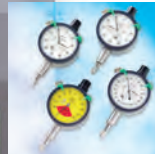




### Digimatic Indicators



### Dial Indicators



### Dial Test Indicators



### Dial Indicator Applications and Stands



Solar ID-S



ID-H



ID-N / ID-B



Caliper gage

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# ABSOLUTE Solar Digimatic Indicator ID-S

543 Series – With Simple Design

## FEATURES

- Mitutoyo's unique ABSOLUTE sensor automatically restores the last origin position when the indicator is turned on. This allows quick-start operation, which is especially useful in multipoint measurement.
- Measurement tool with a solar power source. Ready for use from 40 lux illumination.
- As compact as Series 2 dial indicators.
- SPC Output provided
- Two large buttons (three on inch/mm models) improve functionality



## SPECIFICATIONS

**Inch/Metric** with 3/8" dia. Stem, #4-48UNF Thread

Order	Model	Range	Resolution	Accuracy	Stem Diameter	Measuring Force	Back Type
543-502	ID-S112ES	.5"/12.7mm	.00005"/0.001mm	.0001"/0.003mm	3/8" (ANSI/AGD)	1.5N or less	Lug Back
543-502B	ID-S112ESB	.5"/12.7mm	.00005"/0.001mm	.0001"/0.003mm	3/8" (ANSI/AGD)	1.5N or less	Flat Back
543-507	ID-S1012ES	.5"/12.7mm	.0005"/0.01mm	.001"/0.02mm	3/8" (ANSI/AGD)	1.5N or less	Lug Back
543-507B	ID-S1012ESB	.5"/12.7mm	.0005"/0.01mm	.001"/0.02mm	3/8" (ANSI/AGD)	1.5N or less	Flat Back

**Metric** with 8mm dia. Stem, M2.5x.45 Thread

Order	Model	Range	Resolution	Accuracy	Stem Diameter	Measuring Force	Back Type
543-500	ID-S112S	12.7mm	0.001mm	0.003mm	8mm (ISO)	1.5N or less	Lug Back
543-500B	ID-S112SB	12.7mm	0.001mm	0.003mm	8mm (ISO)	1.5N or less	Flat Back
543-505	ID-S1012S	12.7mm	0.01mm	0.02mm	8mm (ISO)	1.5N or less	Lug Back
543-505B	ID-S1012SB	12.7mm	0.01mm	0.02mm	8mm (ISO)	1.5N or less	Flat Back

**Inch/Metric** with 8mm dia. Stem, M2.5x.45 Thread

Order	Model	Range	Resolution	Accuracy	Stem Diameter	Measuring Force	Back Type
543-501	ID-S112MS	.5"/12.7mm	.00005"/0.001mm	.0001"/0.003mm	8mm (ISO)	1.5N or less	Lug Back
543-501B	ID-S112MSB	.5"/12.7mm	.00005"/0.001mm	.0001"/0.003mm	8mm (ISO)	1.5N or less	Flat Back
543-506	ID-S1012MS	.5"/12.7mm	.0005"/0.01mm	.001"/0.02mm	8mm (ISO)	1.5N or less	Lug Back
543-506B	ID-S1012MSB	.5"/12.7mm	.0005"/0.01mm	.001"/0.02mm	8mm (ISO)	1.5N or less	Flat Back

## Technical Data

Accuracy: Refer to the list of specifications  
 Resolution: 0.01mm, 0.001mm, .00005"/0.001mm, or .0005"/0.01mm  
 Display: LCD  
 Length Standard: ABSOLUTE electrostatic capacitance type linear encoder  
 Max. Response Speed: Unlimited  
 Measuring Force: Refer to the list of specifications  
 Battery: Solar Battery\*  
 Dust/Water Protection Level: IP42  
 \*can be used continuously above 40 lux

## Function

Origin Set, Counting Direction Switching, in/mm conversion

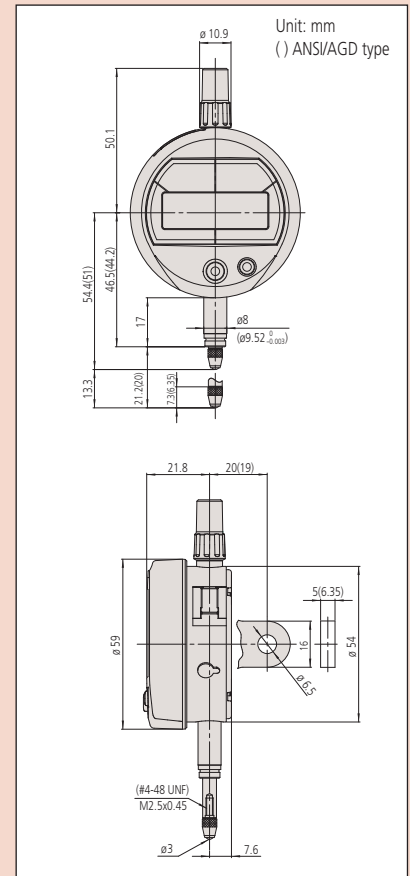
## Optional Accessories

- 21EZA198 Lifting lever (mm)
  - 21EZA199 Lifting lever (inch)
  - 540774 Lifting cable
  - 21EZA105 Lifting knob (mm)
  - 21EZA150 Lifting knob (inch)
  - 905338 SPC cable (1m)
  - 905409 SPC cable (2m)
- All Mitutoyo Series 2 standard backs

## About the charge function:

Reserve capacity allows a fully charged ID-S Solar to be used for about 3.5 hours under light conditions below the minimum level. The charging time differs depending on the environment, but it usually takes about 1.5 hours for a fully discharged ID-S Solar to fully recharge under light conditions of 500 lux.

## DIMENSIONS





### Technical Data

Accuracy: Refer to the list of specifications  
 Resolution: 0.01mm, 0.001mm, .0005"/0.01mm, .0001"/0.001mm or .00005"/0.001mm  
 Display: LCD  
 Length standard: ABSOLUTE electrostatic capacitance type linear encoder  
 Max. response speed: Unlimited  
 Measuring force: Refer to the list of specifications  
 Battery: SR44 (1 pc.), 938882  
 Battery life: Approx. 20,000 hours under normal use  
 Dust/Water protection level: IP42 (IP53: 543-694, 543-695, 543-696)

### Function

Origin-set, Zerostat, Counting direction switching, Power ON/OFF, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error, Over-flow error

### Optional Accessories

- 905338: SPC cable (40" / 1m)
- 905409: SPC cable (80" / 2m)
- 903424: Spindle lifting lever (ISO/JIS type)
- 903425: Spindle lifting lever (ANSI/AGD type)
- 540774: Spindle lifting cable (stroke: .4" / 10mm)
- 125317: Spare rubber boot (for dust-proof type)
- 02ACB420: Lug-on-center back for ISO/JIS type
- 02ACB430: Lug-on-center back for AGD type
- 02ACB440: Flat back
- 02ACB610: Back with post
- 02ACB620: Adjustable back for AGD type
- 02ACB630: Adjustable back (ISO/JIS type)
- 02ACB640: Back with offset lug
- 02ACB650: Magnetic back
- 02ACB660: Back with screw mount for AGD type
- 02ACB670: Back with screw mount (ISO/JIS type)
- 02ACB680: Back with adjustable bracket
- : Contact points (See page F-34.)



# ABSOLUTE Digimatic Indicator ID-S

## SERIES 543 — with Simple Design

### FEATURES

- As compact as standard Series 2 dial indicators.
- After the initial zero-setting with the ORIGIN button, the repeated absolute positioning is no longer necessary over the entire battery life.
- Employing the ABSOLUTE linear encoder, the ID-S always displays the spindle "Absolute Position" from the origin at power-on. Also unlimited response speed eliminates over-speed errors.
- SPC data output.



543-683B



543-690

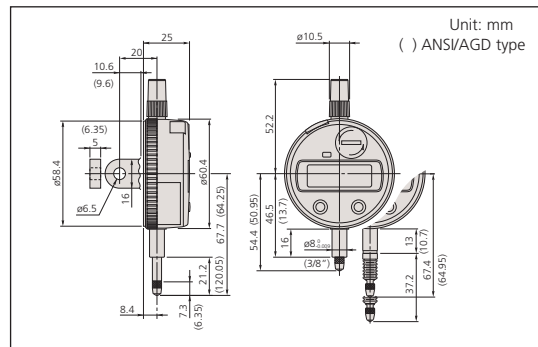
### SPECIFICATIONS

Inch/Metric	Stem dia. 3/8", #4-48 UNF Thread	Order No.		Model	Accuracy	Measuring force	Remarks
		w/ lug back	w/ flat-back				
.00005"/0.001mm	.5" / 12.7mm	543-692	543-692B	ID-S112E	.00012"	2.0N	—
.00005"/0.001mm	.5" / 12.7mm	543-696	543-696B	ID-S112PE	.00012"	2.5N	Dust-proof
.0001"/0.001mm	.5" / 12.7mm	543-693	543-693B	ID-S112T	.00012"	2.0N	—
.0005"/0.01mm	.5" / 12.7mm	543-683	543-683B	ID-S1012E	.0008"	2.0N	—

Inch/Metric	Stem ø 8mm, M2.5 x 0.45 Thread	Order No.		Model	Accuracy	Measuring force	Remarks
		w/ lug back	w/ flat-back				
.00005"/0.001mm	.5" / 12.7mm	543-691	543-691B	ID-S112M	.00012"	2.0N or less	—
.00005"/0.001mm	.5" / 12.7mm	543-695	543-695B	ID-S112PM	.00012"	2.5N or less	Dust-proof
.0005"/0.01mm	.5" / 12.7mm	543-682	543-682B	ID-S1012M	.0008"	2.0N or less	—

Metric	Stem ø 8mm, M2.5 x 0.45 Thread	Order No.		Model	Accuracy	Measuring force	Remarks
		w/ lug back	w/ flat-back				
0.001mm	12.7mm	543-690	543-690B	ID-S112	0.003mm	2.0N or less	—
0.001mm	12.7mm	543-694	543-694B	ID-S112P	0.003mm	2.5N or less	Dust-proof
0.01mm	12.7mm	543-681	543-681B	ID-S1012	0.02mm	2.0N or less	—

### DIMENSIONS

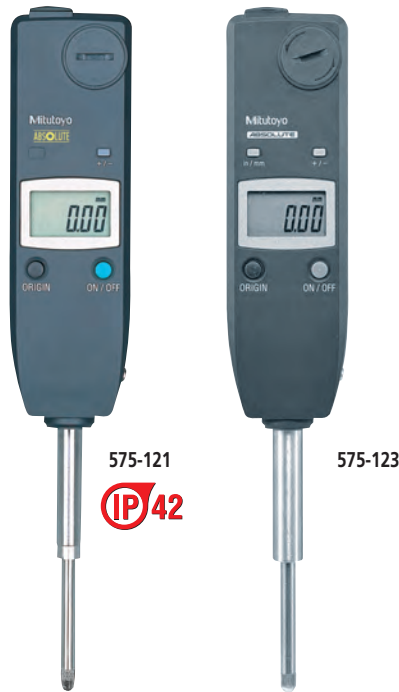


# ABSOLUTE Digimatic Indicator ID-U

**SERIES 575 — with Slim and Simple Design**

## FEATURES

- Slim type digital indicator with low price.
- Large LCD and simple key operation.
- After the initial origin setting, the ID-U no longer needs absolute positioning over the entire battery life; the origin is remembered even after power-off.
- Ideal for installation into measuring devices because of its compact design and long battery life.
- Employing the ABSOLUTE linear encoder, the ID-U always displays the spindle "Absolute Position" from the origin at power-on. Also unlimited response speed eliminates over-speed errors.
- Flat back type only no option for backs.
- SPC data output.



## SPECIFICATIONS

**Inch/Metric** Stem dia. 3/8", #4-48 UNF Thread    ISO/JIS type    ANSI/AGD type

Resolution	Range	Order No.	Model	Accuracy	Measuring force
.0005"/0.01mm	1" / 25.4mm	<b>575-123</b>	ID-U1025E	.0008"	1.8N or less

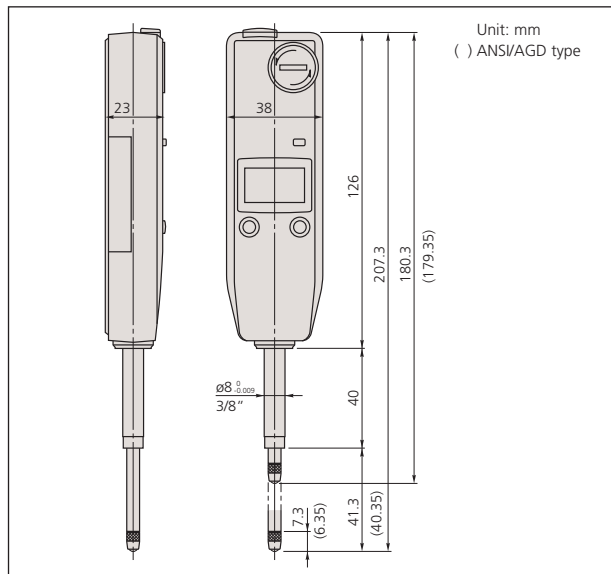
**Inch/Metric** Stem  $\varnothing$  8mm, M2.5 x 0.45 Thread

Resolution	Range	Order No.	Model	Accuracy	Measuring force
.0005"/0.01mm	1" / 25.4mm	<b>575-122</b>	ID-U1025M	.0008"	1.8N or less

**Metric** Stem  $\varnothing$  8mm, M2.5 x 0.45 Thread

Resolution	Range	Order No.	Model	Accuracy	Measuring force
0.01mm	25.4mm	<b>575-121</b>	ID-U1025	0.02mm	1.8N or less

## DIMENSIONS



## Technical Data

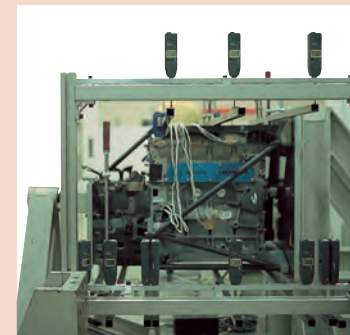
Accuracy: Refer to the list of specifications  
 Resolution: 0.01mm or .0005"/0.01mm,  
 Display: LCD  
 Length standard: ABSOLUTE electrostatic capacitance type linear encoder  
 Max. response speed: Unlimited  
 Measuring force: Refer to the list of specifications  
 Battery: SR44 (1 pc.), **938882**  
 Battery life: Approx. 20,000 hours under normal use  
 Dust/Water protection level: IP42

## Function

Origin-set, Zeroset, Counting direction switching, Power ON/OFF, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error, Over-flow error

## Optional Accessories

**905338:** SPC cable (40" / 1m)  
**905409:** SPC cable (80" / 2m)  
**540774:** Spindle lifting cable (stroke: 4" / 10mm)  
 \_\_\_\_\_: Contact points (See page F-34.)



Application example



### Technical Data

Accuracy: Refer to the list of specifications

Resolution:	0.01mm type	0.01mm
	0.001mm type*	0.001mm/0.01mm
	.0005"/0.01mm type	.0005"/0.01mm
	.00005"/0.001mm type*	.0005"/.0001"/.00005"/0.01mm/0.001mm

\* Switchable resolution

Display: LCD

Length standard: ABSOLUTE electrostatic capacitance type linear encoder

Max. response speed: Unlimited

Measuring force: Refer to the list of specifications

Battery: SR44 (1 pc.), **938882**

Battery life: Approx. 5,000 hours under normal use

Dust/Water protection level: IP42 or IP53 (dust-proof type)

### Function

Origin-set/Preset, Zerose, GO/±NG judgment, Counting direction switching, Power ON/OFF, Data output, inch/mm conversion (on inch/metric models only)

Alarm: Low voltage, Counting value composition error, Over-flow error, Tolerance limit setting error

Internal calculations using the simple formula of  $[F(x) = Ax]$  are available.

### Optional Accessories

**905338:** SPC cable (40" / 1m)

**905409:** SPC cable (80" / 2m)

**21EZA198:** Spindle lifting lever (ISO/JIS type)\*

**21EZA199:** Spindle lifting lever (ANSI/AGD type)\*

**21EZA105:** Spindle lifting knob (12.7mm/.5" ISO/JIS type)\*\*

**21EZA150:** Spindle lifting knob (12.7mm/.5" ANSI/AGD type)\*\*

**21EZA197:** Spindle lifting knob (25.4mm/1", 50.8mm/2" models)

**21EZA200:** Spindle lifting knob (50.8mm/2")

**540774:** Spindle lifting cable (stroke: 1" / 25.4mm)

**02ACA571:** Auxiliary spindle spring for 25mm/1" models\*\*\*

**02ACA773:** Auxiliary spindle spring for 50mm/2" models\*\*\*

——: Backs (See page F-33.)

——: Contact points (See page F-34.)

\*Can be used on 12mm/.5" models only.

\*\*Not available for low measuring force models.

\*\*\*Required when orienting gage upside down.

# ABSOLUTE Digimatic Indicator ID-C

## SERIES 543 — Standard Type

### FEATURES

- As compact as standard Series 2 dial indicators.
- Large, easy-to-read LCD.
- GO/±NG judgment can be performed by setting upper and lower tolerance limits. The judgment result (GO/±NG) can be displayed in full-size characters.
- The positive/negative count resulting from the spindle's up/down movement can be toggled.
- Internal calculations using the simple formula of  $[F(x) = Ax]$  are available.
- Employing the ABSOLUTE linear encoder, the ID-C always displays the spindle "Absolute Position" from the origin at power-on. Also unlimited response speed eliminates over-speed errors.
- The ID-C indicator face can be rotated 330° to an appropriate angle for easy reading.
- With SPC data output.



543-392



543-402



IP42

543-472B



IP42

543-492B

# SPECIFICATIONS

**Inch/Metric** Stem dia. 3/8", #4-48 UNF Thread ISO/JIS type ANSI/AGD type

Resolution	Range	Order No. (w/lug, flat-back)		Model	Accuracy	Measuring force	Remarks
.00005"/0.001mm*	.5" / 12.7mm	<b>543-392</b>	<b>543-392B</b>	ID-C112EXB	.0001"	1.5N or less	—
.00005"/0.001mm*	.5" / 12.7mm	<b>543-396</b>	<b>543-396B</b>	ID-C112CEX	.0001"	0.4N - 0.7N	Low measuring force
.00005"/0.001mm*	1" / 25.4mm	—	<b>543-472B</b>	ID-C125EXB	.0001"	1.8N or less	—
.00005"/0.001mm*	2" / 50.8mm	—	<b>543-492B</b>	ID-C150EXB	.0002"	2.3N or less	—
.0005"/0.01mm	.5" / 12.7mm	<b>543-402</b>	<b>543-402B</b>	ID-C1012EX	.001"	0.9N or less	—
.0005"/0.01mm	.5" / 12.7mm	<b>543-406</b>	<b>543-406B</b>	ID-C1012CEX	.001"	0.2N - 0.5N	Low measuring force
.0005"/0.01mm	1" / 25.4mm	—	<b>543-476B</b>	ID-C1025EXB	.001"	1.8N or less	—
.0005"/0.01mm	2" / 50.8mm	—	<b>543-496B</b>	ID-C112CEXB	.0016"	2.3N or less	—

\* Switchable Resolution Type

**Inch/Metric** Stem ø 8mm, M2.5 x 0.45 Thread

Resolution	Range	Order No. (w/lug, flat-back)		Model	Accuracy	Measuring force	Remarks
.00005"/0.001mm*	.5" / 12.7mm	<b>543-391</b>	<b>543-391B</b>	ID-C112MX	.0001"	1.5N or less	—
.00005"/0.001mm*	.5" / 12.7mm	<b>543-395</b>	<b>543-395B</b>	ID-C112CMX	.0001"	0.4N - 0.7N	Low measuring force
.00005"/0.001mm*	1" / 25.4mm	—	<b>543-471B</b>	ID-C125MXB	.0001"	1.8N or less	—
.00005"/0.001mm*	2" / 50.8mm	—	<b>543-491B</b>	ID-C150MXB	.0002"	2.3N or less	—
.0005"/0.01mm	.5" / 12.7mm	<b>543-401</b>	<b>543-401B</b>	ID-C1012MX	.001"	0.9N or less	—
.0005"/0.01mm	.5" / 12.7mm	<b>543-405</b>	<b>543-405B</b>	ID-C1012CMX	.001"	0.2N - 0.5N	Low measuring force
.0005"/0.01mm	1" / 25.4mm	—	<b>543-475B</b>	ID-C1025MXB	.001"	1.8N or less	—
.0005"/0.01mm	2" / 50.8mm	—	<b>543-495B</b>	ID-C1050MXB	.0016"	2.3N or less	—

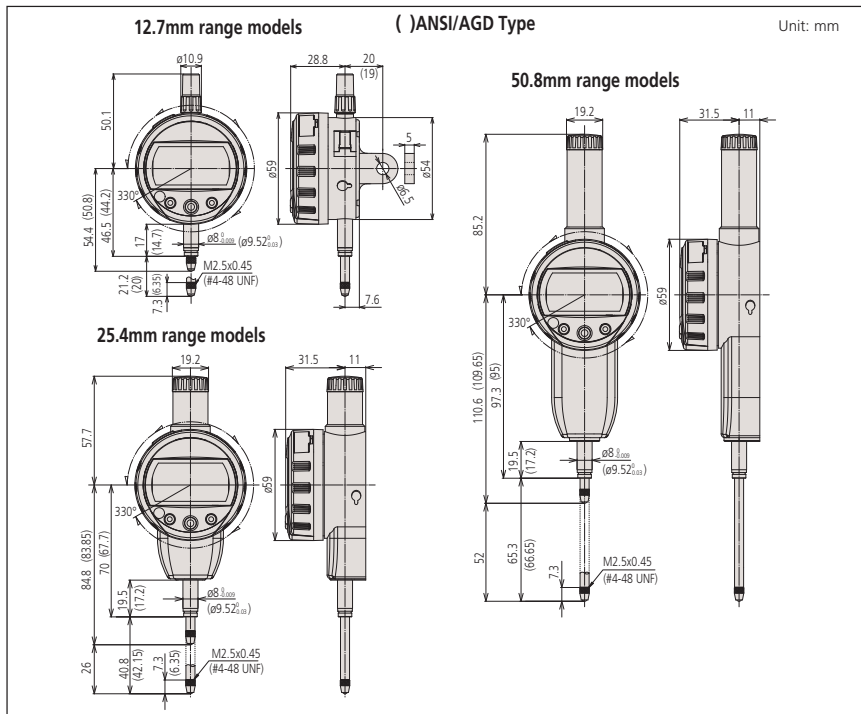
\* Switchable Resolution Type

**Metric** Stem ø 8mm, M2.5 x 0.45 Thread

Resolution	Range	Order No. (w/lug, flat-back)		Model	Accuracy	Measuring force	Remarks
0.001mm*	12.7mm	<b>543-390</b>	<b>543-390B</b>	ID-C112X	0.003mm	1.5N or less	—
0.001mm*	12.7mm	<b>543-394</b>	<b>543-394B</b>	ID-C112CX	0.003mm	0.4N - 0.7N	Low measuring force
0.001mm*	25.4mm	—	<b>543-470B</b>	ID-C125XB	0.003mm	1.8N or less	—
0.001mm*	50.8mm	—	<b>543-490B</b>	ID-C150XB	0.006mm	2.3N or less	—
0.01mm	12.7mm	<b>543-400</b>	<b>543-400B</b>	ID-C1012X	0.02mm	0.9N or less	—
0.01mm	12.7mm	<b>543-404</b>	<b>543-404B</b>	ID-C1012CX	0.02mm	0.2N - 0.5N	Low measuring force
0.01mm	25.4mm	—	<b>543-474B</b>	ID-C1025XB	0.03mm	1.8N or less	—

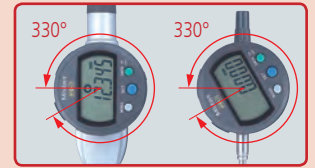
\* Switchable Resolution Type

# DIMENSIONS



## 330° Rotary display

The display can be rotated 330°, allowing use at a position where you can easily read the measurement value.



## Calculation: f(x) = Ax

Mounting the ID-C on a measuring jig and setting the multiplying factor 'A' (to any value) allows direct measurement without using a conversion table and improves measurement efficiency.



## Function locking

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



## Setting measuring force on low measuring force models

### •543-404/404B/405/405B/406/406B

Spindle orientation	Spring	Weight (approximately 0.1N)	Maximum measuring force
Pointing vertically downward	Yes	Yes	0.5N
	Yes	No	0.4N
	No	Yes	0.3N
Horizontal	No	No	0.2N
Horizontal	Yes	No	0.2N

Note) Operation using configurations other than shown above is not guaranteed.

### •543-394/394B/395/395B/396/396B

Spindle orientation	Spring	Weight (approximately 0.1N)	Maximum measuring force
Pointing vertically downward	Yes	Yes	0.7N
	Yes	No	0.6N
	No	Yes	0.4N
Horizontal	No	No	Not guaranteed
Horizontal	Not guaranteed		

Note) Operation using configurations other than shown above is not guaranteed.



### Technical Data

Accuracy: Refer to the list of specifications  
 Resolution: 0.0002mm - 1mm or  
 .00001" - .05"/0.0002mm - 1mm  
 Display: LCD  
 Length standard: ABSOLUTE electrostatic capacitance type  
 linear encoder  
 Max. response speed: Unlimited  
 Measuring force: 1.5N or less  
 Battery: SR44 (1 pc.), **938882**  
 Battery life: Approx. 12 months under normal use

### Function

Origin-set/Pre-set, Zero-set, GO/±NG judgment, Counting direction switching, Power ON/OFF, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error, Over-flow error, Tolerance limit setting error

### Optional Accessories

- 905338:** SPC cable (40" / 1m)
- 905409:** SPC cable (80" / 2m)
- 902011:** Spindle lifting lever (ISO/JIS type)
- 540774:** Spindle lifting cable (Stroke: .4" / 10mm)
- : Backs (See page F-33.)
- : Contact points (See page F-34.)

### APPLICATIONS



- Various fixtures suited for individual workpieces can be prepared.
- Measuring accuracy is subject to fixture accuracy

# ABSOLUTE Digimatic Indicator ID-C

## SERIES 543 — Calculation Type

### FEATURES

A conventional Digimatic indicator simply displays a spindle displacement, but the Calculation-Type Digimatic indicator incorporates an internal calculation function in place of spindle displacement. With fixtures, measurements such as feeler, inside diameter and radius of curvature measurement can easily be obtained without the hassle of conversion tables or equivalents.

- The Absolute Digimatic indicator performs internal calculations using the formula  $Ax+B+Cx^{-1}$  (assuming spindle displacement as  $x$ ) while the specified coefficients  $A$ ,  $B$  and  $C$  can be set with respect to the purpose of measurement or dimensions of the fixtures. This unique features allows you to read your measurements directly, without fumbling for conversions.



### SPECIFICATIONS

ISO/JIS type    ANSI/AGD type

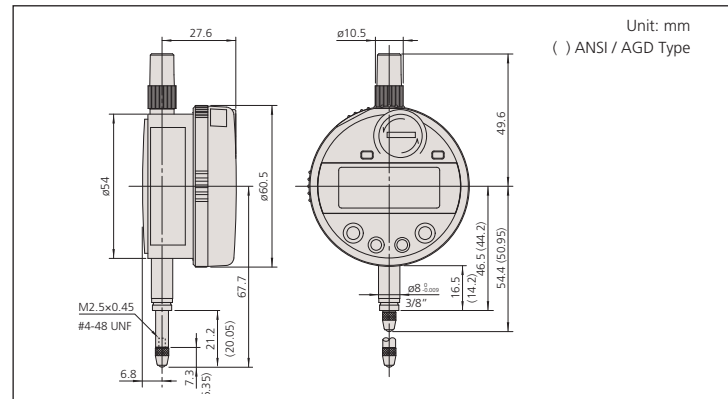
Inch/Metric		Stem dia. 3/8" #4-48 UNF Thread			
Resolution	Range	Order No.*	Model	Accuracy	Measuring Force
.00001" - .05"/ 0.0002 - 1mm	.5" / 12.7mm	<b>543-287B</b>	ID-C112REB	.00012"	1.5N or less
	1" / 25.4mm	<b>543-482B</b>	ID-C125REB	.00012"	2.0N or less
	2" / 50.8mm	<b>543-487B</b>	ID-C150REB	.00025"	2.3N or less

Inch/Metric		Stem ø 8mm, M2.5 x 0.45 Thread			
Resolution	Range	Order No.*	Model	Accuracy	Measuring Force
.00001" - .05"/ 0.0002 - 1mm	.5" / 12.7mm	<b>543-286B</b>	ID-C112RMB	.00012"	1.5N or less
	1" / 25.4mm	<b>543-481B</b>	ID-C125RMB	.00012"	2.0N or less
	2" / 50.8mm	<b>543-486B</b>	ID-C150RMB	.00025"	2.3N or less

Metric		Stem ø 8mm, M2.5 x 0.45 Thread			
Resolution	Range	Order No.*	Model	Accuracy	Measuring Force
0.0002 - 1mm (switchable)	12.7mm	<b>543-285B</b>	ID-C112RB	0.003mm	1.5N or less
	25.4mm	<b>543-480B</b>	ID-C125RB	0.003mm	2.0N or less
	50.8mm	<b>543-485B</b>	ID-C150RB	0.006mm	2.3N or less

\*Flat back

### DIMENSIONS



# ABSOLUTE Digimatic Indicator ID-C

SERIES 543 — with Green/Red LED and GO/NG Signal Output Function



## FEATURES

- With the max./min. value holding function, the signal ID-C can output the signal of the GO/±NG judgment result against the peak values set. Substitute for the mechanical/electrical contact, the judgment is carried out by calculating the measurement data obtained. This provides high reliability with no deterioration of the contact point and volume adjustment.
- The signal can be output to an external device like a sequencer through the NPN open-collector.
- The GO/±NG judgment result is also indicated by the green/red LED and the "<, O, >" signs on LCD.
- Employing the ABSOLUTE linear encoder, the Signal ID-C always displays the spindle "Absolute Position" from the origin at power-on.
- The Signal ID-C achieves the IP54 protection level to resist dust and contaminants for safe operation in harsh machine shop environments.



543-282

## SPECIFICATIONS

**Inch/Metric** Stem dia. 3/8" #4-48 UNF Thread □ ISO/JIS type □ ANSI/AGD type

Resolution	Range	Order No. (w/ lug, flat-back)	Model	Accuracy	Measuring force
.00005"/0.001mm	.5" / 12.7mm	<b>543-282</b> <b>543-282B</b>	ID-C112JE	.00012"	2.0N or less
.0005"/0.01mm	.5" / 12.7mm	<b>543-283</b> <b>543-283B</b>	ID-C112JT	.00012"	2.0N or less

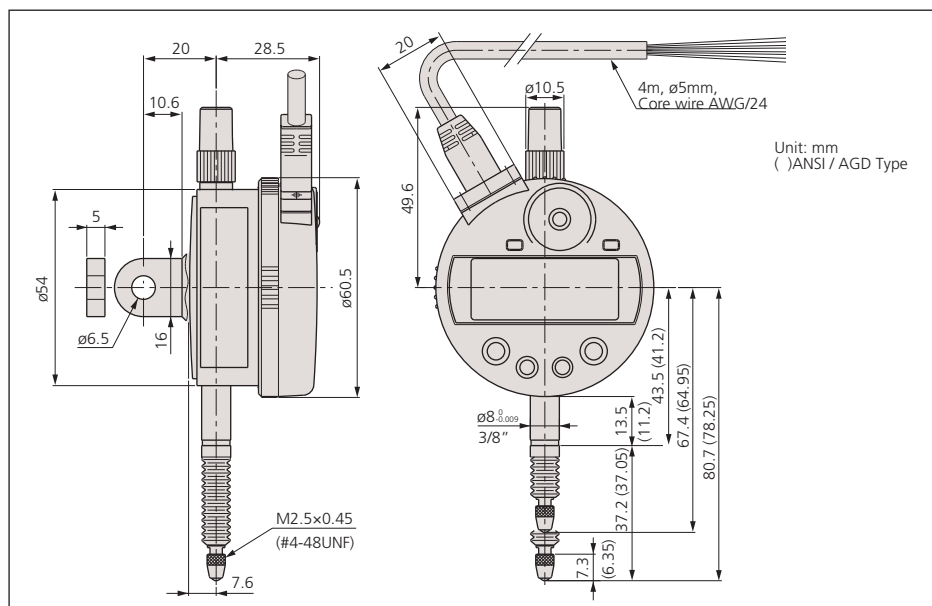
**Inch/Metric** Stem ø 8mm, M2.5 x 0.45 Thread

Resolution	Range	Order No. (w/ lug, flat-back)	Model	Accuracy	Measuring force
.00005"/0.001mm	.5" / 12.7mm	<b>543-281</b> <b>543-281B</b>	ID-C112JM	.00012"	2.0N or less

**Metric** Stem ø 8mm, M2. x 0.45 Thread

Resolution	Range	Order No. (w/ lug, flat-back)	Model	Accuracy	Measuring force
0.001mm	12.7mm	<b>543-280</b> <b>543-280B</b>	ID-C112J	0.003mm	2.0N or less

## DIMENSIONS



## Technical Data

Accuracy: Refer to the list of specifications  
 Resolution: 0.001mm, .00005"/0.001mm or .0001"/0.001mm  
 Display: LCD  
 Length standard: ABSOLUTE electrostatic capacitance type linear encoder  
 Max. response speed: Unlimited  
 Measuring force: 2.0N or less  
 Power supply: DC 12 - 24V±10%  
 Dust/Water protection level: IP54

## Function

Data output (-NG/OK/NG signal, NPN open collector), Remote control (hold-preset, preset-recall, zero-set), Origin-set/Preset, Zeroset, GO/±NG judgment, Max/Min/Runout value holding, Counting direction switching, Power ON/OFF, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error, Over-flow error, Tolerance limit setting error

## Optional Accessories

- 902011:** Spindle lifting lever\* (ISO/JIS type)
- 902794:** Spindle lifting lever\* (ANSI/AGD type)
- 540774:** Spindle lifting cable\* (Stroke: .4" / 10mm)
- 125317:** Rubber boot
- Backs (See page F-33.)
- Contact points (See page F-34.)

