



### Digimatic Indicators



### Dial Indicators



### Dial Test Indicators



### Dial Indicator Applications and Stands



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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 particularly useful in multipoint measurement.
- Measurement tool with a solar power source. Ready for use from 40 lux illumination.
- Similar in size to Series 2 dial indicators.
- SPC output provided.
- Two large buttons (three on inch/mm models) improve functionality.



543-502B  
ID-S112ESB

543-500  
ID-S112S

### 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

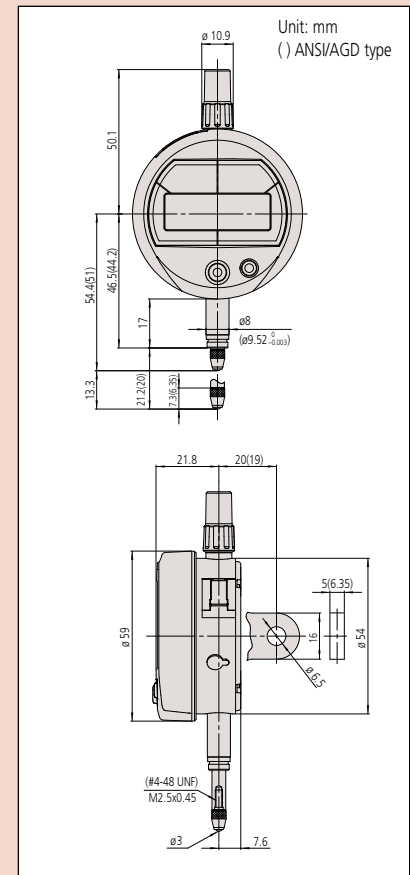
### Optional Accessories

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

### 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: **543-794B**, **543-795B**, **543-796B**)  
 Inspection certificate is included.

### 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)
- 21EZA198:** Spindle lifting lever (ISO/JIS type)
- 21EZA199:** Spindle lifting lever (ANSI/AGD type)
- 540774:** Spindle lifting cable (stroke: .4" / 10mm)
- 21EZA105:** Lifting knob (mm)
- 21EZA150:** Lifting knob (inch)
- 125317:** Spare rubber boot (for dust-proof type)
- : Backs (See page F-33.)
- : Contact points (See page F-34.)

# ABSOLUTE Digimatic Indicator ID-S

## SERIES 543 — with Simple Design

### FEATURES

- After the initial zero-setting with the Origin button, the repeated absolute positioning is no longer necessary over entire battery life.
- Unlimited response speed eliminates over-speed errors
- Similar in size to standard Series 2 dial indicators.
- SPC data output.



543-782B



543-792B

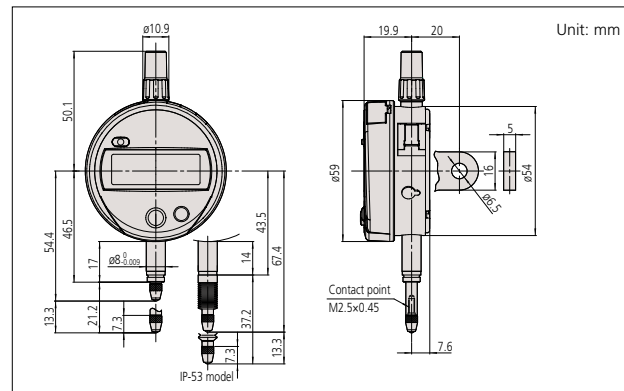
### SPECIFICATIONS

Inch/Metric		Stem dia. 3/8", #4-48 UNF Thread		ISO/JIS type	ANSI/AGD type		
Resolution	Range	Order No.		Model	Accuracy	Measuring force	Remarks
		w/ lug back	w/ flat-back				
.00005"/0.001mm	.5" / 12.7mm	<b>543-792</b>	<b>543-792B</b>	ID-S112EX	±.0001"	1.5N or less	—
.00005"/0.001mm	.5" / 12.7mm	<b>543-796</b>	<b>543-796B</b>	ID-S112PEX	±.0001"	2.5N	Dust-proof
.0001"/0.001mm	.5" / 12.7mm	<b>543-793</b>	<b>543-793B</b>	ID-S112TX	±.0001"	1.5N or less	—
.0005"/0.01mm	.5" / 12.7mm	<b>543-783</b>	<b>543-783B</b>	ID-S1012EX	±.0010"	1.5N or less	—

Inch/Metric		Stem ø 8mm, M2.5 x 0.45 Thread					
Resolution	Range	Order No.		Model	Accuracy	Measuring force	Remarks
		w/ lug back	w/ flat-back				
.00005"/0.001mm	.5" / 12.7mm	<b>543-791</b>	<b>543-791B</b>	ID-S112MX	±.0001"	1.5N or less	—
.00005"/0.001mm	.5" / 12.7mm	<b>543-795</b>	<b>543-795B</b>	ID-S112PMX	±.0001"	2.5N or less	Dust-proof
.0005"/0.01mm	.5" / 12.7mm	<b>543-782</b>	<b>543-782B</b>	ID-S1012MX	±.0008"	1.5N or less	—

Metric		Stem ø 8mm, M2.5 x 0.45 Thread					
Resolution	Range	Order No.		Model	Accuracy	Measuring force	Remarks
		w/ lug back	w/ flat-back				
0.001mm	12.7mm	<b>543-790</b>	<b>543-790B</b>	ID-S112X	0.003mm	1.5N or less	—
0.001mm	12.7mm	<b>543-794</b>	<b>543-794B</b>	ID-S112PX	0.003mm	2.5N or less	Dust-proof
0.01mm	12.7mm	<b>543-781</b>	<b>543-781B</b>	ID-S1012X	0.02mm	1.5N or less	—

### DIMENSIONS



Note 1: Dimensions of the inch (ANSI/AGD Type) dial indicator partly differ from those of the metric (ISO/JIS Type) indicator.  
 Note 2: Inch (ANSI/AGD Type) dial indicators are provided with a stem of 3/8" dia. and #4-48UNF thread mount for the contact point.



# ABSOLUTE Digimatic Indicator ID-U

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

## FEATURES

- Slim 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 entire battery life; the origin is remembered even after power-off.
- Ideal for installation into measuring devices because of 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 has 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

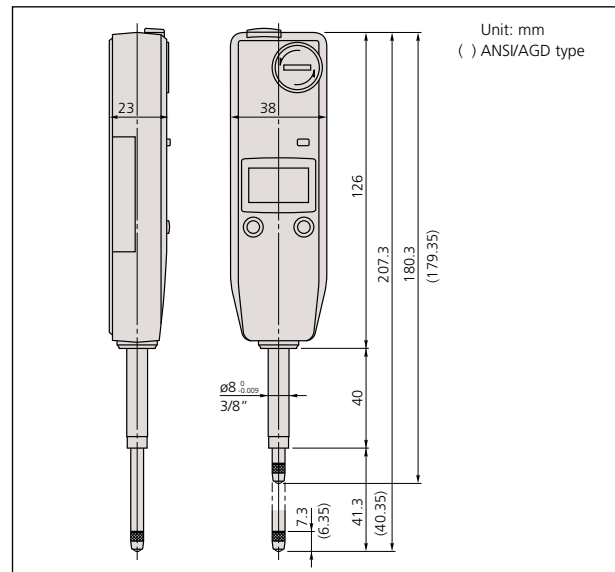
**Inch/Metric** Stem  $\varnothing$  8mm, M2.5 x 0.45 Thread

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

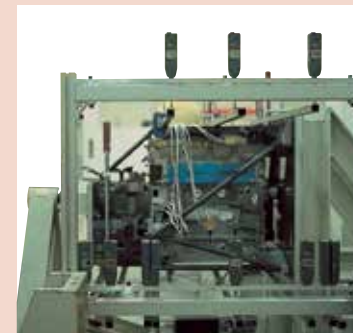
Accuracy: Refer to the list of specifications  
 Resolution: 0.01mm or .0005"/0.01mm,  
 Display: LCD  
 Length standard: ABSOLUTE electrostatic capacitance type linear encoder  
 Max. response speed: Unlimited  
 Measuring force: Refer to the list of specifications  
 Battery: SR44 (1 pc.), **938882**  
 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



# ABSOLUTE Digimatic Indicator ID-C

## SERIES 543 — Standard Type

### FEATURES

- Similar in size to Series 2 dial indicators.
- Large, easy-to-read LCD.
- Go/no-go judgment can be performed by setting upper and lower tolerance limits. The judgment result (go/no-go) 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.

### 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. 7,000 hours under normal use  
 Dust/Water protection level: IP42  
 Inspection certificate is included

### Function

Origin-set/Preset, Zeroset, go/no-go 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.



543-392  
IP42



543-402  
IP42



543-472B  
IP42



543-492B  
IP42

# 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	—

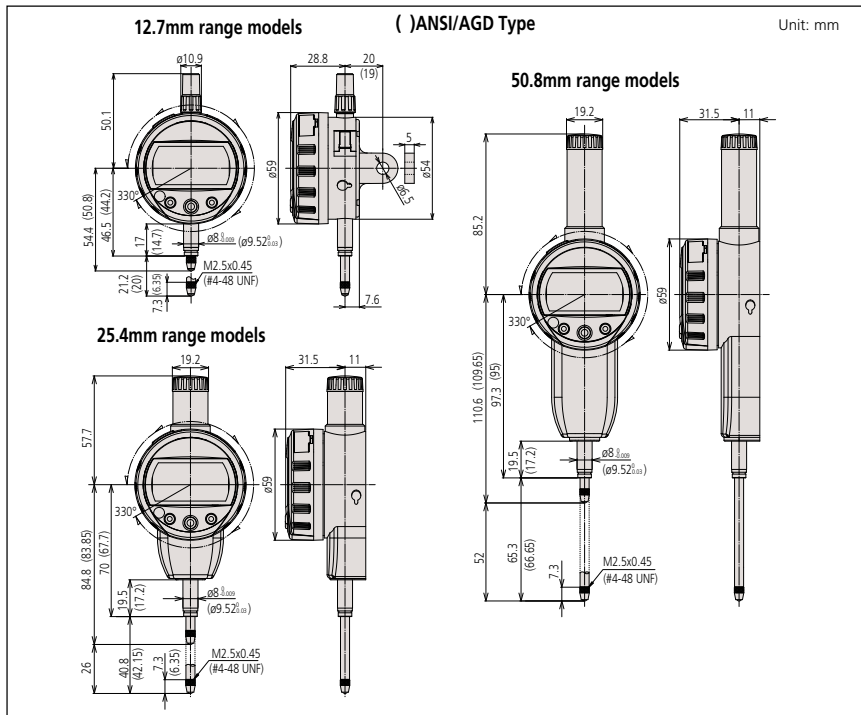
\* Switchable Resolution Type

**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	—
0.01mm	50.8mm	— <b>543-494B</b>	ID-C1050XB	0.04mm	2.3N or less	—

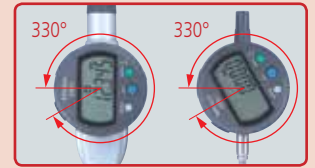
\* Switchable Resolution Type

# 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
	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
	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: 12 Steps  
 .00005/.0001/.0005"  
 0.001/0.01mm  
 Display: LCD  
 Length standard: ABSOLUTE electrostatic capacitance-type linear encoder  
 Max. response speed: Unlimited  
 Measuring force: Refer to the list of specifications  
 Battery: CR2032 (1 pc.), **05SAA217**  
 Battery life: Approx. 12 months under normal use  
 IP Rating: Equivalent to IP-42<sup>1</sup>

<sup>1</sup> A protection class indication (IP=International Protection) is based on the IEC 60529 / DIN40050 part 1/JIS D0207, C0920. The level indicated is valid only if the output connector cap is installed.

### Function

Key Lock, Parameter Lock, PC-USB Input, Analog Bar, FAST measurement frequency, Preset (up to 3 values), Tolerance Judgment, Peak Detection, Calculation, inch/mm conversion (on inch/metric models only), Counting direction switching, Data Output  
 Alarm: Low voltage, Counting value composition error, Over-flow error, Tolerance limit setting error

### Optional Accessories

- 905338:** Connecting Cable (1m)
- 905409:** Connecting Cable (2m)
- 21EZA313:** Parameter Setting USB Cable
- 21EZA198:** Spindle lifting lever (12.7mm ISO/JIS type)
- 21EZA199:** Spindle lifting lever (12.7mm ASME/AGD type)
- 21EZA105:** Lifting Knob (12.7mm/.5" ISO/JIS Models)
- 21EZA150:** Lifting Knob (12.7mm/.5" ASME/AGD Models)
- 21EZA197:** Lifting Knob (for 25.4/1" mm models)
- 21EZA200:** Lifting Knob (for 50.8/2" mm models)
- 540774:** Spindle lifting cable
- : 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

- The new Calculation-Type Digimatic Indicator features both a Key-Lock and Parameter-Lock to prevent accidental changing of settings during operation.
- Improved parameter setting software makes easy to set all available parameters, and determine and upload the proper coefficients for calculation. (optional)
- Fast measurement frequency allows the user to increase the number of readings per second from 10 to 50, allowing higher accuracy measurements of TIR and MAX/MIN.
- An analog bar provides easy-to-read values when scanning for Max, Min, and TIR Values.
- 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 the need for conversions.



543-342B

### SPECIFICATIONS

ISO/JIS type      ANSI/AGD type

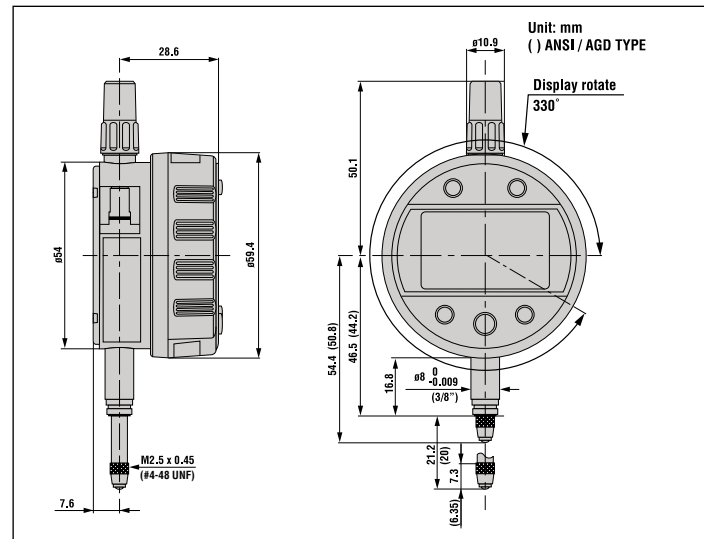
Inch/Metric		Stem dia. 3/8" #4-48 UNF Thread			
Resolution	Range	Order No.*	Model	Accuracy	Measuring Force
.00005/.0001/.0005"	.5"/12.7mm	<b>543-342B</b>	ID-C112REXB	±.00010"/0.003mm	1.5N or less
0.001/0.01mm	1"/25.4mm	<b>543-592B</b>	ID-C125REXB	±.00010"/0.003mm	1.8N or less
Selectable	2"/50.8mm	<b>543-597B</b>	ID-C150REXB	±.00025"/0.006mm	2.3N or less

Inch/Metric		Stem ø 8mm, M2.5 x 0.45 Thread			
Resolution	Range	Order No.*	Model	Accuracy	Measuring Force
.00005/.0001/.0005"	.5"/12.7mm	<b>543-341B</b>	ID-C112RMXB	±.00010"/0.003mm	1.5N or less
0.001/0.01mm	1"/25.4mm	<b>543-591B</b>	ID-C125RMXB	±.00010"/0.003mm	1.8N or less
Selectable	2"/50.8mm	<b>543-596B</b>	ID-C150RMXB	±.00025"/0.006mm	2.3N or less

Metric		Stem ø 8mm, M2.5 x 0.45 Thread			
Resolution	Range	Order No.*	Model	Accuracy	Measuring Force
0.001/0.01mm	.5"/12.7mm	<b>543-340B</b>	ID-C112RXB	0.003mm	1.5N or less
Selectable	1"/25.4mm	<b>543-590B</b>	ID-C125RXB	0.003mm	1.8N or less
	2"/50.8mm	<b>543-595B</b>	ID-C150RXB	0.006mm	2.3N or less

\*Flat back

### DIMENSIONS



# ABSOLUTE Digimatic Indicator ID-C

**SERIES 543 — With Max./Min. Value Holding Function**

## FEATURES

- The new Peak Hold-Type Digimatic Indicator features both a Key-Lock and Parameter-Lock to prevent accidental changing of settings during operation.
- Parameter setting software makes it even easy to set all available parameters.
- An analog bar provides easy-to-read values when scanning for Max, Min and TIR Values.
- The maximum, minimum or runout value can be displayed during measurement.
- Go/no-go 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 when turned on.



543-302B

## SPECIFICATIONS

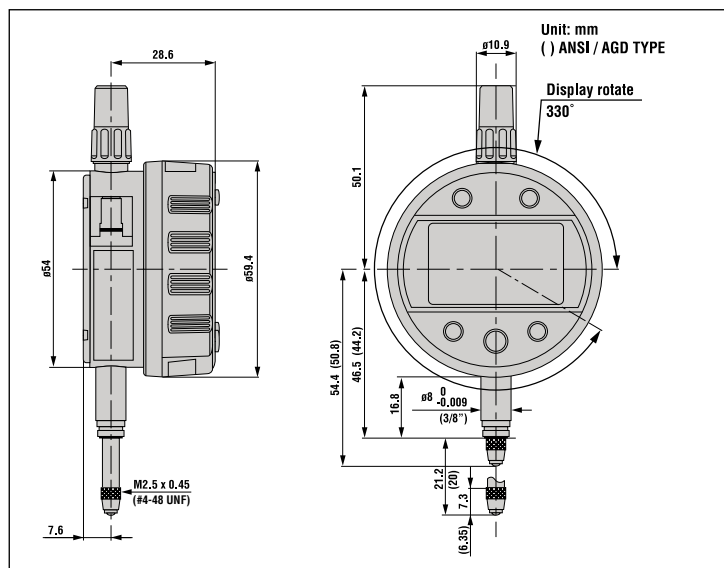
ISO/JIS type    ANSI/AGD type

Resolution	Range	Order No.		Model	Accuracy
		w/lug	Flat-back		
.00005/.0001/.0005" 0.001/0.01mm Selectable	.5"/12.7mm	<b>543-302</b>	<b>543-302B</b>	ID-C112AEX(B)	±.00010"/0.003mm

Resolution	Range	Order No.		Model	Accuracy
		w/lug	Flat-back		
.00005/.0001/.0005" 0.001/0.01mm Selectable	.5"/12.7mm	<b>543-301</b>	<b>543-301B</b>	ID-C112AMX(B)	±.00010"/0.003mm

Resolution	Range	Order No.		Model	Accuracy
		w/lug	Flat-back		
0.001-0.01mm Selectable	12.7mm	<b>543-300</b>	<b>543-300B</b>	ID-C112AX(B)	0.003mm

## DIMENSIONS



## Technical Data

Accuracy: Refer to the list of specifications  
 Resolution: 0.001-0.01mm or .00005-.0005"/  
 0.001-0.01mm  
 Display: LCD  
 Length standard: ABSOLUTE electrostatic capacitance-type  
 linear encoder  
 Max. response speed: Unlimited  
 Measuring force: 1.5N or less  
 Battery: CR2032 (1 pc.), **05SAA217**  
 Battery life: Approx. 12 months under normal use  
 IP Rating: Equivalent to IP-42<sup>1)</sup>

<sup>1)</sup> A protection class indication (IP=International Protection) is based on the IEC 60529/DIN40050 part 1/JIS D0207, C0920. The level indicated is valid only if the output connector cap is installed.

## Function

Key Lock, Parameter Lock, PC-USB Input, Analog Bar, Fast measurement frequency, Preset (up to 3 values), Tolerance Judgment, Peak Detection, Calculation (Ax), inch/mm conversion (on inch/metric models only) Counting direction switching, Data Output  
 Alarm: Low voltage, Counting value composition error, Overflow error, Tolerance limit setting error

## Optional Accessories

- 905338:** Connecting Cable (1m)
- 905409:** Connecting Cable (2m)
- 21EZA313:** Parameter Setting USB Cable
- 21EZA198:** Spindle lifting lever (12.7mm ISO/JIS type)
- 21EZA199:** Spindle lifting lever (12.7mm ASME/AGD type)
- 21EZA105:** Lifting Knob (12.7mm/.5" ISO/JIS models)
- 21EZA150:** Lifting Knob (12.7mm/.5" ASME/AGD models)
- 21EZA197:** Lifting Knob (for 25.4/1" mm models)
- 21EZA200:** Lifting Knob (for 50.8/2" mm models)
- 540774:** Spindle lifting cable
- : Backs (See page F-33.)
- : Contact points (See page F-34.)



