511-734	13 pcs.								
511-755-20	511-735	6 pcs.	7 pcs.	1 pc.			10			
511-756-20	511-736	5 pcs.	2922AB (Graduation: 0.0005 in)	21DZA000	Not supplied	6				
511-741-20	511-731	9 pcs.						2 pcs.	Not supplied	1 pc.
511-742-20	511-732	6 pcs.					4 pcs.	1 pc.	Not supplied	10
511-743-20	511-733	11 pcs.								
511-744-20	511-734	13 pcs.								
511-745-20	511-735	6 pcs.					7 pcs.	1 pc.	10	
511-746-20	511-736	5 pcs.	Set of 2922AB	21DZA000	See SPECIFICATIONS of 511-731/732/733	4				
511-931-20	511-731	9 pcs.					2 pcs.	Not supplied		1 pc.
511-932-20	511-731/732/733	2923AB-10					21DZA000	See SPECIFICATIONS of 511-731/732/733	See SPECIFICATIONS of 511-731/732/733	6
511-935-10	732/733	543-312B								

\* Accuracy of the bore gage alone.

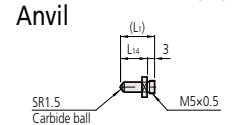
Note 1: A 2 in sub-anvil is supplied with 511-733, and a 3 in sub-anvil is supplied with 511-736.

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.)

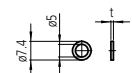
## DIMENSIONS



Unit: mm



## Interchangeable washer

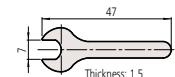


t (mm)	Order No.
0.5	205623
1	205624

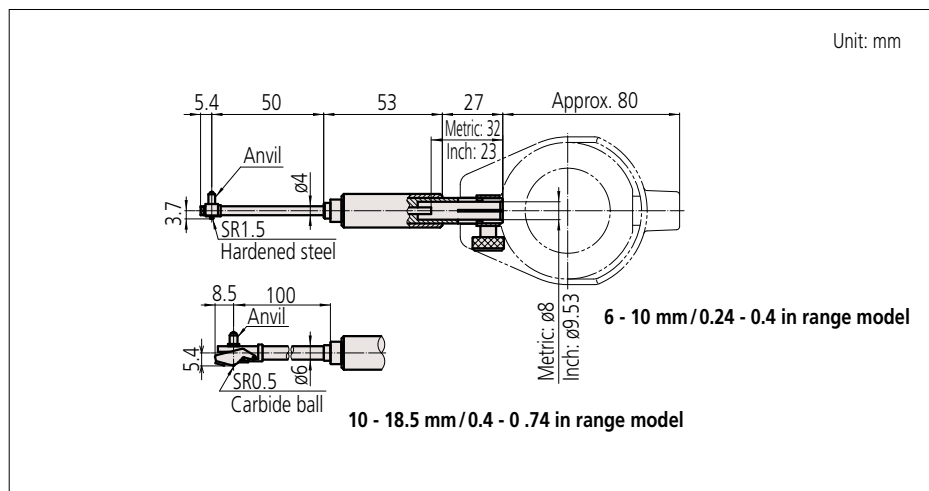
## STANDARD ACCESSORIES

Bore gage (Main body)	Anvil				
	Marked No.	Order No.	Indication of measuring size	L1	L14
511-701 511-731	1	21DZA213A	18 mm/0.71 in	5.5	2.5
	2	21DZA213B	20 mm/0.79 in	7.5	4.5
	3	21DZA213C	22 mm/0.87 in	9.5	6.5
	4	21DZA213D	24 mm/0.94 in	11.5	8.5
	5	21DZA213E	26 mm/1.02 in	13.5	10.5
	6	21DZA213F	28 mm/1.10 in	15.5	12.5
	7	21DZA213G	30 mm/1.18 in	17.5	14.5
	8	21DZA213H	32 mm/1.26 in	19.5	16.5
	9	21DZA213J	34 mm/1.34 in	21.5	18.5

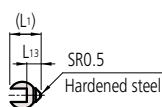
## Spanner 102148



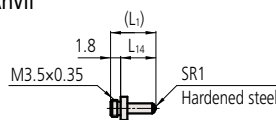
## DIMENSIONS



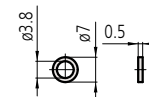
511-209 / 511-214  
Anvil



511-201 / 511-205  
Anvil



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



204355

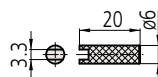
Unit: mm

## STANDARD ACCESSORIES

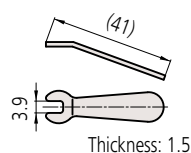
Bore gage (Main body)	Anvil					Interchangeable Washer	Spanner
	Marked No.	Order No.	Indication of measuring size	L <sub>1</sub>	L <sub>13</sub>	Order No.	Order No.
511-209 511-214	1	952168	6.0 mm / 0.24 in	4.7	1.2	Not supplied	206709
	2	952169	6.5 mm / 0.26 in	5.3	1.7		
	3	952170	7.0 mm / 0.28 in	5.8	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	Spanner
	Marked No.	Order No.	Indication of measuring size	L <sub>1</sub>	L <sub>14</sub>	Order No.	Order No.
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