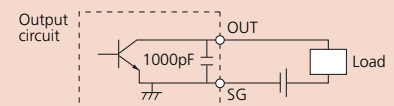
\*When using the spindle lifting lever/cable, IP54 is not guaranteed.

## Output pattern

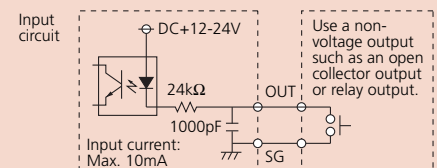
Wire	- NG	OK	+ NG	Composition error
Orange (- NG)	Low	High	High	High
Green (OK)	High	Low	High	High
Brown (+ NG)	High	High	Low	High
LED	Red	Green	Red	Red (blinking)
LCD	<	O	>	"x.xx" indication

## I/O Specifications

Wire	Signal	I/O	Description
Black	- V (GND)	—	Connected to minus (-) terminal
Red	+ V (GND)	I	Power supply (12 - 24VDC)
Orange	- NG	O	Tolerance judgment result output: Only the terminal corresponding to a judgment result is set to the below level.
Green	OK	O	
Brown	+ NG	O	
Yellow	PRESET_RECALL ZERO	I	External input terminal: If the relevant terminal is set to the low level, its signal becomes true.
Blue	HOLD_RESET	I	
Shield	FG	—	Connected to GND



Output voltage: Max. 24V  
 Output current: Max. 30mA  
 Output saturated voltage: Max. 0.3V



Input current: Max. 10mA  
 Use a non-voltage output such as an open collector output or relay output.





### Technical Data

Accuracy: Refer to the list of specifications  
 Resolution: 0.001mm, .00005"/0.001mm or .0001"/0.001mm  
 Display: LCD  
 Length standard: ABSOLUTE electrostatic capacitance type linear encoder  
 Max. response speed: Unlimited  
 Measuring force: 1.5N or less  
 Battery: SR44 (2 pcs.), **938882**  
 Battery life: Approx. 800 - 1300 hours under normal use  
 Dust/Water protection level: IP42

### Function

Origin-set/Preset, Zeraset, GO/±NG judgment, Max/Min/Runout value holding, Counting direction switching, Power ON/OFF, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error, Over-flow error, Tolerance limit setting error

### Optional Accessories

- 905338:** SPC cable (40" / 1m)
- 905409:** SPC cable (80" / 2m)
- 902011:** Spindle lifting lever (ISO/JIS type)
- 902794:** Spindle lifting lever (ANSI/AGD type)
- 540774:** Spindle lifting cable (stroke: .4" / 10mm)
- : Backs (See page F-33.)
- : Contact points (See page F-34.)

# ABSOLUTE Digimatic Indicator ID-C

## SERIES 543 — with Max./Min. Value Holding Function

With max./min. value holding function model of the ID-C Series Digimatic Indicators.

### FEATURES

- The maximum, minimum, or runout value can be displayed during measurement.
- GO/±NG judgment is performed by setting the upper and lower tolerances for max., min. and runout values.
- High speed sampling ratio of 50 times/s.
- Employing the ABSOLUTE linear encoder, the Signal ID-C always displays the spindle "Absolute Position" from the origin at power-on.



543-260

### SPECIFICATIONS

ISO/JIS type      ANSI/AGD type

Inch/Metric		Stem dia. 3/8" #4-48 UNF Thread		
Resolution	Range	Order No.*	Model	Accuracy
.00005"/0.001mm	.5" / 12.7mm	<b>543-262</b>	ID-C112AE	.00012"
.0001"/0.001mm	.5" / 12.7mm	<b>543-263</b>	ID-C112AT	.00012"

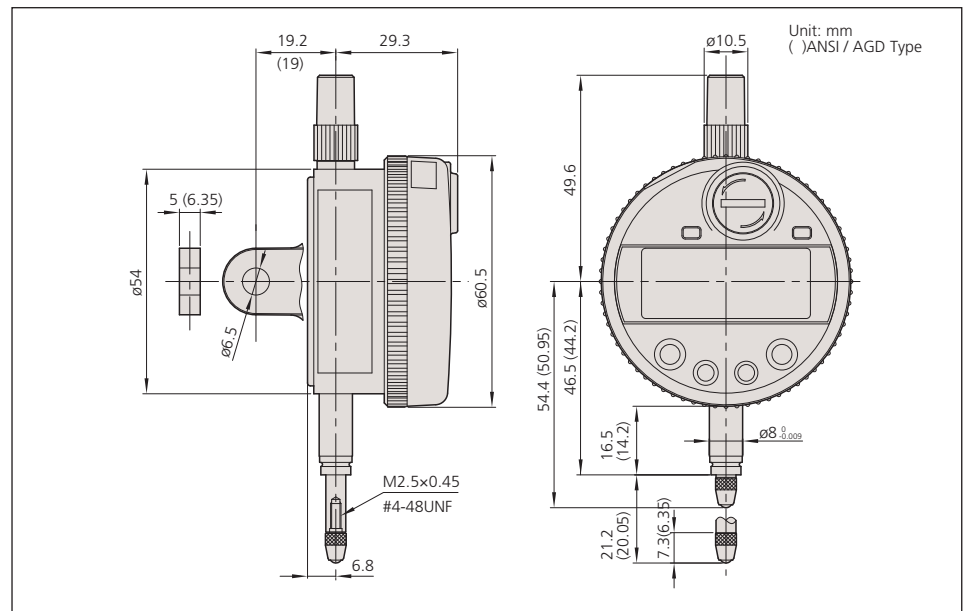
Inch/Metric		Stem ø 8mm, M2.5 x 0.45 Thread		
Resolution	Range	Order No.*	Model	Accuracy
.00005"/0.001mm	.5" / 12.7mm	<b>543-261</b>	ID-C112AM	.00012"

\*Back with lug

Metric		Stem ø 8mm, M2.5 x 0.45 Thread		
Resolution	Range	Order No.*	Model	Accuracy
0.001mm	12.7mm	<b>543-260</b>	ID-C112A	0.003mm

\*Back with lug

### DIMENSIONS



# ABSOLUTE Digimatic Indicator ID-C

## SERIES 543 — Specially Designed for Bore Gage Application

This ID-C Series Digimatic Indicators are exclusively designed for ID measurement.

### FEATURES

- The minimum value holding function provides the easy of detection of hole diameter.
- 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 three sets of master value and upper/lower tolerance value can be memorized.
- Employing the ABSOLUTE linear encoder, the Signal ID-C always displays the spindle "Absolute Position" from the origin at power-on.



### SPECIFICATIONS

ISO/JIS type    ANSI/AGD type

**Inch/Metric**    Stem dia. 3/8" #4-48 UNF Thread

Resolution	Range	Order No.*	Model	Accuracy
.00005"/0.001mm	.5" / 12.7mm	543-266B	ID-C112GE	.00012"
.0001"/0.001mm	.5" / 12.7mm	543-267B	ID-C112G	.00012"

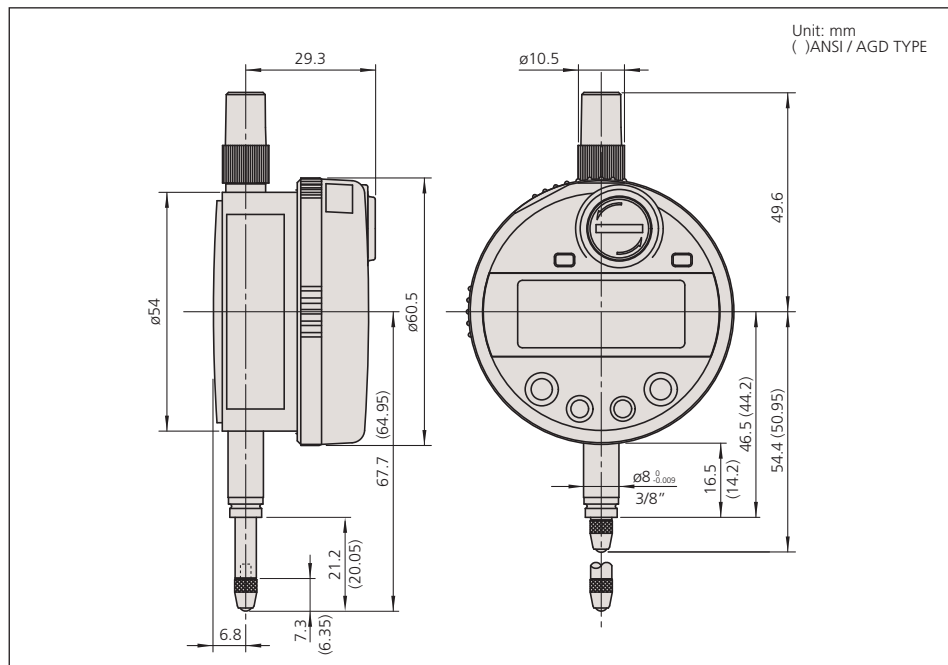
\*Back with lug

**Metric**    Stem  $\varnothing$  8mm, M2.5 x 0.45 Thread

Resolution	Range	Order No.*	Model	Accuracy
0.001mm	12.7mm	543-264B	ID-C112G	0.003mm

\*Back with lug

### DIMENSIONS



### Technical Data

Accuracy: Refer to the list of specifications  
 Resolution: 0.001mm or .00005"/0.001mm  
 Display: LCD  
 Length standard: ABSOLUTE electrostatic capacitance type linear encoder  
 Max. response speed: Unlimited  
 Measuring force: 1.5N or less  
 Battery: SR44 (2 pcs.), **938882**  
 Battery life: Approx. 2000 hours under normal use  
 Dust/Water protection level: IP42

### Function

Origin-set/Pre-set, Zero-set, GO/±NG judgment, Power ON/OFF, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error, Over-flow error, Tolerance limit setting error

### Optional Accessories

**905338:** SPC cable (40" / 1m)  
**905409:** SPC cable (80" / 2m)  
 Applicable Gages Series 511 and 526



Installed on bore gage probe (511-127)



### Technical Data

Accuracy: Refer to the list of specifications  
 Resolution: 0.0005mm/0.001mm or .00002"/.00005"  
 /.0001"/0.0005mm/0.001mm  
 Display: LCD  
 Length standard: Linear encoder  
 Max. response speed: 1000mm/s  
 Measuring force: 2.0N/2.5N\* or less (\*60mm range models)  
 Power supply: 6V DC (via AC adaptor)

### Function

Origin-set/Preset, Zerose, GO/±NG judgment, Max/Min value hold, Runout measurement, Resolution switching, Counting direction switching, Power ON/OFF, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error, Over-flow error, Tolerance limit setting error

### Standard Accessories

06AEG302JA: AC Adapter 120v  
 137693: Lifting Lever

### Optional Accessories

936937: SPC cable (40" / 1m)  
 965014: SPC cable (80" / 2m)  
 21EAA131: RS-232C cable (80" / 2m)  
 21EZA099: Remote controller  
 540774: Spindle lifting cable (stroke: .4" / 10mm)  
 21EZA101: Spindle lifting knob  
 264-504-5A: Digimatic Min-processor DP-1VR  
 543-004A: Digimatic presetter  
 21EZA152A: FREE PARAMETER SETTING SOFTWARE  
 —: Backs (See page F-33.)  
 —: Contact points (See page F-34.)

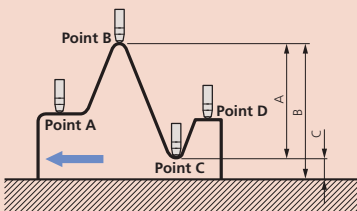
\*Required when orienting the indicator upside down.

### Application

#### Difference/Runout measurement

#### Example: Indicator travel from points A to D

Difference (or Total Runout) is displayed as A. Dimensions B (maximum value) and C (minimum value) can be recalled from memory with a simple key sequence.



Order No.	A	B	C	D	E
543-561A	251.3	47.3	30.48	60	7.3
543-562A	250.35	46.35	30.48	60	6.35
543-563A	311.3	77.3	60.96	90	7.3
543-564A	310.35	76.35	60.96	90	6.35

# ABSOLUTE Digimatic Indicator ID-H

## SERIES 543 — High Accuracy and High Functional Type

### FEATURES

- This new-generation digital indicator offers the excellent accuracy and functionality expected from this class of indicator. Take advantage of its high accuracy backed up by 0.5µm / .00002" resolution, remote control functionality via a handheld controller (or an RS-232C interface) and easy runout measurements with the well-established analog bar display.
- The maximum, minimum, or runout value can be displayed during measurement.
- GO/±NG judgment is performed by setting the upper and lower tolerances. If a judgment result is out of tolerance, the display backlighting changes from green to red, so tolerance judgment can be made at a glance.
- With SPC data output.
- With RS-232C input/output



### SPECIFICATIONS

**Inch/Metric** Stem dia. 3/8" #4-48 UNF Thread

Resolution	Range	Order No.*	Model	Accuracy
.00002", .00005", .0001", 0.0005mm, 0.001mm	1.2" / 30.4mm	543-562A	ID-H530E	0.0015mm
	2.4" / 60.9mm	543-564A	ID-H560E	0.0025mm

**Metric** Stem ø 8mm M2.5 X 0.45 Thread

Resolution	Range	Order No.*	Model	Accuracy
0.0005mm, 0.001mm	30.4mm	543-561A	ID-H530	0.0015mm
	60.9mm	543-563A	ID-H560	0.0025mm

Tolerance judgment



Analog bar display



Max/Min value measurement



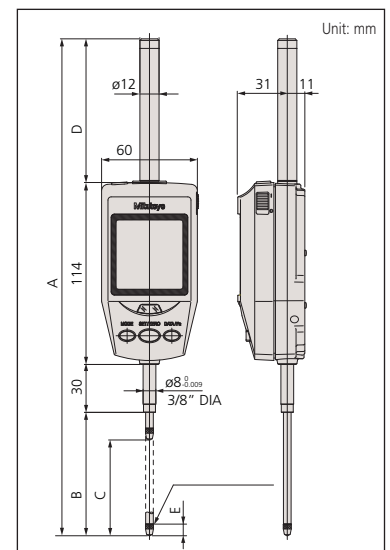
Runout measurement



Resolution switching



### DIMENSIONS



# ABSOLUTE Digimatic Indicator ID-F

**SERIES 543 — with Back-lit LCD Screen**



## FEATURES

- With the ABSOLUTE Linear Encoder technology, once the measurement reference point has been preset it will not be lost when the power is turned on.
- GO/±NG judgment is performed by setting the upper and lower tolerances. If a judgment result is out of tolerance, the display backlighting changes from green to red, so tolerance judgment can be made at a glance.
- An analog bar indicator has been integrated to handle upper/lower limit approaching and zero approaching. It enhances the ease of operation in the same manner as a dial indicator. The display range of the analog bar can be changed.
- With SPC data output.



- The maximum, minimum, or runout value can be displayed during measurement.



## SPECIFICATIONS

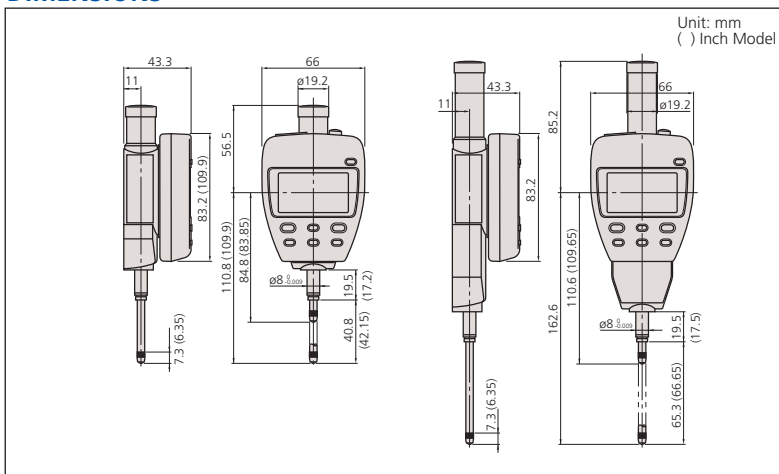
**Inch/Metric** Stem dia. 3/8" #4-48 UNF Thread

Resolution	Range	Order No.*	Model	Accuracy
.00005", .0001", .0005", .001", 0.001mm, 0.01mm	1" / 25.4mm	<b>543-552A</b>	ID-F125E	.00012"
	2" / 50.8mm	<b>543-558A</b>	ID-F150HE	.00012"

**Metric** Stem  $\varnothing$  8mm M2.5 X 0.45 Thread

Resolution	Range	Order No.*	Model	Accuracy
0.001mm, 0.01mm	25mm	<b>543-551A</b>	ID-F125	0.003mm
	50mm	<b>543-557A</b>	ID-F150H	0.003mm

## DIMENSIONS



## Technical Data

Accuracy: Refer to the list of specifications  
 Resolution: 0.01mm/0.001mm or .00005"/.0001"/.0005"/.001"/0.001mm/0.01mm  
 Display: LCD  
 Length standard: ABSOLUTE electrostatic capacitance type linear encoder  
 Max. response speed: Unlimited  
 Measuring force: 1.8N/2.3N\* or less (\*50mm range models)  
 Power supply: 9V DC (via AC adaptor)

## Function

Origin-set/Preset, Zeroset, GO/±NG judgment, Max/Min value hold, Runout measurement, Resolution switching, Counting direction switching, Power ON/OFF, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error, Over-flow error, Tolerance limit setting error

## Standard Accessories

**06AEG180JA**: AC Adapter 120V  
**137693**: Lifting Lever

## Optional Accessories

**936937**: SPC cable (40" / 1m)  
**965014**: SPC cable (80" / 2m)  
**540774**: Spindle lifting cable (stroke: .4" / 10mm)  
**02ACA571**: Auxiliary spindle spring for 25mm/1" models\*  
**02ACA773**: Auxiliary spindle spring for 50mm/2" models\*  
**264-504-5A**: Digimatic Min-processor DP-1VR  
**543-004-1**: Digimatic presetter  
 ———: Backs (See page F-33.)  
 ———: Contact points (See page F-34.)

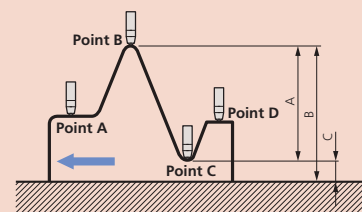
\*Required when orienting the indicator upside down.

## Application

### Difference/Runout measurement

**Example: Indicator travel from points A to D**

Difference (or Total Runout) is displayed as A. Dimensions B (maximum value) and C (minimum value) can be recalled from memory with a simple key sequence.





### Technical Data

Accuracy: Refer to the list of specifications  
 Resolution: 0.01mm, 0.01mm/0.001mm, .0005"/0.01mm or .0005"/0.0005"/0.01mm/0.001mm  
 Display: LCD  
 Length standard: ABSOLUTE electrostatic capacitance type linear encoder  
 Max. response speed: Unlimited  
 Measuring force: 2.5N (2.0N: Back plunger type)  
 Battery: SR44 (1 pc.), **938882**  
 Battery life: Approx. 7000 hours under normal use  
 Dust/Water protection level: IP66

### Function

Zero-setting, Presetting, Direction switching, Tolerance judgment, Display hold, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error, Over-flow error, Tolerance limit setting error

### Optional Accessories

- 21EZA105:** Lifting knob (for ISO/JIS model)
  - 21EZA150:** Lifting knob (for AGD model)
  - 21EZA145:** Lug (for JIS/ISO model)
  - 21EZA146:** Lug (for AGD model)
  - 02ACA376:** Rubber boot (for ID-N, NBR)
  - 238774:** Rubber boot (for ID-N, silicon)
  - 125317:** Rubber boot (for ID-B, NBR)
  - 21EAA212:** Rubber boot (for ID-B, silicon)
  - 21EAA194:** SPC cable (40" / 1m)
  - 21EAA190:** SPC cable (80" / 2m)
  - 21EAA210:** Bifurcated connecting cable with zero-setting terminal (40" / 1m)
  - 21EAA211:** Bifurcated connecting cable with zero-setting terminal (80" / 2m)
- : Contact points (See page F-34.)



# ABSOLUTE Digimatic Indicator ID-N / B

## SERIES 543 — with Dust/Water Protection Conforming to IP66

### FEATURES

- Proven ABSOLUTE sensor.
- Rated to IP66 water- and dust-proofing standard and oil resistance improved.
- Slim body design is advantageous for multi-point measurements.
- Improvement in workability with the LCD readout-rotation function.
- Back plunger design (ID-B).
- Built-in tolerance judgment function.
- Switchable resolution\*.
- Waterproof data output connector.
- Built-in hold/preset function



Slim type ID-N  
543-576



Back plunger type ID-B  
543-586

### ID-B Digimatic Indicators

#### SPECIFICATIONS

Metric		Stem $\varnothing$ 8mm M2.5 X 0.45 Thread			
Resolution	Range	Order No.	Model No.	Accuracy	Measuring Force
0.01mm	5.0mm	<b>543-580</b>	ID-B1005	0.02mm	2.0N or less
0.001mm	5.0mm	<b>543-585</b>	ID-B105	0.003mm	2.0N or less

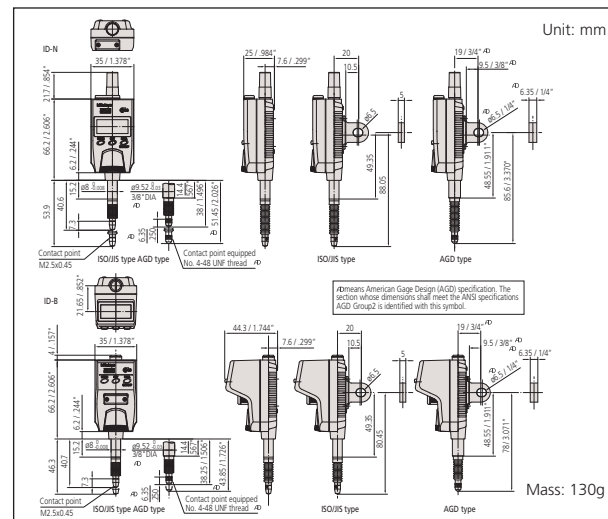
Inch / Metric		Stem dia. 3/8" #4-48 UNF Thread			
Resolution	Range	Order No.	Model No.	Accuracy	Measuring Force
.0005" / 0.01mm	.22" / 5.6mm	<b>543-581</b>	ID-B1005E	.0008" / 0.02mm	2.0N or less
.0005" / 0.01mm	.22" / 5.6mm	<b>543-586*</b>	ID-B105E	.00012" / 0.003mm	2.0N or less

### ID-N Digimatic Indicators

Metric		Stem $\varnothing$ 8mm M2.5 X 0.45 Thread			
Resolution	Range	Order No.	Model No.	Accuracy	Measuring Force
0.01mm	5.0mm	<b>543-570</b>	ID-N1012	0.02mm	2.0N or less
0.001mm / 0.01mm	5.0mm	<b>543-575</b>	ID-N112	0.003mm	2.0N or less

Inch / Metric		Stem dia. 3/8" #4-48 UNF Thread			
Resolution	Range	Order No.	Model No.	Accuracy	Measuring Force
.0005" / 0.01mm	.5" / 12.7mm	<b>543-571</b>	ID-N1012E	.0008" / 0.02mm	2.0N or less
.0005" / 0.01mm	.5" / 12.7mm	<b>543-576*</b>	ID-N112E	.00012" / 0.003mm	2.0N or less

### DIMENSIONS AND MASS



# EC Counter

## SERIES 542 — Low-cost, Assembly, Type Display Unit

### FEATURES

- Employed the DIN size (96 X 48mm) and mount-on-panel configuration, which greatly facilitates the incorporation into a system.
- Possible to produce either tolerance judgment output or Digimatic output.

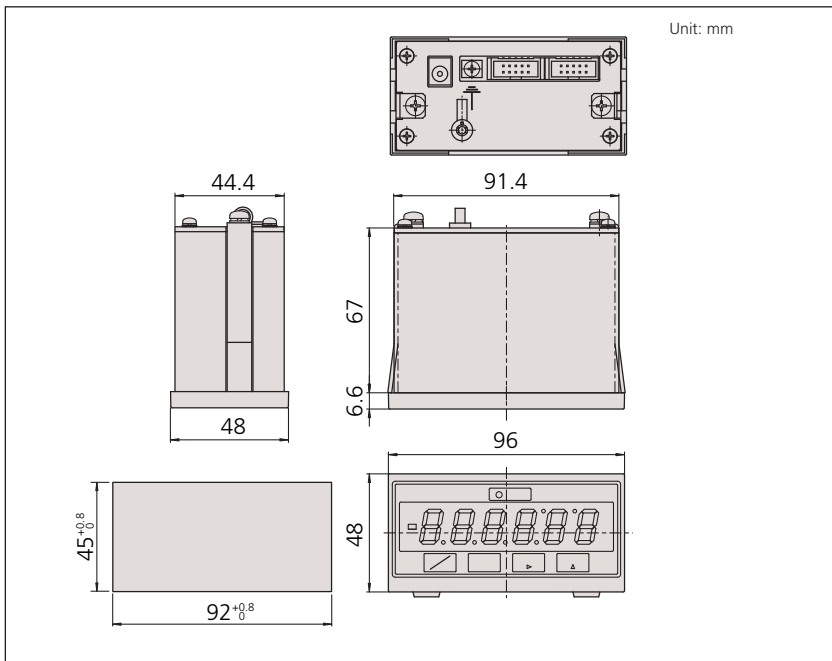


542-007A

### SPECIFICATIONS

Order No.	Description
542-007A	EC Counter

### DIMENSIONS



### EC Counter

#### Technical Data

Applicable gage: LGD, LGS, All SPC output gages  
 Resolution: 0.001mm, 0.01mm  
 No. of gage input: 1  
 Display: 6-digit LED and a negative [-] sign  
 Function: Preset  
 GO/±NG judgment  
 Output (open-collector): 3-step limit signal, Normal signal  
 External control: Preset, Data hold  
 Power supply: Via AC adaptor  
 Dimensions (W x D x H): 96 x 48 x 84.6mm  
 Mass: 500g

#### Standard Accessories

**06AEG302JA:** AC Adapter  
**936937:** SPC cable (40"/1m)  
**965014:** SPC cable (80"/1m)  
**214938:** PJ-2 (DC Plug)  
**C162-155:** GO/±NG judgement cable

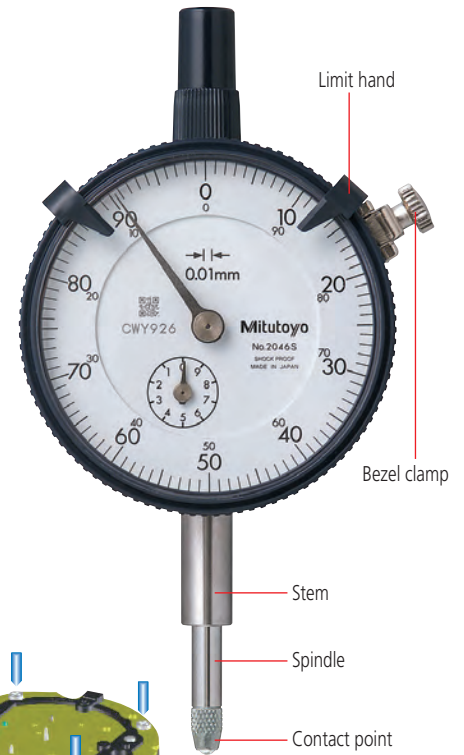
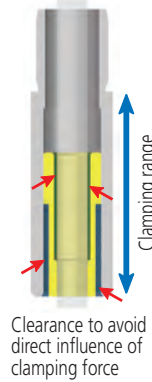
# Dial Indicators

## Description of Icon

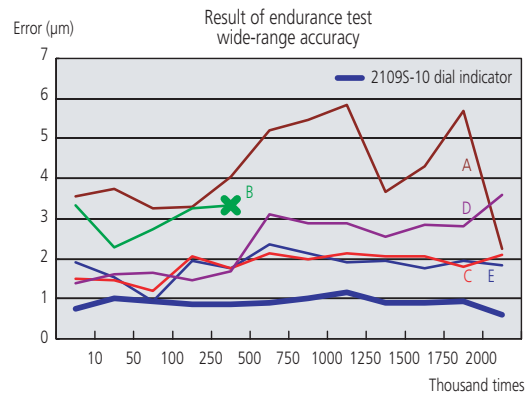
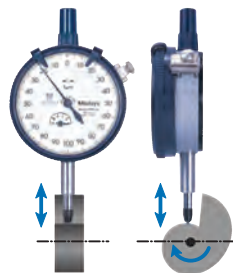
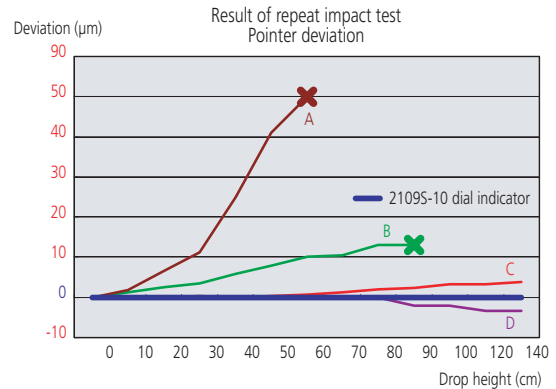
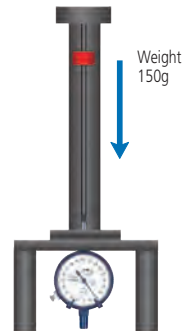
Icon	Description
	Reverse reading type suitable for depth and step measurement.
	One revolution type for easy and error-free reading
	Double scale spacing type, easy-on-the-eyes
	Shockproof type
	Waterproof type
	With damper at lowest rest point
	Jeweled bearing type
	Peak retaining type
	Long stem type
	Dustproof type
	With coaxial revolution counter
	Back plunger type
	Adjustable hand type
	Double-face type

## FEATURES: S Series

- Revolutionary stem-bush design for trouble free stem clamping (longer clamping range).
- No through screw-hole on the frame for high dust-resistance.



- Involute curved lifting lever for smooth movement of spindle and dovetail joint for tool-less connection.
- Grater rigidity in the bearing plate for reducing the retracing error (20%) and 4-screw mounting for increasing impact resistance.