### Technical Data

Accuracy: Refer to the list of specifications  
 Resolution: 0.001-0.01mm or  
 .00005-.0005"/0.001-0.01mm  
 Display: LCD  
 Length standard: ABSOLUTE electrostatic capacitance type  
 linear encoder  
 Max. response speed: Unlimited  
 Measuring force: 1.5N or less  
 Battery: CR2032 (1 pc.), **055AA217**  
 Battery life: Approx. 12 months under normal use  
 IP Rating: Equivalent to IP-42<sup>1</sup>

<sup>1</sup> A protection class indication (IP=International Protection) is based on the IEC 60529 /DIN40050 part 1/JIS D0207, C0920. The level indicated is valid only if the output connector cap is installed.

### Function

Key Lock, Parameter Lock, PC-USB Input, Analog Bar, Fast measurement frequency, Preset (up to 3 values), Tolerance Judgment, Peak Detection (Min Only), inch/mm conversion (on inch/metric models only), Data Output  
 Alarm: Low voltage, Counting value composition error, Overflow error, Tolerance limit setting error

### Optional Accessories

- 905338:** Connecting Cable (1m)
  - 905409:** Connecting Cable (2m)
  - 21EZA313:** Parameter Setting USB Cable
- Applicable Gages Series 511 and 526



Installed on optional bore gage probe (511-703)

# ABSOLUTE Digimatic Indicator ID-C

## SERIES 543 — Specially Designed for Bore Gage Application

### FEATURES

- The new Bore Gage-Type Digimatic Indicator features both a Key-Lock and Parameter-Lock to prevent accidental changing of settings during operation.
- Parameter setting software makes it easy to set all available parameters. (optional)
- Fast measurement frequency allows the user to increase the number of readings per second from 10 to 50.
- The minimum value holding function provides the easy detection of hole diameter.
- An analog bar indicator is integrated to enhance the intuition in reading.
- Go/no-go judgment is performed by setting the upper and lower tolerances.
- Up to three sets of master values and upper/lower tolerance values can be memorized.
- Employing the ABSOLUTE linear encoder, the ID-C always displays the spindle Absolute Position from the origin when turned on.



543-310B

### SPECIFICATIONS

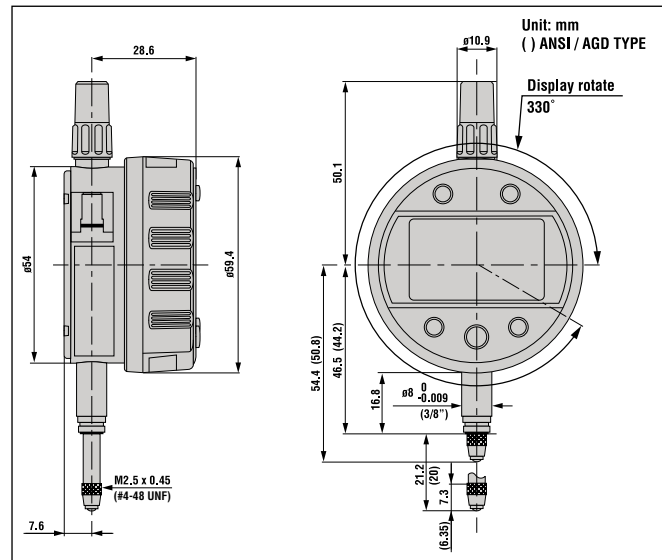
ISO/JIS type    ANSI/AGD type

Inch/Metric		Stem dia. 3/8" #4-48 UNF Thread			
Resolution	Range	Order No.	Model	Accuracy	Measuring Force
.00005/.0001/.0005" 0.001/0.01mm Selectable	.5"/12.7mm	<b>543-312B</b>	ID-C112GEXB	±.00010"/0.003mm	1.5N or less

Inch/Metric		Stem ø 8mm, M2.5 x 0.45 Thread			
Resolution	Range	Order No.	Model	Accuracy	Measuring Force
.00005/.0001/.0005" 0.001/0.01mm Selectable	.5"/12.7mm	<b>543-311B</b>	ID-C112GMXB	±.00010"/0.003mm	1.5N or less

Metric		Stem ø 8mm, M2.5 x 0.45 Thread			
Resolution	Range	Order No.	Model	Accuracy	Measuring Force
0.001/0.01mm Selectable	12.7mm	<b>543-310B</b>	ID-C112GXB	0.003mm	1.5N or less

### DIMENSIONS



# ABSOLUTE Digimatic Indicator ID-C

**SERIES 543 — With Green/Red LED and Go/No-go Signal Output Function**

**ABSOLUTE®**  
Absolute System Patented by MITUTOYO



## FEATURES

- With the max./min. value holding function, the signal ID-C can output the go/no-go 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 such as a sequencer through the NPN open-collector.
- The go/no-go 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 when powered up.
- The Signal ID-C achieves the IP54 protection level to resist dust and contaminants for safe operation in harsh machine shop environments.
- The high-speed detector measures 100 times per second.
- Analog Bar



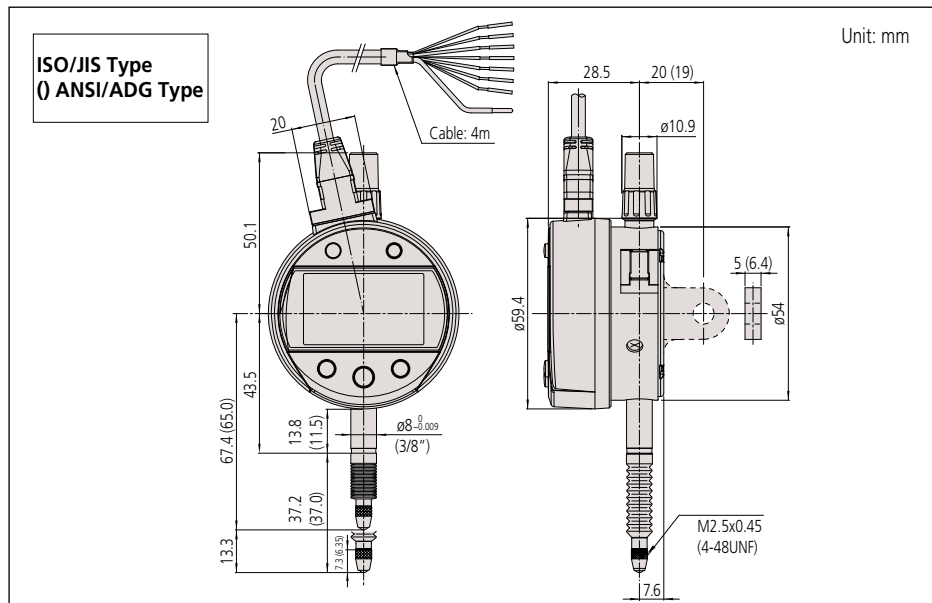
## SPECIFICATIONS

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/.0001/.0005" 0.001/0.01mm	.5" / 12.7mm	<b>543-352</b> <b>543-352B</b>	ID-C112JEX(B)	±.00010/0.003mm	2.5N or less

Inch/Metric		Stem ø 8mm, M2.5 x 0.45 Thread		ISO/JIS type	ANSI/AGD type
Resolution	Range	Order No. (w/ lug, flat-back)	Model	Accuracy	Measuring force
.00005/.0001/.0005" 0.001/0.01mm	.5" / 12.7mm	<b>543-351</b> <b>543-351B</b>	ID-C112JMX(B)	±.00010/0.003mm	2.5N or less

Metric		Stem ø 8mm, M2. x 0.45 Thread		ISO/JIS type	ANSI/AGD type
Resolution	Range	Order No. (w/ lug, flat-back)	Model	Accuracy	Measuring force
0.001/0.01mm	12.7mm	<b>543-350</b> <b>543-350B</b>	ID-C112JX(B)	0.003mm	2.5N or less

## DIMENSIONS



## Technical Data

Accuracy: Refer to the list of specifications  
 Resolution: 0.001mm, .00005"/0.001mm  
 Display: LCD  
 Length standard: ABSOLUTE electrostatic capacitance type linear encoder  
 Max. response speed: Unlimited  
 Measuring force: 2.5N or less  
 Power supply: DC 5-24V±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 (up to 3 values), Zero-Set, Analog-Bar, go/no-go judgment, Max/Min/Runout value holding, Counting direction switching, Power ON/OFF, inch/mm conversion (on inch/metric models only), calibration mode

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

Alarm: Low voltage, Counting value composition error, Overflow 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.)
- 21EAA194:** Connecting Cable (1m)\*\*
- 21EAA190:** Connecting Cable (2m)\*\*
- 21EZA345A:** Digimatic Power Supply Unit\*\*

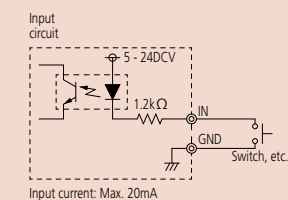
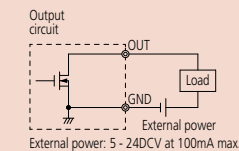
\*When using the spindle lifting lever/cable, IP54 is not guaranteed.  
 \*\* Used only for calibration mode and for automated testing with an i-Checker

## 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.xxE" indication

## I/O Specifications

Wire	Signal	I/O	Description
Black	- V (GND)	—	Connected to minus (-) terminal
Red	+ V (GND)	I	Power supply (5-24VDC)
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_REC-ALL ZERO	I	External input terminal: If the relevant terminal is set to the low level, its signal becomes true.
Blue	PEAK_START	I	
Shield	FG	—	Connected to GND





### 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, Zeroset, go/no-go 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, Overflow error, Tolerance limit setting error

### Standard Accessories

06AEG180JA: AC Adapter 120v  
 137693: Lifting Lever

### Optional Accessories

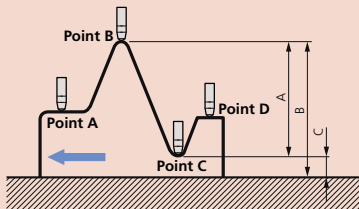
936937: SPC cable (40" / 1m)  
 965014: SPC cable (80" / 2m)  
 21EAA131: RS-232C cable (80" / 2m)  
 21EZA099: Remote controller  
 540774: Spindle lifting cable (stroke: .4" / 10mm)  
 21EZA101: Spindle lifting knob  
 264-504-5A: Digimatic Min-processor DP-1VR  
 21EZA152A: FREE PARAMETER SETTING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

### 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

# 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 by 0.5µm / .00002" resolution, remote control functionality via a handheld controller (or an RS-232C interface) and easy runout measurements with the analog bar display.
- The maximum, minimum, or runout value can be displayed during measurement.
- Go/no-go 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

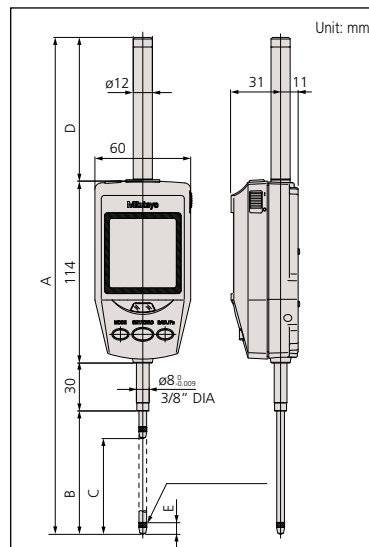
**Inch/Metric** Stem dia. 3/8" #4-48 UNF Thread

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

### DIMENSIONS



Tolerance judgment



Analog bar display



Max/Min value measurement



Runout measurement



Resolution switching



# ABSOLUTE Digimatic Indicator ID-F

SERIES 543 — With Back-lit LCD



## FEATURES

- With ABSOLUTE linear encoder technology, once the measurement reference point has been set it, will not be lost when the power is turned on.
- Go/no-go 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.
- The maximum, minimum, or runout value can be displayed during measurement.
- An analog bar indicator has been integrated to handle upper/lower limit approaching and zero approaching. The display range can be changed.
- With SPC data output.



## SPECIFICATIONS

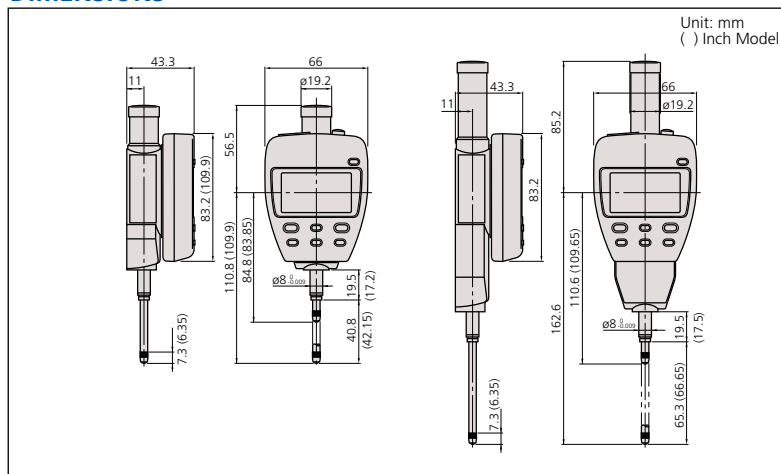
**Inch/Metric** Stem dia. 3/8" #4-48 UNF Thread

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 ø 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"/.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/no-go 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, Overflow error, Tolerance limit setting error

## Standard Accessories

**06AEG302JA**: AC Adapter 120v  
**137693**: Lifting Level

## 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.)  
 ———: (See page F-34.)

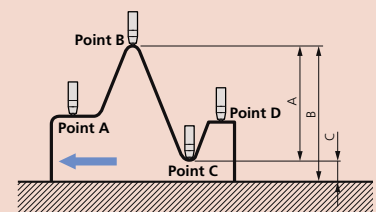
\*Required when orienting the indicator upside down.

## 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.





# 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.

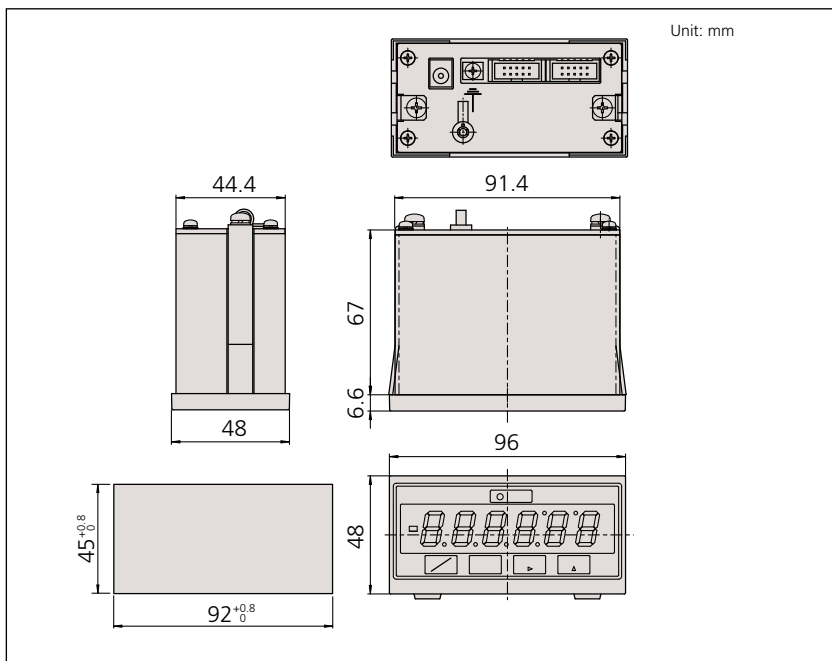


542-007A

### 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, .00005, .0005", .0001"  
 No. of gage input: 1  
 Display: 6-digit LED and a negative [-] sign  
 Function: Preset  
 Go/no-go judgment  
 Output (open-collector): 3-Step limit signal\*, Digimatic  
 External control: Preset, Data hold  
 Power supply: Via AC adaptor  
 Dimensions (W x D x H): 96 x 48 x 84.6mm  
 Mass: 500g  
 \*Requires C162-155 (see Optional Accessories)

#### Standard Accessories

06AEG302JA: AC Adaptor

#### Optional Accessories

936937: SPC cable (40"/1m)  
 965014: SPC cable (80"/1m)  
 214938: PJ-2 (DC Plug)  
 C162-155: Go/no-go judgment cable

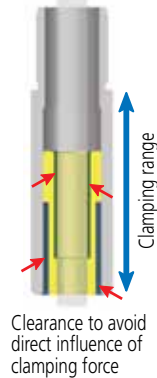
# Dial Indicators

## Description of Icon

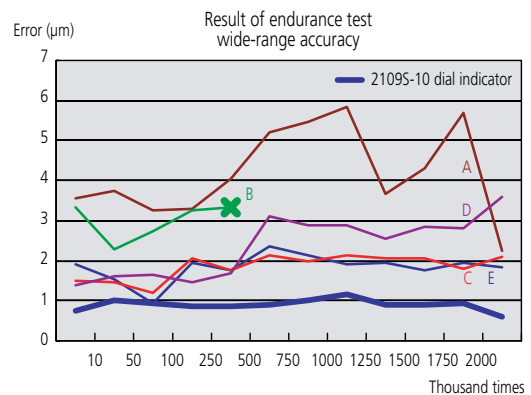
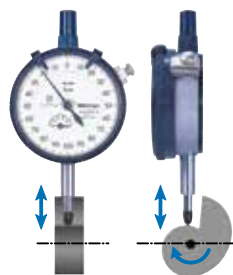
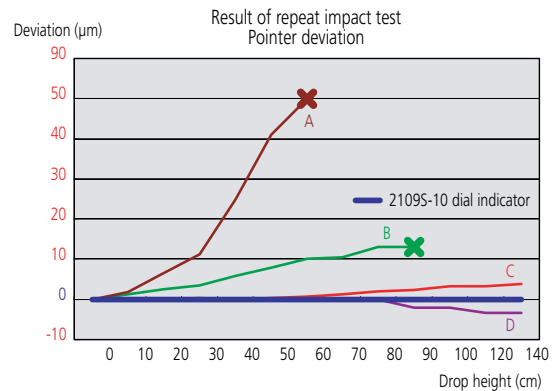
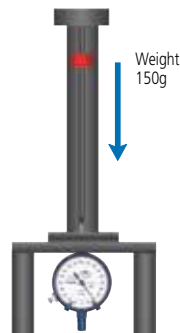
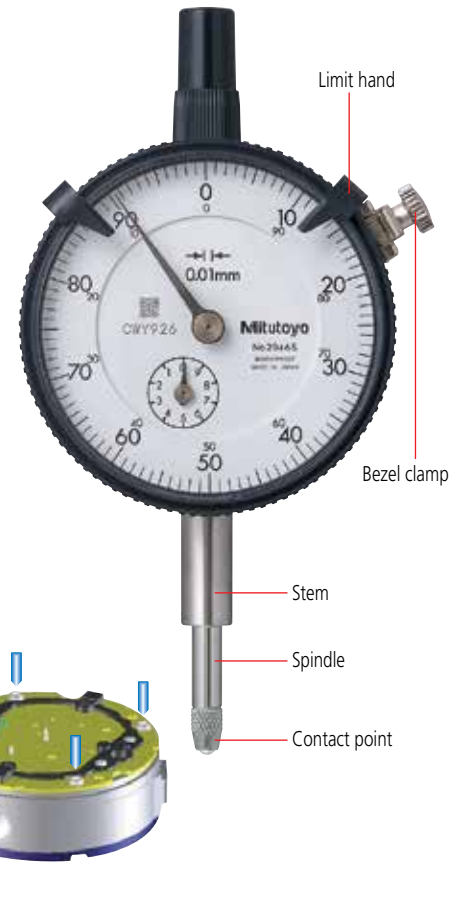
Icon	Description
	Reverse reading type suitable for depth and step measurement
	One revolution type for easy and error-free reading
	Double scale spacing type, easy to read
	Shockproof
	Waterproof
	With damper at lowest rest point
	Jeweled bearing
	Peak retaining
	Long stem
	Dustproof
	With coaxial revolution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



