

# Bore Gages

For easy and accurate measurement of inside diameters

## Bore Gages SERIES 511 — ABSOLUTE Digimatic Bore Gages

**MeasurLink® ENABLED**  
Data Management Software by Mitutoyo

- 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.
- The gauge block set for master setting allows quick and accurate zero-point setting.
- A Bore Gage Checker and a range of Setting Rings are available to aid in accurately setting a gage before making a measurement. (For details, refer to pages C-46 and C-47)



511-501



### SPECIFICATIONS

Metric	511-501	511-502
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	511-521	511-522
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.

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Products equipped with the measurement data output function can be connected to the measurement data network system MeasurLink® (refer to page A-25 for details).

**ABSOLUTE™**



### 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

### Optional Accessories

- Extension rod  
250 mm (10 in): **21DZA089**  
500 mm (20 in): **21DZA081**  
Up to four extension rods can be jointed, and a maximum length of 2 m is allowed.
- Example of Connection  
Using four 500 mm extension rods
- SPC Cable:  
1 m: **905338**  
2 m: **905409**  
Refer to pages A-21 to A-23
- USB Input Tool Direct (2 m): **06AFM380F**  
Refer to page A-22
- USB Keyboard Signal Conversion Type  
Communication Conversion Type: **264-016**
- RS-232C Communication Conversion Type: **264-007**  
Refer to page A-6
- Connecting Cables for U-WAVE-T (160 mm): **02AZD790F**  
For foot switch: **02AZE140F**  
Refer to page A-13
- Digimatic Mini-Processor **DP-1VA LOGGER: 264-505**

## 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	

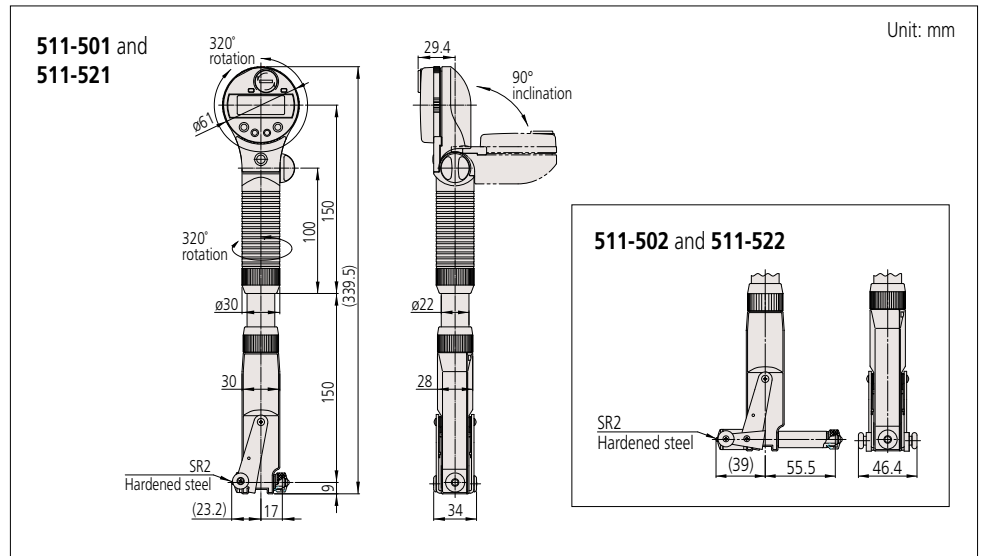
\* Equivalent to JIS B 7506 Grade 0

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

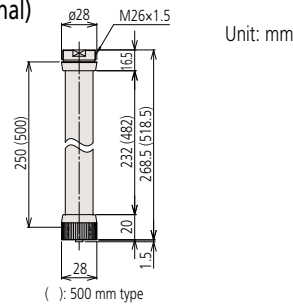
Description*	Order No.	Qty	
Nominal length (mm)	1	<b>614611-021</b>	1
	2	<b>614612-021</b>	1
	3	<b>614613-021</b>	1
	5	<b>614615-021</b>	1
	10	<b>614671-021</b>	1
	20	<b>614672-021</b>	1
	30	<b>614673-021</b>	1
	40	<b>614674-021</b>	1
Flat jaw	<b>619072</b>	1 pair (2 pcs.)	
Tie rod 3 in	<b>619062</b>	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.	t
511-501 511-521	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		
511-502 511-522	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		