# Dial Indicators

## SERIES 0 - Compact type



1911



1923



1911



1913-10

### SPECIFICATIONS

**Inch** Stem dia. 3/8", #4-48 UNF Thread □ ANS/AGD type

Graduation	Range	Range/rev	Dial reading	Order No.		Accuracy		Measuring force	
				w/ lug	Flat-back	First 2.5 Rev	Overall Accuracy		
.0001"	.01"	.004"	0-2-0	<b>1927-10</b>	<b>1927B-10</b>	±.0002"	±.0002"	1.4N or less	✓
.0001"	.025"	.01"	0-5-0	<b>1925-10</b>	<b>1925B-10</b>	±.0002"	±.0002"	1.4N or less	✓
.0005"	.05"	.02"	0-10-0	<b>1923</b>	<b>1923B</b>	±.0005"	±.0005"	1.4N or less	—
.001"	.1"	.04"	0-20-0	<b>1921</b>	<b>1921B</b>	±.001"	±.001"	1.4N or less	—

**Metric** Stem ø 8mm, M2.5 x 0.45 Thread □ ISO/JIS type

Graduation	Range	Range/Rev	Dial reading	Order No.		Accuracy		Measuring force	
				w/ lug	Flat-back	First 2.5 Rev	Overall Accuracy		
0.002mm	0.5mm	0.2mm	0-100-0	<b>1913-10</b>	<b>1913B-10</b>	±0.011mm	±0.011mm	1.4N or less	✓
0.01mm	2.5mm	1mm	0-50-0	<b>1911</b>	<b>1911B</b>	±0.011mm	±0.011mm	1.4N or less	—

Jeweled bearing type

### DIMENSIONS

**Inch Model** Unit: Inch

Order Number	A	B
<b>1927-10</b>	1.46"	.26"
<b>1925-10</b>	1.48"	.28"
<b>1923</b>	1.51"	.31"
<b>1921</b>	1.58"	.37"

**Metric Model** Unit: mm

Order Number	A	B
<b>1911</b>	42	11.5
<b>1913-10</b>	39.5	9

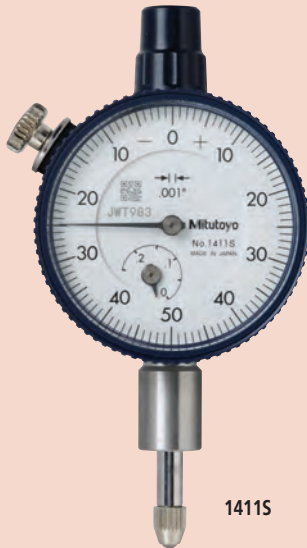


# Dial Indicators

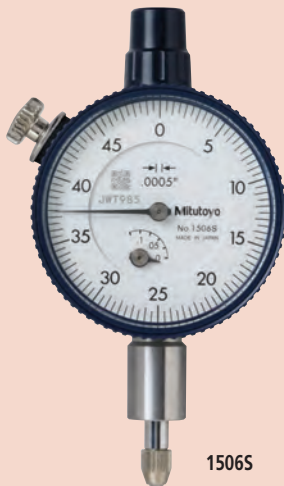
## SERIES 1



18035-10



14115



15065

### SPECIFICATIONS

**Inch**

Stem dia. 3/8" #4-48 UNF Thread

ANSI/AGD type

Graduation	Range	Range / Rev	Dial reading	Order No.		Accuracy		Measuring force	<input type="checkbox"/>	<input type="checkbox"/>
				(W/Lug)	(Flat-back)	First 2.5 Rev	Overall Accuracy			
.0001"	.025"	.01"	0-10	<b>18025-10</b>	<b>18025B-10</b>	±.0001"	±.0001"	1.4N or less	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
.0001"	.025"	.01"	0-5-0	<b>18035-10</b>	<b>18035B-10</b>	±.0001"	±.0001"	1.4N or less	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
.0005"	.1"	.04"	0-40	<b>16705</b>	<b>16705B</b>	±.0005"	±.0005"	1.4N or less	<input type="checkbox"/>	<input type="checkbox"/>
.0005"	.1"	.04"	0-20-0	<b>16715</b>	<b>16715B</b>	±.0005"	±.0005"	1.4N or less	<input type="checkbox"/>	<input type="checkbox"/>
.0005"	.125"	.05"	0-50	<b>15065</b>	<b>15065B</b>	±.0005"	±.0005"	1.4N or less	<input type="checkbox"/>	<input type="checkbox"/>
.0005"	.125"	.05"	0-25-0	<b>15075</b>	<b>15075B</b>	±.0005"	±.0005"	1.4N or less	<input type="checkbox"/>	<input type="checkbox"/>
.001"	.125"	.05"	0-50	<b>17805</b>	<b>17805B</b>	±.001"	±.001"	1.4N or less	<input type="checkbox"/>	<input type="checkbox"/>
.001"	.125"	.025"	0-25-0	<b>17815</b>	<b>17815B</b>	±.001"	±.001"	1.4N or less	<input type="checkbox"/>	<input type="checkbox"/>
.001"	.25"	.1"	0-100	<b>14105</b>	<b>14105B</b>	±.001"	±.001"	1.4N or less	<input type="checkbox"/>	<input type="checkbox"/>
.001"	.25"	.1"	0-100	<b>14105-10</b>	<b>14105B-10</b>	±.001"	±.001"	1.4N or less	<input type="checkbox"/>	<input checked="" type="checkbox"/>
.001"	.25"	.1"	0-50-0	<b>14115</b>	<b>14115B</b>	±.001"	±.001"	1.4N or less	<input type="checkbox"/>	<input type="checkbox"/>



Shockproof type



Jeweled bearing type

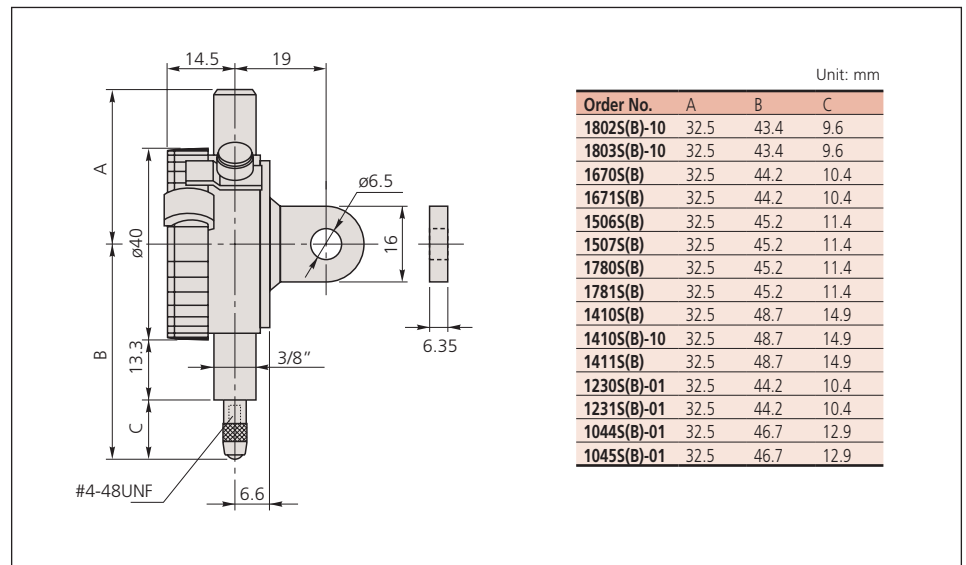
**Metric**

Metric - ANSI Standard Stem dia. 3/8" #4-48 UNF Thread yellow dial face

ANSI/AGD type

Graduation	Range	Range / Rev	Dial reading	Order No.		Accuracy		Measuring force
				(W/Lug)	(Flat-back)	First 2.5 Rev	Overall Accuracy	
0.002mm	0.5mm	0.2mm	0-20	<b>10105-11</b>	<b>10105B-11</b>	±0.002mm	±0.002mm	1.5N or less
0.002mm	0.5mm	0.2mm	0-10-0	<b>10115-11</b>	<b>10115B-11</b>	±0.002mm	±0.002mm	1.5N or less
0.01mm	2.5mm	1mm	0-100	<b>12305-01</b>	<b>12305B-01</b>	±0.01mm	-	1.4N or less
0.01mm	2.5mm	1mm	0-50-0	<b>12315-01</b>	<b>12315B-01</b>	±0.01mm	-	1.4N or less
0.01mm	5mm	1mm	0-100	<b>10445-01</b>	<b>10445B-01</b>	±0.01mm	±0.013mm	1.4N or less
0.01mm	5mm	1mm	0-50-0	<b>10455-01</b>	<b>10455B-01</b>	±0.01mm	±0.013mm	1.4N or less

### DIMENSIONS



# Dial Indicators

## SERIES 1



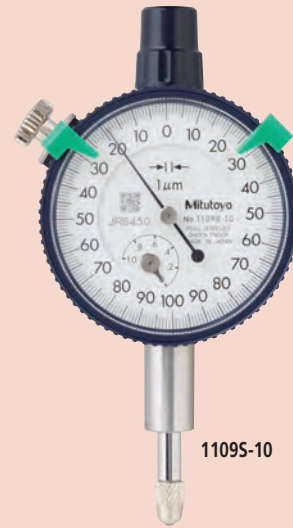
1040S



1013S



1045S



1109S-10

**Metric** Stem  $\varnothing$  8mm M2.5 X 0.45 Thread ISO/JIS type

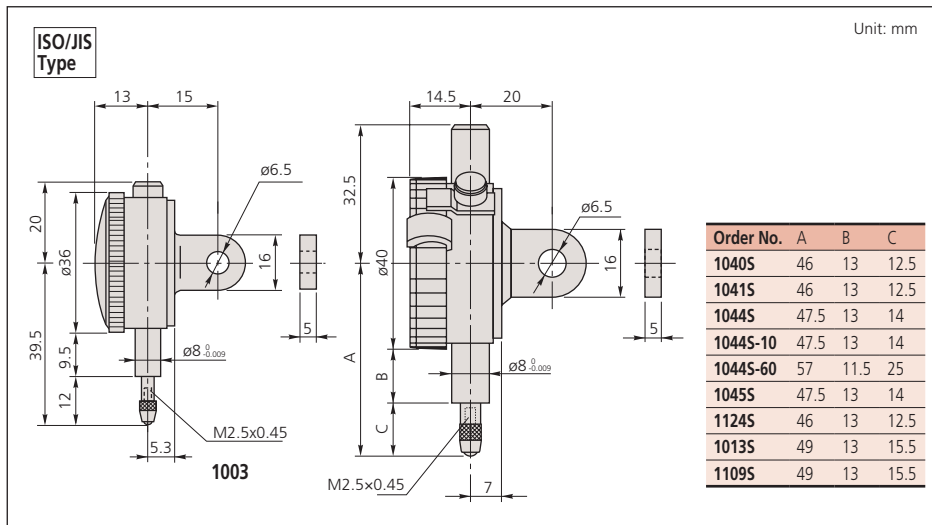
Graduation	Range	Range / Rev	Dial reading	Order No.		Accuracy		Measuring force	Shockproof	Waterproof	Jeweled bearing
				(W/Lug)	(Flat-back)	First 2.5 Rev	Overall Accuracy				
0.001mm	1mm	0.2mm	0-100-0	<b>1109S-10</b>	<b>1109SB-10</b>	$\pm 0.001$ mm	$\pm 0.007$ mm	1.5N or less	✓		✓
0.002mm	1mm	0.2mm	0-100-0	<b>1013S-10</b>	<b>1013SB-10</b>	$\pm 0.002$ mm	$\pm 0.01$ mm	1.5N or less	✓		✓
0.005mm	3.5mm	0.5mm	0-50	<b>1124S</b>	<b>1124SB</b>	$\pm 0.005$ mm	$\pm 0.013$ mm	1.4N or less			✓
0.01mm	3.5mm	0.5mm	0-50-0	<b>1040S</b>	<b>1040SB</b>	$\pm 0.01$ mm	$\pm 0.013$ mm	1.5N or less			
0.01mm	3.5mm	0.5mm	0-25-0	<b>1041S</b>	<b>1041SB</b>	$\pm 0.01$ mm	$\pm 0.013$ mm	1.5N or less			
0.01mm	4mm	1mm	0-50-0	<b>1003</b>	<b>1003B</b>	$\pm 0.01$ mm	$\pm 0.013$ mm	1.5N or less			
0.01mm	5mm	1mm	0-100	<b>1044S</b>	<b>1044SB</b>	$\pm 0.01$ mm	$\pm 0.013$ mm	1.5N or less			
0.01mm	5mm	1mm	0-100	<b>1044S-60</b>	<b>1044SB-60</b>	$\pm 0.01$ mm	$\pm 0.013$ mm	2N or less		✓	
0.01mm	5mm	1mm	0-100	<b>1044S-10</b>	<b>1044SB-10</b>	$\pm 0.01$ mm	$\pm 0.013$ mm	4N or less	✓		
0.01mm	5mm	1mm	0-50	<b>1045S</b>	<b>1045SB</b>	$\pm 0.01$ mm	$\pm 0.013$ mm	1.4N or less			

- Shockproof type
- Waterproof type
- Jeweled bearing type



1003

## DIMENSIONS



1044S

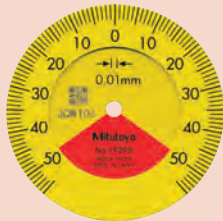


# Dial Indicators

## SERIES 1 — Compact One Revolution Type for Error-free Reading



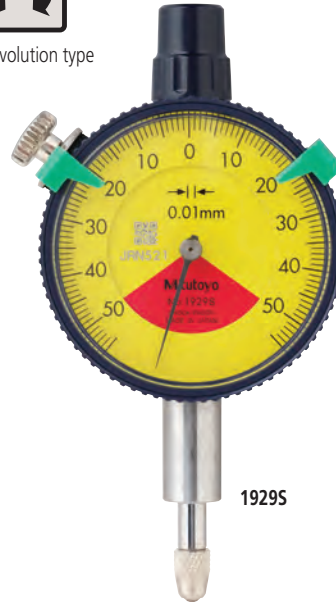
One revolution type



1929S  
1929S-62



1900S-10  
1900S-72



1929S

Unlike many other dial indicators, the one-revolution dial indicator literally shows the entire spindle travel or range as one sweep of the hand, eliminating the possibility of reading errors due to miscounting the multiple revolutions. With one-revolution dial indicators, "within tolerance" and "out-of-tolerance" can never be misinterpreted. An unique shock-proof mechanism is incorporated, providing improved immunity to shock due to sudden spindle retraction caused by high impact.



Shockproof type



Dustproof type



Waterproof type



Jeweled bearing type

### SPECIFICATIONS

**Inch**

Stem dia. 3/8", #4-48 UNF Thread

ANSI/AGD type

Graduation	Range (range/full stroke)	Dial reading	Order No.		Accuracy	Measuring force			<input type="checkbox"/>	<input type="checkbox"/>
			w/lug	Flat-back						
.0001"	.006" / .0079"	3-0-3	<b>1910S-72</b>	<b>1910SB-72</b>	±.0001"	1.4N or less	✓	✓	—	—
.0005"	.04" / .055"	20-0-20	<b>1909S-62</b>	<b>1909SB-62</b>	±.0005"	1.4N or less	✓	✓	—	—

**Metric**

Stem ø 8mm, M2.5 x 0.45 Thread

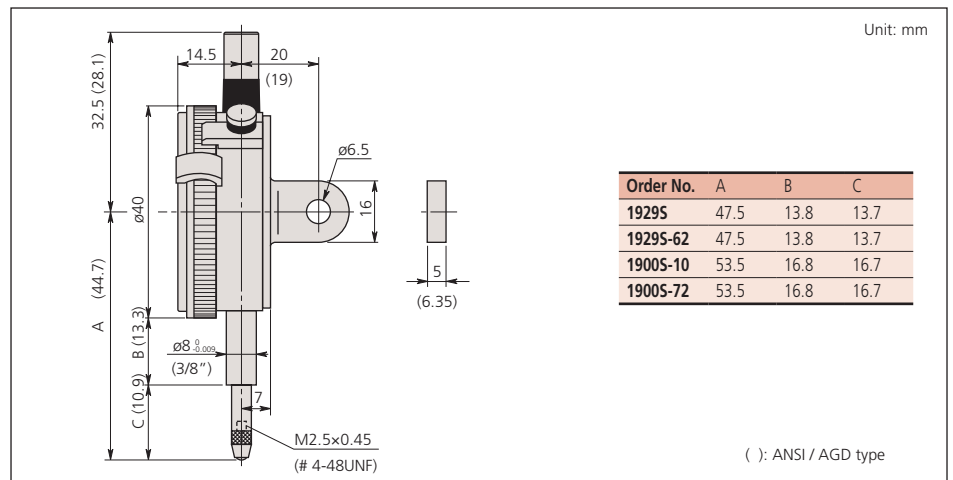
ISO/JIS type

Graduation	Range (range/full stroke)	Dial reading	Order No.		Accuracy	Measuring force			<input type="checkbox"/>	<input type="checkbox"/>
			w/lug	Flat-back						
0.001mm	0.1mm / 0.14mm	50-0-50	<b>1900S-10</b>	<b>1900SB-10</b>	±0.005mm	1.5N or less	✓	—	—	✓
0.001mm	0.1mm / 0.14mm	50-0-50	<b>1900S-72</b>	<b>1900SB-72</b>	±0.006mm	1.5N or less	✓	✓	—	✓
0.01mm	1mm / 1.4mm	50-0-50	<b>1929S</b>	<b>1929SB</b>	±0.011mm	1.4N or less	✓	—	—	—
0.01mm	1mm / 1.4mm	50-0-50	<b>1929S-62</b>	<b>1929SB-62</b>	±0.011mm	1.4N or less	✓	✓	—	—

### Optional Accessories

- : Backs (See page F-33.)
- : Contact points (See page F-34.)

### DIMENSIONS

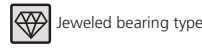
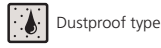
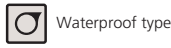


# Dial Indicators

## SERIES 2 — Standard One Revolution Type for Error-free Reading



One revolution type.



### SPECIFICATIONS

**Metric** Stem  $\varnothing$  8mm, M2.5 x 0.45 Thread ISO/JIS type

Graduation	Range (range/full stroke)	Dial reading	Order No.		Accuracy	Measuring force	Shockproof	Waterproof	Dustproof	Jeweled bearing
			w/ lug	Flat-back						
0.001mm	0.08mm / 0.1mm	40-0-40	<b>2900S-10</b>	<b>2900SB-10</b>	$\pm 0.003$ mm	1.4N or less	✓	—	—	✓
0.001mm	0.08mm / 0.1mm	40-0-40	<b>2900S-70</b>	<b>2900SB-70</b>	$\pm 0.003$ mm	2.0N or less	✓	✓	—	✓
0.001mm	0.08mm / 0.1mm	40-0-40	<b>2900S-72</b>	<b>2900SB-72</b>	$\pm 0.003$ mm	2.0N or less	✓	—	✓	✓
0.001mm	0.16mm / 0.2mm	80-0-80	<b>2901S-10</b>	<b>2901SB-10</b>	$\pm 0.004$ mm	1.4N or less	✓	—	—	✓
0.01mm	0.8mm / 1mm	40-0-40	<b>2929S</b>	<b>2929SB</b>	$\pm 0.009$ mm	2.0N or less	✓	—	—	—
0.01mm	0.8mm / 1mm	40-0-40	<b>2929S-60</b>	<b>2929SB-60</b>	$\pm 0.009$ mm	2.0N or less	✓	✓	—	—
0.01mm	0.8mm / 1mm	40-0-40	<b>2929S-62</b>	<b>2929SB-62</b>	$\pm 0.009$ mm	2.0N or less	✓	—	✓	—
0.01mm	1.6mm / 2mm	80-0-80	<b>2959S</b>	<b>2959SB</b>	$\pm 0.013$ mm	1.4N or less	✓	—	—	—
0.01mm	0.5mm / 0.7mm	25-0-25	—	<b>2971*</b>	$\pm 0.010$ mm	1.4N or less	✓	—	✓	—
0.01mm	1mm / 1.4mm	50-0-50	—	<b>2972*</b>	$\pm 0.012$ mm	1.4N or less	✓	—	✓	—
0.02mm	1.6mm / 2mm	80-0-80	—	<b>2973*</b>	$\pm 0.016$ mm	1.4N or less	✓	—	✓	—
0.1mm	4mm / 10mm	2-0-2	<b>2928S</b>	<b>2928SB</b>	$\pm 0.040$ mm	1.4N or less	✓	—	—	—

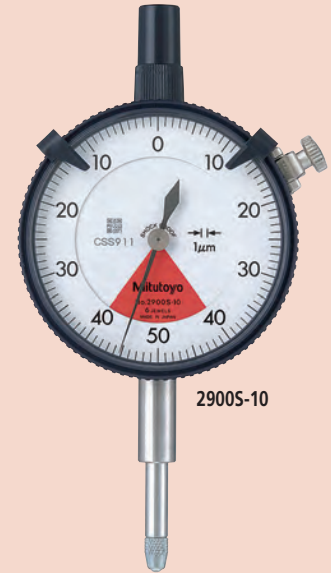
\* Flat back type only. (Lug-on-center back is not available.)

### DIMENSIONS

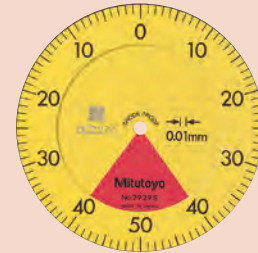
ISO/JIS Type

Unit: mm

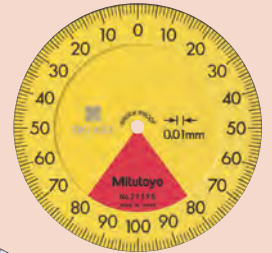
Order No.	A	B	C	D	E	F	H
<b>2971</b>	43.2	65.6	55.6	16.2	21	16.8	55
<b>2972</b>	43.2	66.0	55.6	16.2	21	17.2	55
<b>2973</b>	43.2	66.3	55.6	16.2	21	17.5	55
<b>2929S</b>	48.8	65.2	57	17.7	12.3	29.2	52
<b>2929S-62</b>	48.8	65.2	57	17.7	16.9	19.8	52
<b>2929S-60</b>	48.8	70	57	17.7	12.3	29.2	52
<b>2959S</b>	48.8	65.2	57	17.7	16.9	19.8	52
<b>2900S-10</b>	48.8	66	57	17.7	16.9	20.6	52
<b>2900S-72</b>	48.8	66	57	17.7	16.9	20.6	52
<b>2900S-70</b>	48.8	67	57	17.7	12.3	26.2	52
<b>2901S-10</b>	48.8	66.1	57	17.7	16.9	20.7	52
<b>2928S</b>	48.8	65.2	57	17.7	16.9	19.8	52



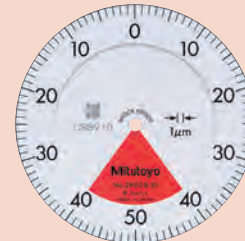
2900S-10



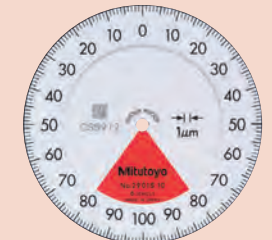
2929S  
2929S-60  
2929S-62



2959S



2900S-10  
2900S-70  
2900S-72



2901S-10

### Optional Accessories

- : Backs (See page F-33.)
- : Contact points (See page F-34.)



# Dial Indicators

## SERIES 2 — Standard One Revolution Type for Error-free Reading

### FEATURES

- An unique shock-proof mechanism is incorporated, providing improved immunity to shock due to sudden spindle retraction caused by high impact.
- The crystal is hard coated for durability and scratch resistance.
- Approximately 40% lighter than the conventional dial indicator.

- Provided with an improved resistance to shop floor contaminants such as water and dust.
- Due to the spindle bushing being offset from the stem, spindle movement will not be hindered or jammed when clamping along the stem.
- A pair of limit hands are provided for quick and easy tolerance judgment (GO/±NG).



2909S-62



2978



One revolution type.

### SPECIFICATIONS

**Inch** Stem 3/8" dia., #4-48 UNF Thread

ANSI/AGD type

Graduation	Range	Range/full stroke	Dial reading	Order No.		Accuracy	Measuring force	Shock Proof	Water Resistant	Hard Coated
				w/ lug	Flat-back					
.0001"	.008"	.01"	4-0-4	2910S-10	2910SB-10	±.0001"	1.8N or less	✓	✓	✓
.0001"	.008"	.01"	4-0-4	2910S-72	2910SB-72	±.0001"	2.5N or less	✓	✓	✓
.0005"	.04"	.05"	20-0-20	2909S-62	2909SB-62	±.0005"	2.5N or less	✓	✓	✓
.0005"	.02"	.028"	10-0-10	—	2976*	±.0005"	1.4N or less	✓	✓	✓
.0005"	.04"	.055"	20-0-20	—	2977*	±.0005"	1.4N or less	✓	✓	✓
.001"	.06"	.079"	30-0-30	—	2978*	±.001"	1.4N or less	✓	✓	✓

\*Flat back type only. (Lug-on-center back is not available.)

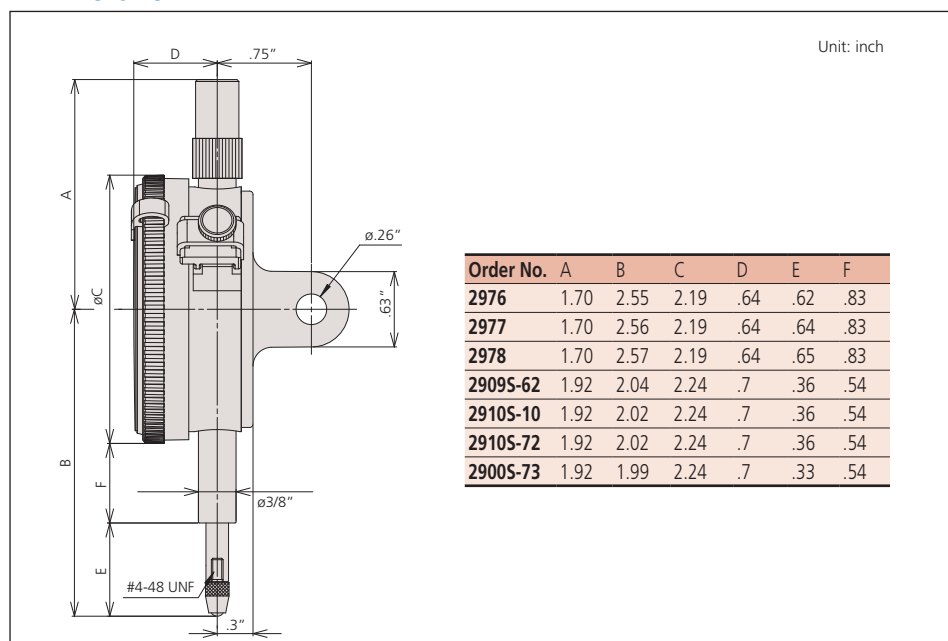
**Metric** Stem 3/8" dia., #4-48 UNF Thread Yellow Dial Face

ANSI/AGD type

Graduation	Range	Range/full stroke	Dial reading	Order No.		Accuracy	Measuring force	Shock Proof	Water Resistant	Hard Coated
				w/ lug	Flat-back					
0.001mm	0.08mm	0.1mm	40-0-40	2900S-73	2900SB-73	±0.003mm	2.0N or less	✓	✓	✓

\*Flat back type only. (Lug-on-center back is not available.)

### DIMENSIONS



# Special Dial Indicators

## SERIES 2



Adjustable hand



20485-10

### Adjustable hand dial gauge

The hand position can be adjusted independently of the vertical movement of the spindle by rotating the top knob.



Peak hold



20465-80

### Peak hold type dial gauge

A mechanism that stops the pointer and the spindle at the depressed position where the spindle is depressed makes the pointer stop and display the maximum value.



Double-face type



29405

### Double-face type dial gauge

The displacement of the spindle can be read from either the front or rear face.

## SPECIFICATIONS

**Inch** Stem dia. 3/8" #4-48 UNF Thread ANSI/AGD type

Graduation	Range	Range /rev	Dial reading	Order No.		Accuracy		Measuring force			
				w/lug	Flat-back	First 2.5 Rev	Overall Accuracy				
.001"	.5"	.1"	0-100	<b>29155-10</b>	<b>29155B-10</b>	±.001"	±.001"	1.8N or less	✓	✓	✓
.001"	.5"	.1"	0-50-0	<b>29185-10</b>	<b>29185B-10</b>	±.001"	±.001"	1.8N or less	✓	✓	✓

**Metric** Stem dia. 3/8" #4-48 UNF Thread, Yellow Dial Face ANSI/AGD type

Graduation	Range	Range /rev	Dial reading	Order No.		Accuracy		Measuring force			
				w/lug	Flat-back	First 2.5 Rev	Overall				
0.01mm	10mm	1mm	0-100	<b>20485-11</b>	<b>20485B-11</b>	±13μm	±0.013mm	1.4N or less	✓	✓	✓

**Metric** Stem ø 8mm, M2.5 x 0.45 Thread ISO/JIS type

Graduation	Range	Range /rev	Dial reading	Order No.		Accuracy	Measuring force					
				w/lug	Flat-back							
0.01mm	10mm	1mm	0-100	<b>20485-10</b>	<b>20485B-10</b>	±0.015mm	1.4N or less	✓	✓	✓		
0.01mm	10mm	1mm	0-100	<b>20465-80</b>	<b>20465B-80</b>	±0.015mm	5.0N or less				✓	
0.01mm	10mm	1mm	0-100	<b>29405</b>	—	±0.015mm	3.0N or less					✓

## DIMENSIONS

Order No.	A	B	C
29155-10, 29185-10	52.2	64.1	22
20485-11	47.7	59.5	17.4

Unit: mm

( ) : ANSI / AGD Type **20485-10**

Unit: mm

**20465-80**

Unit: mm

**29405**



# Dial Indicators

## SERIES 2 — Standard Type, Inch Reading



2416S



2803S-10

### Optional Accessories

- : Backs (See page F-33.)
- : Contact points (See page F-34.)

### SPECIFICATIONS

Graduation	Range	Range /Rev	Dial Reading	Order No.		Accuracy		Measuring force	ANSI/AGD type		
				w/lug	Flat-back	First 2.5 Rev	Overall		Shockproof	Reverse	Jeweled
.0001"	.025"	.01"	0-10	<b>2802S-10</b>	<b>2802SB-10</b>	±.0001"	±.0001"	2.5N or less	✓		✓
.0001"	.025"	.01"	0-5-0	<b>2803S-10</b>	<b>2803SB-10</b>	±.0001"	±.0001"	2.5N or less	✓		✓
.0001"	.05"	.01"	0-10	<b>2804S-10</b>	<b>2804SB-10</b>	±.0001"	±.0002"	2.0N or less	✓		✓
.0001"	.05"	.01"	0-5-0	<b>2805S-10</b>	<b>2805SB-10</b>	±.0001"	±.0002"	2.0N or less	✓		✓
.0001"	.05"	.01"	10-0	<b>2905S-10</b>	<b>2905SB-10</b>	±.0001"	±.0002"	2.0N or less	✓	✓	✓
.0001"	.05"	.01"	0-5-0	<b>2923S-10</b>	<b>2923SB-10</b>	±.0001"	±.0002"	2.0N or less	✓		✓
.0001"	.25"	.01"	0-10	<b>2356S-10</b>	<b>2356SB-10</b>	±.0001"	±.0005"	2.0N or less			✓
.0001"	.5"	.01"	0-10	<b>2358S-10</b>	<b>2358SB-10</b>	±.0001"	±.0008"	2.0N or less			✓
.0005"	.125"	.05"	0-50	<b>2506S</b>	<b>2506SB</b>	±.0005"	±.0005"	1.8N or less			
.0005"	.125"	.05"	0-25-0	<b>2507S</b>	<b>2507SB</b>	±.0005"	±.0005"	1.8N or less			
.0005"	.125"	.05"	0-25-0	<b>2922S</b>	<b>2922SB</b>	±.0005"	±.0005"	1.8N or less			
.0005"	.5"	.05"	0-50	<b>2514S</b>	<b>2514SB</b>	±.0005"	±.0015"	1.8N or less			
.0005"	1"	.05"	0-50	<b>2776S</b>	<b>2776SB</b>	±.0005"	±.002"	2.5N or less			
.001"	.5"	.1"	0-100	<b>2414S</b>	<b>2414SB</b>	±.001"	±.001"	1.8N or less			
.001"	.5"	.1"	0-50-0	<b>2415S</b>	<b>2415SB</b>	±.001"	±.001"	1.8N or less			
.001"	1"	.1"	0-100	<b>2416S</b>	<b>2416SB</b>	±.001"	±.002"	1.8N or less			
.001"	1"	.1"	0-100	<b>2416S-06*</b>	<b>2416SB-06*</b>	±.001"	±.002"	1.8N or less			
.001"	1"	.1"	0-100	<b>2416S-10</b>	<b>2416SB-10</b>	±.001"	±.002"	1.8N or less			✓
.001"	1"	.1"	0-50-0	<b>2417S</b>	<b>2417SB</b>	±.001"	±.002"	1.8N or less			
.001"	1"	.1"	100-0	<b>2904S</b>	<b>2904SB</b>	±.001"	±.002"	1.8N or less		✓	
.001"	2"	.1"	0-100	<b>2424S-19</b>	<b>2424SB-19</b>	±.001"	±.003"	2.5N or less	✓		✓

\* Black Face



Shockproof type



Reverse reading type



Jeweled bearing type

# Dial Indicators

## SERIES 2 — Standard Type, Inch Reading



2506S

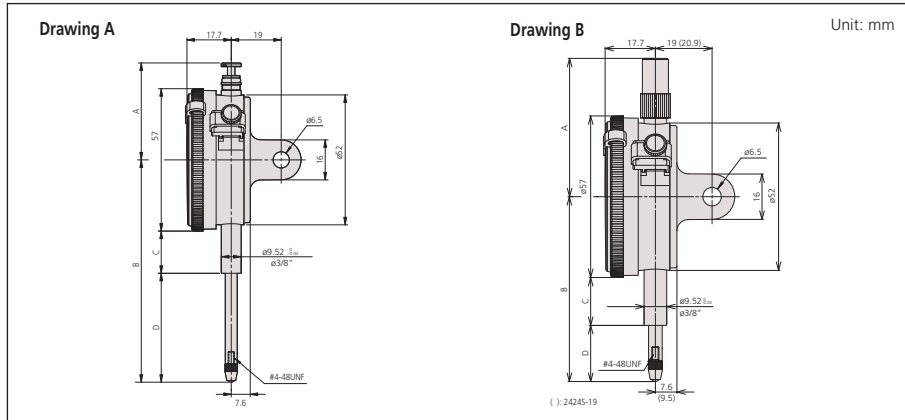


2923S-10



2424S-19

### DIMENSIONS



### 2 Group Inch

Order No.	A	B	C	D	Drawing
2356S(B)-10	48.8	57.2	13.6	15.1	B
2358S(B)-10	38.9	63.6	13.6	21.5	A
2414S(B)	38.9	64.1	13.6	22	A
2415S(B)	38.9	64.1	13.6	22	A
2416S(B)	38.9	76.8	13.6	34.7	A
2416S(B)-06	38.9	76.8	13.6	34.7	A
2416S(B)-10	38.9	76.8	13.6	34.7	A
2417S(B)	38.9	76.8	13.6	34.7	A
2424S(B)-19	118.5	142.5	54.3	59.7	B
2506S(B)	48.8	54.3	13.6	12.2	B
2507S(B)	48.8	54.3	13.6	12.2	B
2514S(B)	38.9	64.1	13.6	22	A

Order No.	A	B	C	D	Drawing
2776S(B)	38.9	76.8	13.6	34.7	A
2802S(B)-10	48.8	51.4	13.6	9.3	B
2803S(B)-10	48.8	51.4	13.6	9.3	B
2804S(B)-10	48.8	51.7	13.6	9.6	B
2805S(B)-10	48.8	51.7	13.6	9.6	B
2904S(B)	38.9	76.8	13.6	34.7	A
2905S(B)-10	48.8	51.7	13.6	9.6	B
2914S(B)	38.9	64.1	13.6	22	A
2915S(B)-10	52.2	63.3	13.6	21.2	A
2918S(B)-10	52.2	63.3	13.6	21.2	A
2922S(B)	48.8	54.3	13.6	12.2	B
2923S(B)-10	48.8	51.7	13.6	9.6	B



# Dial Indicators

## SERIES 2 — Metric Standard Type

Series 2 dial indicators are Mitutoyo's most popular, and have the widest application.



### FEATURES

- Standard 0.01mm graduation dial gauges having an outer frame with an outside diameter of 57mm. All types come with limit pins and an outer frame clamp as standard.
- The outer clamp and lifting lever (optional) can be attached to either the right or left side. These parts can be easily installed and removed without tools.
- Secured adhesion between the outer frame and crystal as well as the use of an O-ring ensure countermeasures against water and oil permeation via the front face.
- The stem spindle is made of high-strength quench-hardened stainless steel which resists strenuous use.
- A carbide contact point is used.
- The grand gear uses stainless steel that is resistant to wear and deformation.
- Application of a hard coating on the surface of the crystal makes the gauge highly scratch- and chemical-resistant.