1911T-10


 **Balanced scale**




1911T-10  
 **Jeweled bearing**


 **Balanced scale**





1913T-10  
 **Jeweled bearing**

## SPECIFICATIONS

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

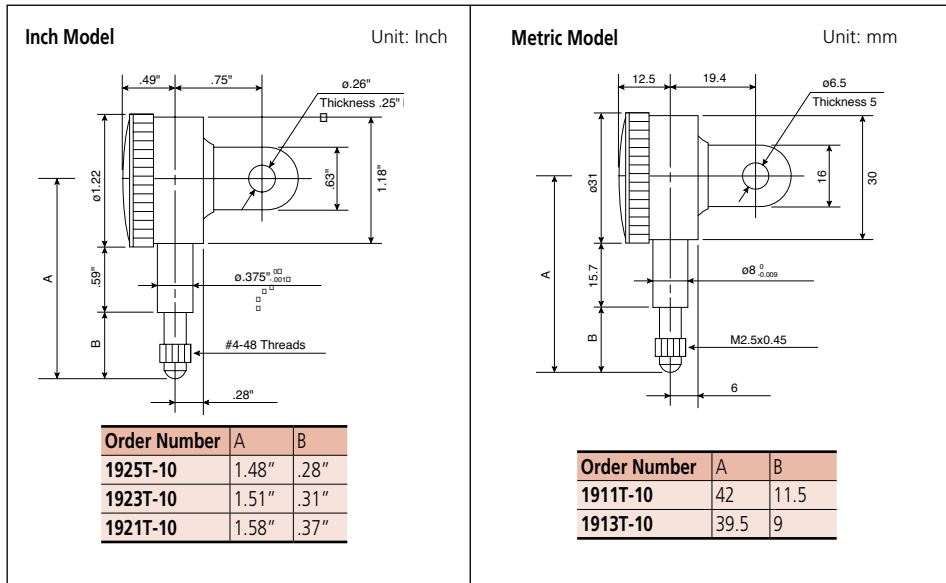
Graduation	Range	Range/rev	Dial reading	Order No.		Accuracy		Measuring force	
				w/ lug	Flat-back	First 2.5 Rev	Overall Accuracy		
.0001"	.025"	.01"	0-5-0	<b>1925T-10</b>	<b>1925TB-10</b>	±.0002"	±.0002"	0.3 - 1.8N	✓
.0005"	.05"	.02"	0-10-0	<b>1923T-10</b>	<b>1923TB-10</b>	±.0005"	±.0005"	0.3 - 1.8N	✓
.001"	.1"	.04"	0-20-0	<b>1921T-10</b>	<b>1921TB-10</b>	±.001"	±.001"	0.3 - 1.8N	✓

**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	Any Rev	Overall Accuracy		
0.002mm	0.5mm	0.2mm	0-100-0	<b>1913T-10</b>	<b>1913TB-10</b>	±5µm	±6µm	0.3 - 1.8N	✓
0.01mm	2.5mm	1mm	0-50-0	<b>1911T-10</b>	<b>1911TB-10</b>	±10µm	±12µm	0.3 - 1.8N	✓

 Jeweled bearing

## DIMENSIONS



# 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	Shockproof	Jeweled bearing
				(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	✓	✓
.0001"	.025"	.01"	0-5-0	<b>18035-10</b>	<b>18035B-10</b>	±.0001"	±.0001"	1.4N or less	✓	✓
.0005"	.1"	.04"	0-40	<b>16705</b>	<b>16705B</b>	±.0005"	±.0005"	1.4N or less		
.0005"	.1"	.04"	0-20-0	<b>16715</b>	<b>16715B</b>	±.0005"	±.0005"	1.4N or less		
.0005"	.125"	.05"	0-50	<b>15065</b>	<b>15065B</b>	±.0005"	±.0005"	1.4N or less		
.0005"	.125"	.05"	0-25-0	<b>15075</b>	<b>15075B</b>	±.0005"	±.0005"	1.4N or less		
.001"	.125"	.05"	0-50	<b>17805</b>	<b>17805B</b>	±.001"	±.001"	1.4N or less		
.001"	.125"	.025"	0-25-0	<b>17815</b>	<b>17815B</b>	±.001"	±.001"	1.4N or less		
.001"	.25"	.1"	0-100	<b>14105</b>	<b>14105B</b>	±.001"	±.001"	1.4N or less		
.001"	.25"	.1"	0-100	<b>14105-10</b>	<b>14105B-10</b>	±.001"	±.001"	1.4N or less		✓
.001"	.25"	.1"	0-50-0	<b>14115</b>	<b>14115B</b>	±.001"	±.001"	1.4N or less		



Shockproof

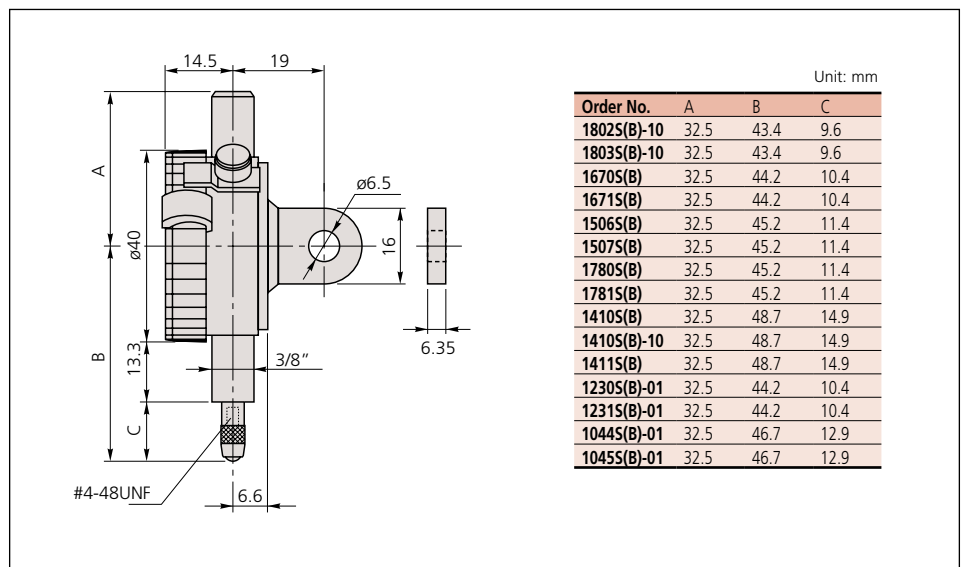


Jeweled bearing

**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 — 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 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't be misinterpreted. Unique shock-proof mechanism provides 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				
			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  $\phi$  8mm, M2.5 x 0.45 Thread

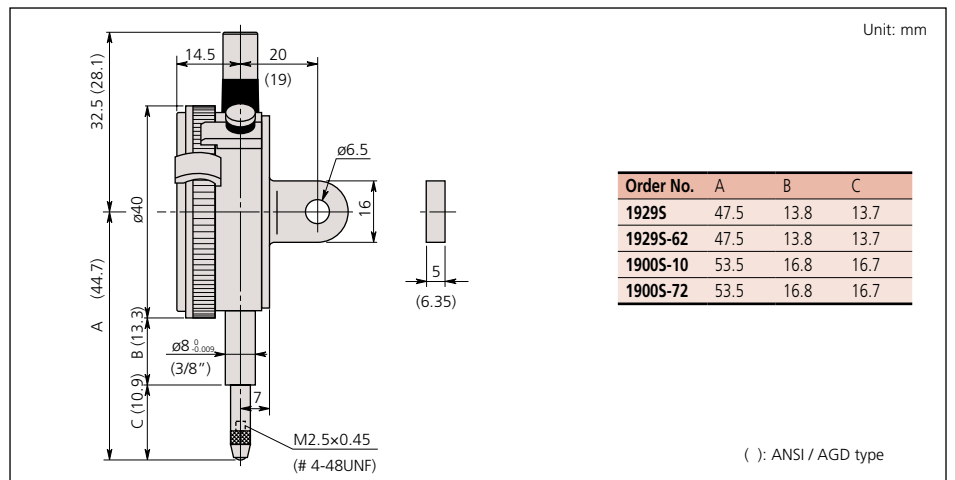
ISO/JIS type

Graduation	Range (range/full stroke)	Dial reading	Order No.		Accuracy	Measuring force				
			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.



Shockproof type



Waterproof type



Dustproof type



Jeweled bearing type

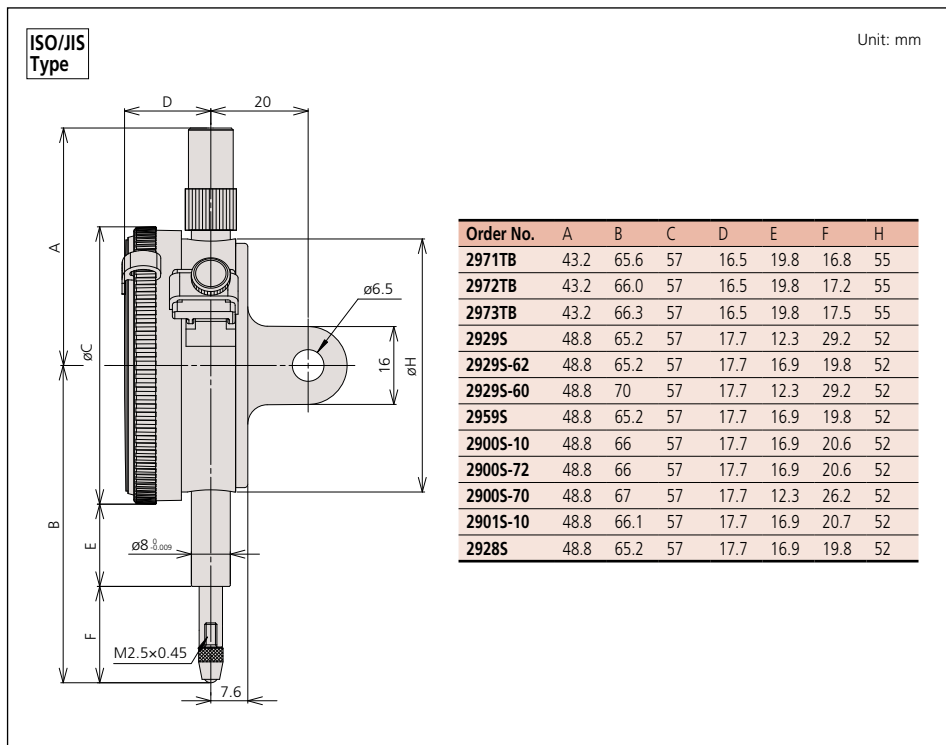
### SPECIFICATIONS

**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>2971TB*</b>	$\pm 0.008$ mm	0.4 - 1.4N	✓	—	✓	—
0.01mm	1mm / 1.4mm	50-0-50	—	<b>2972TB*</b>	$\pm 0.008$ mm	0.4 - 1.4N	✓	—	✓	—
0.02mm	1.6mm / 2mm	80-0-80	—	<b>2973TB*</b>	$\pm 0.016$ mm	0.4 - 1.4N	✓	—	✓	—
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



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

- Unique shock-proof mechanism provides 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 conventional dial indicator.
- 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/no-go).



One revolution type.



29095-62



2978TB

### 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	
				w/ lug	Flat-back			
.0001"	.008"	.01"	4-0-4	29105-10	29105B-10	±.0001"	1.8N or less	<input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>
.0001"	.008"	.01"	4-0-4	29105-72	29105B-72	±.0001"	2.5N or less	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
.0005"	.04"	.05"	20-0-20	29095-62	29095B-62	±.0005"	2.5N or less	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
.0005"	.02"	.028"	10-0-10	—	2976TB*	±.0005"	0.4 - 1.4N	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
.0005"	.04"	.055"	20-0-20	—	2977TB*	±.0005"	0.4 - 1.4N	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
.001"	.06"	.079"	30-0-30	—	2978TB*	±.001"	0.4 - 1.4N	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>

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

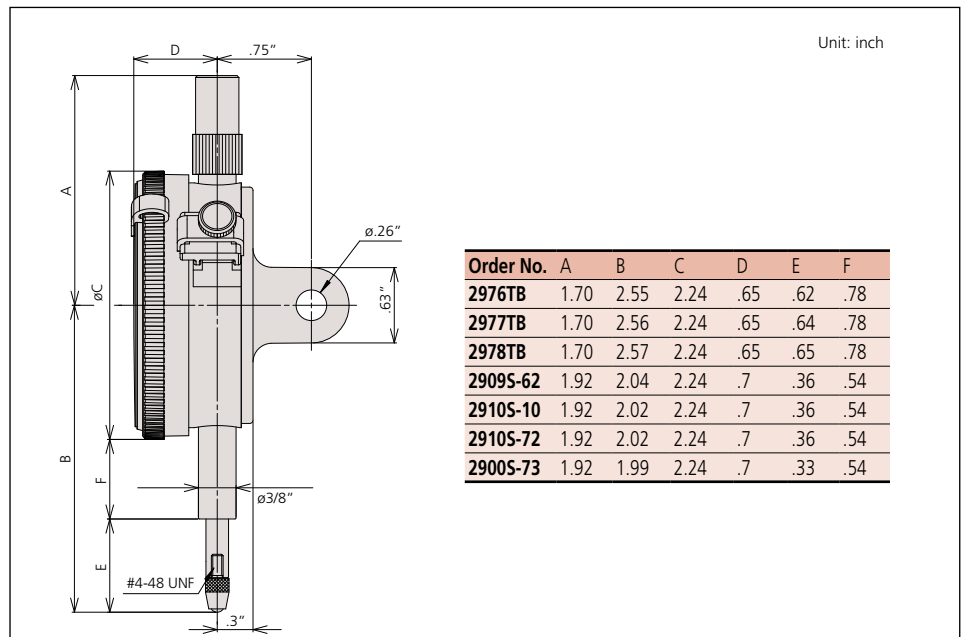
**Metric** Stem 3/8" dia., #4-48 UNF Thread Yellow Dial Face

ANSI/AGD type

Graduation	Range	Range/full stroke)	Dial reading	Order No.		Accuracy	Measuring force	
				w/ lug	Flat-back			
0.001mm	0.08mm	0.1mm	40-0-40	29005-73	29005B-73	±0.003mm	2.0N or less	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>

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

### DIMENSIONS



### Optional Accessories

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

# Special Dial Indicators

## SERIES 2



Adjustable hand



20485-10

### Adjustable hand dial gage

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 dial gage

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.

## 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	✓	✓	✓

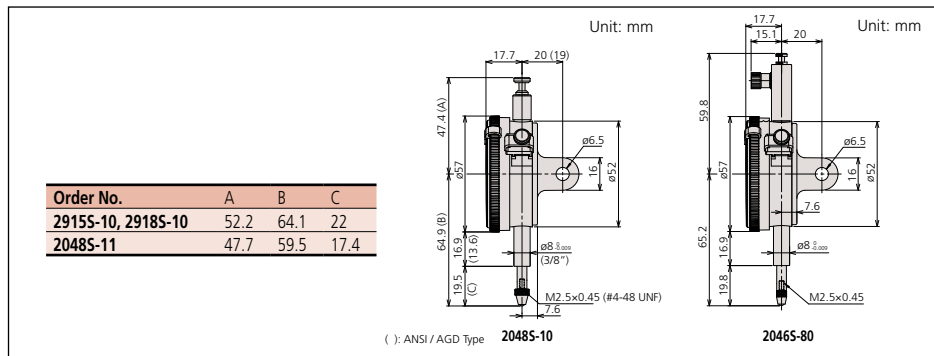
**Metric** Stem dia. 3/8" #4-48 UNF Thread, Yellow Dial Face ANSI/AGD type

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				✓

## DIMENSIONS





# 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	Shockproof	Reverse reading	Jeweled bearing
				w/lug	Flat-back	First 2.5 Rev	Overall				
.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"	100-0	<b>2914S</b>	<b>2914SB</b>	±.001"	±.001"	0.4-1.8N		✓	
.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

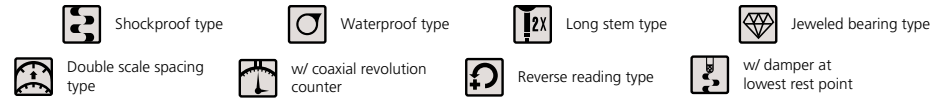
## SERIES 2 — Metric Standard Type

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



### FEATURES

- Standard 0.01mm graduation dial gages 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, protect against water and oil permeation via the front face.
- The stem spindle is made of high-strength quench-hardened stainless steel for longevity.
- 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 gage highly scratch- and chemical-resistant.



### SPECIFICATIONS

Graduation	Range	Range / Rev	Dial reading	Order No.		Accuracy	Measuring Force	Features								
				w/ lug	Flat-back			Shockproof	Waterproof	Long stem	Jeweled bearing	Double scale	Coaxial counter	Reverse reading	Damper	
0.001mm	1mm	(0.1mm)	0-100	<b>2110S-10</b>	<b>2110SB-10</b>	±0.005mm	1.5N or less	✓			✓	✓				
0.001mm	1mm	(0.1mm)	0-100	<b>2110S-70</b>	<b>2110SB-70</b>	±0.005mm	2.0N or less	✓	✓		✓	✓				
0.001mm	1mm	(0.2mm)	0-100-0	<b>2109S-10</b>	<b>2109SB-10</b>	±0.005mm	1.5N or less	✓			✓					
0.001mm	1mm	(0.2mm)	0-100-0	<b>2109S-70</b>	<b>2109SB-70</b>	±0.005mm	2.0N or less	✓	✓		✓					
0.001mm	2mm	(0.2mm)	0-100-0	<b>2113S-10</b>	<b>2113SB-10</b>	±0.007mm	1.5N or less	✓			✓					
0.001mm	5mm	(0.2mm)	0-100-100	<b>2118S-10</b>	<b>2118SB-10</b>	±0.010mm	1.5N or less				✓					
0.001mm	5mm	(0.2mm)	0-100-0	<b>2119S-10</b>	<b>2119SB-10</b>	±0.010mm	1.5N or less				✓					
0.005mm	5mm	(0.5mm)	0-50	<b>2124S-10</b>	<b>2124SB-10</b>	±0.012mm	1.5N or less				✓					
0.01mm	5mm	(1mm)	0-100	<b>2044S</b>	<b>2044SB</b>	±0.012mm	1.4N or less									
0.01mm	5mm	(1mm)	0-100	<b>2044S-09</b>	<b>2044SB-09</b>	±0.013mm	1.4N or less	✓								
0.01mm	5mm	(1mm)	0-100	<b>2044S-60</b>	<b>2044SB-60</b>	±0.012mm	2.5N or less		✓							
0.01mm	5mm	(1mm)	0-50-0	<b>2045S</b>	<b>2045SB</b>	±0.012mm	1.4N or less									
0.01mm	10mm	(1mm)	0-100	<b>2046S</b>	<b>2046SB</b>	±0.013mm	1.4N or less									
0.01mm	10mm	(1mm)	0-100	<b>2046S-09</b>	<b>2046SB-09</b>	±0.015mm	1.4N or less	✓								
0.01mm	10mm	(1mm)	0-100	<b>2046S-60</b>	<b>2046SB-60</b>	±0.013mm	2.5N or less		✓							
0.01mm	10mm	(1mm)	0-100	<b>2310S-10</b>	<b>2310SB-10</b>	±0.015mm	1.4N or less				✓		✓			
0.01mm	10mm	(1mm)	100-0	<b>2902S</b>	<b>2902SB</b>	±0.013mm	1.4N or less								✓	
0.01mm	10mm	(1mm)	0-50-0	<b>2047S</b>	<b>2047SB</b>	±0.013mm	1.4N or less									
0.01mm	20mm	(1mm)	0-100	<b>2050S</b>	<b>2050SB</b>	±0.020mm	2.0N or less									✓
0.01mm	20mm	(1mm)	0-100	<b>2050S-60</b>	<b>2050SB-60</b>	±0.020mm	2.5N or less		✓							
0.01mm	20mm	(1mm)	0-100	<b>2050S-19</b>	<b>2050SB-19</b>	±0.020mm	2.0N or less	✓			✓					✓
0.01mm	20mm	(1mm)	0-100	<b>2320S-10</b>	<b>2320SB-10</b>	±0.020mm	2.0N or less				✓		✓			✓
0.01mm	30mm	(1mm)	0-100	<b>2052S</b>	<b>2052SB</b>	±0.025mm	2.5N or less									✓
0.01mm	30mm	(1mm)	0-100	<b>2052S-19</b>	<b>2052SB-19</b>	±0.025mm	2.5N or less	✓			✓					✓
0.01mm	30mm	(1mm)	0-100	<b>2330S-10</b>	<b>2330SB-10</b>	±0.025mm	2.5N or less				✓		✓			✓
0.01mm	30mm	(1mm)	100-0	<b>2952S</b>	<b>2952SB</b>	±0.025mm	2.5N or less						✓		✓	✓

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



2046S  
2046S-09



2046S-60





2047S



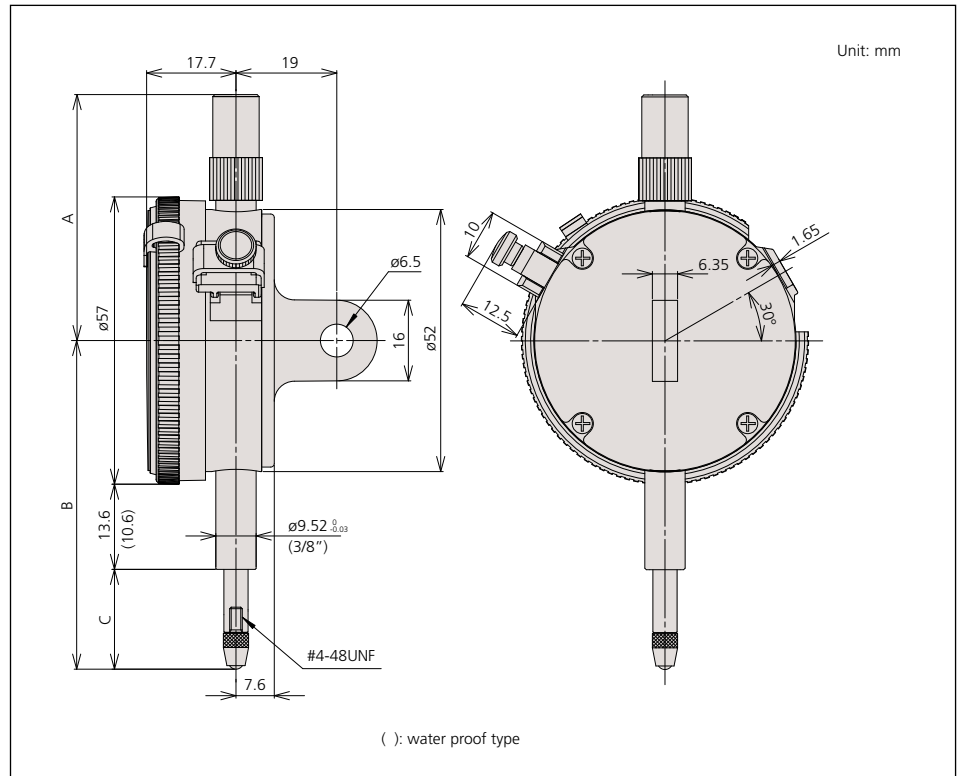
# Dial Indicators

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

### SPECIFICATIONS

Graduation	Range	Range / Rev	Dial reading	Order No.		Accuracy		Measuring force	 
				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	✓ ✓
0.001mm	5mm	0.2mm	0-100-0	<b>2119S-11</b>	<b>2119SB-11</b>	±0.007mm	±0.01mm	1.5N or less	✓
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	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	✓
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	✓
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	✓
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>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

#### Optional Accessories

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

# Dial Indicators

## SERIES 3 — Large Dial Face and Long Stroke

- Dial gages with a large-diameter (78mm / 3.07") graduation face for easy reading.