### SPECIFICATIONS

**Metric** Stem dia. ø8mm M2.5 x 0.45 Thread

ISO/JIS type

Graduation	Range	Range / Rev	Dial reading	Order No.		Accuracy	Measuring force	S	W	L	J	D	C	R	A
				w/ lug	Flat-back										
0.001mm	1mm	(0.1mm)	0-100	2110S-10	2110SB-10	±0.005mm	1.5N or less	✓			✓	✓			
0.001mm	1mm	(0.1mm)	0-100	2110S-70	2110SB-70	±0.005mm	2.0N or less	✓	✓		✓	✓			
0.001mm	1mm	(0.2mm)	0-100-0	2109S-10	2109SB-10	±0.005mm	1.5N or less	✓			✓	✓			
0.001mm	1mm	(0.2mm)	0-100-0	—	2109SLB-10	±0.005mm	1.5N or less	✓		✓	✓	✓			
0.001mm	1mm	(0.2mm)	0-100-0	2109S-70	2109SB-70	±0.005mm	2.0N or less	✓	✓		✓	✓			
0.001mm	2mm	(0.2mm)	0-100-0	2113S-10	2113SB-10	±0.007mm	1.5N or less	✓			✓	✓			
0.001mm	5mm	(0.2mm)	0-100-100	2118S-10	2118SB-10	±0.010mm	1.5N or less				✓	✓			
0.001mm	5mm	(0.2mm)	0-100-0	2119S-10	2119SB-10	±0.010mm	1.5N or less				✓	✓			
0.005mm	5mm	(0.5mm)	0-50	2124S-10	2124SB-10	±0.012mm	1.5N or less				✓	✓			
0.01mm	5mm	(1mm)	0-100	2044S	2044SB	±0.012mm	1.4N or less								
0.01mm	5mm	(1mm)	0-100	2044S-09	2044SB-09	±0.013mm	1.4N or less	✓							
0.01mm	5mm	(1mm)	0-100	2044S-60	2044SB-60	±0.012mm	2.5N or less		✓						
0.01mm	5mm	(1mm)	0-50-0	2045S	2045SB	±0.012mm	1.4N or less							✓	
0.01mm	10mm	(1mm)	0-100	2046S	2046SB	±0.013mm	1.4N or less								
0.01mm	10mm	(1mm)	0-100	2046SY	2046SYB	±0.013mm	1.4N or less								
0.01mm	10mm	(1mm)	0-100	2046SH	2046SHB	±0.08mm	1.4N or less								
0.01mm	10mm	(1mm)	0-100	—	2046SLB	±0.013mm	1.4N or less			✓					
0.01mm	10mm	(1mm)	0-100	2046S-09	2046SB-09	±0.015mm	1.4N or less	✓							
0.01mm	10mm	(1mm)	0-100	2046S-60	2046SB-60	±0.013mm	2.5N or less								
0.01mm	10mm	(1mm)	0-100	2046S-69	2046SB-69	±0.015mm	2.5N or less	✓	✓						
0.01mm	10mm	(1mm)	0-100	2046S-15	2046SB-15	±0.013mm	0.8N or less*				✓				
0.01mm	10mm	(1mm)	0-100	2310S-10	2310SB-10	±0.015mm	1.4N or less				✓		✓		
0.01mm	10mm	(1mm)	100-0	2902S	2902SB	±0.013mm	1.4N or less							✓	
0.01mm	10mm	(1mm)	0-50-0	2047S	2047SB	±0.013mm	1.4N or less								
0.01mm	20mm	(1mm)	0-100	2050S	2050SB	±0.020mm	2.0N or less								✓
0.01mm	20mm	(1mm)	0-100	2050S-60	2050SB-60	±0.020mm	2.5N or less		✓						
0.01mm	20mm	(1mm)	0-100	2050S-19	2050SB-19	±0.020mm	2.0N or less	✓			✓				✓
0.01mm	20mm	(1mm)	0-100	2320S-10	2320SB-10	±0.020mm	2.0N or less				✓		✓		✓
0.01mm	30mm	(1mm)	0-100	2052S	2052SB	±0.025mm	2.5N or less								✓
0.01mm	30mm	(1mm)	0-100	2052S-19	2052SB-19	±0.025mm	2.5N or less	✓			✓				✓
0.01mm	30mm	(1mm)	0-100	2330S-10	2330SB-10	±0.025mm	2.5N or less				✓		✓		✓
0.01mm	30mm	(1mm)	100-0	2952S	2952SB	±0.025mm	2.5N or less							✓	✓

\*Use in a vertical position only (contact point downward).

# Dial Indicators

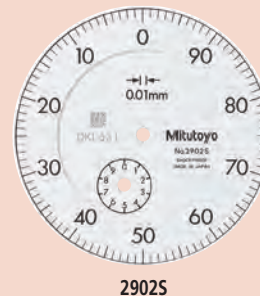
## SERIES 2 — Metric Standard Type



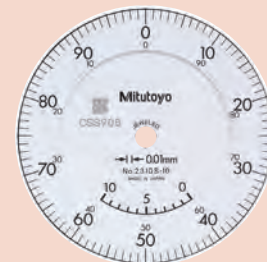
### DIMENSIONS

**ISO/JIS Type** Unit: mm

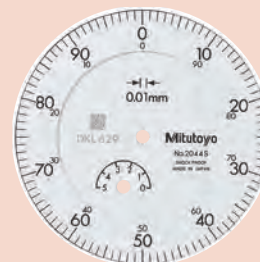
Order No.	A	B	C
2124S-10	60.3	16.9	14.9
2110S-10	66.5	16.9	21.1
2110S-70	67.5	12.3	26.7
2109S-10	60.5	16.9	15.1
2109S-70	65.3	12.3	24.5
2113S-10	61	16.9	15.6
2118S-10	60.3	16.9	14.9
2119S-10	60.3	16.9	14.9
2044S	65.2	16.9	19.8
2044S-09	65.2	16.9	19.8
2044S-60	70	12.3	29.2
2045S	65.2	16.9	19.8
2046S	65.2	16.9	19.8
2046SH	65.2	16.9	19.8
2046SLB	85.2	36.9	19.8
2046S-09	65.2	16.9	19.8
2046S-60	70	12.3	29.2
2046S-69	70	12.3	29.2
2046S-15	65.2	16.9	19.8
2310S-10	65.2	16.9	19.8
2902S	65.2	16.9	19.8
2047S	65.2	16.9	19.8



2902S



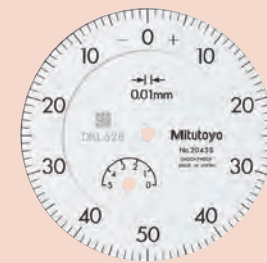
2310S-10



2044S  
2044S-60  
2044S-09

**ISO/JIS Type** Unit: mm

Order No.	A	B	C	D
2050S	38.8	75.2	16.9	29.8
2050S-60	59.8	87.2	12.3	46.4
2050S-19	38.8	75.2	16.9	29.8
2320S-10	38.8	75.2	16.9	29.8
2052S	38.8	88.7	16.9	43.3
2052S-19	38.8	88.7	16.9	43.3
2330S-10	38.8	88.7	16.9	43.3
2952S	38.8	88.7	16.9	43.3



2045S

### Optional Accessories

- : Backs (See page F-33.)
- : Contact points (See page F-34.)

# Dial Indicators

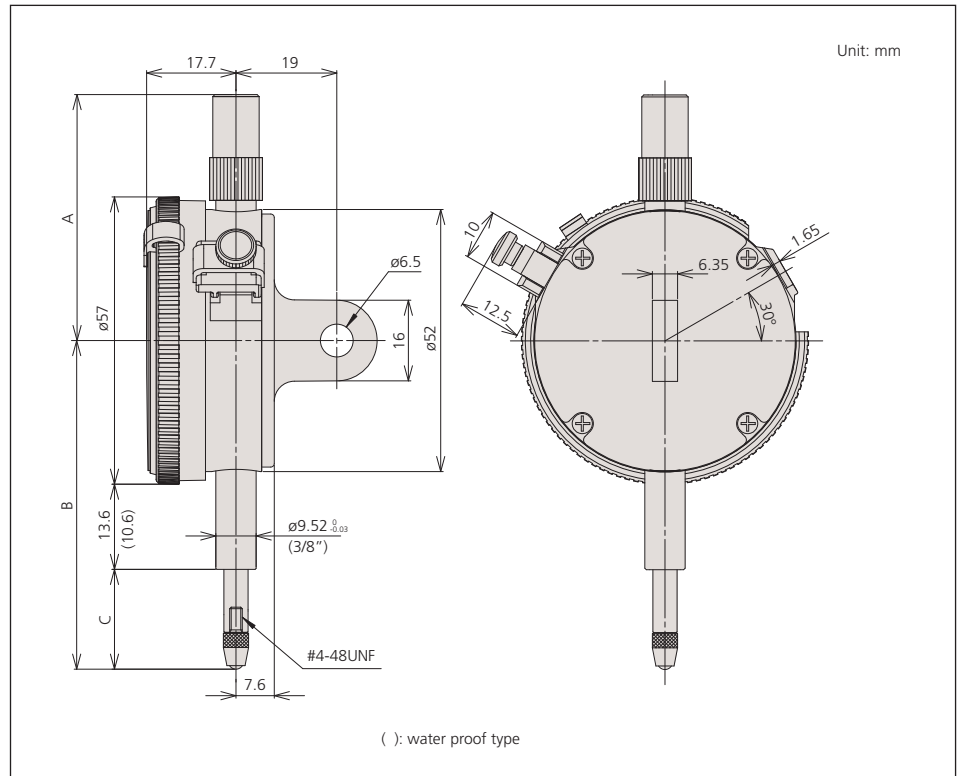
## SERIES 2 — ANSI / AGD Type Metric Dial Indicator

### SPECIFICATIONS

Graduation	Range	Range / Rev	Dial reading	Order No.		Accuracy		Measuring force	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
				w/ lug	Flat-back	First 2.5 Rev	Overall		
0.001mm	1mm	0.2mm	0-100-0	<b>2109S-11</b>	<b>2109SB-11</b>	±0.003mm	±0.004mm	1.5N or less	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
0.001mm	5mm	0.2mm	0-100-0	<b>2119S-11</b>	<b>2119SB-11</b>	±0.007mm	±0.01mm	1.5N or less	<input checked="" type="checkbox"/>
0.01mm	2.5mm	1mm	0-100	<b>2230S-01</b>	<b>2230SB-01</b>	±0.01mm	±0.01mm	1.4N or less	
0.01mm	2.5mm	1mm	0-50-0	<b>2231S-01</b>	<b>2231SB-01</b>	±0.01mm	±0.01mm	1.4N or less	
0.01mm	5mm	1mm	0-100	<b>2044S-01</b>	<b>2044SB-01</b>	±0.01mm	±0.01mm	1.4N or less	
0.01mm	10mm	1mm	0-100	<b>2046S-01</b>	<b>2046SB-01</b>	±0.01mm	±0.013mm	1.4N or less	
0.01mm	10mm	1mm	0-100	<b>2046S-11</b>	<b>2046SB-11</b>	±0.01mm	±0.013mm	1.4N or less	<input checked="" type="checkbox"/>
0.01mm	10mm	1mm	0-50-0	<b>2047S-01</b>	<b>2047SB-01</b>	±0.01mm	±0.013mm	1.4N or less	
0.01mm	10mm	1mm	0-50-0	<b>2047S-11</b>	<b>2047SB-11</b>	±0.01mm	±0.013mm	1.4N or less	<input checked="" type="checkbox"/>
0.01mm	10mm	1mm	100-0	<b>2902S-01</b>	<b>2902SB-01</b>	±0.01mm	±0.013mm	1.4N or less	
0.01mm	20mm	1mm	0-100	<b>2050S-01</b>	<b>2050SB-01</b>	±0.01mm	±0.02mm	2.0N or less	
0.01mm	20mm	1mm	0-100	<b>2050S-11</b>	<b>2050SB-11</b>	±0.01mm	±0.02mm	2.0N or less	<input checked="" type="checkbox"/>
0.01mm	25mm	1mm	0-100	<b>2056S-01</b>	<b>2056SB-01</b>	±0.01mm	±0.025mm	2.5N or less	

### DIMENSIONS

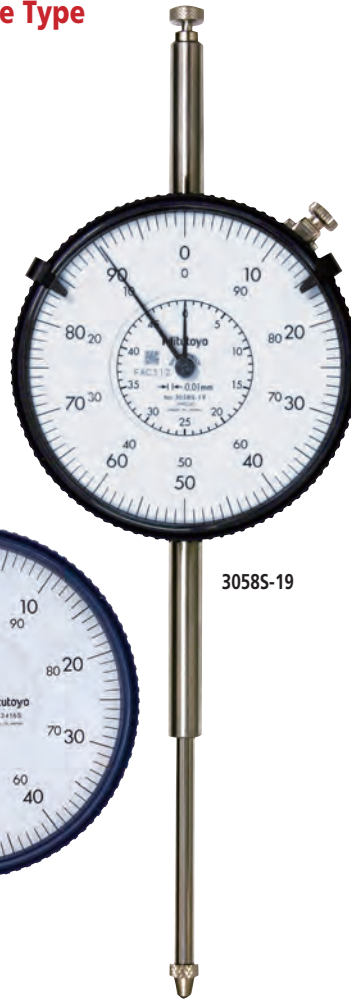
Order No.	A	B	C
<b>2109S-11</b>	48.8	51.4	9.3
<b>2119S-11</b>	48.8	55.8	13.7
<b>2230S-01</b>	48.8	53.6	11.5
<b>2231S-01</b>	48.8	53.6	11.5
<b>2044S-01</b>	48.8	56.1	14.0
<b>2046S-01</b>	48.8	61.1	19.0
<b>2046S-11</b>	48.8	61.1	19.0
<b>2047S-01</b>	48.8	61.1	19.0
<b>2902S-01</b>	48.8	61.1	19.0
<b>2050S-01</b>	38.8	71.1	29.0
<b>2050S-11</b>	38.8	71.1	29.0
<b>2056S-01</b>	38.8	76.1	34.0



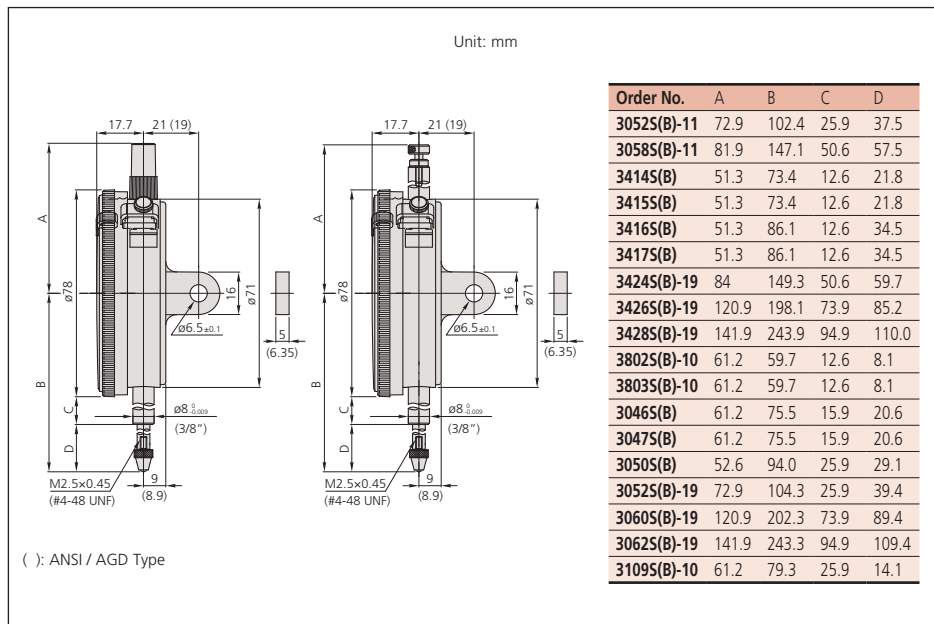
# Dial Indicators

## SERIES 3 — Large Dial Face and Long Stroke Type

- Dial gages with a large-diameter (78mm / 3.07") graduation face to ease reading.
- All types come with limit pins and an outer frame clamp as standard.



### DIMENSIONS






# Dial Indicators




## SERIES 3 — Large Dial Face

### SPECIFICATIONS






**Inch** Stem 3/8" DIA. #4-48 UNF Thread ANSI/AGD type

Graduation	Range	Range /rev	Dial reading	Order No.		Accuracy		Measuring force			
				W/ lug	Flat-back	First 2.5 Rev	Overall accuracy				
.0001"	.025"	.01"	0-10	<b>3802S-10</b>	<b>3802SB-10</b>	±.0001"	±.0001"	2.0N or less	✓	✓	
.0001"	.025"	.01"	0-5-0	<b>3803S-10</b>	<b>3803SB-10</b>	±.0001"	±.0001"	2.0N or less	✓	✓	
.001"	.5"	.1"	±0-100	<b>3414S</b>	<b>3414SB</b>	±.001"	±.001"	1.8N or less			
.001"	.5"	.1"	0-50-0	<b>3415S</b>	<b>3415SB</b>	±.001"	±.001"	1.8N or less			
.001"	1"	.1"	±0-100	<b>3416S</b>	<b>3416SB</b>	±.001"	±.002"	1.8N or less			
.001"	1"	.1"	0-50-0	<b>3417S</b>	<b>3417SB</b>	±.001"	±.002"	1.8N or less			
.001"	2"	.1"	±0-100	<b>3424S-19</b>	<b>3424SB-19</b>	±.001"	±.003"	3.0N or less	✓	✓	✓
.001"	3"	.1"	±0-100	<b>3426S-19</b>	<b>3426SB-19</b>	±.001"	±.005"	3.0N or less	✓	✓	✓
.001"	4"	.1"	±0-100	<b>3428S-19</b>	<b>3428SB-19</b>	±.001"	±.005"	3.2N or less	✓	✓	✓

**Metric** Stem 3/8" DIA. #4-48 UNF Thread, Yellow dial face ANSI/AGD type

Graduation	Range	Range /rev	Dial reading	Order No.		Accuracy		Measuring Force			
				W/ lug	Flat-back	First 2.5 Rev	Overall accuracy				
0.01mm	30mm	1mm	±0-100	<b>3052S-11</b>	<b>3052SB-11</b>	±0.01mm	±0.03mm	2.5N or less	✓	✓	✓
0.01mm	50mm	1mm	±0-100	<b>3058S-11</b>	<b>3058SB-11</b>	±0.01mm	±0.04mm	3.0N or less	✓	✓	✓

**Metric** Stem ø 8mm M2.5x0.45 Thread ISO/IS type

Graduation	Range	Range /rev	Dial reading	Order No.		Accuracy	Measuring Force				
				W/ lug	Flat-back						
0.001mm	1mm	0.2mm	0-10-0	<b>3109S-10</b>	<b>3109SB-10</b>	±0.004mm	1.5N or less	✓	✓		
0.01mm	10mm	1mm	0-100	<b>3046S</b>	<b>3046SB</b>	±0.015mm	1.4N or less				
0.01mm	10mm	1mm	0-50-0	<b>3047S</b>	<b>3047SB</b>	±0.015mm	1.4N or less				
0.01mm	20mm	1mm	0-100	<b>3050S</b>	<b>3050SB</b>	±0.020mm	2.0N or less				✓
0.01mm	30mm	1mm	0-100	<b>3052S-19</b>	<b>3052SB-19</b>	±0.025mm	2.5N or less	✓	✓	✓	
0.01mm	50mm	1mm	0-100	<b>3058S-19</b>	<b>3058SB-19</b>	±0.035mm	3.0N or less	✓	✓	✓	
0.01mm	80mm	1mm	0-100	<b>3060S-19*</b>	<b>3060SB-19*</b>	±0.045mm	3.0N or less	✓	✓	✓	
0.01mm	100mm	1mm	0-100	<b>3062S-19*</b>	<b>3062SB-19*</b>	±0.050mm	3.2N or less	✓	✓	✓	

\*use in a vertical position only



Shockproof type



w/ coaxial revolution counter



w/ damper at lowest rest point



Jeweled bearing type

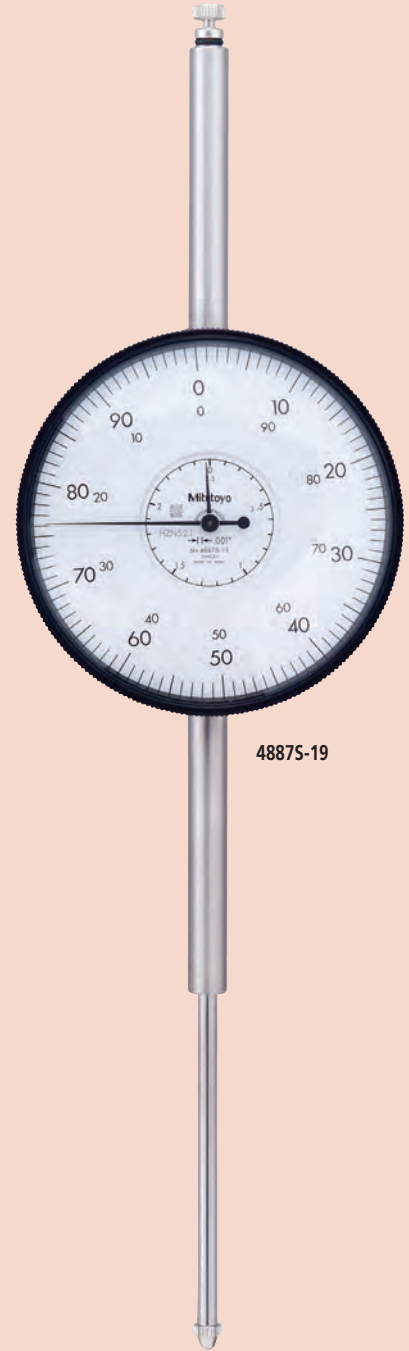
# Dial Indicators

## SERIES 4 — Large Dial Face

- Dial gauges with a large-diameter (92mm / 3.62") graduation face to ease reading.
- All types come with limit pins and an outer frame clamp as standard.













4046S



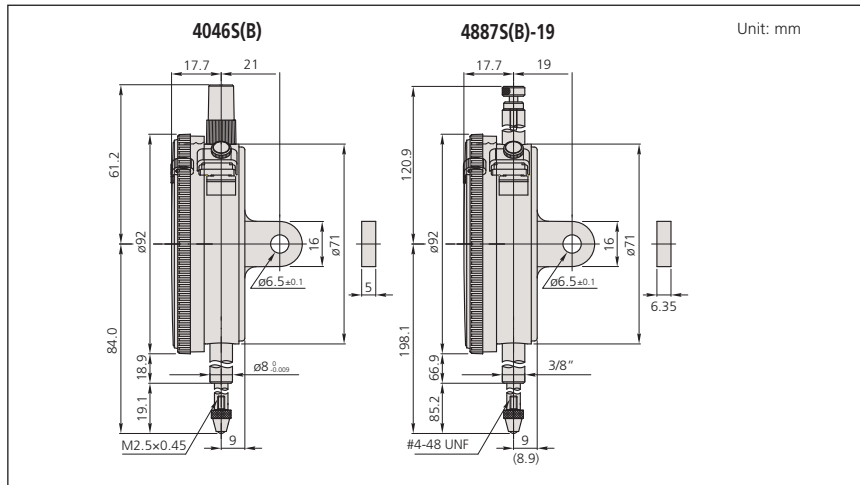
4887S-19

## SPECIFICATIONS

Inch		Stem 3/8" DIA. #4-48 UNF Thread				ANSI/AGD type			
Graduation	Range	Range /rev	Dial reading	Order No.		Accuracy		Measuring Force	  
				W/ lug	Flat-back	First 2.5 Rev	Overall accuracy		
0.001"	3"	.1"	±0-100	<b>4887S-19</b>	<b>4887SB-19</b>	±.001"	±.005"	3.0N or less	  

Metric		Stem ø 8mm M2.5x0.45 Thread				ISO/JIS type			
Graduation	Range	Range /rev	Dial reading	Order No.		Accuracy		Measuring force	 
				W/ lug	Flat-back	First 2.5 Rev	Overall accuracy		
0.01mm	10mm	1mm	0-100	<b>4046S</b>	<b>4046SB</b>	± 0.01mm	± 0.015mm	1.4N or less	 

## DIMENSIONS



# Back Plunger Type Dial Indicators

## SERIES 1 and 2



Mitutoyo's back plunger type dial indicators are built with the measuring spindles on the back of the units. This type of indicator offers the same precision and durability as all other Mitutoyo dial indicators, and operates very effectively with optional holding bars.

- Back plunger type dial gauges are suitable for mounting onto leveling machine tool tables or inspection jigs, and for use in small spaces where the graduations of standard dial gauges are difficult to see.
- Model No. 1960, which uses Mitutoyo's proprietary shock-proofing mechanism, has excellent durability and shock resistance.



One revolution type



Shockproof type



Jeweled bearing type

### Optional Accessories

- 136567:** Holding bar (ø6mm, L=81mm)  
**136568:** Holding bar (ø8mm, L=81mm)  
**124625:** Holding bar (.25" DIA, L=3.19")

—: Backs (See page F-33.)

—: Contact points (See page F-34.)

### SPECIFICATIONS

**Inch** Series 1 Stem 3/8" dia., #4-48 UNF Thread ANSI/AGD type

Graduation	Range	Range / Rev	Dial reading	Order No.	Accuracy	Measuring force			
.001"	.04"	.05"*	20-0-20	<b>1961</b>	±.001"	1.4N or less	✓	✓	
.001"	.2"	.05"	0-50	<b>1166</b>	±.001"	1.4N or less			
.001"	.2"	.05"	0-25-0	<b>1167</b>	±.001"	1.4N or less			
.001"	.2"	.05"	50-0	<b>1168</b>	±.001"	1.4N or less			✓

\*Full stroke

**Metric** Series 1 Stem ø8mm, M2.5x0.45 Thread ISO/JIS type

Graduation	Range	Range / Rev	Dial reading	Order No.	Accuracy	Measuring force				Remarks
0.01mm	1mm	1.27mm*	50-0-50	<b>1960</b>	±0.014mm	1.4N or less	✓	✓		—
0.01mm	5mm	1mm	0-100	<b>1160</b>	±0.016mm	1.4N or less				—
0.01mm	5mm	1mm	100-0	<b>1162</b>	±0.016mm	1.4N or less			✓	—

**Inch** Series 2 Stem 3/8" dia., #4-48 UNF Thread ANSI/AGD type

Graduation	Range	Range/full stroke	Dial reading	Order No.	Accuracy	Measuring force			
.0001"	.008"	.01"	4-0-4	<b>2991</b>	±.0002"	1.5N or less	✓	✓	✓
.0005"	.04"	.05"	20-0-20	<b>2961F</b>	±.0005"	1.8N or less	✓	✓	

**Metric** Series 2 Stem ø8mm, M2.5x0.45 Thread ISO/JIS type

Graduation	Range	Range/full stroke	Dial reading	Order No.	Accuracy	Measuring force			
0.001mm	0.1mm	0.14mm	50-0-50	<b>2990</b>	±0.0065mm	1.5N or less	✓	✓	✓
0.01mm	1mm	1.27mm	50-0-50	<b>2960F</b>	±0.014mm	1.4N or less	✓	✓	

# Back Plunger Type Dial Indicators

SERIES 1 and 2



1960



2960F

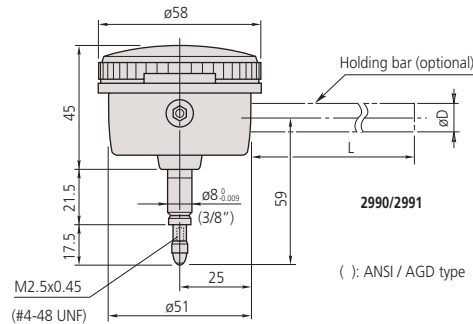
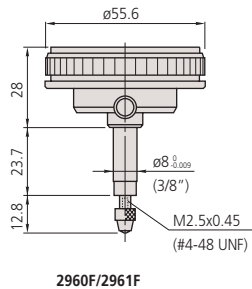
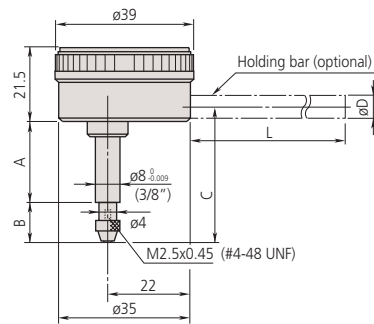


2991

## DIMENSIONS

Unit: mm

Order No.	A	B	C
1160	25.0	13.8	43.3
1162	25.0	13.8	43.3
1166	25.0	13.0	42.5
1167	25.0	13.0	42.5
1168	25.0	13.0	42.5
1960	28.7	12.8	46.0
1961	25.0	10.9	40.4



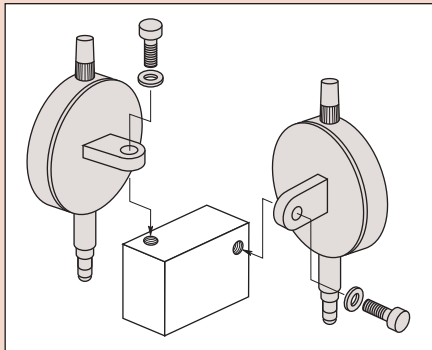


# Backs




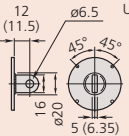

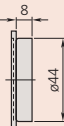

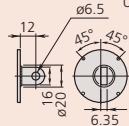

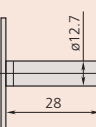

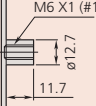

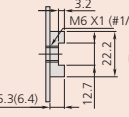
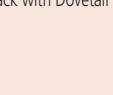
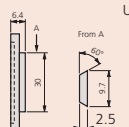

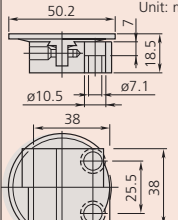
## Optional Accessory for Digimatic and Dial Indicators

There are two ways to support Digimatic and dial indicators; by either holding the stem or the lug on the back of the indicator. The back of the indicator may need to be replaced for special applications. A wide variety of backs are available for Mitutoyo Digimatic and dial indicators.

### Application



### SPECIFICATIONS

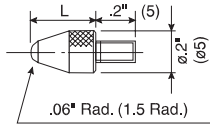
Description		Order No.			
		Series 0 ( $\phi$ 31mm) 1003 ( $\phi$ 36mm)	Series 1 ( $\phi$ 41mm)	Series 2 ( $\phi$ 57mm)	Series 3, 4 ( $\phi$ 77, 91mm)
Flat Back 	 Unit: mm	<b>191559:</b> a=1.0 <b>137906:</b> for 1003 a=1.0	<b>101211:</b> a=2.2 <b>136872:</b> for water-proof type <b>191559:</b> for 1911, 1913-10	<b>101039:</b> a=2.5 <b>21AZB231:</b> for water-proof of S type	<b>100836:</b> a=3.0
Lug-on-Center Back 	 Unit: mm	<b>190561:</b> Metric type <b>190139:</b> Inch type <b>137905:</b> for 1003	<b>101210:</b> metric type <b>101307:</b> inch type <b>190561:</b> for 1911, 1913-10	<b>101040:</b> metric type <b>101306:</b> inch type <b>21AZB230:</b> for water-proof of S type	<b>100691:</b> metric type <b>100797:</b> inch type
Magnetic Back 	 Unit: mm	—	<b>Special order</b>	<b>900928</b>	<b>900929</b>
Back with Offset Lug 	 Unit: mm	—	<b>Special order</b>	<b>101167</b>	<b>100837</b>
Back with Post 	 Unit: mm	—	<b>193172</b>	<b>101169</b>	<b>100839</b>
Back with Screw Mount 	 Unit: mm	—	<b>193173:</b> M6x1, <b>193174:</b> #1/4-28UNF,	<b>136023:</b> M6x1 <b>101170:</b> #1/4-28UNF	<b>136024:</b> M6x1 <b>100840:</b> #1/4-28UNF
Adjustable Back 	 Unit: mm	—	<b>136025:</b> M6x1 <b>129721:</b> #1/4-28UNF	<b>136026:</b> M6x1 1/4-28UNF	<b>136027:</b> M6x1 <b>100838:</b> #1/4-28UNF
Back with Dovetail 	 Unit: mm	—	—	<b>900008</b>	<b>Special order</b>
Back with Adjustable Bracket 	 Unit: mm	—	—	<b>901963:</b> Set No. <b>129902:</b> Dovetail Rack Back <b>901964:</b> Dovetail bracket for rack back	—

( ) : ANSI / AGD Type

# Contact Points

## Optional Accessories for Digimatic and Dial Indicators and Linear Gages

### ø.118" (ø3mm) Ball Point



#### 4-48UNF

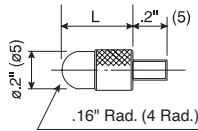
L	Carbide	Sapphire	Ruby	Plastic
.25"	21BZB005*	—	—	—
.28"	—	—	—	902018
.3"	131262	131263	131264	—
.6"	131265	131266	131267	—
1"	131268	131269	131270	—

#### M2.5 x 0.45mm

L	Carbide	Sapphire	Ruby	Plastic
7.3mm	901312*	—	—	901994
8mm	120045	120046	120047	—
15mm	120049	120050	120051	—
25mm	120053	120054	120055	—

\*Furnished with standard metric dial indicators.

### Shell type point



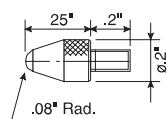
#### 4-48UNF

L	Order No.
3/32" (.094")	193697
5/32" (.156")	101184
1/4" (.25")	21AAA031
3/8" (.375")	21AAA032
1/2" (.5")	101185
5/8" (.625")	21AAA033
3/4" (.75")	101186
7/8" (.875")	21AAA034
1"	101187
1 1/4" (1.25")	21AAA035
1 1/2" (1.5")	21AAA036
1 3/4" (1.75")	21AAA037
2"	21AAA038
2 1/4" (2.25")	21AAA039
2 1/2" (2.5")	21AAA040
2 3/4" (2.75")	21AAA041
3"	21AAA042

#### M2.5 x 0.45mm

L	Order No.
5mm	101386
10mm	101118
15mm	137393
20mm	101387
25mm	101388
30mm	21AAA254

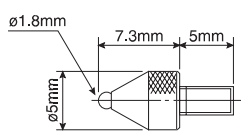
### ø.16 Ball Point



#### 4-48UNF

Order No.
900032

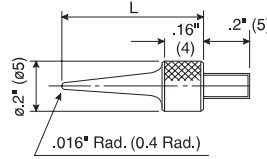
### ø1.8mm Ball Point



#### M2.5 x 0.45mm

Order No.
101122

### Needle point



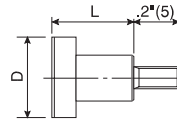
#### 4-48UNF

L	Order No.
.6"	21AAA030
1"	21AAA046
1 1/2"	21AAA047
2"	21AAA048

#### M2.5 x 0.45mm

L	Order No.
15mm	101121
17mm	137413

### Flat Point



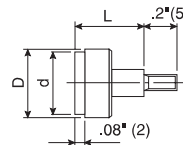
#### 4-48UNF

D	L	Order No.
ø1/2"	3/8"	101188
ø3/8"	3/8"	101189

#### M2.5 x 0.45mm

D	L	Order No.
ø10mm	10mm	101117

### Flat Point, Carbide Tip



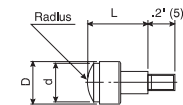
#### 4-48UNF

D	d	L	Order No.
ø.2"	ø.17"	.2"	131259
ø.27"	ø.25"	.4"	131260
ø.41"	ø.37"	.4"	131261

#### M2.5 x 0.45mm

D	d	L	Order No.
ø5.2mm	ø4.3mm	5mm	120041
ø7mm	ø6.5mm	10mm	120042
ø10.5mm	ø9.5mm	10mm	120043

### Spherical Point, Carbide Tip



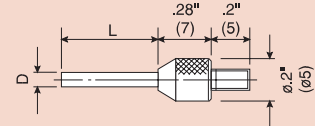
#### 4-48UNF

D	d	Radius	L	Order No.
ø.2"	ø.17"	.2"	.2"	131273
ø.27"	ø.16"	.16"	.4"	131274
ø.41"	ø.37"	.4"	.4"	131275

#### M2.5 x 0.45mm

D	d	Radius	L	Order No.
ø5.2mm	ø4.3mm	5mm	5mm	120058
ø7mm	ø6.5mm	7mm	10mm	120059
ø10.5mm	ø9.5mm	10mm	10mm	120060

### Needle point, Carbide tipped



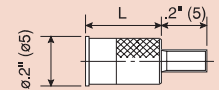
#### 4-48UNF

D	L	Order No.
ø.018"	.12"	131281
ø.04"	.12"	131280
ø.06"	.5"	131279
ø.078"	.04"	131271

#### M2.5 x 0.45mm

D	L	Order No.
ø0.45mm	2.5mm	120066
ø1mm	2.5mm	120065
ø1.5mm	13mm	120064
ø2mm	1mm	120056
ø2mm	8mm	137257

### ø.2" (ø5mm) Flat Point



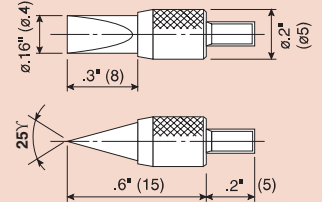
#### 4-48UNF

L	Order No.
5/16"	133017
1/2"	21AAA043
3/4"	21AAA044
1"	21AAA045

#### M2.5 x 0.45mm

L	Order No.
8mm	131365

### Knife edge point, Carbide tipped



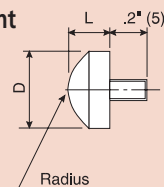
#### 4-48UNF

Order No.
131282

#### M2.5 x 0.45mm

Order No.
120067

### Spherical point



#### 4-48UNF

D	L	Radius	Order No.
ø.5"	.125"	.28"	101205
ø.375"	.09375"	.35"	101204

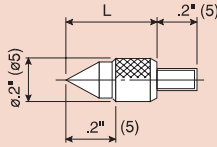
#### M2.5 x 0.45mm

D	L	Radius	Order No.
ø10mm	5mm	7mm	101119

# Contact Points

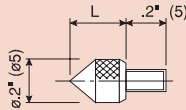
Optional Accessories for Digimatic and Dial Indicators and Linear Gages

## 60° Conical point



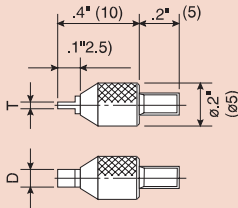
4-48UNF		M2.5 x 0.45mm	
L	Order No.	L	Order No.
1/2"	101190	10mm	101120

## 90° Conical point



4-48UNF		M2.5 x 0.45mm	
L	Order No.	L	Order No.
1/4"	101191	5mm	101385

## Blade Point, Carbide Tip



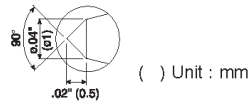
4-48UNF			M2.5 x 0.45mm		
D	T	Order No.	D	T	Order No.
.08"	.016"	131276	2mm	0.4mm	120061
.08"	.024"	131277	2mm	0.6mm	120062
.16"	.04"	131278	4mm	1mm	120063

## Interchangeable Contact Point Set (4-48 UNF)

Set Order No. 21AZA034

Individual No.	Description
101184	Shell Type Point 5/32"
101185	Shell Type Point 1/2"
101186	Shell Type Point 3/4"
101187	Shell Type Point 1"
101188	Flat Point $\phi$ 1/2"
101189	Flat Point $\phi$ 3/8"
101190	60° Conical Point
101191	90° Conical Point
101204	Spherical Point $\phi$ 3/8"
21AAA030	Needle Point .6"

## 90° Conical point, Carbide tipped

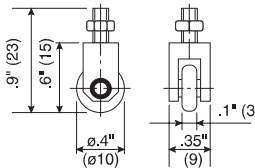


4-48UNF		4-48UNF	
L	Order No.	L	Order No.
.08"	131272	.3"	131283

M2.5 x 0.45mm		M2.5 x 0.45mm	
L	Order No.	L	Order No.
2mm	120057	8mm	120068

## Roller Point



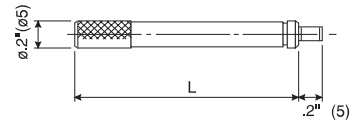
4-48UNF		M2.5 x 0.45mm	
Order No.	Order No.	Order No.	Order No.
901991	901954	901991	901954

## Interchangeable Carbide Contact Point Set (4-48 UNF)

Set Order No. 21AZA035

Individual No.	Description
131260	Flat Point $\phi$ 1/4"
131274	Spherical Point $\phi$ 1/4"
131279	Needle Point $\phi$ .06" 1/2" Long
131262	Ballpoint $\phi$ .118"
131271	Needle Point $\phi$ .078" .04" Long

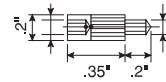
## Extension Rod



4-48UNF		M2.5 x 0.45mm	
L	Order No.	L	Order No.
1/2"	139167	10mm	303611
1"	301655	20mm	303612
2"	301657	30mm	303613
4"	301659	100mm	303614

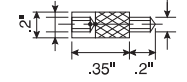
## Point Conversion

M2.5 x 0.45mm 4-48 UNFI



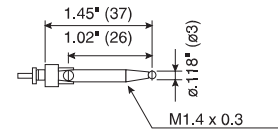
Order No.
21AAA011

4-48 UNFI M2.5 x 0.45mm



Order No.
21AAA012

## Lever Point



4-48UNF		M2.5 x 0.45mm	
Order No.	Order No.	Order No.	Order No.
900393	900393	900393	900391

## Interchangeable Contact Point Set (M2.5x0.45)

Set Order No. 7822



Individual No.	Description
131365	Flat Point ( $\phi$ 5mm)
101117	Flat Point ( $\phi$ 10mm)
101121	Needle Point
101119	Spherical Point
101118	Shell Type Point
101387	Shell Type Point

# Spindle Lifting Lever and Cable

## Optional Accessories for Digimatic and Dial Indicators

### Spindle Lifting Lever

- The Spindle Lifting Lever is attached to the top end of the spindle for improved inspection efficiency when using a dial indicator mounted on a stand.

Applicable S-Type Gages

Order No.	Description
21AZB149	2,3, and 4 series up to (.5" / 12.7mm)
21AZB150	2,3, and 4 series up to (.5" / 12.7mm up to 1" / 25.4mm)
21AZB151	S-Type thickness gage



Dove Tail Type Lever Assy

Order No.	Lever up to .5" / 12.7mm	Screw	Screw Thread
21EZA198	21AZB149	101171	M2.5
21EZA199	21AZB149	101047	4/48 UNF



ANSI Screw **101047**  
JIS Screw **101171**

### Spindle Lifting Cable

- 901975:** with auto-stop function
- 540774:** without auto-stop function
- Lifting range: 1" / 25.4mm
- Cable length: 300mm



### Spindle Lifting Knob

- 137693**
- Applicable spindle diameter; 4.8mm



Use for Series 1 dial indicators.(up 5mm / .25")

Set Order No.	Lever	Screw	Screw Thread
21BZA610	900527	101047	4-48 UNF
21BZA205	900527	101171	M2.5 x 0.45



Use for Series 2 dial indicators (up to 10mm/.4")

Set Order No.	Lever	Screw	Screw Thread
902794	900525	101047	4-48 UNF
902011	900525	101171	M2.5 x 0.45



Use for Series 2 dial indicators (up to 10mm/.4") and 1 Group S-Type

Set Order No.	Lever	Screw	Screw Thread
21BZA613	21BZA612	101047	4-48 UNF
902100	21BZA612	101171	M2.5 x 0.45



Use for Series 2 dial indicators (up to 20mm/.8") and Series 3 and 4 dial indicators (up to 10mm/.4")

Set Order No.	Lever	Screw	Screw Thread
903425	903307	192753	4-48 UNF
903424	903307	192686	M2.5 x 0.45

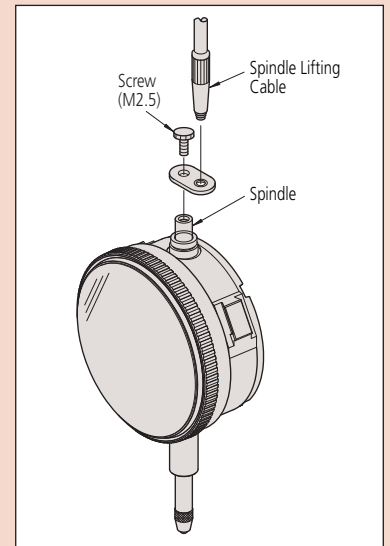
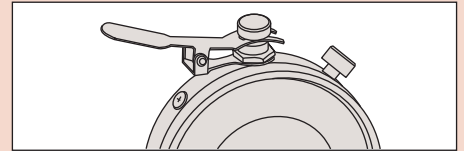
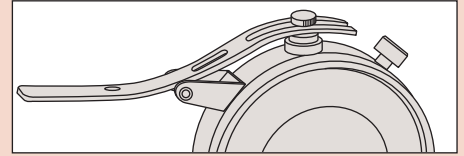


### Spindle Lifting Knob

Set Order No.	Range
21EZA197	For 1" range
21EZA200	For 2" range



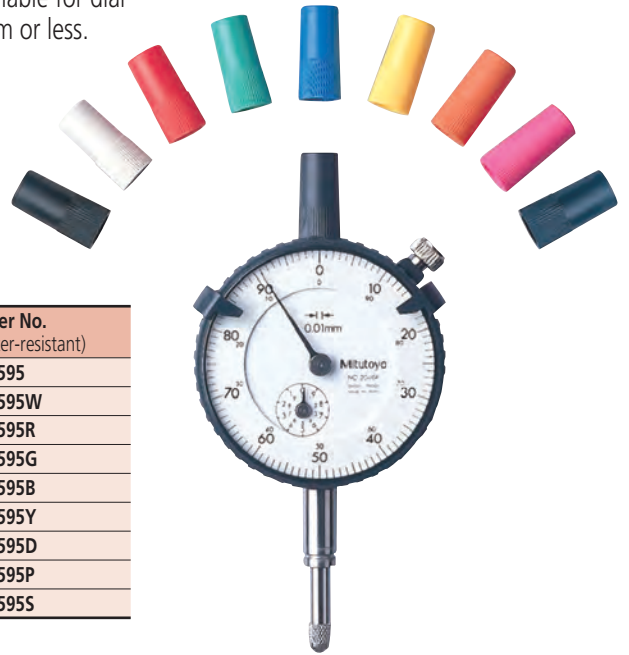
### Application



# Color Spindle Caps

## Optional Accessories for Digimatic and Dial Indicators

8 colors of spindle caps are available for dial indicators with a range of 10mm or less.



### SPECIFICATIONS

Color	Order No. (normal)	Order No. (water-resistant)
Black	193051	193595
White	193051W	193595W
Red	193051R	193595R
Green	193051G	193595G
Blue	193051B	193595B
Yellow	193051Y	193595Y
Orange	193051D	193595D
Pink	193051P	193595P
Dark blue	193051S	193595S

# Limit Stickers

## Optional Accessories for Digimatic and Dial Indicators

### FEATURES

- Stuck on the dial face or crystal of a Series 2 dial indicator (55.6mm or 57mm bezel dia.) to indicate tolerance limits.



136420: Red (10-sheet/set)



136421: Green (10-sheet/set)

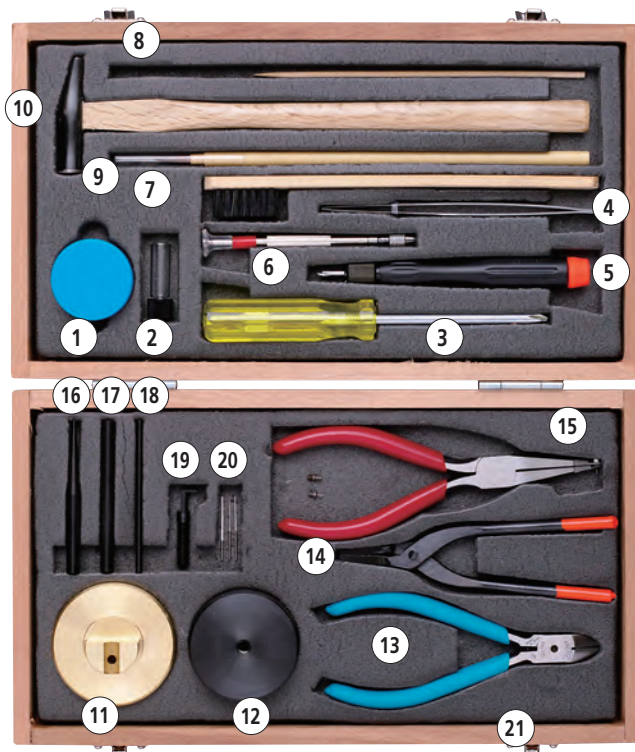


136422: Yellow (10-sheet/set)

# Dial Indicator Repair Tool Kit

## Optional Accessories for Digimatic and Dial Indicators

Mitutoyo offers a tool set designed to let you perform simple repairs to your Mitutoyo dial indicator, and a device that lets you reset the indicator crystals.



7823

### SPECIFICATIONS

Order No.	Description
7823	Dial indicator repair tool kit

# Dial Indicator Crystal Setter

## Optional Accessories for Test and Dial Indicators

### FEATURES

- Used for fitting a crystal on dial indicators, dial test indicators, and dial calipers.

### SPECIFICATIONS

Order No.	Description
7000	Dial indicator crystal setter



7000

With 8 sizes of crystal setting pads

### Order No. 7823

#### Set Configuration

- (1) 901171: Molykote (lubricant)
- (2) 21JAA313: Lubricating oil
- (3) 901173: Screwdriver (Phillips)
- (4) 901174: Screwdriver (Phillips/flat blade)
- (5) 129729: Tweezers
- (6) 901175: Pin-vise
- (7) 901176: Brush
- (8) 21JAA314: Stick
- (9) 901177: Brush
- (10) 901178: Hammer
- (11) 129730: Spindle rest
- (12) 129731: Pin rest
- (13) 901179: Nippers
- (14) 901180: Pliers
- (15) 901181: Hand remover
- (16) 129732: Pin remover
- (17) 129733: Punch
- (18) 129734: Bearing adjuster
- (19) 129735: Pinion rest
- (20) 129736: Reamer  $\varnothing 1$
- (21) 193702: Reamer  $\varnothing 0.6$
- 21JAA273: Reamer  $\varnothing 0.5$
- 901182: Case

#### Optional Accessories For Hand Remover

- 126630: Interchangeable Pin, 0.8mm DIA.
- 126630B: Interchangeable Pin, 0.5mm DIA.
- 126630C: Interchangeable Pin, 1.6mm DIA.

# Dial Test Indicators

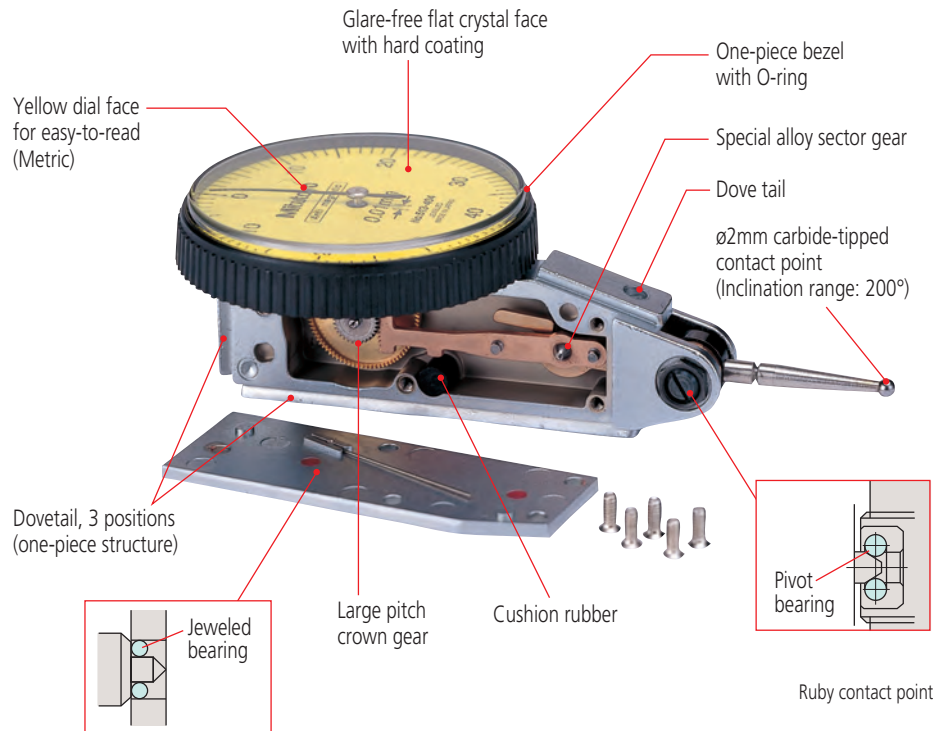
## SERIES 513

### Description of Icon

Icon	Description
	With revolution counter type
	Long contact point type
	Jeweled bearing type
	Double scale spacing type, easy-on-the-eyes
	Compact type
	Dustproof type
	Anti-magnetic type

### FEATURES

- Narrow or deep places, which cannot be measured with a normal dial gauge, can be easily and accurately measured.
- Mitutoyo's proprietary new structure permits smooth pointer operation.
- Use of a hard frame body provides excellent rigidity and durability.
- Non-magnetic pointer and contact point permit secure operation even in environments with magnetism.
- Use of a clear and concise wide dial face allows excellent visibility.
- The surface of the crystal is hard-coated, to make it scratch-resistant.
- Flat crystal makes graduations easy to read. Moreover, the unified structure of the outer frame prevents oil and water from permeating via the front face.
- Six types are available: vertical, inclined, perpendicular, horizontal, universal, and pocketable, allowing users to select the model most suited to their needs.
- Vertical: Standard
- Inclined: Dial face inclined 20°, compared with the vertical type, allows easy reading.
- Perpendicular: Best suited for centering holes.
- Horizontal: The graduations can be read from the front, with the probe on the tip of the horizontal conical rod abutting the workpiece.
- Universal: The direction of the probe movement can be freely changed.
- Pocketable: Compact type



# Dial Test Indicators

## SERIES 513 — Horizontal Type

### FEATURES

- Performs easy and accurate measurement of narrow or recessed areas, plus inside and outside diameters that dial indicators cannot access.
- No-clutch structure for automatic reversal of measuring direction.
- Resistant to water and dust thanks to the one-piece bezel and "crystal" design with O-ring.
- The glare-free flat crystal face has a scratch-resistant coating.
- High-sensitivity and quick-response because of jeweled bearings.
- A carbide contact point is provided as standard.



513-424E



513-404E



513-414E



513-403



513-474E

### Optional Accessories

- : Swivel clamp
- : Holding bar
- : Stem
- : Contact points

### Special Set: No. 513-908 (mm)

- 513-404E: Dial test indicator
- 7014: Mini magnetic stand

### No. 513-907 (inch)

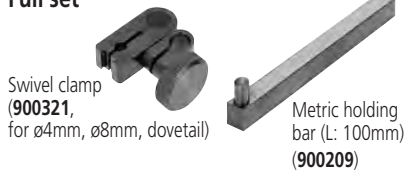
- 513-402: Dial test indicator
- 7014E: Mini magnetic stand



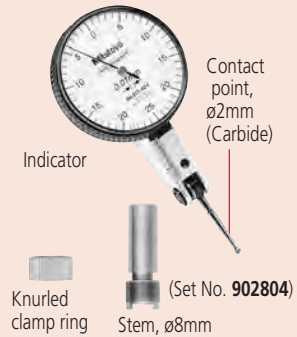


## Set Configuration: Metric Test Indicators

### Full set

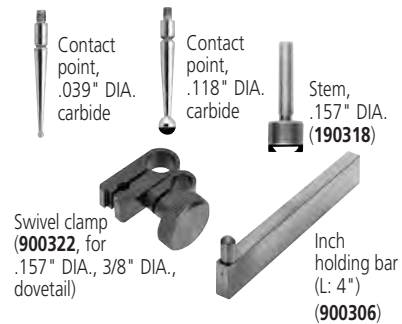


### Basic set

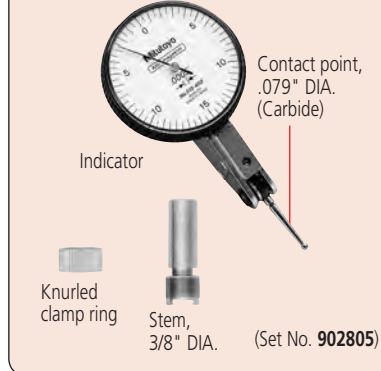


## Set Configuration: Inch Test Indicators

### Full set



### Basic set



Anti-magnet type



Double scale spacing type



Long contact point type



Jeweled bearing type



Compact type



With revolution counter type



## SPECIFICATIONS

### Metric

Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	L (mm)						
	Basic set	Full set											
0.01mm	513-424E	513-424T	0.5mm	5μm	0-25-0	0.3N or less	22.3	✓	✓	—	✓	—	—
0.01mm	513-414E	513-414T	0.5mm	10μm	0-25-0	0.2N or less	36.8	✓	✓	✓	✓	—	—
0.01mm	513-466E	—	0.5mm	5μm	0-25-0	0.3N or less	22.3	✓	✓	—	✓	✓	—
0.01mm	513-404E	513-404T	0.8mm	8μm	0-40-0	0.3N or less	20.9	✓	—	—	✓	—	—
0.01mm	513-474E*	—	0.8mm	8μm	0-40-0	0.3N or less	20.9	✓	—	—	✓	—	—
0.01mm	513-464E	—	0.8mm	8μm	0-40-0	0.3N or less	20.9	✓	—	—	✓	✓	—
0.01mm	513-415E	513-415T	1mm	10μm	0-50-0	0.2N or less	44.5	✓	—	✓	✓	—	—
0.01mm	513-426E	—	1.5mm	8μm	0-25-0	0.4N or less	22.3	✓	✓	—	✓	—	✓
0.002mm	513-405E	513-405T	0.2mm	3μm	0-100-0	0.3N or less	14.7	✓	—	—	✓	—	—
0.002mm	513-465E	—	0.2mm	3μm	0-100-0	0.3N or less	14.7	✓	—	—	✓	✓	—
0.002mm	513-425E	—	0.6mm	6μm	0-100-0	0.4N or less	14.7	✓	—	—	✓	—	✓
0.001mm	513-401E	—	0.14mm	3μm	0-70-0	0.3N or less	12.8	✓	—	—	✓	—	—

\*provided with a 2mm ruby contact point as a substitute for 2mm carbide contact point.

### Inch

Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	L (mm)					
	Basic set	Full set										
.0005"	513-402	513-402T	.03"	±.0005"	0-15-0	0.3N or less	19.9	✓	—	✓	—	—
.0005"	513-412	513-412T	.03"	±.0005"	0-15-0	0.2N or less	33.9	✓	✓	✓	—	—
.0005"	513-462	—	.03"	±.0005"	0-15-0	0.3N or less	19.9	✓	—	✓	✓	—
.0001"	513-403	513-403T	.008"	±.0001"	0-4-0	0.3N or less	15	✓	—	✓	—	—
.0001"	513-463	—	.008"	±.0001"	0-4-0	0.3N or less	15	✓	—	✓	✓	—

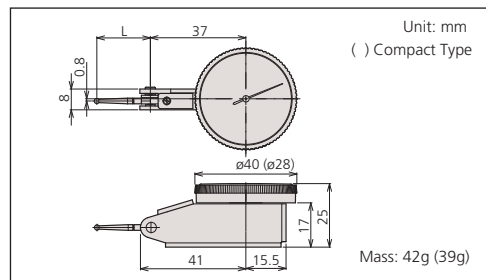
### Metric/inch

Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	L (mm)		
	Basic set	Full set							
0.002mm, .0001"	513-409	513-409T	0.2mm, .0075"	3μm	0-10-0, 0-38-0	0.3N or less	14.7	✓	✓

### Inch/Metric

Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	L (mm)		
	Basic set	Full set							
.0005", 0.01mm	513-406	513-406T	.03", 0.7mm	±.0005"	0-15-0, 0-35-0	0.3N or less	19.9	✓	✓

## DIMENSIONS AND MASS

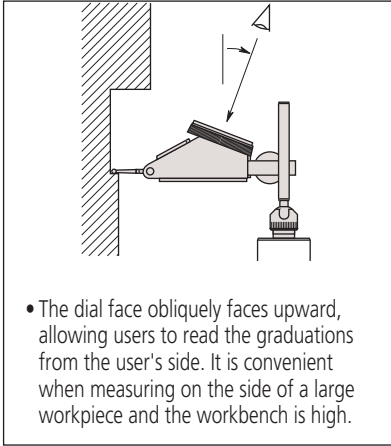


# Dial Test Indicators

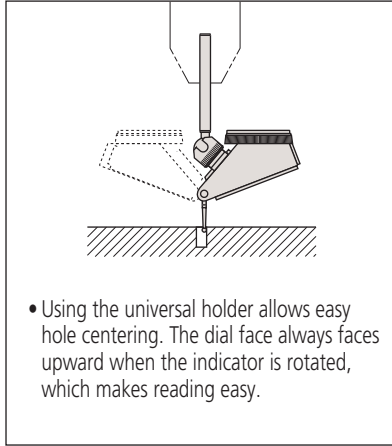
## SERIES 513 — Horizontal (20° Tilted Face), Vertical, and Parallel Types

### FEATURES

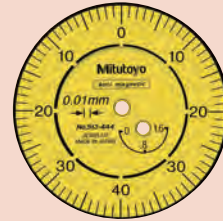
- Specially designed for easy viewing of measurements.



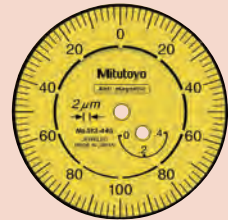
- The dial face obliquely faces upward, allowing users to read the graduations from the user's side. It is convenient when measuring on the side of a large workpiece and the workbench is high.



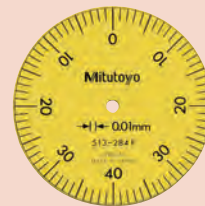
- Using the universal holder allows easy hole centering. The dial face always faces upward when the indicator is rotated, which makes reading easy.



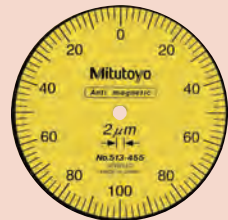
513-444E



513-445E



513-454E  
513-284GE



513-455E



513-452



513-282G



513-444E



513-445E



513-284G



513-442



513-446

### Optional Accessories

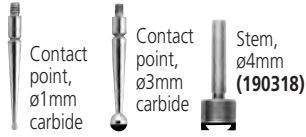
- : Swivel clamp
- : Holding bar
- : Stem
- : Contact points

## Set Configuration: Metric

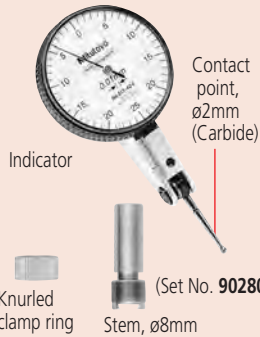
### Full set

Swivel clamp  
(900321,  
for  $\varnothing 4\text{mm}$ ,  $\varnothing 8\text{mm}$ , dovetail)

Metric holding bar  
(L: 100mm)  
(900209)



### Basic set



## Set Configuration: Inch

### Full set

Contact point,  
.039" DIA.  
carbide

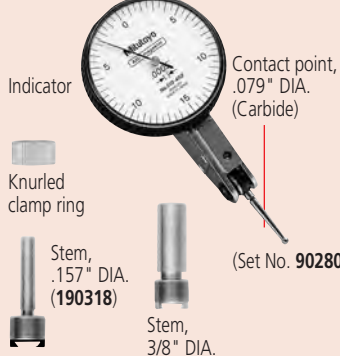
Contact point,  
.118" DIA.  
carbide

Stem,  
.157" DIA.  
(190318)

Swivel clamp  
(900322, for  
.157" DIA., 3/8" DIA.,  
dovetail)

Inch  
holding bar  
(L: 4")  
(900306)

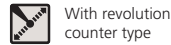
### Basic set



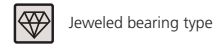
Basic set for 20° Tilted face type.  
Also supplied .039" and .118" Contact points



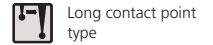
Anti-magnet type



With revolution counter type



Jeweled bearing type



Long contact point type

## SPECIFICATIONS

### Metric Horizontal (20° tilted face) type

Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	Mass (g)	L (mm)			
	Basic set	Full set									
0.01mm	513-444E	513-444T	1.6mm	10 $\mu\text{m}$	0-40-0	0.3N or less	48	20.9	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
0.002mm	513-445E	513-445T	0.4mm	5 $\mu\text{m}$	0-100-0	0.3N or less	48	14.7	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

### Inch Horizontal (20° tilted face) type

Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	Mass (g)	L (mm)					Remarks
	Basic set	Full set											
.0005"	513-442	513-442T	.06"	$\pm 0.0005$ "	0-15-0	0.3N or less	48	19.9	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	—
.0005"	513-442-01	513-442T-01	.06"	$\pm 0.0005$ "	0-15-0	0.3N or less	48	19.9	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Blue dial
.0005"	513-442-06	513-442T-06	.06"	$\pm 0.0005$ "	0-15-0	0.3N or less	48	19.9	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Black dial
.0005"	513-446	513-446T	.06"	$\pm 0.0005$ "	0-15-0	0.2N or less	48	33.9	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	—
.0005"	513-446-06	513-446T-06	.06"	$\pm 0.0005$ "	0-15-0	0.2N or less	48	33.9	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Black dial
.0001"	513-443	513-443T	.016"	$\pm 0.0002$ "	0-4-0	0.3N or less	48	15	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	—
.0001"	513-443-06	513-443T-06	.016"	$\pm 0.0002$ "	0-4-0	0.3N or less	48	15	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Black dial

### Metric Vertical type

Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	Mass (g)	L (mm)		
	Basic set	Full set								
0.01mm	513-454E	513-454T	0.8mm	8 $\mu\text{m}$	0-40-0	0.3N or less	50	20.9	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
0.002mm	513-455E	513-455T	0.2mm	3 $\mu\text{m}$	0-100-0	0.3N or less	50	14.7	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

### Inch Vertical type

Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	Mass (g)	L (mm)		
	Basic set	Full set								
.0005"	513-452	513-452T	.03"	$\pm 0.0005$ "	0-15-0	0.3N or less	50	19.9	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
.0001"	513-453	513-453T	.008"	$\pm 0.0001$ "	0-4-0	0.3N or less	50	15	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

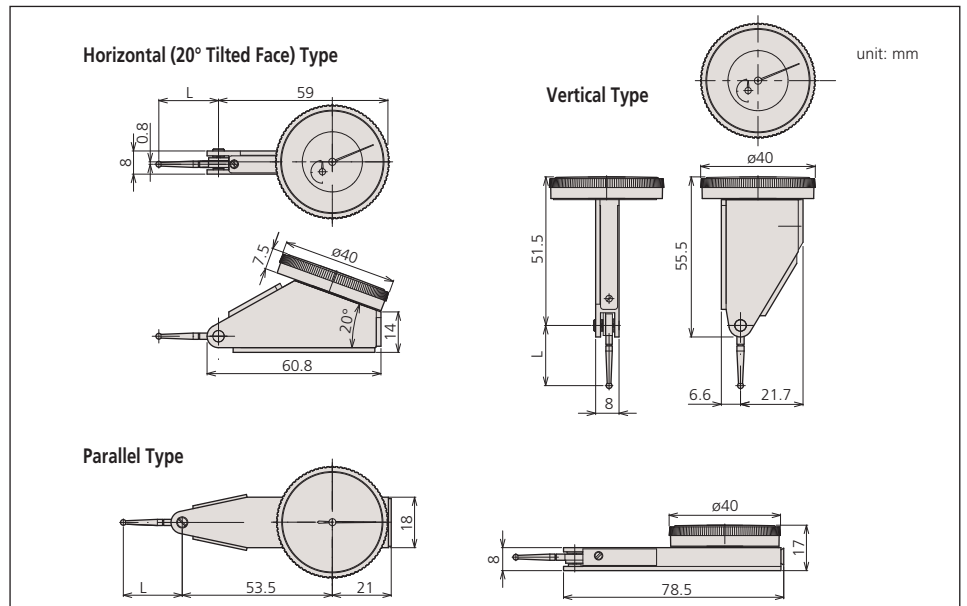
### Metric Parallel type

Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	Mass (g)	L (mm)		
	Basic set	Full set								
0.01mm	513-284GE	513-284GT	0.8mm	8 $\mu\text{m}$	0-40-0	0.3N or less	68	20.9	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

### Inch Parallel type

Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	Mass (g)	L (mm)		
	Basic set	Full set								
.0005"	513-282G	513-282GT	.03"	$\pm 0.0005$ "	0-15-0	0.3N or less	68	20	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

## DIMENSIONS

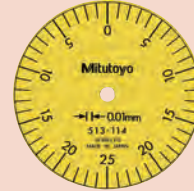
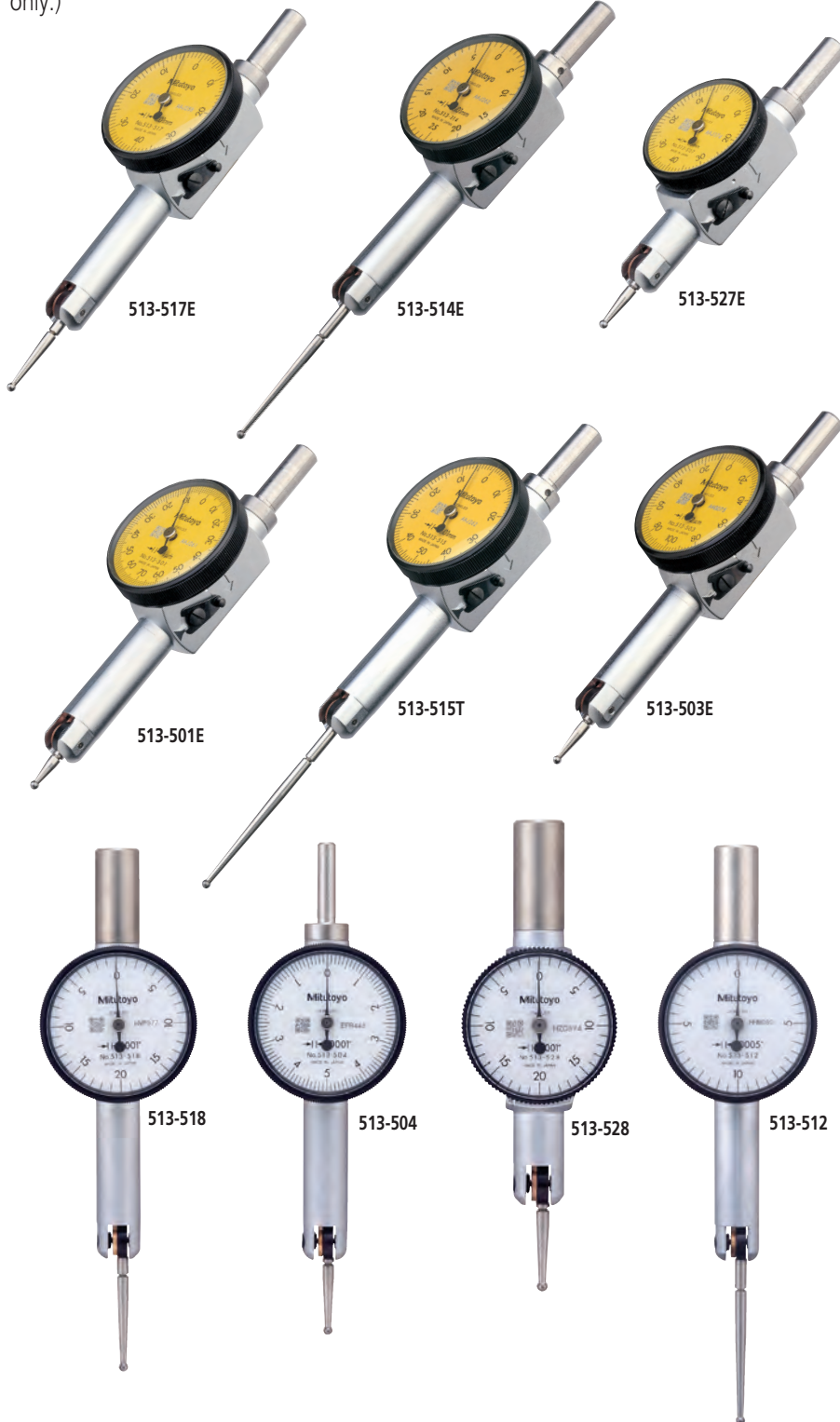


# Pocket Type Dial Test Indicators

## SERIES 513

### FEATURES

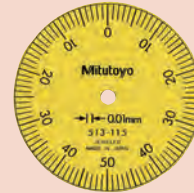
- Jeweled bearings assure higher sensitivity and accuracy.
- Reversible measuring direction.
- Two holding bars are supplied. (Full sets only.)
- Fully adjustable bezel/dial face.
- Contact point is adjustable within 220°.
- Bezel is sealed with an O-ring to keep out water / oil.