3046S



3047S

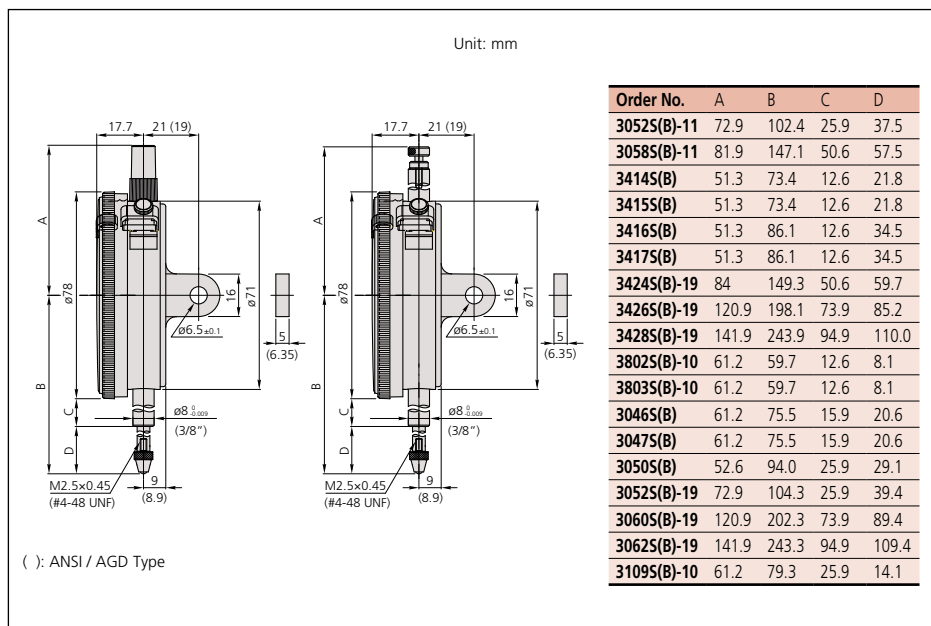


3050S



3052S-19

## 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	✓	✓	✓

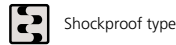
**Metric** Stem 3/8" DIA. #4-48 UNF Thread, Yellow dial face ANSI/AGD type

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>	±0.005mm	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

### Optional Accessories

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

# Dial Indicators

## SERIES 4 — Large Dial Face

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

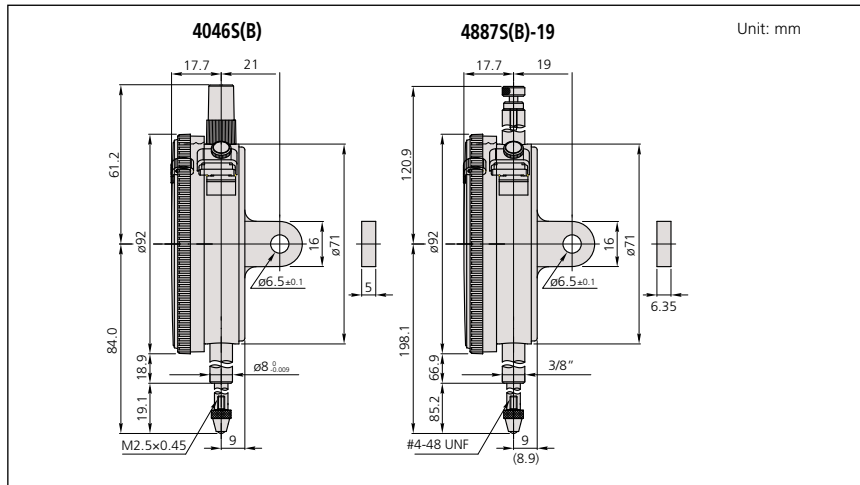


## SPECIFICATIONS

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		
.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



## Optional Accessories

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

# Back Plunger Dial Indicators

## SERIES 1 and 2



Mitutoyo's back-plunger 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 effectively with optional holding bars.

- Back-plunger dial gages are suitable for mounting onto leveling machine tool tables or inspection jigs, and for use in small spaces where the graduations of standard dial gages are difficult to see.
- Model No. 1960T, 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-31.)

—: 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>1961T</b>	±.001"	0.4 - 1.4N	✓	✓	
.001"	.2"	.05"	0-50	<b>1166T</b>	±.001"	0.4 - 1.4N			
.001"	.2"	.05"	0-25-0	<b>1167T</b>	±.001"	0.4 - 1.4N			
.001"	.2"	.05"	50-0	<b>1168T</b>	±.001"	0.4 - 1.4N			✓

\*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>1960T</b>	±0.014mm	0.4 - 1.4N	✓	✓		—
0.01mm	5mm	1mm	0-100	<b>1160T</b>	±0.016mm	0.4 - 1.4N				—
0.01mm	5mm	1mm	100-0	<b>1162T</b>	±0.016mm	0.4 - 1.4N			✓	—

\*Full stroke

**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>2991T-10</b>	±.0002"	0.4 - 1.5N	✓	✓	✓
.0005"	.04"	.05"	20-0-20	<b>2961T</b>	±.0005"	0.4 - 1.4N	✓	✓	

**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>2990T-10</b>	±0.005mm	0.4 - 1.5N	✓	✓	✓
0.01mm	1mm	1.27mm	50-0-50	<b>2960T</b>	±0.014mm	0.4 - 1.4N	✓	✓	

# Back Plunger Dial Indicators

SERIES 1 and 2



2960T

Balanced scale



Graduation: 0.01mm,  
Measuring range: 1mm

2960T

- One revolution
- Shockproof
- Back plunger



2990T-10

Balanced scale

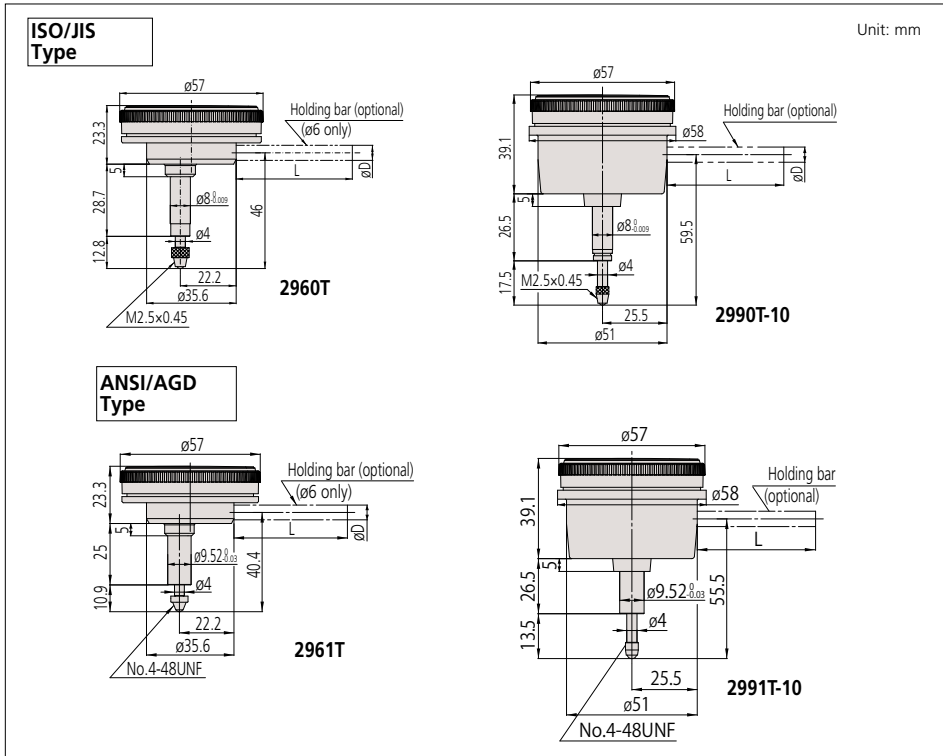


Graduation: 0.01mm,  
Measuring range: 1mm

2990T-10

- One revolution
- Shockproof
- Back plunger
- Jeweled bearing

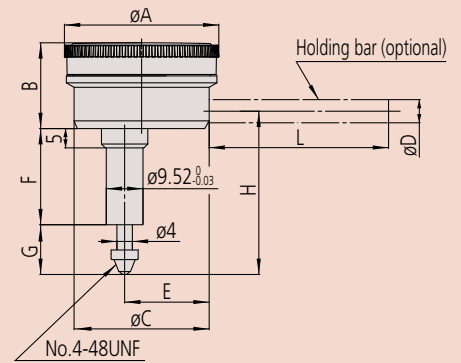
## DIMENSIONS



## DIMENSIONS

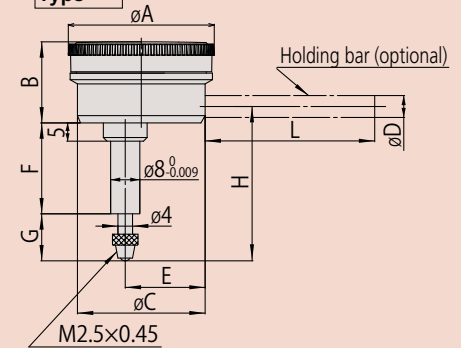
ANSI/AGD Type

Unit: mm



Order No.	A	B	C	E	F	G	H
1166T	40	22.1	35.6	22.2	25	10.9	42
1167T	40	22.1	35.6	22.2	25	10.9	42
1168T	40	22.1	35.6	22.2	25	10.9	42
1961T	40	22.1	35.6	22.2	25	10.9	40

ISO/JIS Type



Order No.	A	B	C	E	F	G	H
1160T	40	22.1	35.6	22.2	25	13.8	43.3
1162T	40	22.1	35.6	22.2	25	13.8	43.3
1960T	40	22.1	35.6	22.2	28.7	12.8	46

Note 1: Refer to pages F-34 to F-35 for contact point details.  
Note 2: Dimensions of the inch (ANSI/AGD Type) dial indicator partly differ from those of the metric (ISO/JIS Type) indicator.

Note 3: Inch (ANSI/AGD Type) dial indicators are provided with a stem of 3/8" dia. and #4-48UNF thread mount for the contact point.

## Holding bar (optional)

Order No.	øD	L
21AAA166	ø6mm	42mm
136567	ø6mm	81mm
124625	ø6.35mm	81mm
21AAA167	ø6.35mm	42mm
21AAA168	ø8mm	42mm
136568	ø8mm	81mm

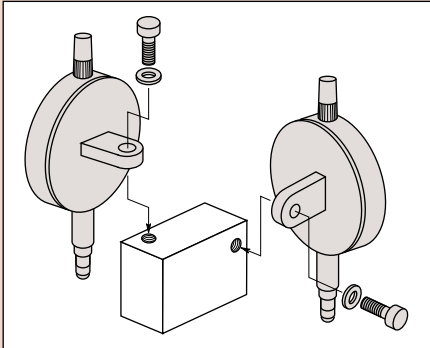
\* øD and L: detail shown in drawing below.

# 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 variety of backs are available for Mitutoyo Digimatic and dial indicators.

### Application











### ID-S (543-6xx only)\*

- 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

\*Includes the required adapter.



### SPECIFICATIONS

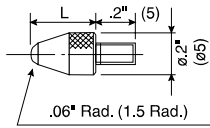
Description	Order No.	Series 0	Series 1	Series 2	Series 3, 4
		(ø31mm) 1003 (ø36mm)	(ø41mm)	ID-C (all types), ID-F, ID-H ID-S (excludes 543-6xx) (Ø57mm)	(ø77, 91mm)
Flat Back  Unit: mm	<b>191559:</b> a=1.0 <b>137906:</b> for 1003 a=1.0	<b>101211:</b> a=2.2 <b>136872:</b> for water-proof type <b>191559:</b> for 1911, 1913-10	<b>101039:</b> a=2.5 <b>21AZB231:</b> for waterproof 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 waterproof 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>M6 X1 (#1/4 - 28UNF)</b>	<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>M6 X1 (#1/4 - 28UNF)</b>	<b>136025:</b> M6x1 <b>129721:</b> #1/4-20UNC	<b>136026:</b> M6x1 <b>101168:</b> #1/4-20UNC	<b>136027:</b> M6x1 <b>100838:</b> #1/4-20UNC	
Back with Adjustable Bracket  Unit: mm	—	—	<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

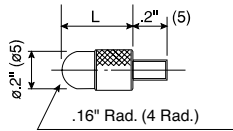
L	Carbide	Sapphire	Ruby	Plastic
.25"	21BZB005*	—	—	—
.28"	—	—	—	902018
.3"	131262	131263	131264	—
.6"	131265	131266	131267	—
1"	131268	131269	131270	—

#### 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 point



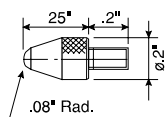
#### 4-48UNF

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

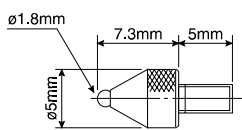
### ø.16 Ball Point



#### 4-48UNF

Order No.
21BZB005

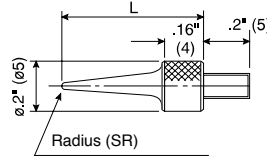
### ø1.8mm Ball Point



#### M2.5 x 0.45mm

Order No.
101122

### Needle point



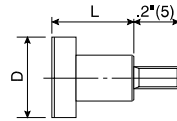
#### 4-48UNF

L	Order No.	SR
.6"	21AAA030	.016"
1"	21AAA046	.016"
1 1/2"	21AAA047	.016"
2"	21AAA048	.016"

#### M2.5 x 0.45mm

L	Order No.	SR
15mm	101121	0.4
17mm	137413	0.2

### Flat point



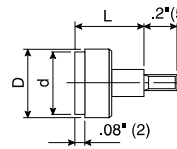
#### 4-48UNF

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



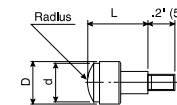
#### 4-48UNF

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



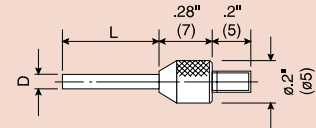
#### 4-48UNF

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



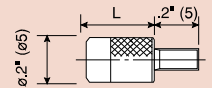
#### 4-48UNF

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



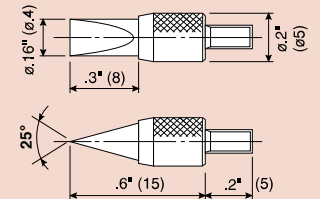
#### 4-48UNF

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



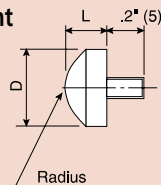
#### 4-48UNF

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

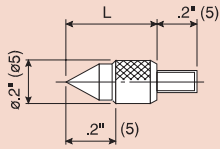
#### M2.5 x 0.45mm

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

# Contact Points

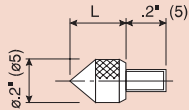
Optional Accessories for Digimatic and Dial Indicators and Linear Gages

## 60° Conical point



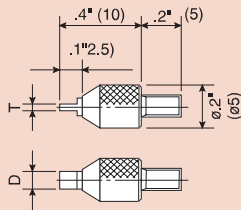
4-48UNF		M2.5 x 0.45mm	
L	Order No.	L	Order No.
1/2"	101190	10mm	101120

## 90° Conical point



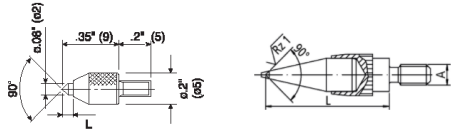
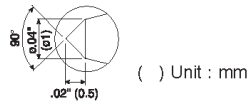
4-48UNF		M2.5 x 0.45mm	
L	Order No.	L	Order No.
1/4"	101191	5mm	101385

## 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

## 90° Conical point, Carbide tipped

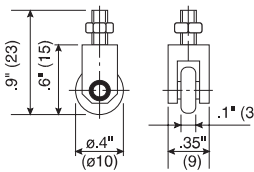


4-48UNF		4-48UNF	
L	Order No.	L	Order No.
.08"	131272	.3"	131283

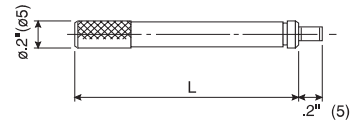
M2.5 x 0.45mm		M2.5 x 0.45mm	
L	Order No.	L	Order No.
2mm	120057	8mm	120068

## Roller Point



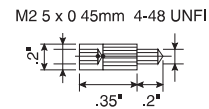
4-48UNF		M2.5 x 0.45mm	
Order No.	Order No.	Order No.	Order No.
901991	901954		

## Extension Rod

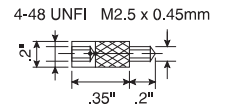


4-48UNF		M2.5 x 0.45mm	
L	Order No.	L	Order No.
1/2"	139167	10mm	303611
1"	301655	15mm	21AAA259A
2"	301657	20mm	303612
4"	301659	25mm	21AAA259B
		30mm	303613
		35mm	21AAA259C
		40mm	21AAA259D
		45mm	21AAA259E
		50mm	21AAA259F
		55mm	21AAA259G
		60mm	304146
		65mm	21AAA259H
		70mm	21AAA259J
		75mm	21AAA259L
		80mm	21AAA259M
		90mm	304147
		100mm	303614

## Point Conversion



Order No.
21AAA011



Order No.
21AAA012

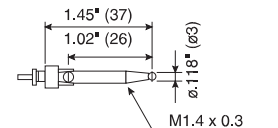
## Interchangeable Contact Point Set (M2.5x0.45)

Set Order No. 7822



Individual No.	Description
131365	Flat Point (ø5mm)
101117	Flat Point (ø10mm)
101121	Needle Point
101119	Spherical Point
101118	Shell Type Point
101387	Shell Type Point

## Lever Point



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

# 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 Thickness and Depth Gages

Order No.	Description
21AZB149	Depth gages up to 12.7mm/.5"
21AZB150	Depth gages up to 25mm/1"
21AZB151	S-Type thickness gage



Dove Tail Type Lever Assembly

Order No.	Lever up to	Screw	Screw Thread
21EZA198	.5" / 12.7mm	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
  - 971753**: With release-speed control
- Lifting range: 1" / 25.4mm  
Cable length: 300mm