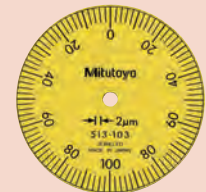
513-514E



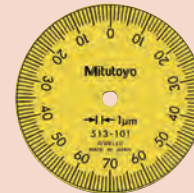
513-517E  
513-527E



513-515T



513-503E

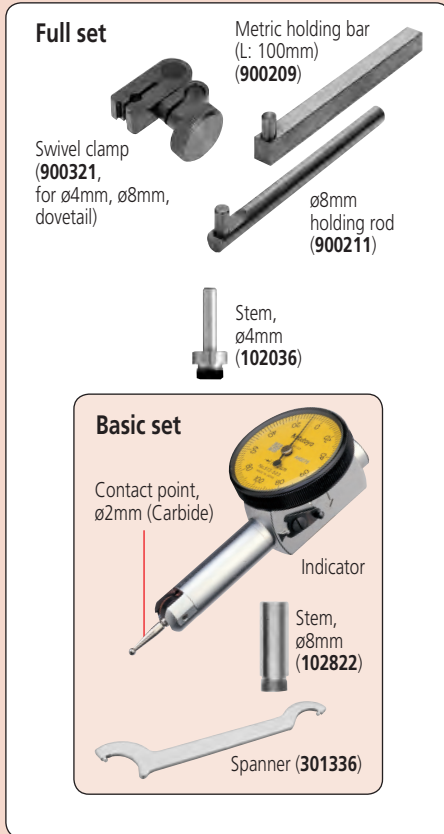


513-501E

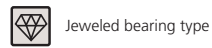
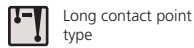
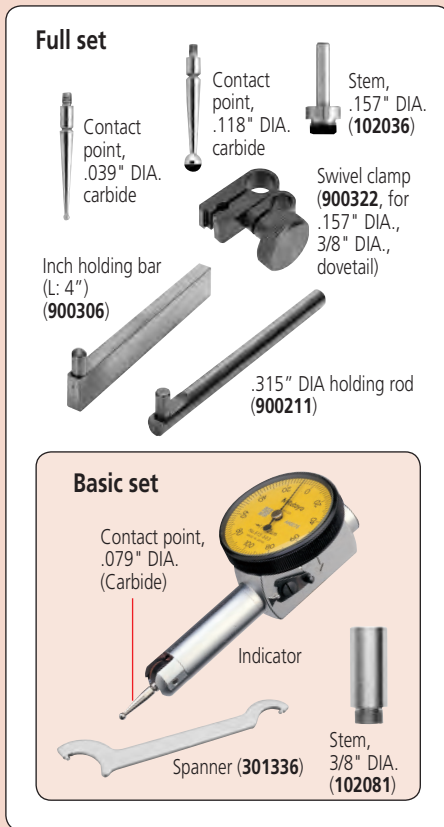
### Optional Accessories

- : Swivel clamp
- : Holding bar
- : Stem
- : Contact points

## Set Configuration: Metric



## Set Configuration: Inch



## SPECIFICATIONS

### Metric

Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	L (mm)			
	Basic set	Full set								
0.01mm	513-514E	513-514T	0.5mm	10µm	0-25-0	0.3N or less	36.8	✓	✓	—
0.01mm	513-517E	513-517T	0.8mm	8µm	0-40-0	0.3N or less	20.9	—	✓	—
0.01mm	513-527E	513-527T	0.8mm	8µm	0-40-0	0.3N or less	14.7	—	✓	✓
0.01mm	—	513-515T	1mm	10µm	0-50-0	0.3N or less	44.5	✓	✓	—
0.002mm	513-503E	513-503T	0.2mm	3µm	0-100-0	0.3N or less	14.7	—	✓	—
0.001mm	513-501E	513-501T	0.14mm	3µm	0-70-0	0.4N or less	12	—	✓	—

### Inch

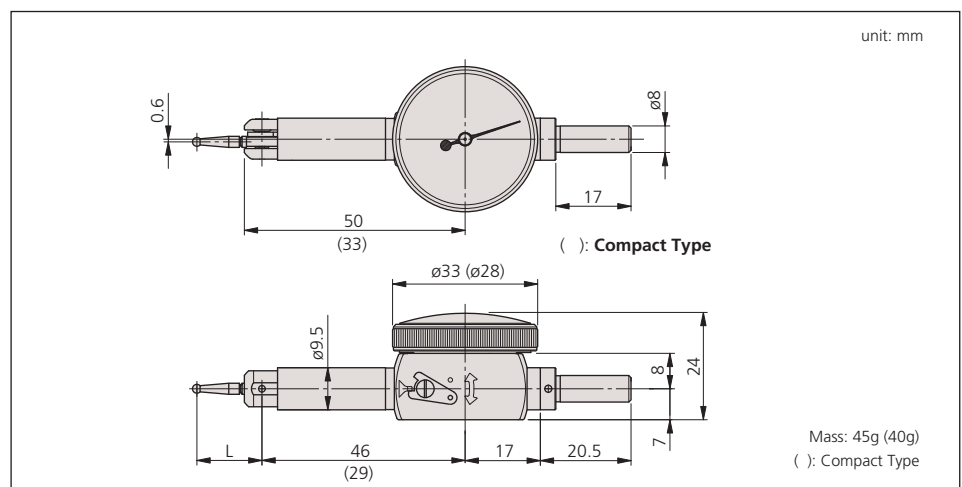
Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	L (mm)			
	Basic set	Full set								
.001"	513-518	513-518T	.04"	±.001"	0-20-0	0.3N or less	26.5	—	✓	—
.001"	513-528	513-528T	.04"	±.001"	0-20-0	0.3N or less	18.7	—	✓	✓
.0005"	513-512	513-512T	.02"	±.0005"	0-10-0	0.3N or less	37.4	✓	✓	—
.0001"	513-504	513-504T	.01"	±.0002"	0-5-0	0.3N or less	18.7	—	✓	—

## Optional Contact Points

### Pocket Type

Order No.	1mm	2mm	3mm	0.5mm	0.7mm
513-501E	136756	136104	136758	—	—
513-503E	513-527E	103017	103010	103018	190547
513-504	513-528	131314	103011	131315	—
513-512		131316	131324	131317	—
513-514E		137746	129949	137747	—
513-515T		136235	136013	136236	190656
513-517E		103013	103006	103014	190549
513-518		103008	103007	103009	—

## DIMENSIONS AND MASS

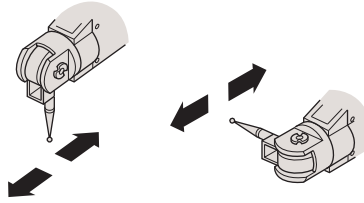


# Dial Test Indicators

## SERIES 513 — Universal Type

### FEATURES

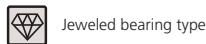
- Universal application to all directions. (Not only the direction of the measuring point, but also the direction of measurement itself can be adjusted 360 degrees without moving the indicator.)



513-304GE

### SPECIFICATIONS

#### Metric

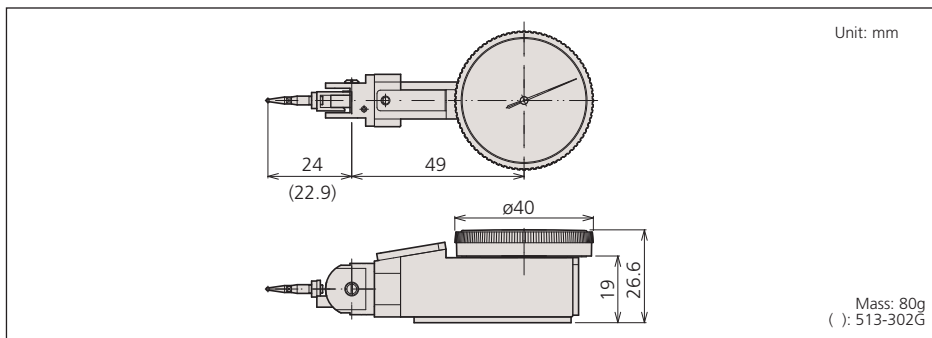


Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	
	Basic set	Full set					
0.01mm	513-304GE	513-304GT	0.8mm	8μm	0-40-0	0.3N or less	✓

#### Inch

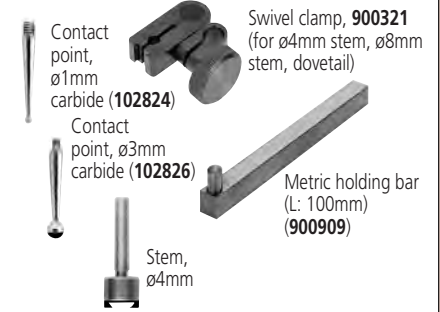
Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	
	Basic set	Full set					
.0005"	513-302G	513-302GT	.03"	±.0005"	0-15-0	0.3N or less	✓

### DIMENSIONS AND MASS

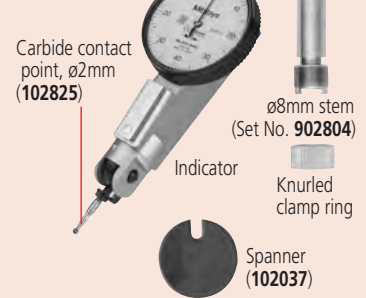


### Set Configuration: Metric

#### Full set

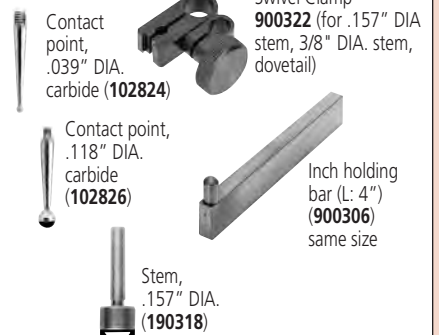


#### Basic set

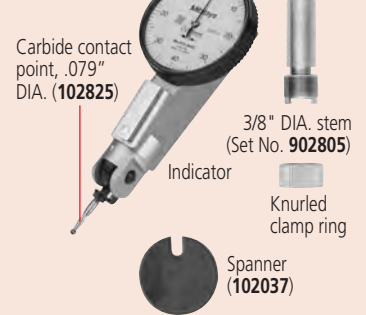


### Set Configuration: Inch

#### Full set



#### Basic set



### Optional Accessories

- : Swivel clamp
- : Holding bar
- : Stem

# Contact Points and Clamp Holders

## Optional Accessories for Dial Test Indicator

### Contact Points

Order No.	1mm	2mm	3mm	0.5mm	0.7mm
513-401E	21CZA044	21CZA036	21CZA045		
513-405E    513-425E	103017	103010	103018	190547	190548
513-465E    513-445E					
513-455E    513-409					
513-404E    513-464E	103013	103006	103014	190549	190550
513-444E    513-454E					
513-284GE					
513-424E    513-466E	137558	137557	137559	190654	190653
513-426E					
513-415E	136235	136013	136236	190656	190655
513-414E	137746	129949	137747		
513-402    513-462	133196	133195	133197		
513-406    513-442					
513-442-01    513-442-06					
513-452    513-282G					
513-403    513-463	136076	136075	136077		
513-443    513-443-06					
513-453					
513-412    513-446	136291	136290	136292		
513-446-06					

### Holding Bars



9 x 9mm    953638 (Length: 50mm)  
900209 (Length: 100mm)



ø8mm    900211 (Length: 115mm)



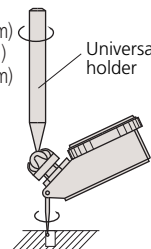
.25" x .5"    953639 (Length: 2")  
900306 (Length: 4")

### Universal Holder

- Allows the indicator to be set at a desired position.

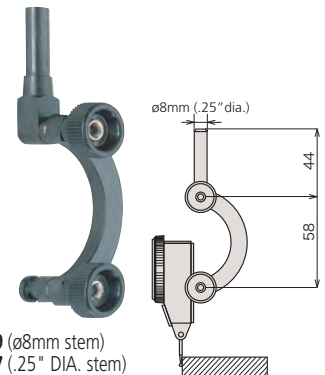


901916 (ø8mm stem, Length: 80mm)  
901459 (.25" DIA. stem, Length: 3")  
901461 (ø6mm stem, Length: 80mm)



### Centering Holder

- Allows large diameter cylinders or holes to be centered.



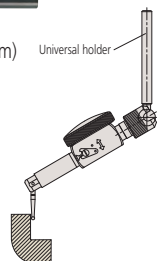
901959 (ø8mm stem)  
901997 (.25" DIA. stem)

### Universal Holder (pocket type)

- Since the Dial Test Indicator can be swiveled to a desired angle, the holder is useful for centering workpieces and installing workpieces on a milling machine.



901917 (ø8mm stem, Length: 84mm)  
901546 (.25" DIA. stem, Length: 84mm)  
901547 (ø6mm stem, Length: 84mm)



# i-Checker

## SERIES 170 – Inspection Instrument for Dial Indicator

The i-Checker is specially designed to calibrate dial indicators, dial test indicators, and other electronic comparison gage heads with a stroke of up to 100mm (4").

- $\pm(0.2+L/100)\mu\text{m}$  indication accuracy.
- Directly inspects an indicator with a stroke of up to 100mm (4"). The dial test indicator, bore gage and lever-type inductive head can be inspected with optional accessories.

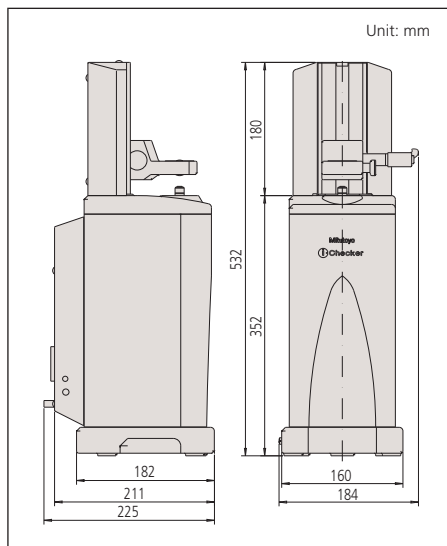
- Adjustment of the measurement position is very easily accomplished because of semi-automatic measurement and fully automatic measurement functions.
- Creates and prints out a simple inspection certificate.
- Saves inspection results as a CSV file for analysis by software.



### SPECIFICATIONS

Order No.	Remarks
170-311	with $\varnothing 8\text{mm}$ bush
170-312A	with $\varnothing 3/8"$ bush

### DIMENSIONS



### Applicable Indicators

- Dial indicator
- Hicator
- Digimatic indicator\*\*\*
- Test indicator\*
- Bore gage\*\*
- Linear gage

\* requires optional test indicator attachment set.  
 \*\* Contact the nearest Mitutoyo sales office for testable indicators.  
 \*\*\* requires optional bore gage accessory.  
 \*\*\*\* requires optional SPC cable for fully automatic measurement.



Using test indicator attachment set (02ASK000)



### Technical Data

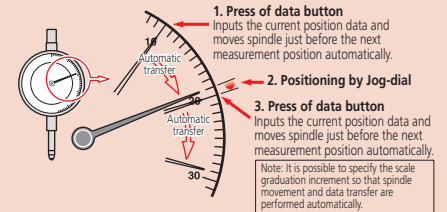
Measuring Range: 100mm/4"  
 Resolution: 0.02 $\mu\text{m}$ /0.8 $\mu\text{in}$   
 Accuracy:  $\pm(0.2+L/100)\mu\text{m}$  in vertical position  
 $\pm(0.3+2L/100)\mu\text{m}$  in lateral position  
 L = arbitrary length (mm)  
 Drive method: Electric motor  
 Measuring Unit: Reflective-type glass linear encoder  
 Thermal expansion coefficient:  $(8\pm 1)\times 10^{-5}/\text{K}$   
 Measurement method: Semi-automatic / Fully automatic\*  
 Dimensions: 184 x 225 x 532mm (W x D x H)  
 Operating temperature range: 20°C $\pm$ 3°C  
 Power supply: 100VAC to 240VAC  $\pm$ 10%, 50/60Hz  
 Mass: 20kg/44.1lbs

\* Automatic measurement requires the indicator's connection cable. Additionally some form of indicator, along with a connecting machine (the optional accessory for indicator as a Digimatic power-supply unit on EF counter) will be needed.

### Functions

#### Inspect your analog indicator semi-automatically!

The pointer of the analog indicator is positioned just before the measuring point automatically via Mitutoyo's Semi-automatic Measurement function. After that, inspection begins simply by adjusting the pointer position with the jog-dial. Because of this function, measurement time is reduced and user fatigue is practically eliminated. Additionally all functions necessary for inspection are combined in the control box so that the operator need not rely on excessive eye movement to adjust the pointer.



#### Fully automatic inspection of digital indicator

The Automatic Measurement function, in tandem with a digital indicator makes the spindle move so that measurement data is acquired automatically. Therefore, manual adjustment to the measurement position is unnecessary and the efficiency of every inspection is enhanced.



#### Create and printout a simplified inspection certificate

It is possible to create, edit and print out your own inspection certificate. Furthermore, that data can be saved as a CSV file.

### Optional Accessories

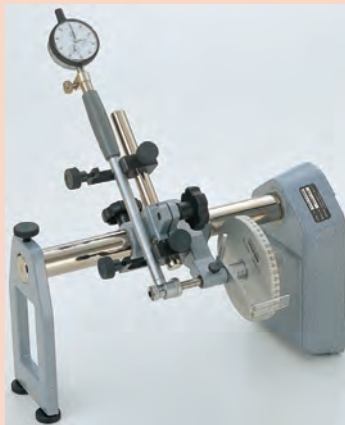
- 02ASK000: Test indicator attachment set ( $\varnothing 6\text{mm}$  stem)
- 02ASK180: Test indicator attachment set ( $\varnothing 8\text{mm}$  stem)
- 02ASK370: Test indicator holder ( $\varnothing 6\text{mm}$  stem)
- 02ASK380: Test indicator holder ( $\varnothing 8\text{mm}$  stem)
- 02ASL310: Accessory for Bore gages
- 902803:  $\varnothing 6\text{mm}$  dovetail grooved stem
- 902804:  $\varnothing 8\text{mm}$  dovetail grooved stem
- 02ASK040: Stem bush  $\varnothing 6\text{mm}$
- 02ASJ856: Stem bush  $\varnothing 8\text{mm}$
- 02ASK150: Stem bush  $\varnothing 8\text{mm}$ , short
- 02ASL150: Stem bush  $\varnothing 10$ , short
- 02ASK050: Bush  $\varnothing 9.5$  (Requires 02ASK070)
- 02ASK060: Stem bush  $\varnothing 12\text{mm}$
- 02ASK070: Stem bush  $\varnothing 15\text{mm}$
- 02ASK080: Stem bush  $\varnothing 20\text{mm}$
- 02ASK710: Stem bush  $\varnothing 28\text{mm}$
- 02ASK090: Stem bush 3/8"
- 02ASK130: Stem bush case
- 02ASK730: Reflector
- 937179T: Foot switch





### Optional Accessory

**21AKK824:** Stand for bore gage inspection



# UDT-2 Dial Gage Testers

## SERIES 170

The UDT-2 Dial Gage Tester consists of a specially designed 0-1" / 0-25mm micrometer head, with a large disc, and rigid holding fixtures. Gage tester to calibrate measuring accuracy of dial indicators, dial test indicators and dial bore gage.

### FEATURES

- Clamping stem diameter—  
170-102-10: 6mm and 8mm,  
170-101-10: .25" and .375"
- With the optional stand (**12AAK824**), inspection of Dial Bore Gages becomes possible to perform.

### SPECIFICATIONS

Metric			
Range	Order No.	Graduation	Accuracy
0 - 25mm	<b>170-102-10</b>	0.001mm	±1µm



170-102-10

Inch			
Range	Order No.	Graduation	Accuracy
0 - 1"	<b>170-101-10</b>	.0001"	±.0001"

# Calibration Testers

## SERIES 521

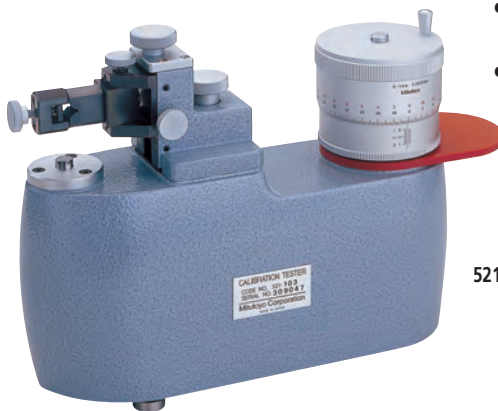
The Calibration Tester is specially designed to calibrate measuring accuracy of short range dial indicators, dial test indicators, and other electronic comparison gage heads.

### FEATURES

- Universal bracket accepts any dial indicator, dial test indicator, lever head of Mu-Checker without any additional accessory.
- Clamping capacity: ø4mm - ø10mm / .157"-.394" dia.
- Dual color-indexed directional graduations to facilitate measurements.



Calibrating test indicator



521-103

### SPECIFICATIONS

Metric			
Range	Order No.	Graduation	Accuracy
0 - 1mm	<b>521-103</b>	0.0002mm	±0.2µm
0 - 5mm	<b>521-105</b>	0.0002mm	±0.8µm

Inch			
Range	Order No.	Graduation	Accuracy
0 - .05"	<b>521-104</b>	.00001"	±.00001"
0 - .2"	<b>521-106</b>	.00001"	±.00003"

# Thickness Gages

## SERIES 547, 7

The Thickness Gages offer a quick and efficient means of inspection with their convenient grip handle, thumb trigger and spring-loaded spindle. The various models cover a wide range of applications.

### FEATURES

- Wide range of applications with various types of measuring faces (on the spindle and anvil).

- The digital models incorporate Mitutoyo's popular ID-C and ID-S Series Digimatic Indicators to provide error-free LCD readings as well as data output for SPC analysis.
- **547-400S** is ideally suited for measuring thicknesses of paper, film, wire, sheet metal and similar materials.

### Flat Anvil Type

#### Standard Type / Digital



#### Deep Throat Type / Digital



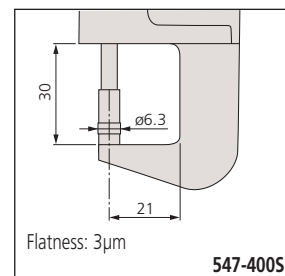
#### Deep Throat Type / Dial



#### High Accuracy Type / Digital



### DIMENSIONS



### Technical Data

#### Function of Digital Models

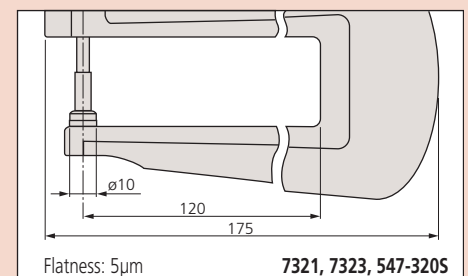
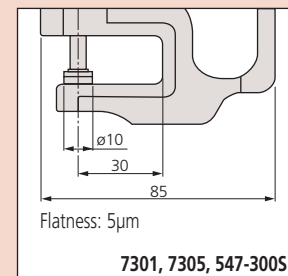
- IDS Types
- ON/OFF
  - Inch / mm Conversion
  - Origin
  - ±Direction Changeover
  - SPC Output
  - Battery Life: 20,000 hrs
  - Power Supply: Silver Oxide Cell (SR-44 1pc.)

#### IDC Types

- ON/OFF
- Inch / mm Conversion
- Zero / ABS
- ±Direction Changeover
- SPC Output
- Battery Life: 5,000 hrs
- Power Supply: Silver Oxide Cell (SR-44 1pc.)
- Preset
- Provides GO / ±NG Judgement
- Face Rotates 330°

### DIMENSIONS

Unit: mm



# Thickness Gages

## SERIES 547, 7

### Optional Accessories

- 905338: SPC cable (40" / 1m) for digital type
- 905409: SPC cable (80" / 2m) for digital type
- 902794: Spindle lifting lever for IDS digimatic type (stroke .5" / 12.7mm)
- 21AZB149: Spindle lifting lever for digimatic and dial thickness gage (stroke .5" / 12.7mm)
- 21AZB150: Spindle lifting lever for dial indicator (stroke 1" / 25.4mm)

### Flat Anvil Type

#### SPECIFICATIONS

**Inch/Metric** Digital Type

Range	Order No.	Resolution	Accuracy	Measuring force	Indicator
0 - .47" / 0 - 12mm	547-500	.0005"/0.01mm	±.001"	1.5N or less	Digimatic IDS
0 - .47" / 0 - 12mm	547-520	.0005"/0.01mm	±.001"	1.5N or less	Digimatic IDS
0 - .47" / 0 - 12mm	547-526	.0001"/0.001mm	±.0002"	1.5N or less	Digimatic IDS
0 - .4" / 0 - 10mm	547-3005	.0005"/0.01mm	±.001"	1.5N or less	Digimatic IDC
0 - .4" / 0 - 10mm	547-3205	.0005"/0.01mm	±.001"	1.5N or less	Digimatic IDC
0 - .47" / 0 - 12mm	547-4005	.00005"/0.001mm	±.00015"	3.5N or less	Digimatic IDC

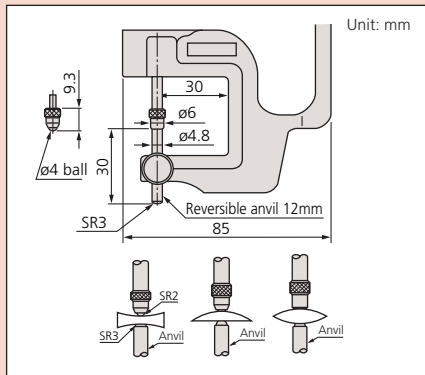
**Inch** Dial Type

Range	Order No.	Graduation	Accuracy	Measuring force	Remarks
0 - .05"	7326S	.0001"	±.0002"	1.4N or less	Fine dial reading, ceramic spindle/anvil
0 - .5"	7300S	.001"	±.001"	1.4N or less	Standard, ceramic spindle/anvil
0 - 1"	7304S	.001"	±.002"	2.0N or less	Standard, ceramic spindle/anvil
0 - 1"	7322S	.001"	±.002"	2.0N or less	Deep throat, ceramic spindle/anvil

**Metric** Dial Type

Range	Order No.	Graduation	Accuracy	Measuring force	Remarks
0 - 1mm	7327	0.001mm	±5µm	1.4N or less	Fine dial reading, ceramic spindle/anvil
0 - 10mm	7301	0.01mm	±15µm	1.4N or less	Standard, ceramic spindle/anvil
0 - 20mm	7305	0.01mm	±20µm	2.0N or less	Standard, ceramic spindle/anvil
0 - 10mm	7321	0.01mm	±15µm	1.4N or less	Deep throat, ceramic spindle/anvil
0 - 20mm	7323	0.01mm	±22µm	2.0N or less	Deep throat, ceramic spindle/anvil

### DIMENSIONS



### Lens thickness measurement (reverse anvil)



#### SPECIFICATIONS

**Inch/Metric** Digital Type

Range	Order No.	Resolution	Accuracy	Measuring force	Indicator
0 - .47" / 0 - 12mm	547-512	.0005"/0.01mm	±.001"	1.5N or less	Digimatic IDS
0 - .47" / 0 - 12mm	547-3125	.0005"/0.01mm	±.001"	1.5N or less	Digimatic IDC

**Inch** Dial Type

Range	Order No.	Graduation	Accuracy	Measuring force	Remarks
0 - .5"	7312S	.001"	±.001"	1.4N or less	Lens thickness

**Metric** Dial Type

Range	Order No.	Graduation	Accuracy	Measuring force	Remarks
0 - 10mm	7313	0.01mm	±15µm	1.4N or less	Lens thickness

# Thickness Gages

## SERIES 547, 7

### Tube thickness measurement



SPC  
ABSOLUTE  
ANALOG SYSTEMS COMPANY



### SPECIFICATIONS

**Inch/Metric** Digital Type

Range	Order No.	Resolution	Accuracy	Measuring force	Indicator
0 - .47" / 0 - 10mm	547-561	.0005"/0.01mm	±.001"	1.5N or less	Digimatic IDS
0 - .47" / 0 - 12mm	547-3615	.0005"/0.01mm	±.001"	1.5N or less	Digimatic IDC

**Inch** Dial Type

Range	Order No.	Graduation	Accuracy	Measuring force	Remarks
0 - .5"	73615	.001"	±.001"	1.4N or less	Tube thickness

**Metric** Dial Type

Range	Order No.	Graduation	Accuracy	Measuring force	Remarks
0 - 10mm	7360	0.01mm	±15µm	1.4N or less	Tube thickness

### Groove thickness measurement (Blade anvil type)



SPC  
ABSOLUTE  
ANALOG SYSTEMS COMPANY



### SPECIFICATIONS

**Inch/Metric** Digital Type

Range	Order No.	Resolution	Accuracy	Measuring force	Indicator
0 - .47" / 0 - 12mm	547-516	.0005"/0.01mm	±.001"	1.5N or less	Digimatic IDS
0 - .47" / 0 - 10mm	547-3165	.0005"/0.01mm	±.001"	1.5N or less	Digimatic IDC

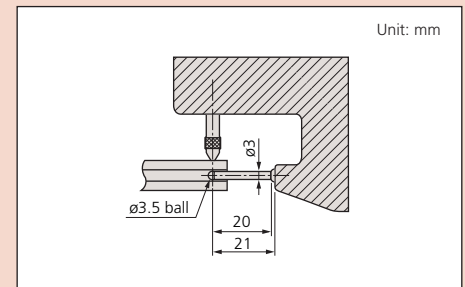
**Inch** Dial Type

Range	Order No.	Graduation	Accuracy	Measuring force	Remarks
0 - .5"	73165	.001"	±.001"	1.4N or less	Groove thickness

**Metric** Dial Type

Range	Order No.	Graduation	Accuracy	Measuring force	Remarks
0 - 10mm	7315	0.01mm	±15µm	1.4N or less	Groove thickness

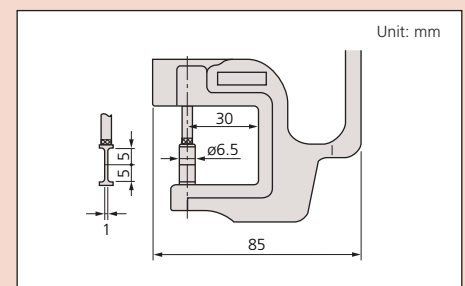
### DIMENSIONS



### Optional Accessories

- 905338: SPC cable (40" / 1m) for digital type
- 905409: SPC cable (80" / 2m) for digital type
- 902794: Spindle lifting lever for IDS digimatic type (stroke .5" / 12.7mm)
- 21AZB149: Spindle lifting lever for digimatic and dial thickness gage (stroke .5" / 12.7mm)
- 21AZB150: Spindle lifting lever for dial indicator (stroke 1" / 25.4mm)

### DIMENSIONS



# Thickness Gages

## SERIES 547, 7

Universal Type (interchangeable anvils)



547-528

### SPECIFICATIONS

**Inch/Metric** Digital Type

Range	Order No.	Resolution	Accuracy	Measuring force	Indicator
0 - .47" / 0 - 12mm	<b>547-528</b>	.0005"/0.01mm	±.001"	1.5N or less	Digimatic IDS

**Inch** Dial Type

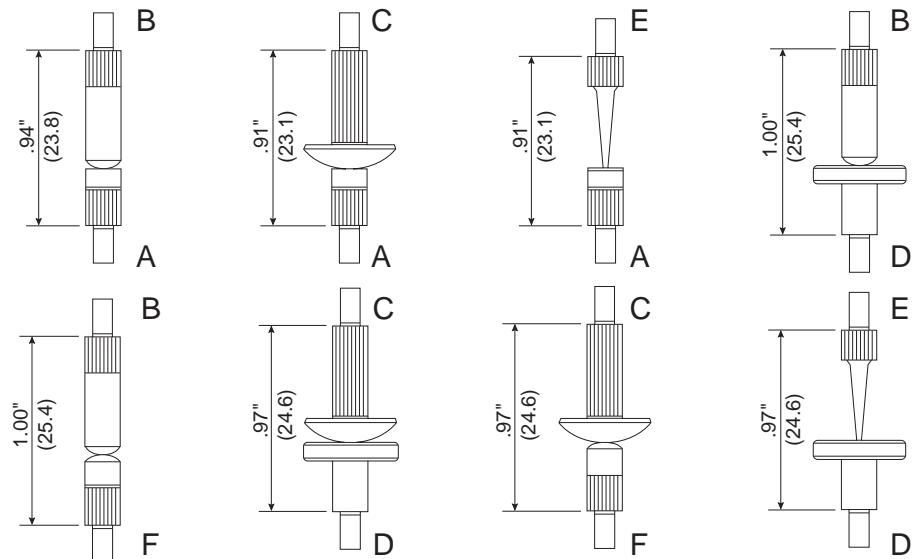
Range	Order No.	Graduation	Accuracy	Measuring force	Remarks
0 - .4"	<b>73285</b>	.001"	±.001"	1.5N or less	Interchangeable anvils

### Optional Accessories

- 905338:** SPC cable (40" / 1m) for digital type
- 905409:** SPC cable (80" / 2m) for digital type
- 902011:** Spindle lifting lever for metric dial type (stroke 10mm)
- 902794:** Spindle lifting lever for digital and inch dial type (stroke .4" / 10mm)

### Standard Accessories

#### Recommended Combinations



- |                    |                 |              |
|--------------------|-----------------|--------------|
| <b>A. 133017</b>   | Flat Point      | ø.20         |
| <b>B. 21AAA033</b> | Shell Point     | .16" Radius  |
| <b>C. 21BZA767</b> | Spherical Point | .36" Radius  |
| <b>D. 101188</b>   | Flat Point      | ø.50         |
| <b>E. 21AAA030</b> | Needle Point    | .016" Radius |
| <b>F. 21AAA032</b> | Shell Point     | .16" Radius  |

# Quick-Mini

## SERIES 700

A compact comparator designed for carrying convenience, it is very suited for quick inspection of paper thickness, leather, wires, plastic parts, etc. The digital display provides error-free reading with 0.01mm / .0005" resolution.

### FEATURES

- Measuring force less than 2N.
- Supplied in fitted plastic case.

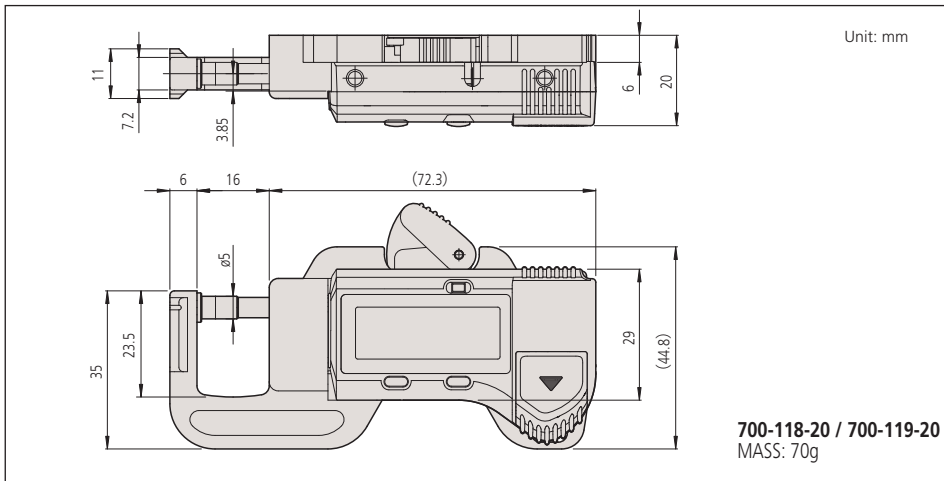


700-118-20

### SPECIFICATIONS

Metric			Inch/Metric		
Range	Order No.	Accuracy	Range	Order No.	Accuracy
0 - 12mm	700-119-20	±0.02mm	0 - .5"/0 - 12.7mm	700-118-20	±.001"

### DIMENSIONS AND MASS



### Technical Data

Accuracy: Refer to the list of specifications.  
 Resolution: 0.01mm or .0005"/0.01mm  
 Display: LCD  
 Battery: SR44 (1 pc.), **938882**  
 Battery life: Approx. 2 years under normal use

### Function

Zero-setting, Data hold, Power ON/OFF, inch/mm conversion (on inch/metric models only)





# Digimatic Caliper Gages

## SERIES 209 — Internal Tube Thickness Measurement Type

Versatile ID measuring gages for holes diameters, groove thickness, tube thickness, and hard-to-reach dimensions. The Digimatic

Caliper Gages provide error-free LCD readings as well as data output for SPC analysis.

### Technical Data

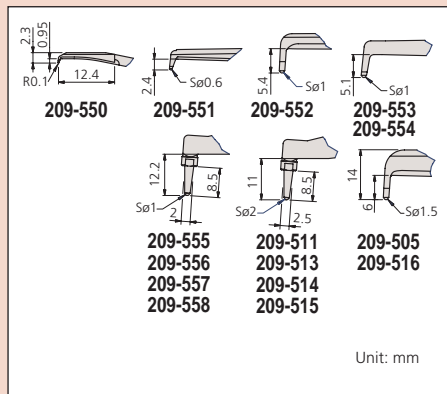
Accuracy: Refer to the list of specifications  
 Resolution: .001", .0005", or .0002"  
 0.01mm, 0.02mm, or 0.005mm  
 Display: LCD Analog / Digital  
 Power Supply: AA Battery (1pc)  
 Battery life: Approx. 350 hours  
 Measuring Force: 0.7 - 1.7N  
 Dust/Water protection level: IP67  
 Provided with inspection certificate.

### Function

Zeraset, Preset, Auto power OFF, Inch/Metric, conversion  
 Data hold, Max/Min value holding, Data output

### Optional Accessories

21JAA300D: SPC cable kit (80" / 2m)  
 for 209-505, 209-511, 209-513, 209-514, 209-515,  
 209-516, 209-517



### Internal measurement type

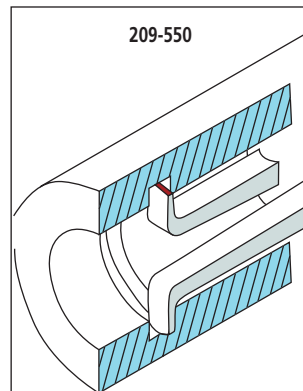
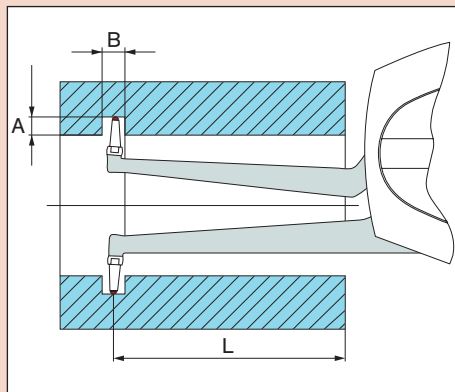
209-552



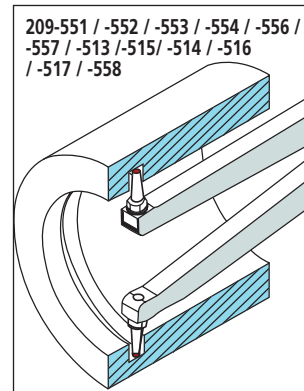
### SPECIFICATIONS

Inch / Metric

Range	Order No.	Resolution	Accuracy	Max. Measuring Depth L	Max. Groove Depth A	Min. Groove Width B	Type of Measuring Contact	Mass(g)
.10 - .49" / 2.5 - 12.5mm	209-550	.0002" / 0.005mm	.0008" / 0.015mm	.47" / 12mm	.027" / 0.7mm	.023" / 0.5mm	Chisel R. .0039" / 0.1mm	225
.20 - .59" / 5 - 15mm	209-551	.0002" / 0.005mm	.0008" / 0.015mm	1.37" / 35mm	.09" / 2.3mm	.032" / 0.8mm	Ball .024" / 0.6mm dia.	230
.39 - 1.18" / 10 - 30mm	209-552	.0005" / 0.01mm	.0015" / 0.03mm	3.3" / 85mm	.19" / 5.2mm	.06" / 1.2mm	Ball .04" / 1mm dia.	250
.79 - 1.58" / 20 - 40mm	209-553	.0005" / 0.01mm	.0015" / 0.03mm	3.3" / 85mm	.26" / 7mm	.06" / 1.2mm	Ball .04" / 1mm dia.	250
1.18 - 1.97" / 30 - 50mm	209-554	.0005" / 0.01mm	.0015" / 0.03mm	3.3" / 85mm	.26" / 7mm	.06" / 1.2mm	Ball .04" / 1mm dia.	255
1.58 - 2.36" / 40 - 60mm	209-555	.0005" / 0.01mm	.0015" / 0.03mm	3.3" / 85mm	.31" / 8.3mm	.06" / 1.2mm	Ball .04" / 1mm dia.	265
1.97 - 2.75" / 50 - 70mm	209-556	.0005" / 0.01mm	.0015" / 0.03mm	3.3" / 85mm	.31" / 8.3mm	.06" / 1.2mm	Ball .04" / 1mm dia.	265
2.36 - 3.15" / 60 - 80mm	209-557	.0005" / 0.01mm	.0015" / 0.03mm	3.3" / 85mm	.31" / 8.3mm	.06" / 1.2mm	Ball .04" / 1mm dia.	270
2.75 - 3.54" / 70 - 90mm	209-558	.0005" / 0.01mm	.0015" / 0.03mm	3.3" / 85mm	.31" / 8.3mm	.06" / 1.2mm	Ball .04" / 1mm dia.	270
.60-2.17" / 15-55mm	209-505	.001" / 0.02mm	.002" / 0.04mm	4.49" / 115mm	.177" / 5mm	.10" / 1.8mm	Ball .059" / 1.5mm dia.	360
1.38-2.95" / 35-75mm	209-511	.001" / 0.02mm	.002" / 0.04mm	4.49" / 115mm	.315" / 8mm	.157" / 2.2mm	Ball .079" / 2.0mm dia.	380
2.17-3.74" / 55-95mm	209-513	.001" / 0.02mm	.002" / 0.04mm	4.49" / 115mm	.315" / 8mm	.157" / 2.2mm	Ball .079" / 2.0mm dia.	380
2.95-4.52" / 75-115mm	209-514	.001" / 0.02mm	.002" / 0.04mm	4.49" / 115mm	.315" / 8mm	.157" / 2.2mm	Ball .079" / 2.0mm dia.	380
3.75 - 5.32" / 95 - 135mm	209-515	.001" / 0.02mm	.002" / 0.04mm	4.49" / 115mm	.315" / 8mm	.157" / 2.2mm	Ball .079" / 2mm dia.	380
.60-2.95" / 15-75mm	209-516	.001" / 0.02mm	.003" / 0.06mm	6.89" / 175mm	.196" / 5mm	.07" / 1.8mm	Ball .059" / 1.5mm dia.	440
1.57-3.94" / 40-100mm	209-517	.001" / 0.02mm	.003" / 0.06mm	7.77" / 195mm	.315" / 8mm	.086" / 2.2mm	Ball .079" / 2.0mm dia.	440



Edge R 0.1 mm



Ball  $\phi$  0.6mm,  $\phi$  1mm,  $\phi$  1.5mm and  $\phi$  2mm

# Digimatic Caliper Gages

## SERIES 209 — External Tube Thickness Measurement Type

Versatile OD measuring gages for holes diameters, groove thickness, tube thickness, and hard-to-reach dimensions. The Digimatic Caliper Gages provide error-free LCD readings as well as data output for SPC analysis.

External measurement type

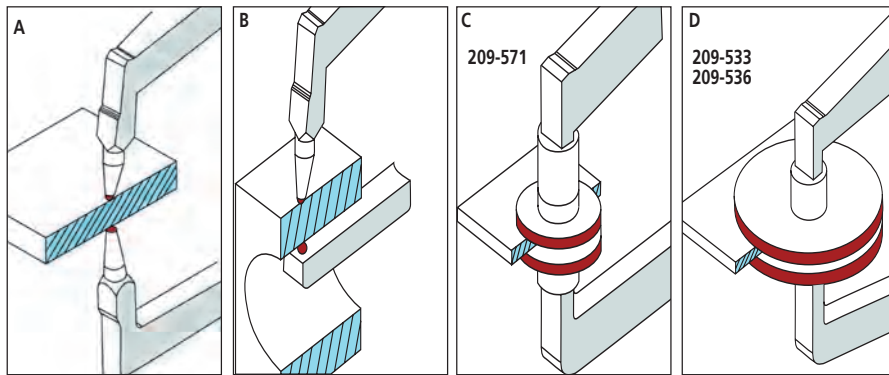
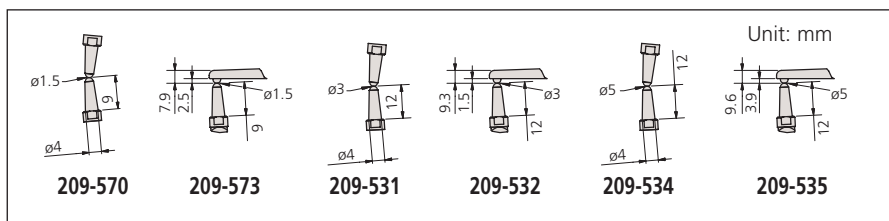
209-572



### SPECIFICATIONS

Inch / Metric

Range	Order No.	Resolution	Accuracy	Max. Measuring Depth L	Measuring Contact length Hb	Measuring Contact length Hf	Type of Measuring Contact/type of set up	Mass(g)
0 - .39" / 0 - 10mm	209-570	.0002" / 0.005mm	.0008" / 0.05mm	1.37" / 35mm	.75" / 19.1mm	.73" / 18.6mm	Ball .059" / 1.5mm dia. Both / A	240
0 - .39" / 0 - 10mm	209-571	.0002" / 0.005mm	.001" / 0.02mm	1.37" / 35mm	.85" / 21.7mm	.58" / 14.8mm	Desc .24" / 6mm dia. Both / C	175
0 - .78" / 0 - 20mm	209-572	.0005" / 0.01mm	.0015" / 0.03mm	3.2" / 85mm	.97" / 24.7mm	.97" / 24.6mm	Ball .059" / 1.5mm dia. Both / A	280
0 - .78" / 0 - 20mm	209-573	.0005" / 0.01mm	.0015" / 0.03mm	3.2" / 80mm	.97" / 24.7mm	.10" / 2.5mm	Ball .059" / 1.5mm dia. Both / B	270
0-1.57" / 0-40mm	209-531	.001" / 0.02mm	.002" / 0.04mm	4.33" / 115mm	.98" / 24.9mm	.1" / 25.4mm	Ball .118" / 3.0mm dia. Both / A	380
0-1.57" / 0-40mm	209-532	.001" / 0.02mm	.002" / 0.04mm	4.33" / 100mm	.98" / 32mm	.059" / 3.5mm	Ball .118" / 3.0mm dia. Both / B	380
0-1.57" / 0-40mm	209-533	.001" / 0.02mm	.002" / 0.04mm	4.33" / 115mm	1.14" / 30mm	.77" / 19.4mm	Desc 1.97" / 50mm dia. Both / D	380
0-2.36" / 0-60mm	209-534	.001" / 0.02mm	.003" / 0.06mm	7.48" / 190mm	.98" / 25mm	.98" / 25mm	Ball .197" / 5.0mm dia. Both / A	470
0-2.36" / 0-60mm	209-535	.001" / 0.02mm	.003" / 0.06mm	5.9" / 150mm	.98" / 25mm	.13" / 3.5mm	Ball .197" / 5.0mm dia. Both / B	470
0-2.36" / 0-60mm	209-536	.001" / 0.02mm	.004" / 0.08mm	7.48" / 190mm	1.06" / 27mm	.77" / 19.5mm	Desc 1.97" / 50mm dia. Both / D	470



A Ball  $\phi$  1.5 and 3mm for wall thickness

B Ball  $\phi$  1.5 and 3mm for min. wall thickness  $\phi$  3mm / 9mm

C Disk  $\phi$  6mm for flat surfaces

D Disk  $\phi$  50mm for flat surfaces



### Technical Data

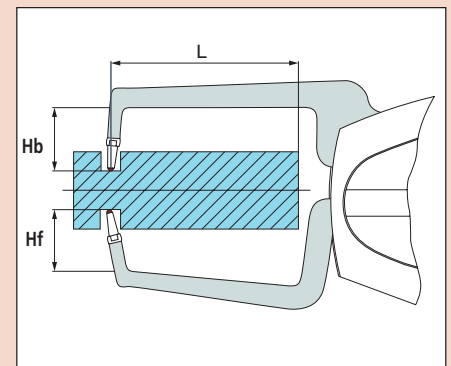
Accuracy: Refer to the list of specifications  
 Resolution: .001", .0005", or .0002"  
 .01mm, 0.02mm, or 0.005mm  
 Display: Analog / Digital  
 Power Supply: AA Battery (1pc)  
 Battery life: Approx. 350 hours  
 Measuring Force: 0.5 - 1.5N  
 Dust/Water protection level: IP67  
 Provided with inspection certificate.

### Function

Zeraset, Preset, Auto power OFF, Inch/Metric conversion, Data hold, Max/Min value holding, Data output  
 \* Contact type 3, 4 does not have max. min. value hold.

### Optional Accessories

21JAA300D: SPC cable kit (80" / 2m)





# Dial Caliper Gages

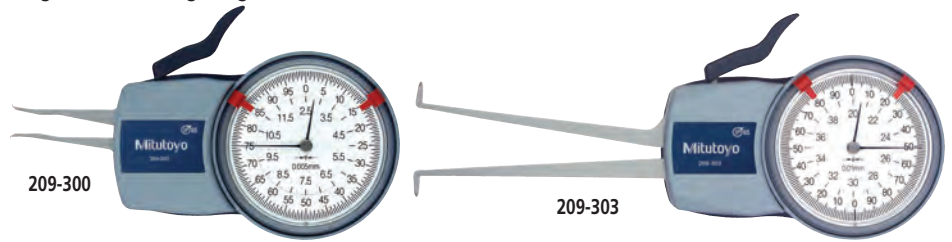
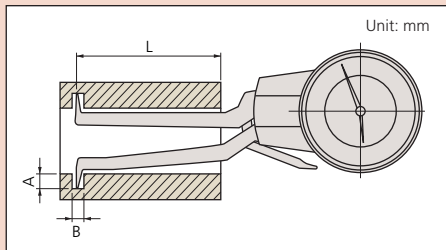
## SERIES 209 — Internal Measurement Type



These Dial Caliper Gages are used only as comparison gages, and should be used along with a Setting Ring or a micrometer.

The caliper is spring loaded and makes point contact at constant measuring pressure.

### DIMENSIONS



### SPECIFICATIONS

#### Inch

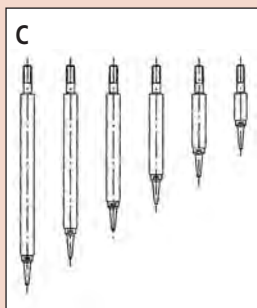
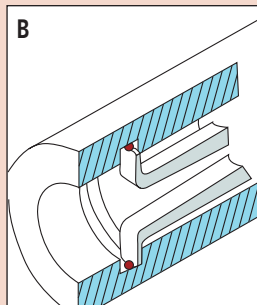
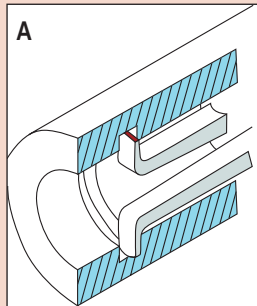
Measuring Range	Order No.	Graduation	Accuracy	Max. Measuring Depth L	Max. Groove Depth A	Min. Groove Width B	Measuring Contact Type	Size (mm)	Mass (g)
.10 - .50"	<b>209-350</b>	.0002"	± .0008"	.47"	.027"	.023"	A	R0.1	200
.20 - .60"	<b>209-351</b>	.0002"	± .0008"	1.37"	.09"	.032"	B	ø0.6	200
.40 - 1.2"	<b>209-352</b>	.0005"	± .0015"	3.3"	.19"	.06"	B	ø1	200
.80 - 1.6"	<b>209-354</b>	.0005"	± .0015"	3.3"	.26"	.06"	B	ø1	200
1.2 - 2"	<b>209-355</b>	.0005"	± .0015"	3.3"	.26"	.06"	B	ø1	200
1.6 - 2.4"	<b>209-356</b>	.0005"	± .0015"	3.3"	.31"	.06"	B	ø1	200
2 - 2.8"	<b>209-357</b>	.0005"	± .0015"	3.3"	.31"	.06"	B	ø1	200
2.4 - 3.2"	<b>209-358</b>	.0005"	± .0015"	3.3"	.31"	.06"	B	ø1	250
2.8 - 3.6"	<b>209-359</b>	.0005"	± .0015"	3.3"	.31"	.06"	B	ø1	250
3.2 - 4"	<b>209-360</b>	.0005"	± .0015"	3.3"	.31"	.06"	B	ø1	250
2 - 4"	<b>209-361*</b>	.0005"	± .0015"	3.3"	.31"	.06"	C	ø1	250
3.6 - 5.6"	<b>209-362*</b>	.0005"	± .0015"	3.3"	.31"	.06"	C	ø1	250
5.2 - 7.2"	<b>209-363*</b>	.0005"	± .0015"	3.3"	.31"	.06"	C	ø1	250

\*Interchangeable contact points (additional anvil 4 pcs.) with ball point .04" dia.

#### Metric

Measuring Range	Order No.	Graduation	Accuracy	Max. Measuring Depth L	Max. Groove Depth A	Min. Groove Width B	Measuring Contact Type	Size (mm)	Mass(g)
2.5 - 12.5mm	<b>209-300</b>	0.005mm	±0.015mm	12mm	0.7mm	0.5mm	A	R0.1	155
5 - 15mm	<b>209-301</b>	0.005mm	±0.015mm	35mm	2.3mm	0.8mm	B	ø0.6	160
10 - 30mm	<b>209-302</b>	0.01mm	±0.03mm	85mm	5.2mm	1.2mm	B	ø1	180
20 - 40mm	<b>209-303</b>	0.01mm	±0.03mm	85mm	7mm	1.2mm	B	ø1	180
30 - 50mm	<b>209-304</b>	0.01mm	±0.03mm	85mm	7mm	1.2mm	B	ø1	185
40 - 60mm	<b>209-305</b>	0.01mm	±0.03mm	85mm	8.3mm	1.2mm	B	ø1	195
50 - 70mm	<b>209-306</b>	0.01mm	±0.03mm	85mm	8.3mm	1.2mm	B	ø1	195
60 - 80mm	<b>209-307</b>	0.01mm	±0.03mm	85mm	8.3mm	1.2mm	B	ø1	200
70 - 90mm	<b>209-308</b>	0.01mm	±0.03mm	85mm	8.3mm	1.2mm	B	ø1	200
80 - 100mm	<b>209-309</b>	0.01mm	±0.03mm	85mm	8.3mm	1.2mm	B	ø1	200
50 - 100mm	<b>209-310*</b>	0.01mm	±0.03mm	85mm	8.3mm	1.2mm	C	ø1	220
90 - 140mm	<b>209-311*</b>	0.01mm	±0.03mm	85mm	8.3mm	1.2mm	C	ø1	230
130 - 180mm	<b>209-312*</b>	0.01mm	±0.03mm	85mm	8.3mm	1.2mm	C	ø1	240
15-65mm	<b>209-896</b>	0.05mm	±0.05mm	175mm	5mm	1.8mm	B	ø1.5	400
40-90mm	<b>209-897</b>	0.05mm	±0.05mm	175mm	8mm	2.2mm	B	ø2	440
70-120mm	<b>209-898</b>	0.05mm	±0.05mm	175mm	8mm	2.2mm	B	ø2	440

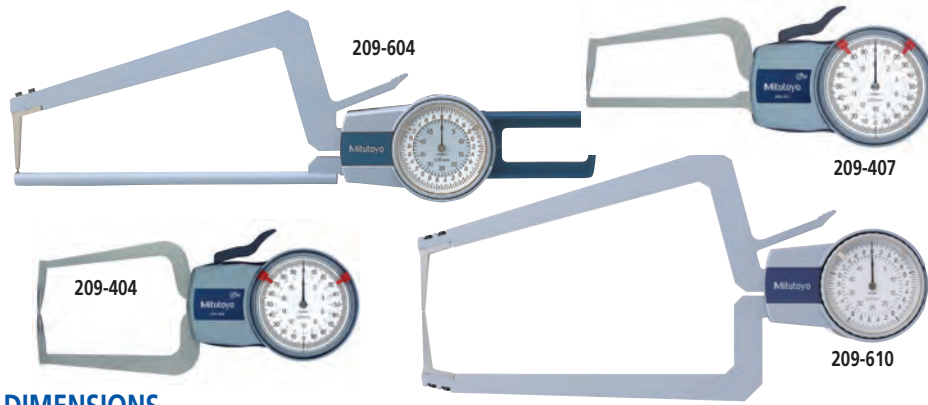
\*Interchangeable contact point (additional anvil 5pcs.) with ball point 1mm dia



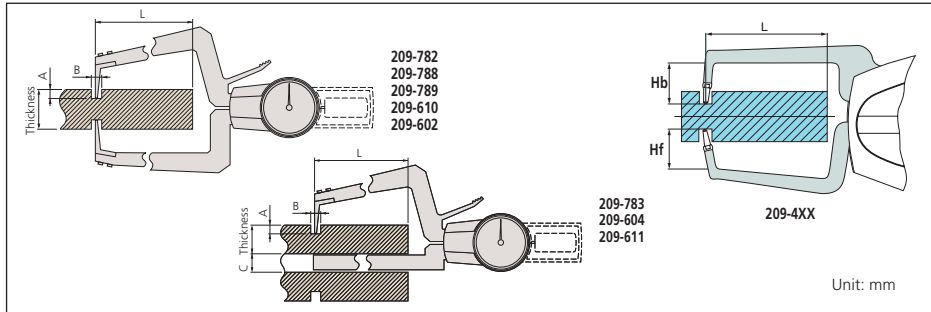
# Dial Caliper Gages

**SERIES 209 — External Measurement Type**

**IP 65**



## DIMENSIONS



## SPECIFICATIONS

**Inch**

Measuring Range	Order No.	Graduation	Accuracy	Max. Measuring Depth L	Max. Groove Depth A/Hb	Min. Groove B/Hf	Measuring Contact Type	Size (mm)	Mass (g)
0 - .40"	<b>209-450</b>	.0002"	±.0008"	1.37"	.75"	.75"	K/K	ø1.5	170
0 - .40"	<b>209-451</b>	.0002"	±.001"	1.37"	.85"	.58"	T	ø6	175
0 - .40"	<b>209-452</b>	.0002"	±.0008"	1.37"	.75"	.035"	RK/K	ø1.5	165
0 - .40"	<b>209-453</b>	.0002"	±.0008"	1.37"	.75"	.035"	R/S	Chisel R0.4, ø1.5	165
0 - .50"	<b>209-789</b>	.005"	±.005"	1.38"	-	-	PK	ø2, Chisel R0.5	40
0 - .50"	<b>209-790</b>	.005"	±.005"	1.38"	-	-	PR	ø2	40
0 - .80"	<b>209-454</b>	.0005"	±.0015"	3.2"	.97"	.97"	S	Chisel R0.4	210
0 - .80"	<b>209-455</b>	.0005"	±.0015"	3.2"	.97"	.97"	K/K	ø1.5	210
0 - .80"	<b>209-456</b>	.0005"	±.0015"	3.2"	.97"	.10"	RK/K	ø1.5	200
0 - .80"	<b>209-457</b>	.0005"	±.0015"	3.2"	.97"	.10"	R/S	Chisel R0.4, ø1.5	200
0 - 2.0"	<b>209-782</b>	.001"	±.002"	6.7"	1.26"	.18"	K/K	ø2	560
0 - 2.0"	<b>209-783</b>	.001"	±.002"	6.7"	1.26"	.18"	R	ø2.5	520
2.0 - 4.0"	<b>209-788</b>	.001"	±.003"	6.7"	1.26"	.18"	K/K	ø2	580

**Metric**

Measuring Range	Order No.	Graduation	Accuracy	Max. Measuring Depth L	Max. Groove Depth A/Hb	Min. Groove B/Hf	Measuring Contact	Size (mm)	Mass (g)
0 - 10mm	<b>209-402</b>	0.005mm	±0.015mm	35mm	19.1mm	18.6mm	K/K	ø1.5	240
0 - 10mm	<b>209-403</b>	0.005mm	±0.02mm	35mm	21.7mm	14.8mm	T	ø6	175
0 - 20mm	<b>209-404</b>	0.01mm	±0.03mm	85mm	7mm	24.6mm	K/K	ø1.5	210
0 - 20mm	<b>209-405</b>	0.01mm	±0.03mm	85mm	7mm	24.6mm	S	R 0.4	210
0 - 20mm	<b>209-406</b>	0.01mm	±0.03mm	80mm	7mm	2.5mm	R/S	Chisel R0.4, ø1.5	200
0 - 20mm	<b>209-407</b>	0.01mm	±0.03mm	80mm	7mm	2.5mm	RK/K	ø1.5	200
0 - 10mm	<b>209-843</b>	0.1mm	±0.1mm	36mm	-	-	PK	ø2, Chisel R0.5	40
0 - 10mm	<b>209-603</b>	0.1mm	±0.1mm	33mm	-	-	PR	ø2	40
0 - 50mm	<b>209-602</b>	0.05mm	±0.05mm	170mm	10mm	4.5mm	K/K	ø2	560
0 - 50mm	<b>209-604</b>	0.05mm	±0.05mm	170mm	10mm	4.5mm	PR	ø2, Chisel R0.5	520
0 - 50mm	<b>209-610</b>	0.05mm	±0.05mm	170mm	10mm	4.5mm	R	ø2.5	560
0 - 50mm	<b>209-611</b>	0.05mm	±0.05mm	170mm	10mm	4.5mm	S/R	ø2, Chisel R0.75	525

## Type of Contact Points

**S** Upper / Lower contact point  
R0.4 / R0.4: **209-454, 209-405**  
R0.75 / R0.75: **209-610**

**K/K** Upper / Lower contact point  
ø2.0 / ø2.0 ball: **209-602, 209-782, 209-788, 209-789**  
ø1.5 / ø1.5 ball: **209-450, 209-455, 209-402, 209-404**

**R/S** R0.4 / ø1.5 carbide ball: **209-406, 209-453**

**RK/K** Upper / Lower contact point  
ø1.5 / ø1.5 ball: **209-407, 209-452, 209-456**

**S/R** Upper / Lower contact point  
R0.75 / ø2 ball: **209-611**

**R** Upper / Lower contact point  
ø2 / ø2.5 ball: **209-604, 209-783**

**T** Upper / Lower contact point  
**209-451:**  
**209-403:**

**PR** Upper / Lower contact point  
ø2 / R0.5: **209-790, 209-603**

**PK** Upper / Lower contact point  
**209-789:**  
**209-843:**

# Dial Caliper Gages

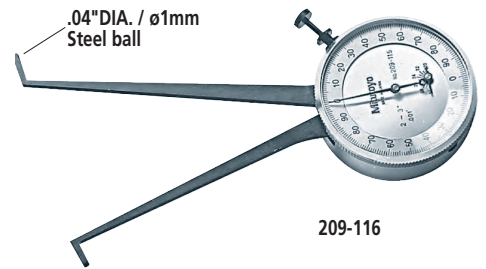
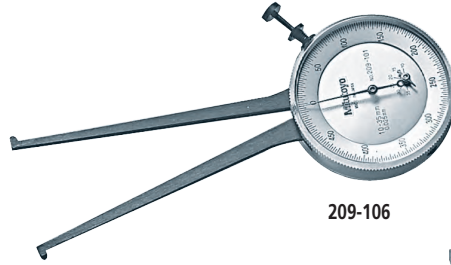
## SERIES 209 — Internal Measurement Type

These Dial Caliper Gages are used only as comparison gages, and should be used along with a Setting Ring or a micrometer.