### Spindle Lifting Pick

- 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

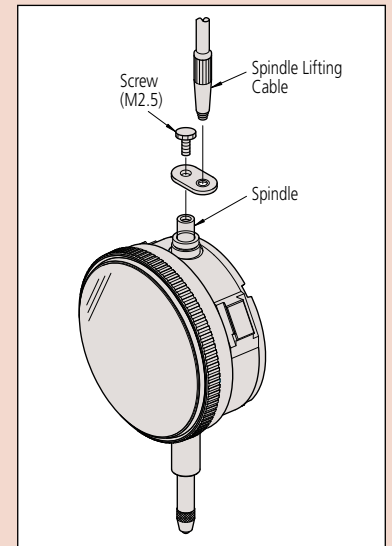
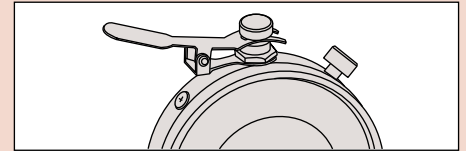
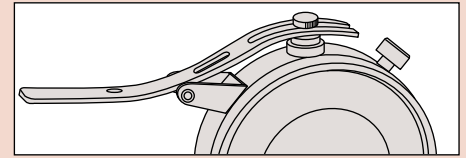


### Spindle Lifting Knob

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



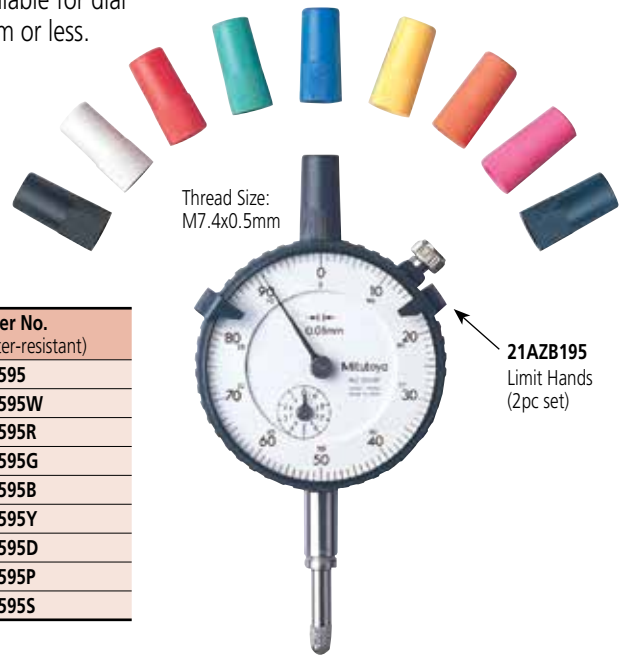
### Application



# 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, as well as a device that lets you reset the indicator crystals.



### SPECIFICATIONS

Order No.	Description
7823EU	Dial indicator repair tool kit

### Order No. 7823U

#### Set Configuration

- (1) 901173: Screwdriver (Phillips)
- (2) 901174: Screwdriver (Phillips/flat blade)
- (3) 129729: Tweezers
- (4) 901175: Pin-vise
- (5) 901176: Brush
- (6) 21JAA314: Stick
- (7) 901177: Brush
- (8) 901178: Hammer
- (9) 129730: Spindle rest
- (10) 129731: Pin rest
- (11) 901179: Nippers
- (12) 901180: Pliers
- (13) 126628: Hand remover (main unit)
- 126630: Interchangeable Pin, 0.8mm DIA.
- 126630B: Interchangeable Pin, 0.5mm DIA.
- 126630C: Interchangeable Pin, 1.6mm DIA.
- 100699: Nut
  
- (14) 129732: Pin remover
- (15) 129733: Punch
- (16) 129734: Bearing adjuster
- (17) 129735: Pinion rest
- (18) 129736: Reamer  $\varnothing 1$
- 193702: Reamer  $\varnothing 0.6$
- 21JAA273: Reamer  $\varnothing 0.5$
- (19) 901182: Case

# Dial Crystal Setter

## Optional Accessories for 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



With 8 sizes of crystal setting pads

# Dial Test Indicators

## SERIES 513

### FEATURES

- One piece movement for high-impact resistance and durability
- Contact point length is printed on dial face to avoid accuracy issues
- Scratch and smudge-resistant, anti-glare crystal for easy-to-read dial
- Newly designed contact point holder prevents backlash
- Includes NIST-traceable Certificate of Inspection - bidirectional
- Limit hands (optional) can be attached to the bezel, allowing easy identification of the upper and lower limits of tolerance.
- A  $\varnothing 8\text{mm}$  ( $\varnothing 0.315$  in) plain stem (21CAB104) for the Metric models or a  $\varnothing 9.52\text{mm}$  ( $\varnothing 3/8$  in) plain stem (21CAB105) for the Inch models that attaches to any dovetail on the frame is supplied as a standard accessory. Other sizes are available as optional accessories:
  - $\varnothing 4\text{mm}$  ( $\varnothing 0.157$  in) stem: **21CAB106**
  - $\varnothing 6\text{mm}$  ( $\varnothing 0.236$  in) stem: **21CAB103**
- Optional ruby tip has wear-resistance several times greater than a carbide tip and, since it is nonconductive, it can be used safely on an electrical discharge machine.
- Using universal fonts, changing dial face color and reviewing the relationship between pointer and scale marks have drastically improved readability.
- The O-ring seal on the bezel provides smooth rotation and prevents dust and oil from penetrating the dial face.
- Bonding the bezel and crystal eliminates a gap for cutting fluid or oil to penetrate the dial face.
- A flange prevents the bezel from unintentionally being removed during handling.
- Four models are available, each with a different orientation of the dial to allow the best visibility in any situation.
  - Standard - dial is on top of the frame.
  - Vertical: dial is on the end of the frame.
  - Standard ( $20^\circ$  tilted face): dial is on top of the frame but tilted  $20^\circ$ .
  - Horizontal: dial is on the side of the frame.
- The conventional method of mounting the stylus pivot bearing screw in the frame is prone to loosen with prolonged use. A unique sub-plate structure has been incorporated in all models to eliminate this issue.

Contact point length is printed on dial face to avoid accuracy issues



Scratch and smudge-resistant, anti-glare crystal for easy-to-read dial



Conventional

New

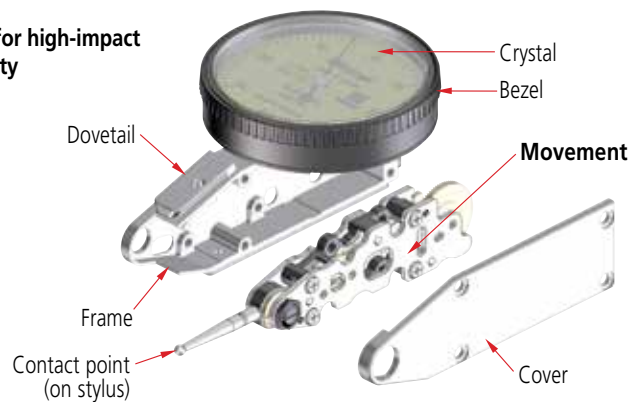
Newly designed contact point holder prevents backlash



Includes NIST-traceable Certificate of Inspection - bidirectional



One piece movement for high-impact resistance and durability



Four models are available:



Standard

Vertical

Standard  
( $20^\circ$  Tilted face)

Parallel



Impact-resistant bezel

# 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.
- One-piece bezel and crystal design with O-ring provide resistance to water and dust.
- The glare-free flat crystal face has a scratch-resistant coating.
- High sensitivity and quick response because of jeweled bearings.
- Standard carbide contact point provide.



513-424-10E



513-414-10E

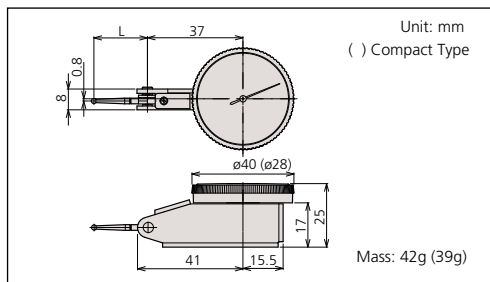


513-404-10E



513-402-10E

### DIMENSIONS AND MASS



### Optional Accessories

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

### Special Set: No. 513-908-10E (mm)

- 513-404-10E: Dial test indicator
- 7014-10E: Mini magnetic stand

### No. 513-907-10E (inch)

- 513-402-10E: Dial test indicator
- 7014E-10: Mini magnetic stand



### Description of Icon

Icon	Description
	With revolution counter
	Long contact point
	Jeweled bearing
	Double scale spacing, easy to read
	Compact
	Dustproof
	Anti-magnetic

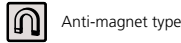
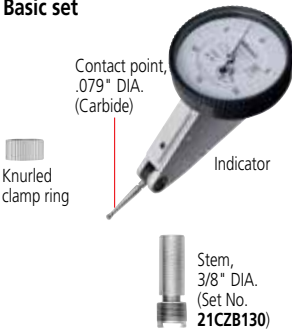
## Set Configuration: Test Indicators

Inch

### 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

### Inch

Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	L (mm)								
	Basic set	Full set												—	—
.00005"	513-407-10E	513-407-10T	.008"	±.0001"	0-4-0	0.3N or less	19	✓	—	✓	—	—	—	—	—
.0005"	513-402-10E	513-402-10T	.03"	±.0005"	0-15-0	0.3N or less	19.9	✓	—	✓	—	—	—	—	—
.0005"	513-472-10E*		.03"	±.0005"	0-15-0	0.3N or less	19.9	✓	—	✓	—	—	—	—	—
.0005"	513-412-10E	513-412-10T	.03"	±.0005"	0-15-0	0.2N or less	33.9	✓	✓	✓	—	—	—	—	—
.0005"	513-479-10E*		.03"	±.0005"	0-15-0	0.2N or less	33.9	✓	✓	✓	—	—	—	—	—
.0005"	513-462-10E		.03"	±.0005"	0-15-0	0.3N or less	19.9	✓	—	✓	✓	—	—	—	—
.0001"	513-403-10E	513-403-10T	.008"	±.0001"	0-4-0	0.3N or less	19	✓	—	✓	—	—	—	—	—
.0001"	513-473-10E*		.008"	±.0001"	0-4-0	0.3N or less	19	✓	—	✓	—	—	—	—	—
.0001"	513-463-10E		.008"	±.0001"	0-4-0	0.3N or less	15	✓	—	✓	✓	—	—	—	—

\*Provided with a ø2mm ruby contact point as a substitute for ø2mm carbide contact point.

### Metric

Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	L (mm)								
	Basic set	Full set												—	—
0.01mm	513-424-10E	513-424-10T	0.5mm	5µm	0-25-0	0.3N or less	22.3	✓	✓	—	✓	—	—	—	—
0.01mm	513-414-10E	513-414-10T	0.5mm	10µm	0-25-0	0.2N or less	36.8	✓	✓	✓	✓	—	—	—	—
0.01mm	513-466-10E	-	0.5mm	5µm	0-25-0	0.3N or less	22.3	✓	✓	—	✓	✓	—	—	—
0.01mm	513-478-10E*	-	0.5mm	5µm	0-25-0	0.3N or less	22.3	✓	—	—	✓	—	—	—	—
0.01mm	513-404-10E	513-404-10T	0.8mm	8µm	0-40-0	0.3N or less	20.9	✓	—	—	✓	—	—	—	—
0.01mm	513-474-10E*	-	0.8mm	8µm	0-40-0	0.3N or less	20.9	✓	—	—	✓	—	—	—	—
0.01mm	513-464-10E	-	0.8mm	8µm	0-40-0	0.3N or less	20.9	✓	—	—	✓	✓	—	—	—
0.01mm	513-415-10E	513-415-10T	1mm	10µm	0-50-0	0.2N or less	44.5	✓	—	✓	✓	—	—	—	—
0.01mm	513-477-10E*	-	1mm	10µm	0-50-0	0.2N or less	44.5	✓	—	✓	✓	—	—	—	—
0.01mm	513-426-10E	-	1.5mm	16µm	0-25-0	0.4N or less	22.3	✓	✓	—	✓	—	—	—	✓
0.002mm	513-405-10E	513-405-10T	0.2mm	4µm	0-100-0	0.3N or less	14.7	✓	—	—	✓	—	—	—	—
0.002mm	513-465-10E	-	0.2mm	4µm	0-100-0	0.3N or less	14.7	✓	—	—	✓	✓	—	—	—
0.002mm	513-475-10H*	-	0.2mm	4µm	0-100-0	0.3N or Less	18.7	✓	—	—	✓	—	—	—	—
0.002mm	513-425-10E	-	0.6mm	7µm	0-100-0	0.4N or less	14.7	✓	—	—	✓	—	—	—	✓
0.001mm	513-401-10E	-	0.14mm	4µm	0-70-0	0.3N or less	12.8	✓	—	—	✓	—	—	—	—
0.001mm	513-471-10E*	-	0.14mm	4µm	0-70-0	0.3N or less	12.8	✓	—	—	✓	—	—	—	—

\*Provided with a ø2mm ruby contact point as a substitute for ø2mm carbide contact point.

### Metric/inch

Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	L (mm)							
	Basic set	Full set								—	—	—	—	
0.002mm, .0001"	513-409-10E	513-409-10T	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	513-406-10E	513-406-10T	.03", 0.7mm	±.0005"	0-15-0, 0-35-0	0.3N or less	19.9	✓	✓	—	—	—	—	—

Metric

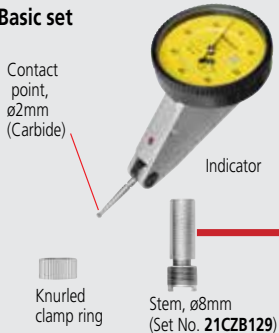
### Full set



### Plus set



### Basic set

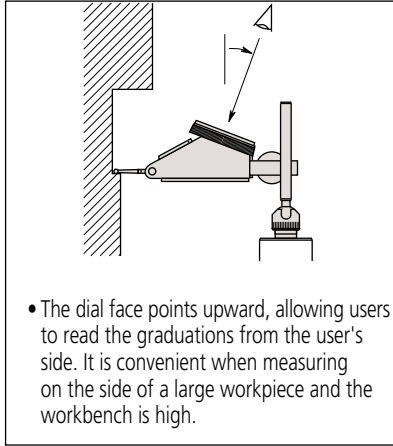


# Dial Test Indicators

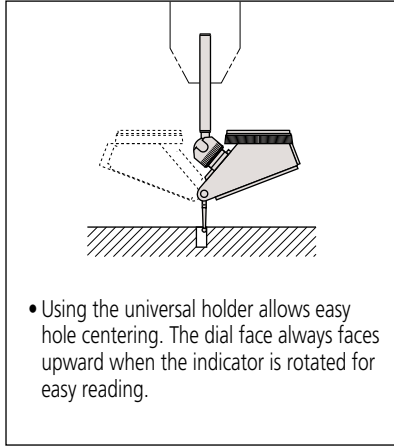
## SERIES 513 — Horizontal (20° Tilted Face), Vertical and Parallel

### FEATURES

- Specially designed for easy viewing of measurements.



- The dial face points 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 for easy reading.



513-444-10E



513-445-10E



513-454-10E  
513-484-10E



513-455-10E



513-452-10E



513-482-10A



513-444-10E



513-455-10E



513-484-10E



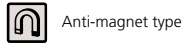
513-442-10A



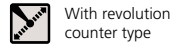
513-446-10A

### Optional Accessories

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



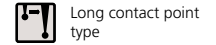
Anti-magnet type



With revolution counter type



Jeweled bearing type



Long contact point type

## Set Configuration: Test Indicators

Inch

**Full set**

Contact point, .039" DIA. carbide  
Contact point, .118" DIA. carbide  
Stem, .157" DIA. (21CAB106)

Swivel clamp (900322, for .157" DIA., 3/8" DIA., dovetail)  
Inch holding bar (L: 4") (900306)

**Basic set**

Contact point, .079" DIA. (Carbide)  
Indicator  
Knurled clamp ring  
Stem, 3/8" DIA. (Set No. 21CZB130)

Metric

**Full set**

Swivel clamp (900321, for ø4mm, ø8mm, dovetail)  
Metric holding bar (L: 100mm) (900209)

**Plus set**

Contact point, ø1mm carbide  
Contact point, ø3mm carbide  
Stem, ø4mm (21CAB106)

**Basic set**

Contact point, ø2mm (Carbide)  
Indicator  
Knurled clamp ring  
Stem, ø8mm (Set No. 21CZB129)

(ø 6 Stem)

## 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	513-444-10E	513-444-10T	1.6mm	10µm	0-40-0	0.3N or less	48	20.9	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
0.002mm	513-445-10E	513-445-10T	0.4mm	5µm	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"	513-442-10A	513-442-10T	.06"	±.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"	513-442-16A	513-442-16T	.06"	±.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"	513-446-10A	513-446-10T	.06"	±.0005"	0-15-0	0.2N or less	48	33.9	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	—
.0005"	513-446-16A	513-446-16T	.06"	±.0005"	0-15-0	0.2N or less	48	33.9	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Black dial
.0001"	513-443-10A	513-443-10T	.016"	±.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"	513-443-16A	513-443-16T	.016"	±.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	513-454-10E	513-454-10T	0.8mm	8µm	0-40-0	0.3N or less	50	20.9	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
0.002mm	513-455-10E	513-455-10T	0.2mm	3µm	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"	513-452-10E	513-452-10T	.03"	±.0005"	0-15-0	0.3N or less	50	19.9	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
.0001"	513-453-10E	513-453-10T	.008"	±.0001"	0-4-0	0.3N or less	50	19	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

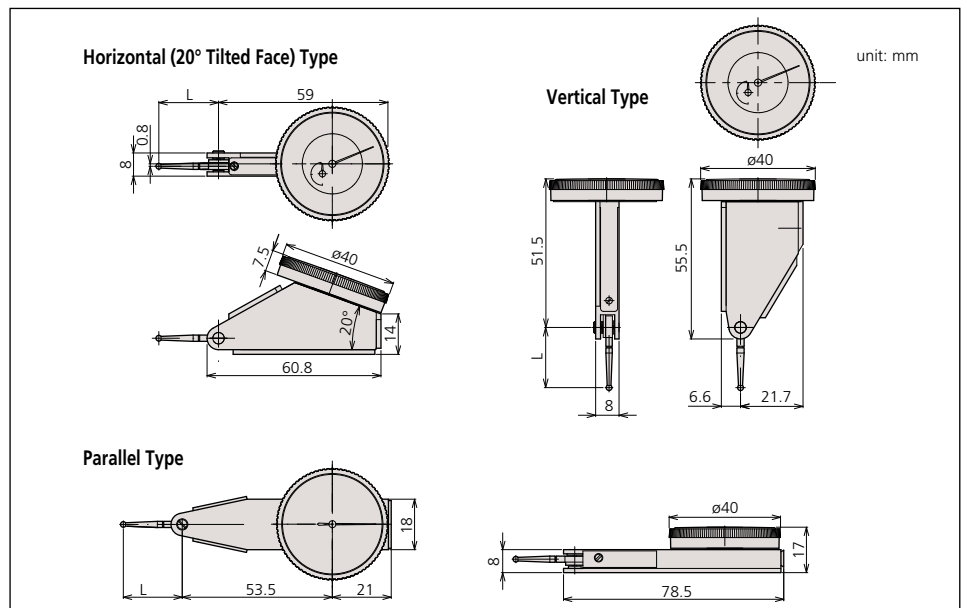
**Metric** Parallel type

Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	Mass (g)	L (mm)		
	Basic set	Full set								
0.01mm	513-484-10E	513-484-10T	0.8mm	8µm	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"	513-482-10A	513-482-10T	.03"	±.0005"	0-15-0	0.3N or less	68	20	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