The caliper is spring loaded and makes point contact at constant measuring pressure.

### Technical Data

Dial Diameter: 2" / 50mm  
 Measuring Force: 2.0N or less  
 Repeatability: .001" / 0.025mm



Metric		Yellow Dial Face	
Order No.	Range	Graduation	Accuracy
209-106	10–35mm	0.025mm	$\pm$ 0.075mm
209-107	30–55mm	0.025mm	$\pm$ 0.075mm
209-108	50–75mm	0.025mm	$\pm$ 0.075mm

Inch		Yellow Dial Face	
Order No.	Range	Graduation	Accuracy
209-116	.4"–1.4"	.001"	$\pm$ .003"
209-117	1.2"–2.2"	.001"	$\pm$ .003"
209-118	2.0"–3.0"	.001"	$\pm$ .003"

### DIMENSIONS

Range	A	B	Mass(g)
10 - 35mm / .4 - 1.4"	2.6mm	2.6mm	85
30 - 55mm / 1.2 - 2.2"	8.5mm	7.5mm	85
50 - 75mm / 2.0 - 3.0"	8.5mm	7.5mm	85

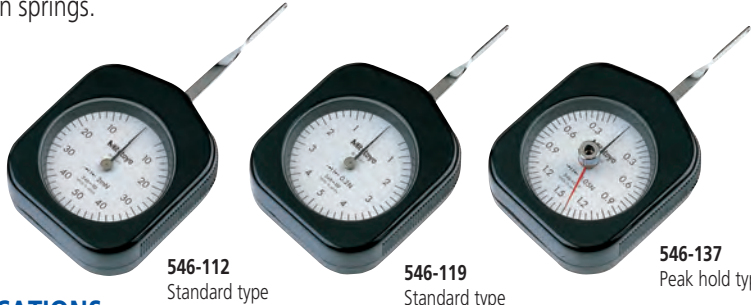
$\phi$ 1.6mm

# Dial Tension Gages

## SERIES 546

### FEATURES

- Can measure dynamic tension in Newton (N) units.
- Dial Tension Gages are widely used to determine the contact force of other measuring instruments as well as that of electrical relays, micro-switches, valves and precision springs.
- Convenient peak-hold type gages are also available.



### SPECIFICATIONS

#### Standard

Range	Order No.	Minimum reading
6mN - 50mN	546-112	2mN
10mN - 100mN	546-113	5mN
30mN - 300mN	546-114	10mN
0.06N - 0.5N	546-115	0.02N
0.1N - 1N	546-116	0.05N
0.15N - 1.5N	546-117	0.05N
0.3N - 3N	546-118	0.1N
0.6N - 5N	546-119	0.2N

#### Peak hold

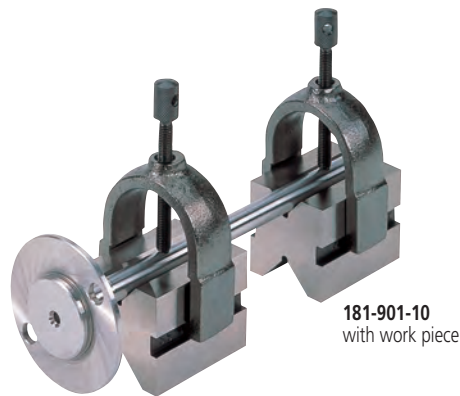
Range	Order No.	Graduation
10mN - 100mN	546-133	5mN
30mN - 300mN	546-134	10mN
0.06N - 0.5N	546-135	0.02N
0.1N - 1N	546-136	0.05N
0.15N - 1.5N	546-137	0.05N
0.3N - 3N	546-138	0.1N
0.6N - 5N	546-139	0.2N

# V-Block Sets

## SERIES 181

### FEATURES

- Two V-blocks per set.
- Magnetic type is available. (The magnetic type V-block is not provided with a workpiece clamp.)



### SPECIFICATIONS

#### Inch

Max. workpiece dia.	Order No.	Thread Size	Remarks	Mass(g)
1"	181-901-10	UNC 1/4"-20	With clamp	750
2"	181-904-10	5/16"-18NC	With clamp	3600

# Magnetic V-Block

## SERIES 181

### SPECIFICATIONS

#### Metric

Max. workpiece dia.	Order No.	Magnetic Pull	Remarks
2"	181-146	60 kg	1 Piece

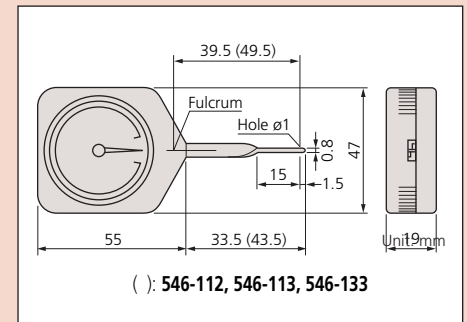


### Application

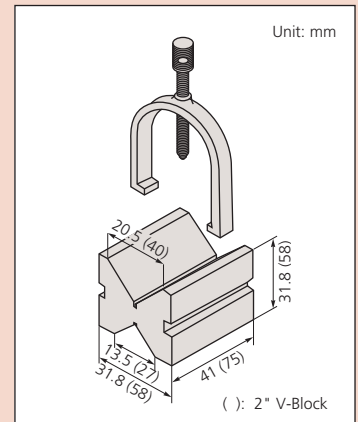
Measuring contact force of relay



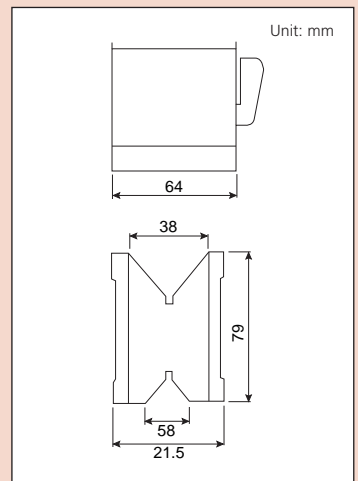
### DIMENSIONS



### DIMENSIONS



### DIMENSIONS

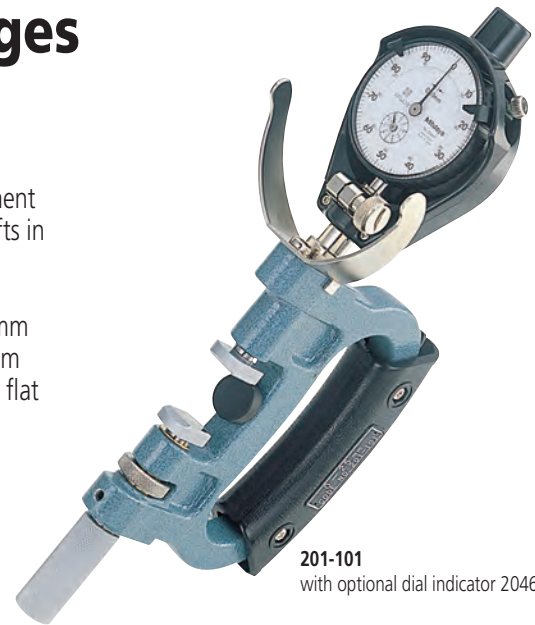


# Dial Snap Gages

## SERIES 201

### FEATURES

- Designed for quick GO/NG judgment of diameters of cylinders and shafts in machining processes.
- Dial indicator is optional.
- Anvil retracting stroke: .078" / 2mm
- Anvil positioning range: 1" / 25mm
- Wide (.53 x .47" / 13.5 x 12mm), flat carbide anvils.
- Both front edges of the anvil are chamfered for easy insertion.



201-101  
with optional dial indicator 2046SB.

### Technical Data

Accuracy: Refer to the list of specifications  
 Anvil retracting stroke: .078" / 2mm  
 Anvil positioning range: 1" / 25mm  
 Anvil flatness: .00004" / 1μm

### SPECIFICATIONS

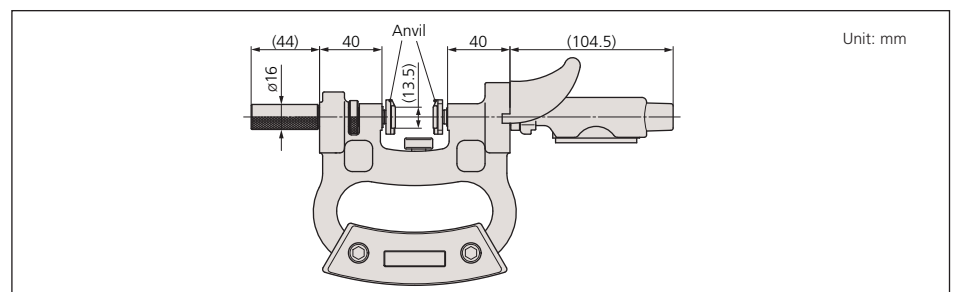
**Metric** Gage stem diameter 8mm

Range	Order No.	Parallelism	Measuring force	Recommended dial indicator (optional)
0 - 25mm	201-101	5μm or less	15N±3N	2046SB (0.01mm reading), 2109SB-10 (0.001mm reading)
25 - 50mm	201-102	5μm or less	15N±3N	2046SB (0.01mm reading), 2109SB-10 (0.001mm reading)
50 - 75mm	201-103	5μm or less	15N±3N	2046SB (0.01mm reading), 2109SB-10 (0.001mm reading)
75 - 100mm	201-104	5μm or less	15N±3N	2046SB (0.01mm reading), 2109SB-10 (0.001mm reading)
100 - 125mm	201-105	5μm or less	15N±3N	2046SB (0.01mm reading), 2109SB-10 (0.001mm reading)
125 - 150mm	201-106	5μm or less	15N±3N	2046SB (0.01mm reading), 2109SB-10 (0.001mm reading)
150 - 175mm	201-107	5μm or less	15N±3N	2046SB (0.01mm reading), 2109SB-10 (0.001mm reading)
175 - 200mm	201-108	5μm or less	15N±3N	2046SB (0.01mm reading), 2109SB-10 (0.001mm reading)
200 - 225mm	201-109	5μm or less	15N±3N	2046SB (0.01mm reading), 2109SB-10 (0.001mm reading)
225 - 250mm	201-110	5μm or less	15N±3N	2046SB (0.01mm reading), 2109SB-10 (0.001mm reading)
250 - 275mm	201-111	5μm or less	15N±3N	2046SB (0.01mm reading), 2109SB-10 (0.001mm reading)
275 - 300mm	201-112	5μm or less	15N±3N	2046SB (0.01mm reading), 2109SB-10 (0.001mm reading)

**Inch** Gage stem diameter 3/8"

Range	Order No.	Parallelism	Measuring force	Recommended dial indicator (optional)
0 - 1"	201-151	.00025" or less	15N±3N	2803SB-10 (.0001" reading)
1 - 2"	201-152	.00025" or less	15N±3N	2803SB-10 (.0001" reading)
2 - 3"	201-153	.00025" or less	15N±3N	2803SB-10 (.0001" reading)
3 - 4"	201-154	.00025" or less	15N±3N	2803SB-10 (.0001" reading)
4 - 5"	201-155	.00025" or less	15N±3N	2803SB-10 (.0001" reading)
5 - 6"	201-156	.00025" or less	15N±3N	2803SB-10 (.0001" reading)
6 - 7"	201-157	.00025" or less	15N±3N	2803SB-10 (.0001" reading)
7 - 8"	201-158	.00025" or less	15N±3N	2803SB-10 (.0001" reading)
8 - 9"	201-159	.00025" or less	15N±3N	2803SB-10 (.0001" reading)
9 - 10"	201-160	.00025" or less	15N±3N	2803SB-10 (.0001" reading)
10 - 11"	201-161	.00025" or less	15N±3N	2803SB-10 (.0001" reading)
11 - 12"	201-162	.00025" or less	15N±3N	2803SB-10 (.0001" reading)

### DIMENSIONS

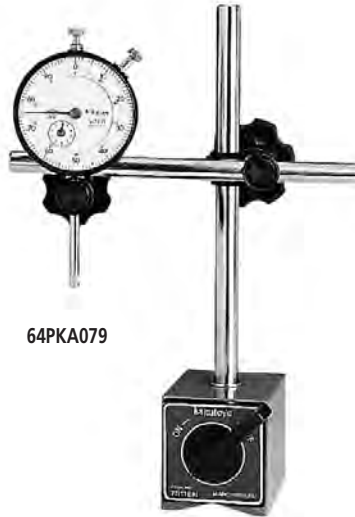


# Dial/Test Indicator & Magnetic Stand Sets

## SERIES 7



513-907



64PKA079

### SPECIFICATIONS

Set No.	Included in set
64PKA078	2804S-10, 7010S
64PKA079	2416S, 7010S
513-907	513-402, 7014E
513-908	513-404E, 7014

\*Supplied with collar 02AZC291

# Magnetic Stands

## SERIES 7

Mitutoyo's Magnetic Stands accept all dial indicators and dial test indicators. The ON-OFF switch offers instant mounting and dismounting without any adverse effect to the indicators or workpiece surface.



7033B



7010S



7011BN



7014 / 7014E  
No magnet force ON/OFF



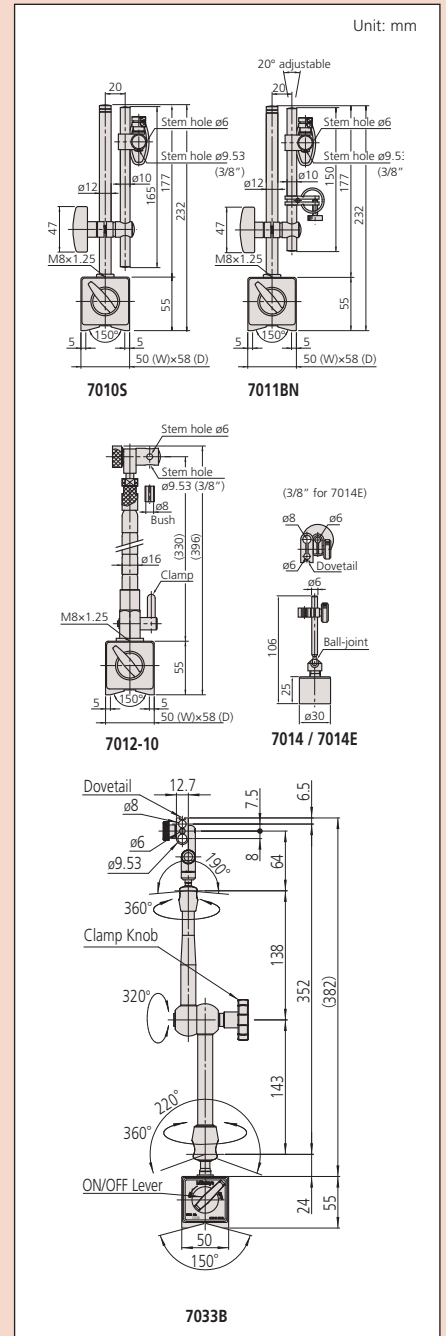
7012-10

### SPECIFICATIONS

Order No.	Description	Applicable holding stem dia.	Dovetail groove	Remarks
7010S	Magnetic stand	ø6mm, ø8mm*, ø9.53mm (3/8")	—	—
7011BN	Magnetic stand	ø6mm, ø8mm*, ø9.53mm (3/8")	—	With fine adjustment
7012-10	Magnetic flexi-stand	ø6mm, ø8mm*, ø9.53mm (3/8")	—	For dial test indicator
7014	Mini magnetic stand	ø6mm, ø8mm	Provided	Without magnet ON/OFF
7014E	Mini magnetic stand	ø6mm, ø8mm*, ø9.53mm (3/8")	Provided	Without magnet ON/OFF
7033B	Universal magnetic stand	ø6mm, ø8mm, ø9.53mm (3/8")	Provided	With mechanical locking system

\*Supplied with collar 02AZC291

### DIMENSIONS



# Dial Gage Stands

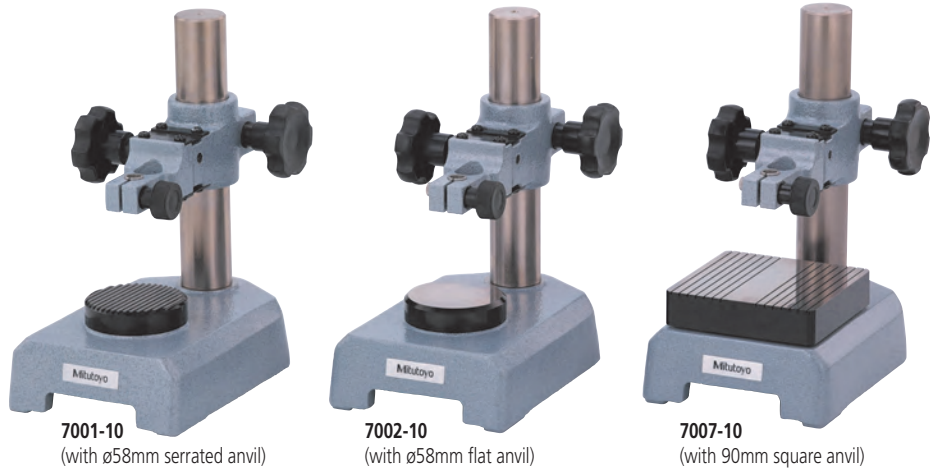
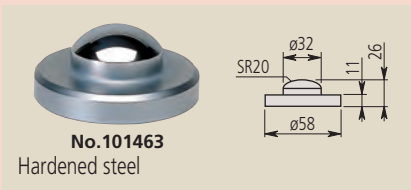
## SERIES 7

### FEATURES

- Dial Gage Stands are designed for comparison measurements of size using a dial indicator or Digimatic Indicator.
- Anvil of 7001-10 and 7002-10:  $\phi 58\text{mm}$   
Anvil of 7007-10: 90mm square
- Vertical fine adjustment is available with one-touch control thanks to the parallel spring suspension.

### Optional Accessories

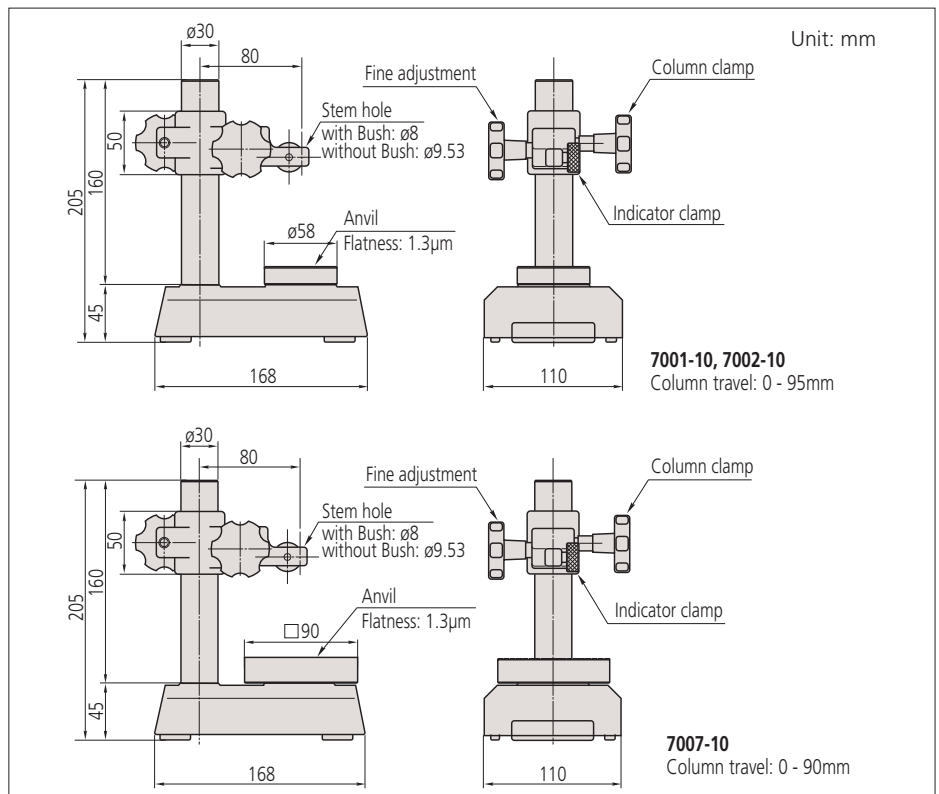
- 101461:** Hardened steel flat anvil
  - 101462:** Hardened steel serrated anvil
  - 101463:** Hardened steel domed anvil\*
- \*Not available for 7007-10.



### SPECIFICATIONS

Metric			
Order No.	Stem hole	Remarks	Mass(g)
7001-10	$\phi 8\text{mm}$ , $\phi 9.53\text{mm}$	With serrated anvil (101462)	4
7002-10	$\phi 8\text{mm}$ , $\phi 9.53\text{mm}$	With flat anvil (101461)	4
7007-10	$\phi 8\text{mm}$ , $\phi 9.53\text{mm}$	With square anvil	5

### DIMENSIONS

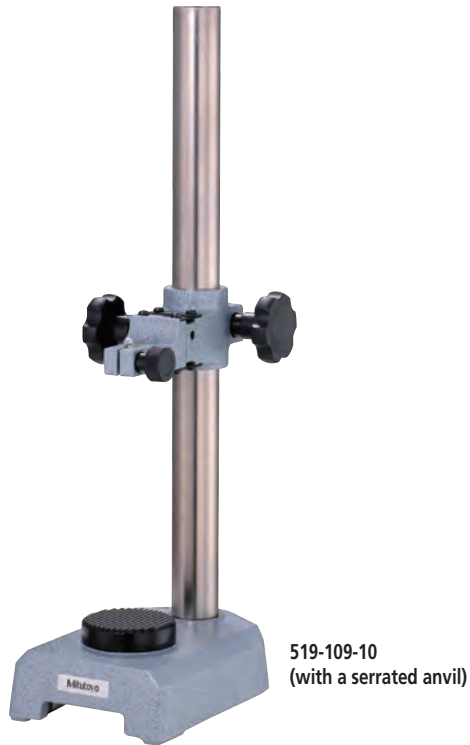


# Transfer Stands

## SERIES 519

### FEATURES

- Transfer Stands are designed for comparison measurements of size using a dial indicator or Digimatic Indicator.

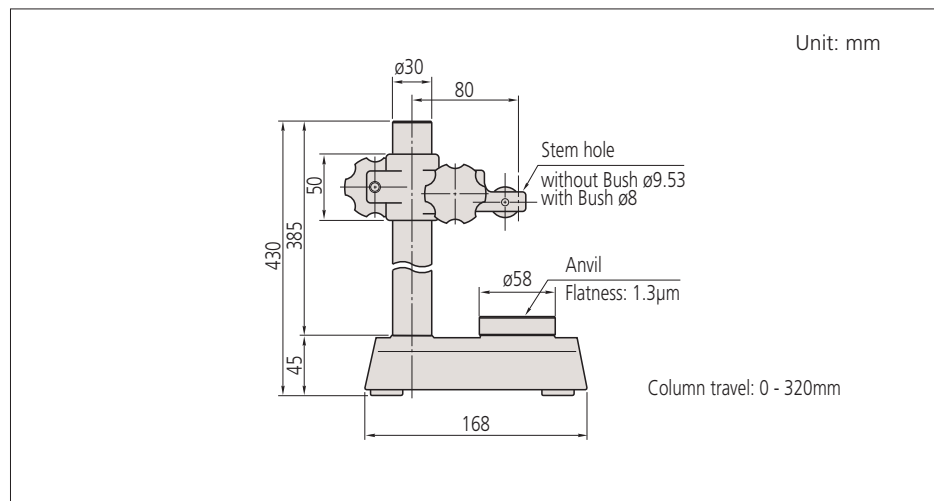


519-109-10  
(with a serrated anvil)

### SPECIFICATIONS

Metric		
Order No.	Stem hole	Remarks
519-109-10	ø8mm, ø9.53mm	With serrated anvil (101462)

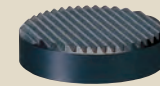
### DIMENSIONS



### Optional Accessories

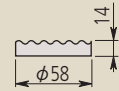
101461: Hardened steel flat anvil

101463: Hardened steel domed anvil



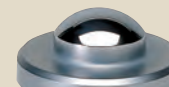
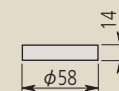
No. 101462

Hardened steel



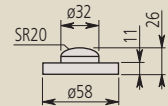
No. 101461

Hardened steel



No. 101463

Hardened steel





# Granite Comparator Stands

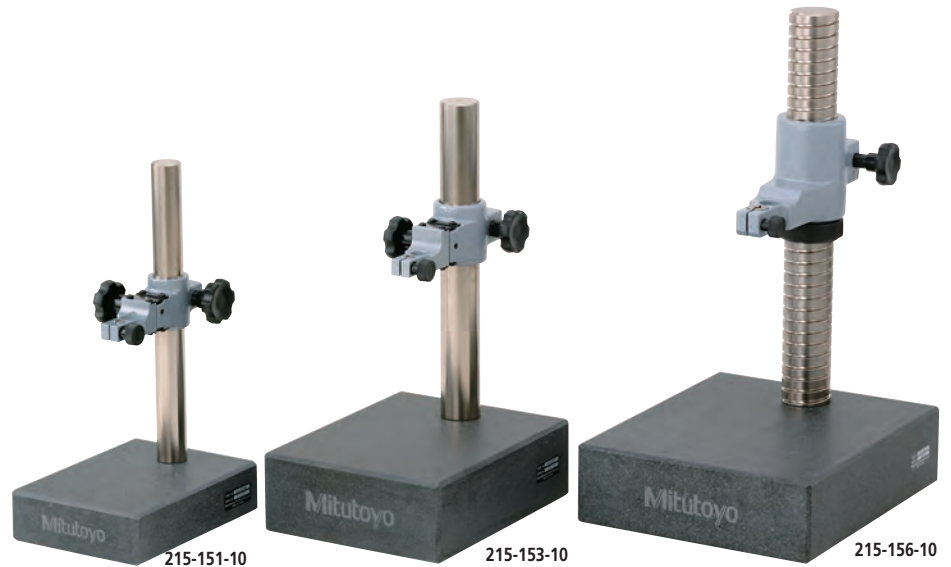
## SERIES 215

### FEATURES

- The base is made of black granite that stays free of burrs and pileups due to its fine-grain composition.
- Easy maintenance due to the non-rusting base.
- The rigid granite base is free from burrs and pileups due to its fine-grain composition and less viscousness compared with casting iron: the flatness is always accurate and the workpiece is free from damage.

### Optional Accessories

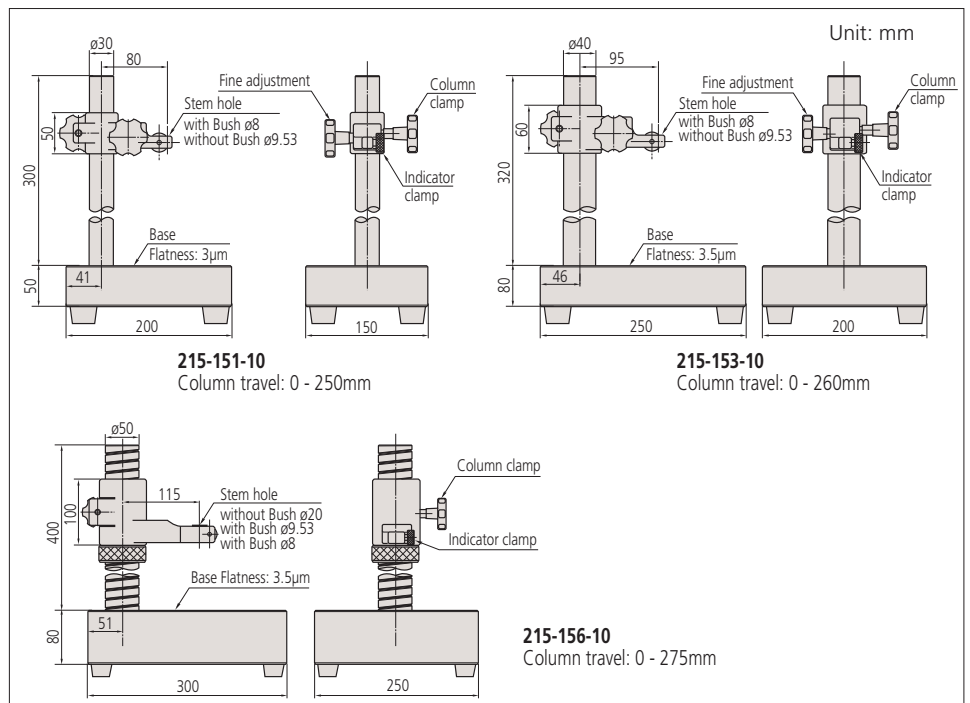
21JAA329:  $\varnothing 8$ mm bush  
 21JAA330:  $\varnothing 9.53$ mm bush  
 21JAA331:  $\varnothing 15$ mm bush  
 only available for 215-156-10



### SPECIFICATIONS

Order No.	Granite base size (W x D x H)	Column travel	Stem hole	Remarks
215-151-10	150 x 200 x 50mm	250mm	$\varnothing 8$ mm, $\varnothing 9.53$ mm	With fine adjustment of 1mm range
215-153-10	200 x 250 x 80mm	260mm	$\varnothing 8$ mm, $\varnothing 9.53$ mm	With fine adjustment of 1mm range
215-156-10	300 x 250 x 80mm	275mm	$\varnothing 8$ mm, $\varnothing 9.53$ mm, $\varnothing 20$ mm	With fine adjustment over the entire travel

### DIMENSIONS



# Comparator Stands

## SERIES 215

### FEATURES

- Comparator Stands have a very stable, cast-iron which enables precise measurement.
- The partially serrated anvil prevents very flat workpieces from wringing to it and the 2.3µm flatness (or better) promotes accurate measurement.
- The **215-505-10** model has a threaded column which enables easy and precise coarse adjustment.
- Serrated anvils 110×110mm are supplied with **215-405-10**, and 150×150mm with **215-505-10** models.



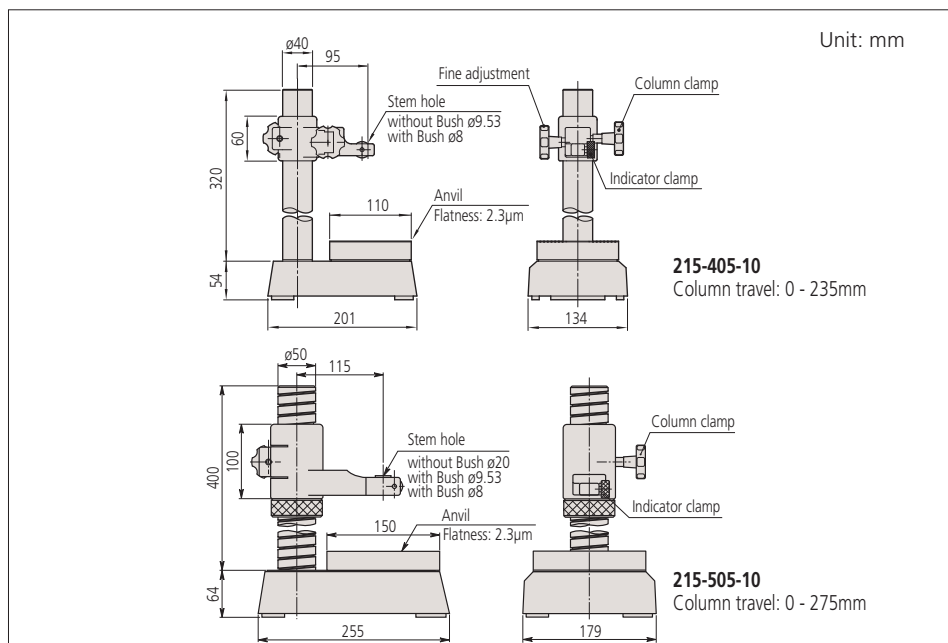
Application example using Digimatic Indicator ID-H.

### SPECIFICATIONS

Order No.	Square anvil size (W x D)	Column travel	Stem hole	Remarks
<b>215-405-10</b>	110 x 110mm	235mm	ø8mm, ø9.53mm	With fine adjustment of 1mm range
<b>215-505-10</b>	150 x 150mm	275mm	ø8mm, ø9.53mm, ø20mm	With fine adjustment over the entire travel

\* Perpendicularity of the mounting hole to the anvil: less than 0.4mm/100mm

### DIMENSIONS



### Optional Accessories

- 21JAA329:** ø8mm bush\*
  - 21JAA330:** ø9.53mm (3/8") bush\*
  - 21JAA331:** ø15mm bush\*
- \* Only available for **215-505-10**.

# Precision Granite Stands (with black granite bases)

## SERIES 517

### FEATURES

Mitutoyo's Granite Comparator Stands are basic building-blocks for the assembly of special-purpose, precision measuring equipment. By mounting precision measuring instruments such as Digimatic indicators, Mu-Checker Cartridge Heads, and Linear Gages onto the stands, it is possible to satisfy all manner of measuring assignment. The rigid granite base is free from burrs, pileups, rust, and deterioration over time.

### Optional Accessories

**58AAA151:** ø8mm bush\*

**58AAA273:** ø9.53mm (3/8") bush\*

**58AAA276:** ø15mm bush\*

\*Only available for 215-156.

**517-895**  
(stand only)



**517-898**  
(stand only)



### SPECIFICATIONS

Order No.	Base	Column Diameter	Column Height	Throat Clearance	Table Flatness	Table Thickness	Weight
517-890	6 x 8"	1.181"	6"	4.375"	.0001"	2"	18 lbs
517-891	6 x 8"	1.181"	8"	4.375"	.0001"	2"	19 lbs
517-892	6 x 8"	1.181"	12"	4.375"	.0001"	2"	20 lbs
517-893	6 x 8"	1.181"	18"	4.375"	.0001"	2"	21 lbs
517-895	8 x 12"	1.181"	6"	5.8"	.0001"	2"	29 lbs
517-896	8 x 12"	1.181"	8"	5.8"	.0001"	2"	30 lbs
517-897	8 x 12"	1.181"	12"	5.8"	.0001"	2"	31 lbs
517-898	8 x 12"	1.181"	18"	5.8"	.0001"	2"	32 lbs
517-899	8 x 12"	1.181"	24"	5.8"	.0001"	2"	35 lbs