## DIMENSIONS

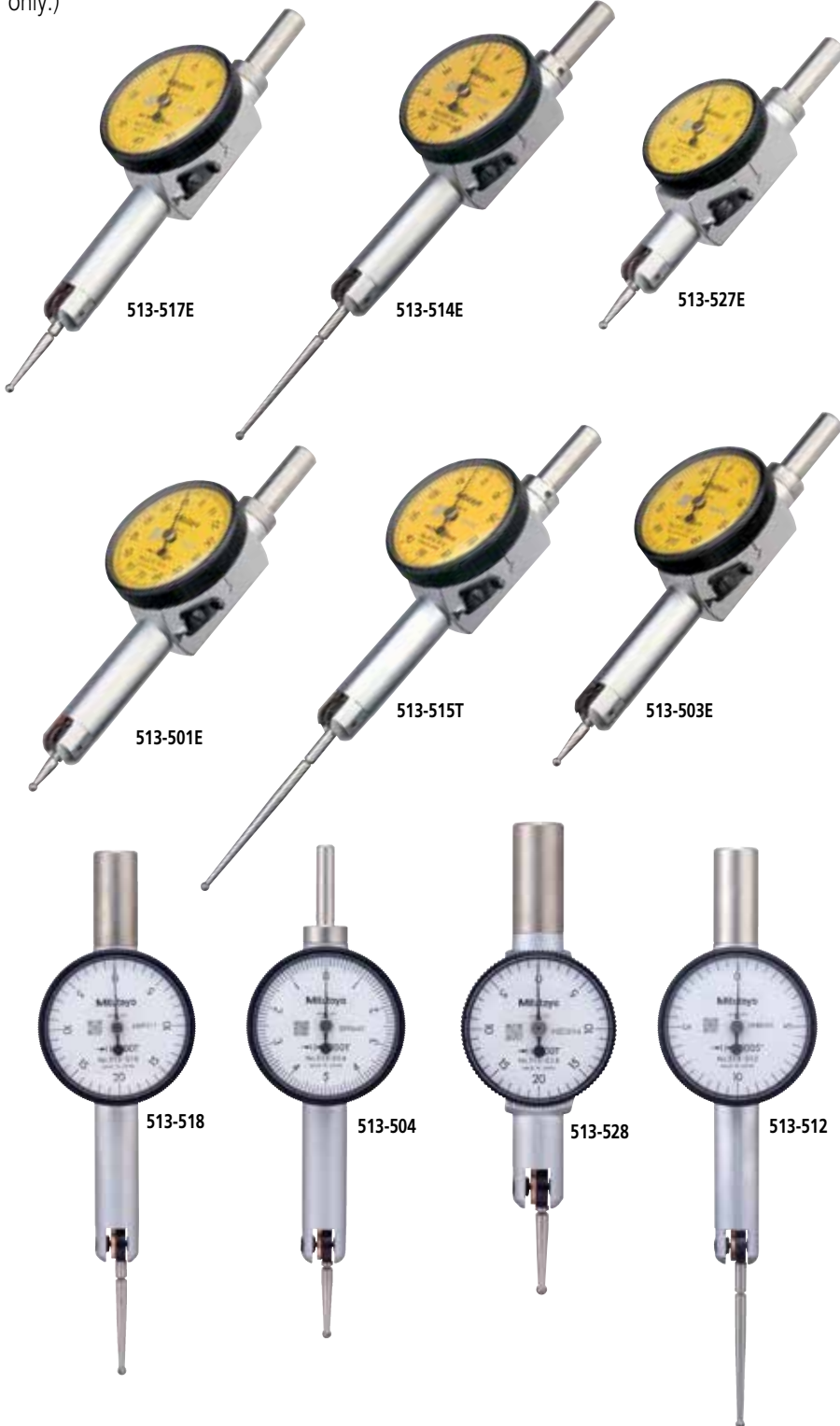


# Pocket Dial Test Indicators

## SERIES 513

### FEATURES

- Jeweled bearings ensure high 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

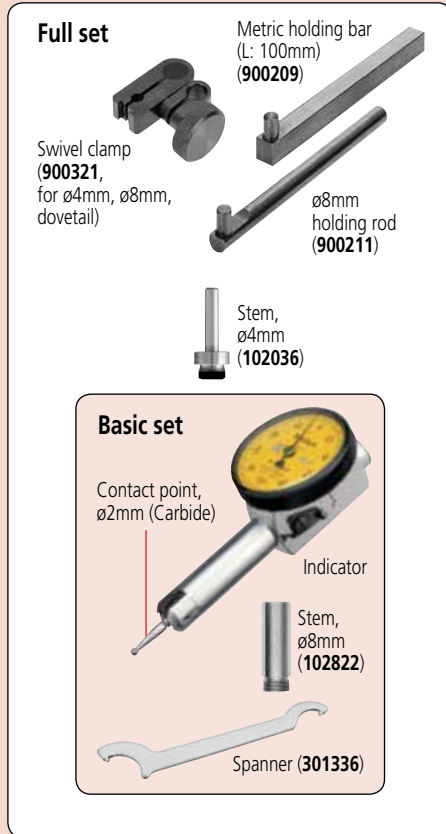


513-501E

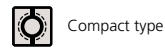
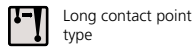
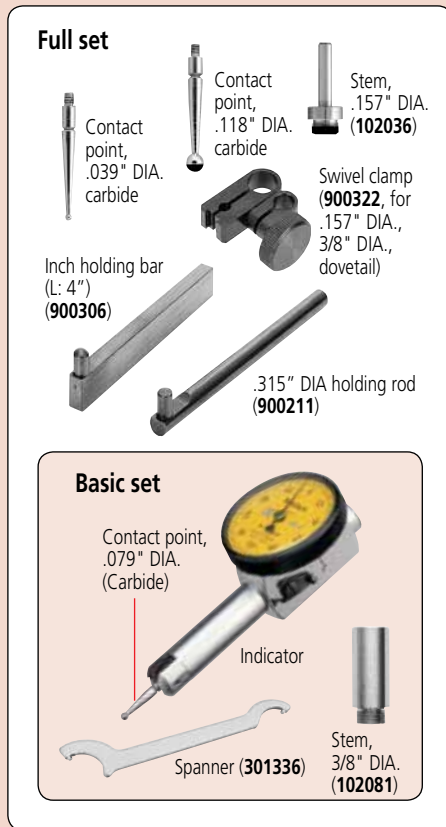
### Optional Accessories

- : 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

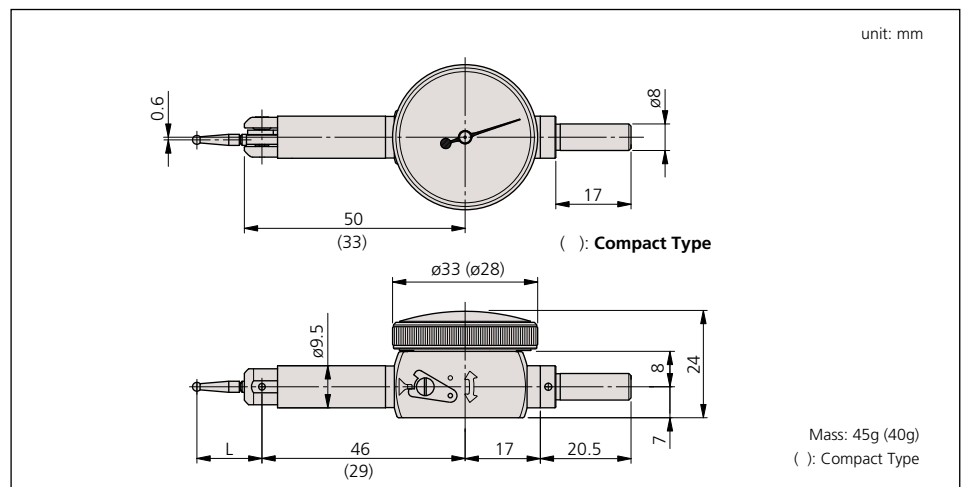
Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	L (mm)			
	Basic set	Full set								
.001"	513-518	513-518T	.04"	±.001"	0-20-0	0.3N or less	26.5	—	✓	—
.001"	513-528	513-528T	.04"	±.001"	0-20-0	0.3N or less	18.7	—	✓	✓
.0005"	513-512	513-512T	.02"	±.0005"	0-10-0	0.3N or less	37.4	✓	✓	—
.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	190548
513-504 513-528	131314	103011	131315	—	—
513-512	131316	131324	131317	—	—
513-514E	137746	129949	137747	—	—
513-515T	136235	136013	136236	190656	190655
513-517E	103013	103006	103014	190549	190550
513-518	103008	103007	103009	—	—

## DIMENSIONS AND MASS

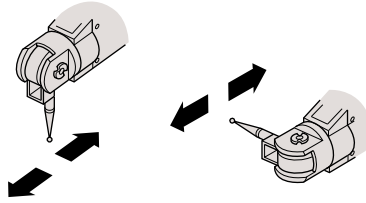


# Dial Test Indicators

## SERIES 513 — Universal Type

### FEATURES

- Universal application for 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



Jeweled bearing type

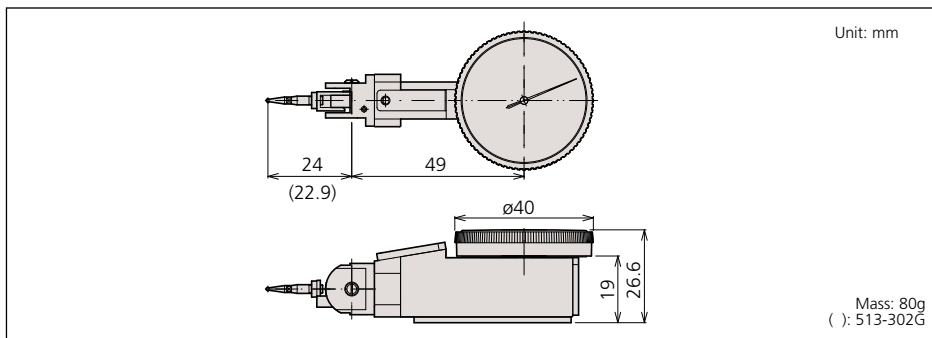
#### Metric

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

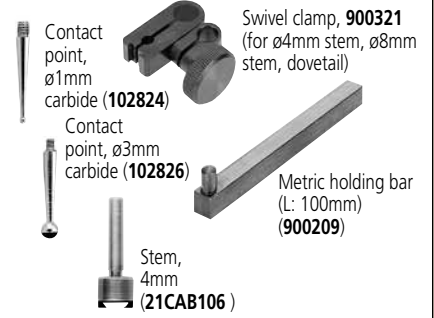


Unit: mm

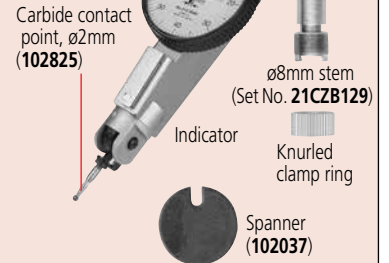
Mass: 80g  
( ): 513-302G

### Set Configuration: Metric

#### Full set

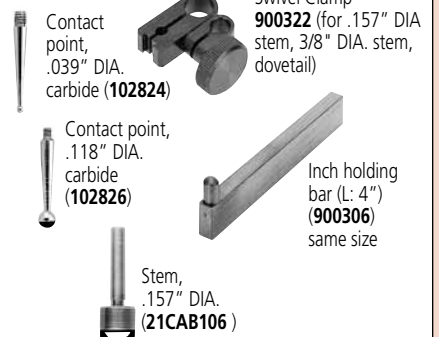


#### Basic set

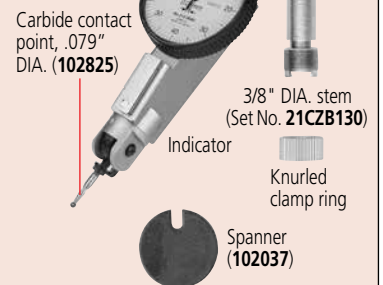


### Set Configuration: Inch

#### Full set



#### Basic set

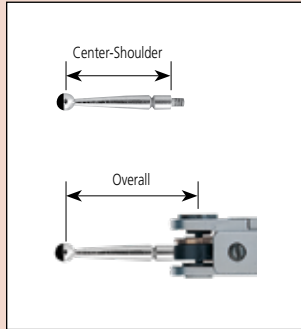


### Optional Accessories

- : Swivel clamp
- : Holding bar
- : Stem

# Contact Points and Clamp Holders

## Optional Accessories for Dial Test Indicator

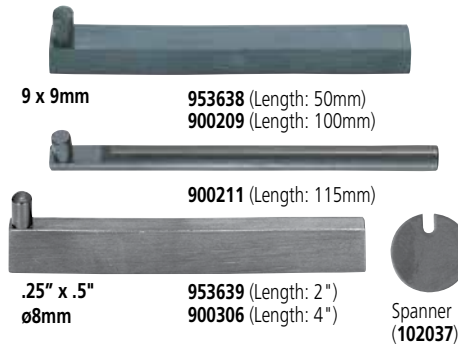


Inch											
Length (mm)		Part No.						Test Indicator Code No.			
Center-Shoulder	Overall	ø0.5	ø0.7	ø1	ø2	ø3	Ruby ø2mm				
11.5	15.0	—	—	136076	136075	136077	21CZA213	513-403-10E 513-453-10E	513-443-10A 513-463-10E	513-473-10E <sup>1</sup> 513-443-16A	
16.4	19.9	—	—	133196	133195	133197	21CZA204	513-401-10E 513-406-10E 513-452-10E	513-442-10A 513-462-10E	513-472-10E <sup>1</sup> 513-442-16A 513-482-10A	
30.4	33.9	—	—	136291	136290	136292	21CZA214	513-412-10E 513-446-16A	513-446-10A		
15.2	18.7	—	—	131314	103011	131315	—	513-504 <sup>1</sup>	513-528 <sup>1</sup>		
23.0	26.5	—	—	103008	103007	103009	—	513-518 <sup>1</sup>			
33.9	37.4	—	—	131316	131324	131317	—	513-512 <sup>1</sup>			

Metric											
Length (mm)		Part No.									
9.4	12.9	—	—	21CZA044	21CZA036	21CZA045	21CZA212	513-401-10E	513-471-10E		
11.2	14.7	190547	190548	103017	103010	103018	21CZA209	513-405-10E 513-503E 513-527E	513-425-10E 513-455-10E 513-455-10E	513-445-10E	
17.4	20.9	190549	190550	103013	103006	103014	21CZA201	513-404-10E 513-464-10E 513-484-10E	513-444-10E 513-517E <sup>1</sup>	513-454-10E 513-474-10E <sup>1</sup>	
18.7	22.2	190654	190653	137558	137557	137559	21CZA210	513-424-10E 513-478-10H <sup>3</sup>	513-426-10E	513-466-10E	
41.0	44.5	190656	190655	136235	136013	136236	21CZA211	513-415-10E	513-515T <sup>1</sup>		
33.3	36.8	—	—	137746	129949	137747	—	513-414-10E	513-514E <sup>1</sup>		
8.6	12.0	—	—	136756	136104	136758	—	513-501E <sup>1</sup>			
6.5	24.0	—	—	102824	102825	102826	—	513-304GE <sup>2</sup>	513-302G <sup>2</sup>		

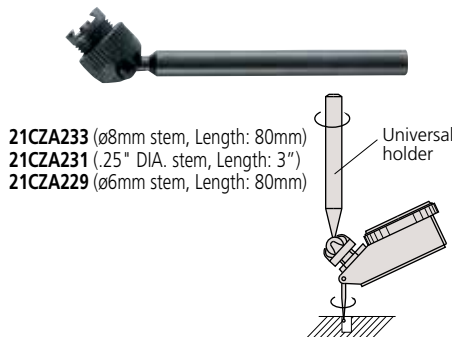
\*1 Denotes Pocket Indicators  
\*2 Denotes Universal Indicator  
\*3 Indicator Ships with Ruby Contact

### Holding Bars (with 6mm mounting pin)



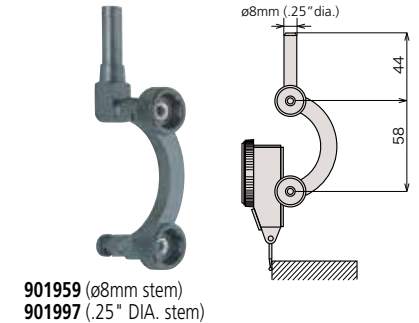
### Universal Holder

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



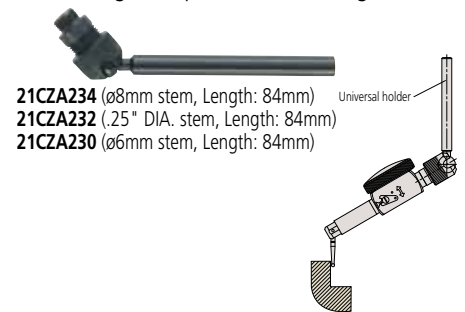
### Centering Holder

- Allows large diameter cylinders or holes to be centered.



### 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.



# 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").

- $\pm(0.1+0.4L/100)$   $\mu\text{m}$  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 easily accomplished due to 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.

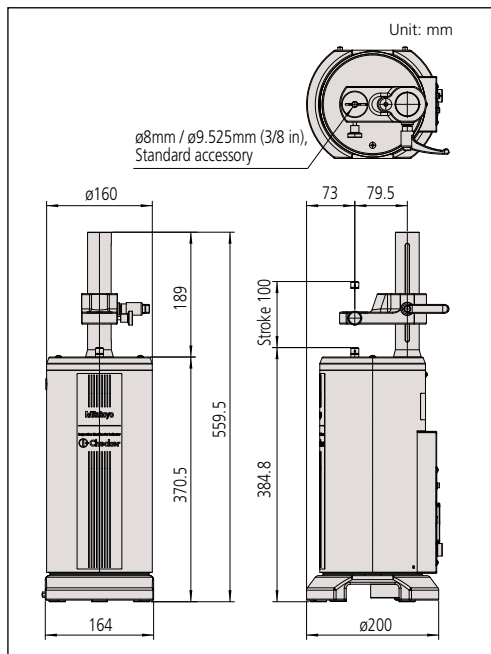


## SPECIFICATIONS

Order No.	Remarks
64PKA148	comes with both 8mm and 3/8" bushing

Recommended PC Part No. **64PKA149E**

## 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

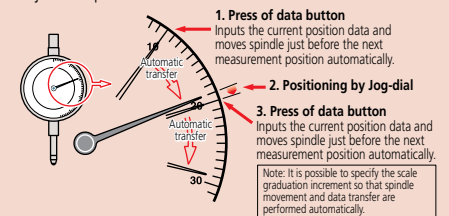
Measuring Range: 100mm / 4"  
 Resolution: 0.01  $\mu\text{m}$  / 0.4  $\mu\text{m}$   
 Accuracy:  $\pm(0.1+0.4L/100)$   $\mu\text{m}$  in vertical position  
 (at 20°C)  $\pm(0.15+0.6L/100)$   $\mu\text{m}$  in lateral position  
 L = measuring length (mm)  
 Drive method: Motor direct drive  
 Measuring Unit: "STVC-4Z" linear encoder  
 Thermal Expansion coefficient: 0.4 ppm / °C  
 Measurement method: Semi / Full automatic\*  
 Dimensions: 116 x 205.5 x 559.5mm (W x D x H)  
 Operating temperature range: 20°C  $\pm$  0.5°C  
 Power supply: 100 – 240VAC  $\pm$ 10%, 50/60 Hz  
 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

### Semi-automatic inspection of analog indicator

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

Create, edit and print your own inspection certificate. 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)
- 02ASU162: CG accessory set (type C) for bore gages\*
- 21CZB128:  $\varnothing 6\text{mm}$  dovetail grooved stem
- 21CZB129:  $\varnothing 8\text{mm}$  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

\* Not compatible with IC1000 models



### Optional Accessory

**12AKK824:** 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.



170-102-10

### SPECIFICATIONS

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

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, and 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

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

### FEATURES

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

### Flat-Anvil Type

#### Standard Type / Digital



Ceramic spindle/anvil

#### Deep-Throat Type / Digital



Ceramic spindle/anvil

#### Deep-Throat Type / Dial

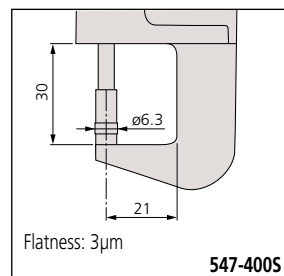


Ceramic spindle/anvil

#### High-Accuracy Type / Digital



### DIMENSIONS



### Technical Data

#### Function of Digital Models

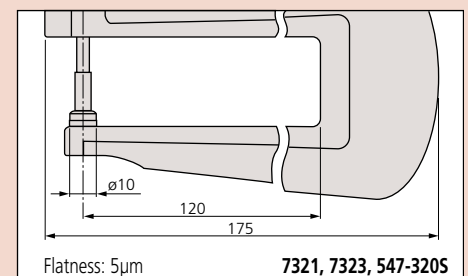
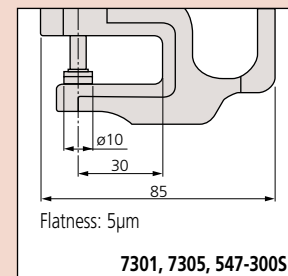
- IDS Types
- ON/OFF
  - Inch / mm Conversion
  - Origin
  - ±Direction Changeover
  - SPC Output
  - Battery Life: 20,000 hrs
  - Power Supply: Silver Oxide Cell (SR-44 1pc.)

#### 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/no-go judgment
- 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)

### Standard Accessories

- 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

#### SPECIFICATIONS

Inch/Metric		Digital Type				
Range	Order No.	Resolution	Accuracy	Measuring Force	Indicator	Spindle/Anvil Material
0 - .47" / 0 - 12mm	<b>547-500S</b>	.0005"/0.01mm	±.001"	1.5N or less	Digimatic IDS	Ceramic
0 - .47" / 0 - 12mm	<b>547-520S</b>	.0005"/0.01mm	±.001"	1.5N or less	Digimatic IDS	Ceramic
0 - .47" / 0 - 12mm	<b>547-526S</b>	.0001"/0.001mm	±.0002"	1.5N or less	Digimatic IDS	Ceramic
0 - .4" / 0 - 10mm	<b>547-300S</b>	.0005"/0.01mm	±.001"	1.5N or less	Digimatic IDC	Ceramic
0 - .4" / 0 - 10mm	<b>547-320S</b>	.0005"/0.01mm	±.001"	1.5N or less	Digimatic IDC	Ceramic
0 - .47" / 0 - 12mm	<b>547-400S</b>	.0005"/0.001mm	±.00015"	3.5N or less	Digimatic IDC	Carbide

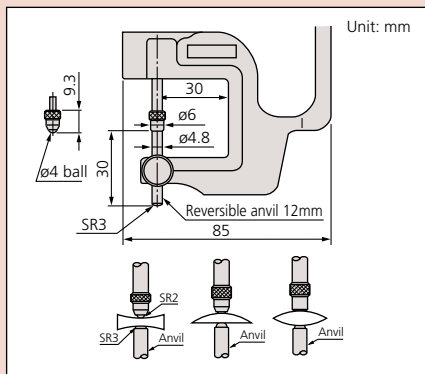
#### Inch Dial Type

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

#### Metric Dial Type

Range	Order No.	Graduation	Accuracy	Measuring Force	Remarks
0 - 1mm	<b>7327</b>	0.001mm	±5µm	1.4N or less	Fine dial reading, ceramic spindle/anvil
0 - 10mm	<b>7301</b>	0.01mm	±15µm	1.4N or less	Standard, ceramic spindle/anvil
0 - 20mm	<b>7305</b>	0.01mm	±20µm	2.0N or less	Standard, ceramic spindle/anvil
0 - 10mm	<b>7321</b>	0.01mm	±15µm	1.4N or less	Deep throat, ceramic spindle/anvil
0 - 20mm	<b>7323</b>	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	<b>547-512S</b>	.0005"/0.01mm	±.001"	1.5N or less	Digimatic IDS	
0 - .4" / 0 - 10mm	<b>547-312S</b>	.0005"/0.01mm	±.001"	1.5N or less	Digimatic IDC	

#### Inch Dial Type

Range	Order No.	Graduation	Accuracy	Measuring Force	Remarks
0 - .5"	<b>7312S</b>	.001"	±.001"	1.4N or less	Lens thickness

#### Metric Dial Type

Range	Order No.	Graduation	Accuracy	Measuring Force	Remarks
0 - 10mm	<b>7313</b>	0.01mm	±15µm	1.4N or less	Lens thickness

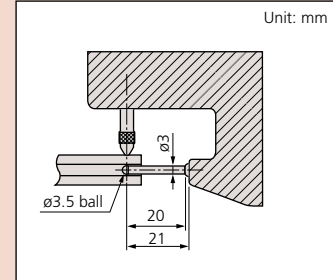
# Thickness Gages

## SERIES 547, 7

### Tube thickness measurement



### DIMENSIONS



### SPECIFICATIONS

Inch/Metric		Digital Type			
Range	Order No.	Resolution	Accuracy	Measuring Force	Indicator
0 - .47" / 0 - 12mm	547-561S	.0005"/0.01mm	±.001"	1.5N or less	Digimatic IDS
0 - .4" / 0 - 12mm	547-361S	.0005"/0.01mm	±.001"	1.5N or less	Digimatic IDC

Inch		Dial Type			
Range	Order No.	Graduation	Accuracy	Measuring Force	Remarks
0 - .5"	7361S	.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

### 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)

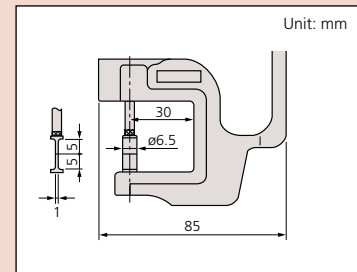
### Standard Accessories

- 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)

### Groove thickness measurement (Blade anvil)



### DIMENSIONS



### SPECIFICATIONS

Inch/Metric		Digital Type			
Range	Order No.	Resolution	Accuracy	Measuring Force	Indicator
0 - .47" / 0 - 12mm	547-516S	.0005"/0.01mm	±.001"	1.5N or less	Digimatic IDS
0 - .47" / 0 - 10mm	547-316S	.0005"/0.01mm	±.001"	1.5N or less	Digimatic IDC

Inch		Dial Type			
Range	Order No.	Graduation	Accuracy	Measuring Force	Remarks
0 - .5"	7316S	.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

# Quick-Mini

## SERIES 700

A compact comparator designed for carrying convenience is 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.
- Notifications for:
  - Low battery voltage
  - Scale surface contamination
  - overflow
- Supplied in fitted plastic case.



700-118-20

### 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. 5 years under normal use

### Function

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

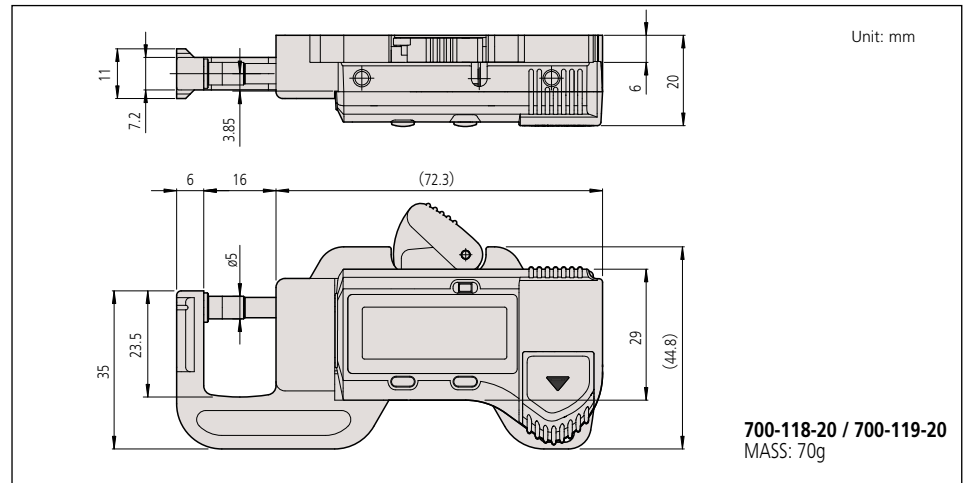


### SPECIFICATIONS

Metric		
Range	Order No.	Accuracy
0 - 12mm	<b>700-119-30</b>	±0.02mm

Inch/Metric		
Range	Order No.	Accuracy
0 - .5"/0 - 12.7mm	<b>700-118-30</b>	±.001"

### DIMENSIONS AND MASS



# Digimatic Caliper Gages

## SERIES 209 — Internal Tube Thickness Measurement

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

### Internal measurement type

209-552



### Technical Data

Accuracy: Refer to the list of specifications  
 Resolution: .001", .0005", or .0002"  
 .01mm, 0.02mm, or 0.005mm  
 Display: LCD Analog / Digital  
 Power Supply: AAA Battery (2 pcs.)  
 Battery life: Approx. 350 hours  
 Measuring Force: 0.9 - 1.8N  
 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

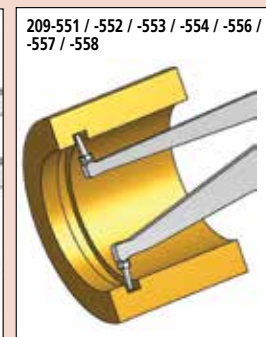
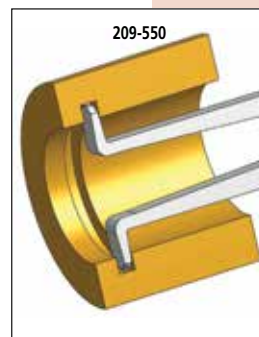
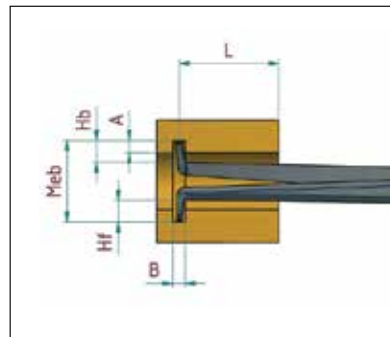
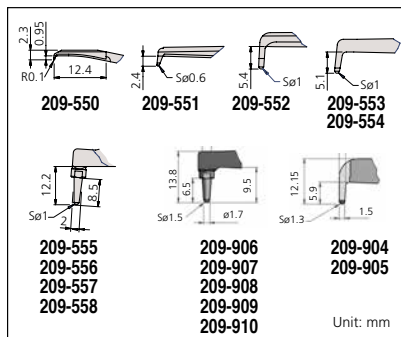
### Optional Accessories

**KPL1961-09**: SPC Adapter  
**937387**: Digimatic cable (1m)  
**965013**: Digimatic cable (2m)  
**KPL8004-50**: Holder for stand

## 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	<b>209-550</b>	.0002" / 0.005mm	.0008" / 0.015mm	.47" / 12mm	.027" / 0.7mm	.023" / 0.5mm	Chisel R .0039" / 0.1mm	225
.20 - .59" / 5 - 15mm	<b>209-551</b>	.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	<b>209-552</b>	.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	<b>209-553</b>	.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	<b>209-554</b>	.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	<b>209-555</b>	.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	<b>209-556</b>	.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	<b>209-557</b>	.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	<b>209-558</b>	.0005" / 0.01mm	.0015" / 0.03mm	3.3" / 85mm	.31" / 8.3mm	.06" / 1.2mm	Ball .04" / 1mm dia.	270
0.51 - 1.69" / 13-43mm	<b>209-904</b>	.001" / 0.02mm	.002" / 0.04mm	5.0" / 127mm	.177" / 4.5mm	.079" / 2.0mm	Ball Ø.05" / 1.3mm	360
1.18 - 2.36" / 30-60mm	<b>209-906</b>	.001" / 0.02mm	.002" / 0.04mm	5.2" / 132mm	.256" / 6.5mm	.098" / 2.5mm	Ball Ø.06" / 1.5mm	370
1.97 - 3.15" / 50-80mm	<b>209-907</b>	.001" / 0.02mm	.002" / 0.04mm	5.2" / 132mm	.335" / 8.5mm	.098" / 2.5mm	Ball Ø.08" / 2mm	370
2.76 - 3.94" / 70-100mm	<b>209-908</b>	.001" / 0.02mm	.002" / 0.04mm	5.2" / 132mm	.335" / 8.5mm	.098" / 2.5mm	Ball Ø.08" / 2mm	375
3.54 - 4.72" / 90-120mm	<b>209-909</b>	.001" / 0.02mm	.002" / 0.04mm	5.2" / 132mm	.335" / 8.5mm	.098" / 2.5mm	Ball Ø.08" / 2mm	380
0.59 - 2.56" / 15-65mm	<b>209-905</b>	.001" / 0.02mm	.0024" / 0.06mm	7.4" / 188mm	.196" / 5mm	.087" / 2.2mm	Ball Ø.06" / 1.5mm	415
1.57 - 3.54" / 40-90mm	<b>209-910</b>	.001" / 0.02mm	.0024" / 0.06mm	7.56" / 192mm	.315" / 8mm	.098" / 2.5mm	Ball Ø.08" / 2mm	420



Edge R 0.1 mm

Ball Ø 0.6mm, Ø 1mm, Ø 1.3mm  
 Ø 1.5mm and Ø 2mm



### Technical Data

Accuracy: Refer to the list of specifications  
 Resolution: .001", .0005", or .0002"  
 0.01mm, 0.02mm, or 0.005mm  
 Display: Analog / Digital  
 Power Supply: AAA Battery (2 pcs.)  
 Battery life: Approx. 350 hours  
 Measuring Force: 0.8 - 1.7N  
 Dust/Water protection level: IP67  
 Provided with inspection certificate.

### Function

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

# Digimatic Caliper Gages

## SERIES 209 — External Tube Thickness Measurement

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

External measurement type

209-572

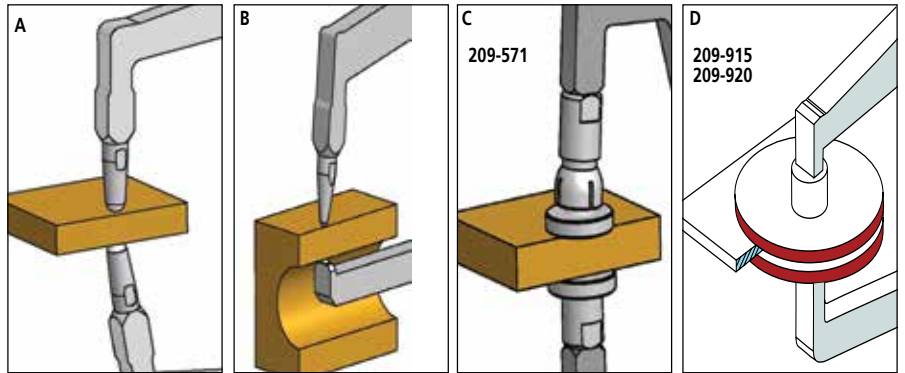
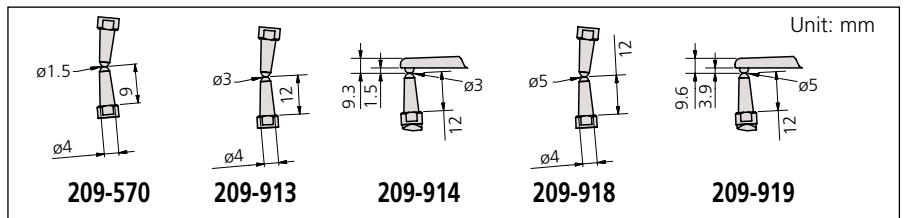
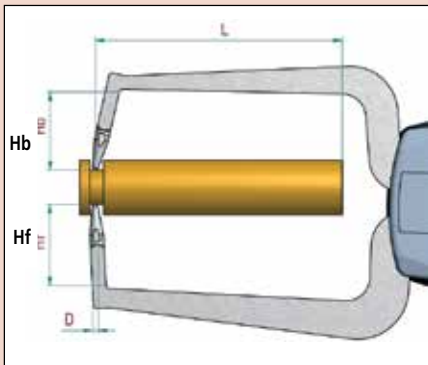


### SPECIFICATIONS

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
0-1.18" / 0-30mm	209-913	.001" / 0.02mm	.002" / 0.04mm	4.5" / 114mm	1.17" / 30mm	1.17" / 30mm	Ball Ø.12" / 3mm A	430
0-1.18" / 0-30mm	209-914	.001" / 0.02mm	.002" / 0.04mm	4.58" / 116mm	1.17" / 30mm	.16" / 4mm	Ball Ø.12" / 3mm B	410
0-1.18" / 0-30mm	209-915	.001" / 0.02mm	.002" / 0.04mm	4.56" / 116mm	1.42" / 36mm	.94" / 24mm	Disc Ø1.97" / 50mm D	430
0-1.97" / 0-50mm	209-918	.001" / 0.02mm	.002" / 0.04mm	6.57" / 167mm	1.17" / 30mm	1.17" / 30mm	Ball Ø.12" / 3mm A	490
0-1.97" / 0-50mm	209-919	.001" / 0.02mm	.0024" / 0.06mm	6.57" / 167mm	1.17" / 30mm	.18" / 4.6mm	Ball Ø.12" / 3mm B	460
0-1.97" / 0-50mm	209-920	.001" / 0.02mm	.003" / 0.08mm	6.57" / 167mm	1.42" / 36mm	.94" / 24mm	Disc Ø1.97" / 50mm both/D	500

### Optional Accessories

- KPL1961-09: SPC Adapter
- 937387 Digimatic cable (1m)
- 965013 Digimatic cable (2m)
- KPL8004-50 Holder for stand



Ball ø 1.5 and 3mm for wall thickness

Ball ø 1.5 and 3mm for min. wall thickness ø3mm / 9mm

Disk ø6mm for flat surfaces

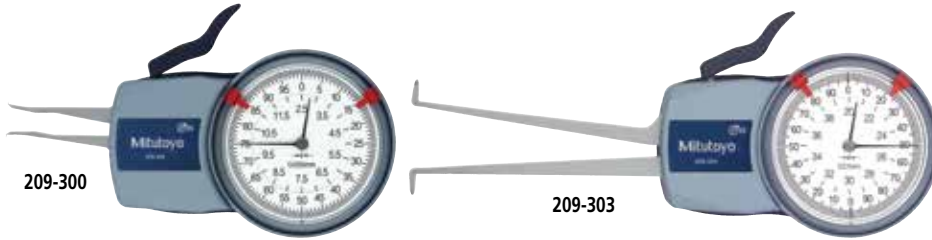
Disk ø50mm for flat surfaces



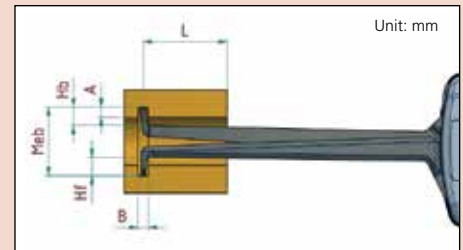
# Dial Caliper Gages

## SERIES 209 — Internal Measurement

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



### DIMENSIONS



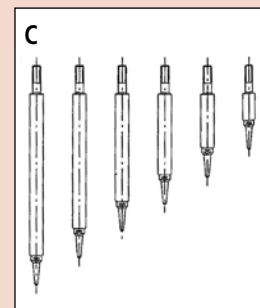
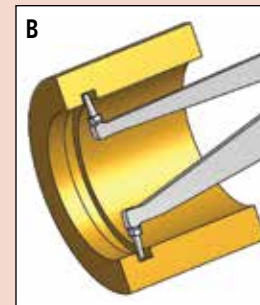
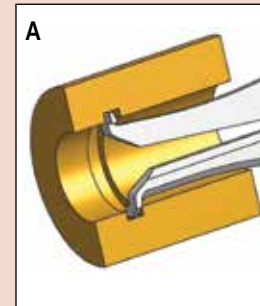
### SPECIFICATIONS

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

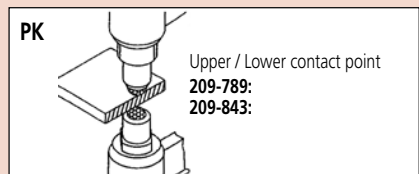
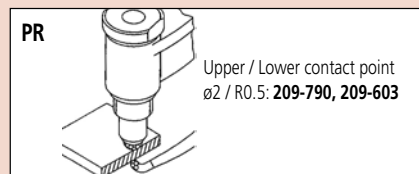
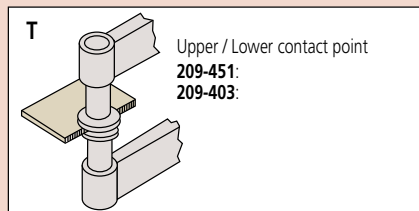
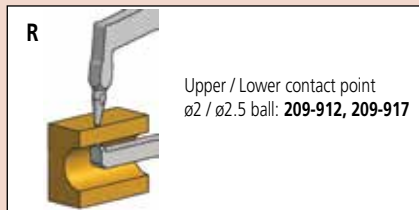
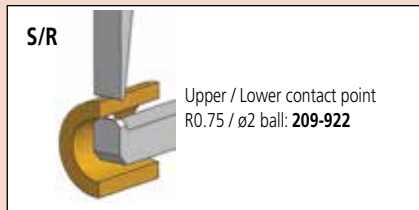
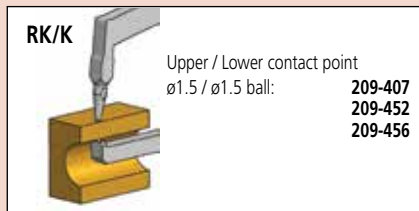
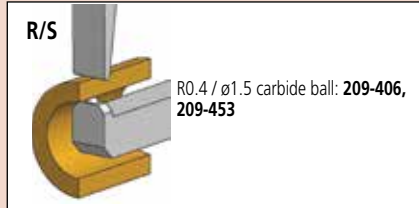
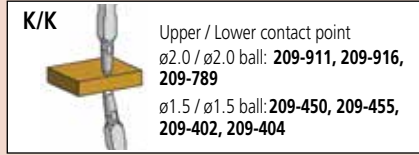
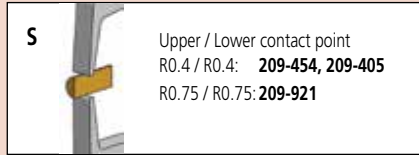
\*Interchangeable contact points (additional anvil 4 pcs.) with ball point .04" dia. These Dial Caliper Gages are used only as comparison gages and should be used along with a setting ring or a micrometer.

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>209-901</b>	0.05mm	±0.05	188	5	1.9	B	ø1.5mm	355
40-90mm	<b>209-902</b>	0.05mm	±0.05	192	8.5	2.4	B	ø2mm	370
70-120mm	<b>209-903</b>	0.05mm	±0.05	192	8.5	2.4	B	ø2mm	380

\*Interchangeable contact point (additional anvil 5pcs.) with ball point 1mm dia. These Dial Caliper Gages are used only as comparison gages and should be used along with a setting ring or a micrometer.

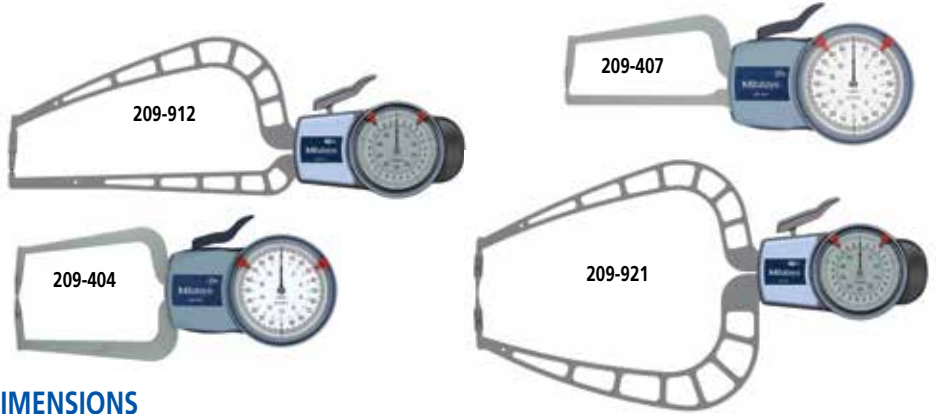


## Type of Contact Points

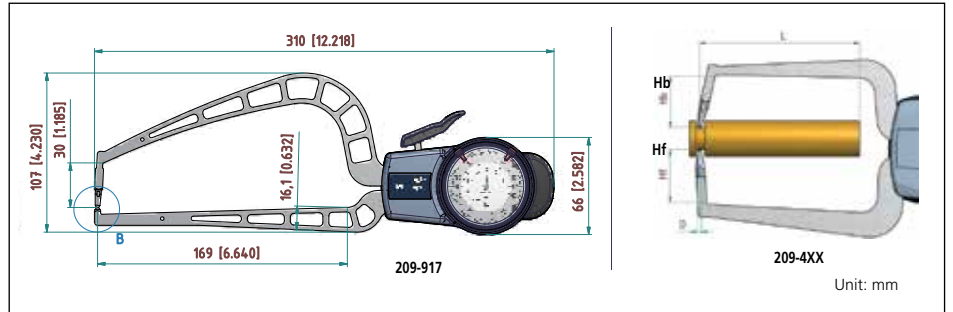


# Dial Caliper Gages

## SERIES 209 — External Measurement



## DIMENSIONS



## SPECIFICATIONS

Measuring Range	Order No.	Graduation	Accuracy	Max. Measuring Depth L	Length Hb	Length Hf	Measuring Contact Type	Size (mm)	Mass (g)
0 - .40"	209-450	.0002"	± .0008"	1.37"	.75"	.75"	K/K	ø1.5	170
0 - .40"	209-451	.0002"	± .001"	1.37"	.85"	.58"	T	ø6	175
0 - .40"	209-452	.0002"	± .0008"	1.37"	.75"	.035"	RK/K	ø1.5	165
0 - .40"	209-453	.0002"	± .0008"	1.37"	.75"	.035"	R/S	Chisel R0.4, ø1.5	165
0 - .50"	209-789	.005"	± .005"	1.38"	-	-	PK	ø2, Chisel R0.5	40
0 - .50"	209-790	.005"	± .005"	1.38"	-	-	PR	ø2	40
0 - .80"	209-454	.0005"	± .0015"	3.2"	.97"	.97"	S	Chisel R0.4	210
0 - .80"	209-455	.0005"	± .0015"	3.2"	.97"	.97"	K/K	ø1.5	210
0 - .80"	209-456	.0005"	± .0015"	3.2"	.97"	.10"	RK/K	ø1.5	200
0 - .80"	209-457	.0005"	± .0015"	3.2"	.97"	.10"	R/S	Chisel R0.4, ø1.5	200
0 - 2.0"	209-916	.001"	± .002"	6.6"	1.2"	1.2"	K/K	ø3	430
0 - 2.0"	209-917	.001"	± .002"	6.6"	1.2"	.18"	RK/K	ø3	400

## Metric

Measuring Range	Order No.	Graduation	Accuracy	Max. Measuring Depth L	Length Hb	Length Hf	Measuring Contact	Size (mm)	Mass (g)
0 - 10mm	209-402	0.005mm	±0.015mm	35mm	19.1mm	18.6mm	K/K	ø1.5	240
0 - 10mm	209-403	0.005mm	±0.02mm	35mm	21.7mm	14.8mm	T	ø6	175
0 - 20mm	209-404	0.01mm	±0.03mm	85mm	7mm	24.6mm	K/K	ø1.5	210
0 - 20mm	209-405	0.01mm	±0.03mm	85mm	7mm	24.6mm	S	R 0.4	210
0 - 20mm	209-406	0.01mm	±0.03mm	80mm	7mm	2.5mm	R/S	Chisel R0.4, ø1.5	200
0 - 20mm	209-407	0.01mm	±0.03mm	80mm	7mm	2.5mm	RK/K	ø1.5	200
0 - 10mm	209-843	0.1mm	±0.1mm	36mm	-	-	PK	ø2, Chisel R0.5	40
0 - 10mm	209-603	0.1mm	±0.1mm	33mm	-	-	PR	ø2	40
0 - 50mm	209-911	0.05mm	±0.05mm	167mm	30mm	30mm	KK	Ball ø3mm	430
0 - 50mm	209-912	0.05mm	±0.05mm	169mm	30mm	4.5mm	RK/K	Ball ø3mm	400
0 - 50mm	209-921	0.05mm	±0.05mm	167mm	30mm	30mm	S	Chisel R0.75	490
0 - 50mm	209-922	0.05mm	±0.05mm	169mm	30mm	4.5mm	R/S	ø3, Chisel R0.75	400



# 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

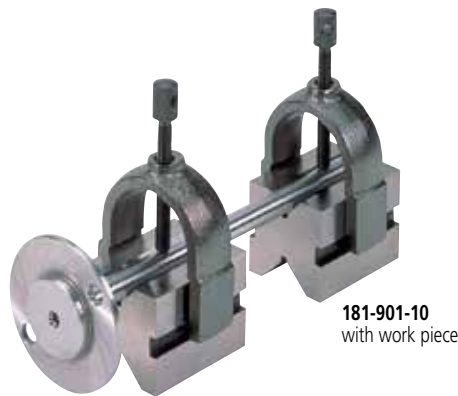
Range	Order No.	Graduation
10mN - 100mN	546-133	5mN
30mN - 300mN	546-134	10mN
0.06N - 0.5N	546-135	0.02N
0.1N - 1N	546-136	0.05N
0.15N - 1.5N	546-137	0.05N
0.3N - 3N	546-138	0.1N
0.6N - 5N	546-139	0.2N

# V-Block Sets

## SERIES 181

### FEATURES

- Two V-blocks per set.
- Magnetic type is available. (The magnetic 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

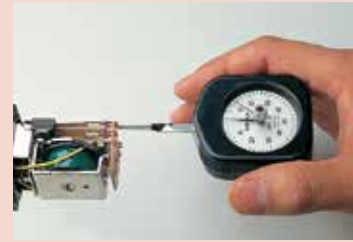
#### Metric

Max. workpiece dia.	Order No.	Magnetic Pull	Remarks
50mm	181-146	60 kg	1 Piece

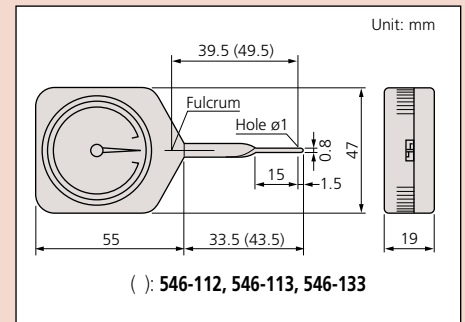


### Application

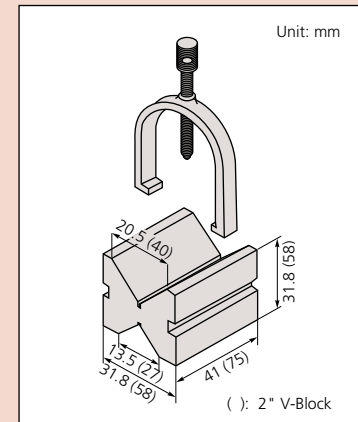
Measuring contact force of relay



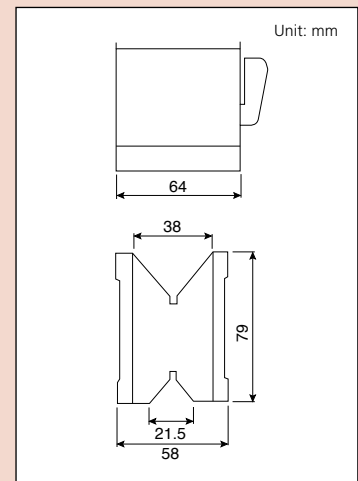
### DIMENSIONS



### DIMENSIONS



### DIMENSIONS



# Dial Snap Gages

## SERIES 201

### FEATURES

- Designed for quick go/no-go judgment of diameters of cylinders and shafts in machining processes.
- Dial or Digital indicators are 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

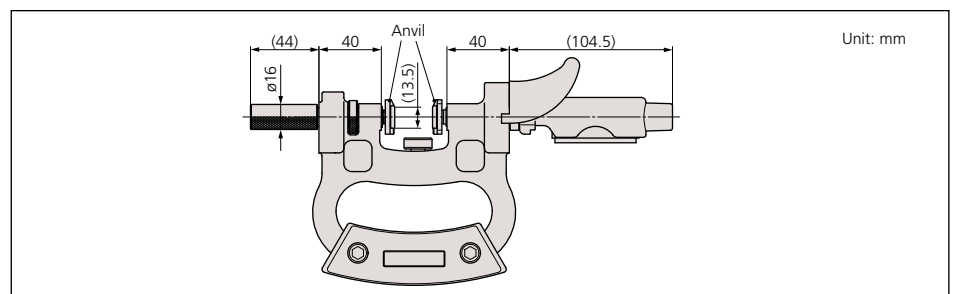
**Metric** Gage stem diameter 8mm

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

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

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

### DIMENSIONS



# Dial/Test Indicator & Magnetic Stand Sets

## SERIES 7



513-907

### SPECIFICATIONS

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

\*Supplied with collar 02AZC291



64PKA079

# 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.



7031B



7032B



7033B



7012-10

7014-10 / 7014E-10  
No magnet force On/Off

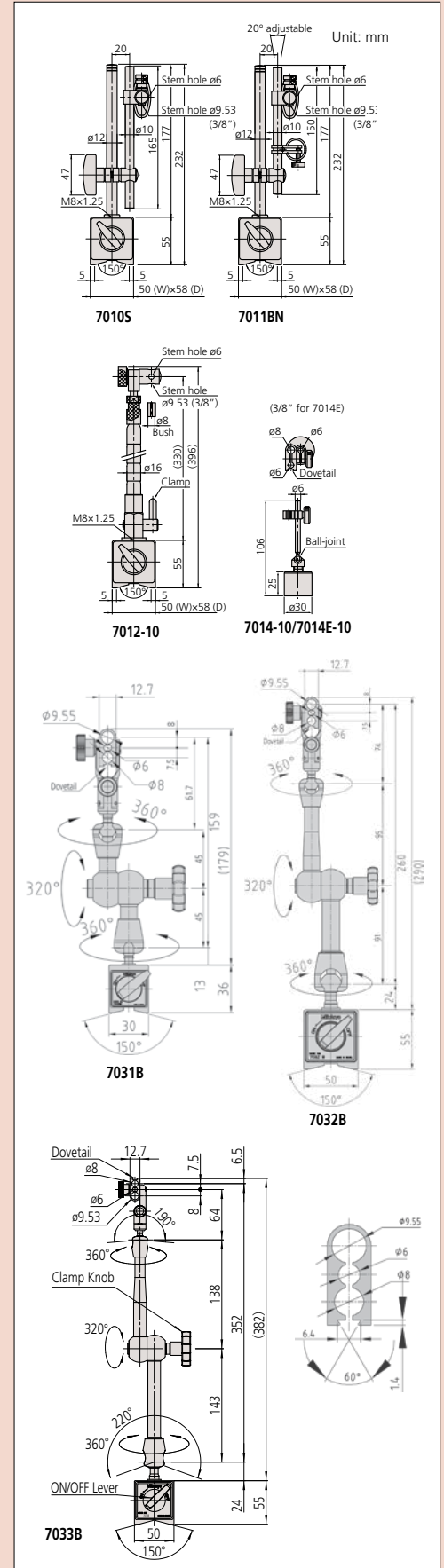


7010S



7011BN

## DIMENSIONS



### SPECIFICATIONS

Order No.	Description	Applicable holding stem dia.	Dovetail groove	Remarks
7010S	Magnetic stand	$\phi 8\text{mm}^*$ , $\phi 9.53\text{mm}$ (3/8")	—	—
7011BN	Magnetic stand	$\phi 6\text{mm}$ , $\phi 8\text{mm}^*$ , $\phi 9.53\text{mm}$ (3/8")	—	With fine adjustment
7011S-10	Magnetic stand	$\phi 4\text{mm}$ , $\phi 8\text{mm}$ , $\phi 9.53\text{mm}$ (3/8")	—	With fine adjustment
7012-10	Magnetic flexi-stand	$\phi 6\text{mm}$ , $\phi 8\text{mm}^*$ , $\phi 9.53\text{mm}$ (3/8")	—	For dial test indicator
7014-10	Mini magnetic stand	$\phi 6\text{mm}$ , $\phi 8\text{mm}$	Provided	Without magnet ON/OFF
7014E-10	Mini magnetic stand	$\phi 6\text{mm}$ , $\phi 8\text{mm}^*$ , $\phi 9.53\text{mm}$ (3/8")	Provided	Without magnet ON/OFF
7031B	Universal magnetic stand	$\phi 6\text{mm}$ , $\phi 8\text{mm}$ , $\phi 9.53\text{mm}$ (3/8")	Provided	With mechanical locking system
7032B	Universal magnetic stand	$\phi 6\text{mm}$ , $\phi 8\text{mm}$ , $\phi 9.53\text{mm}$ (3/8")	Provided	With mechanical locking system
7033B	Universal magnetic stand	$\phi 6\text{mm}$ , $\phi 8\text{mm}$ , $\phi 9.53\text{mm}$ (3/8")	Provided	With mechanical locking system

\*Supplied with collar 02AZC291

# Dial Gage Stands

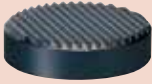
## SERIES 7

### FEATURES

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

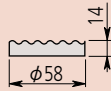
### Optional Accessories

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



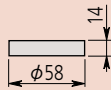
No. 101462

Hardened steel



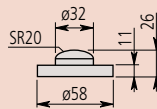
No. 101461

Hardened steel



No. 101463

Hardened steel



7001-10  
(with  $\phi 58$ mm serrated anvil)



7002-10  
(with  $\phi 58$ mm flat anvil)

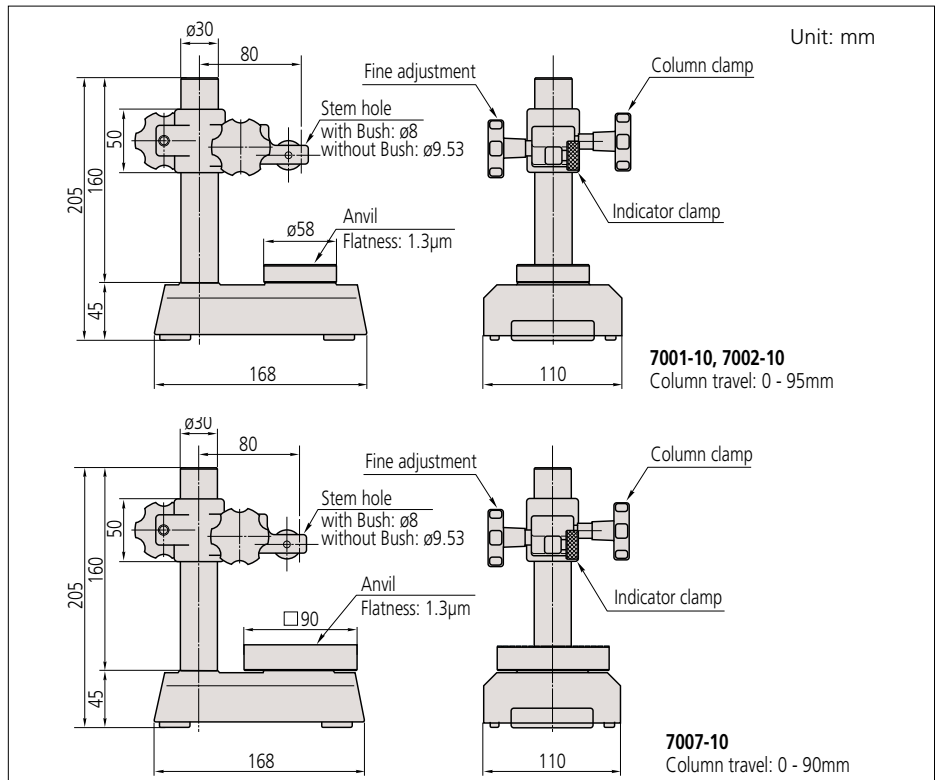


7007-10  
(with 90mm square anvil)

### SPECIFICATIONS

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

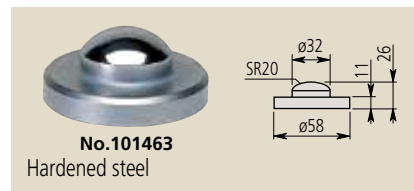
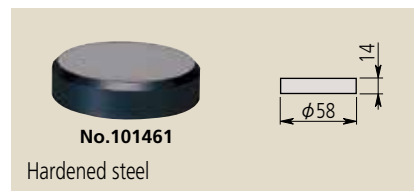


519-109-10  
(with a serrated anvil)

### Optional Accessories

**101461:** Hardened-steel flat anvil

**101463:** Hardened-steel domed anvil

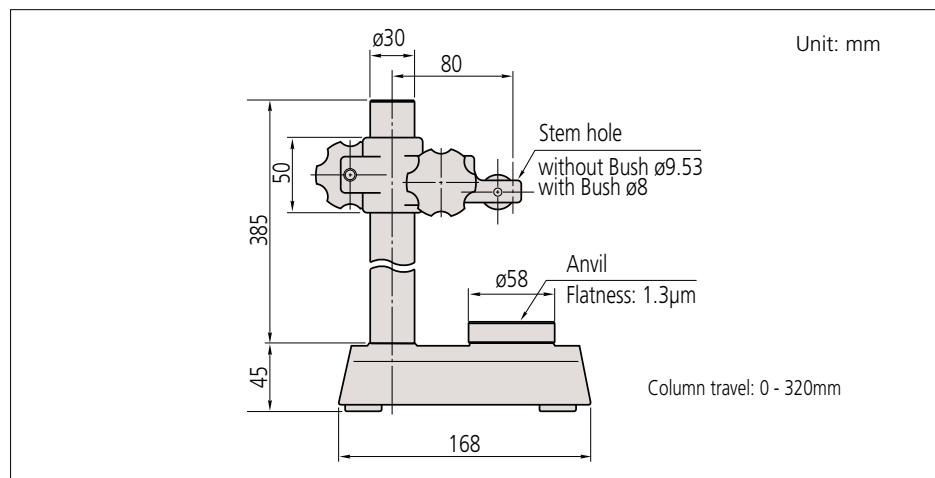


### SPECIFICATIONS

Metric

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

### DIMENSIONS



# Granite Comparator Stands

## SERIES 215

### FEATURES

- 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

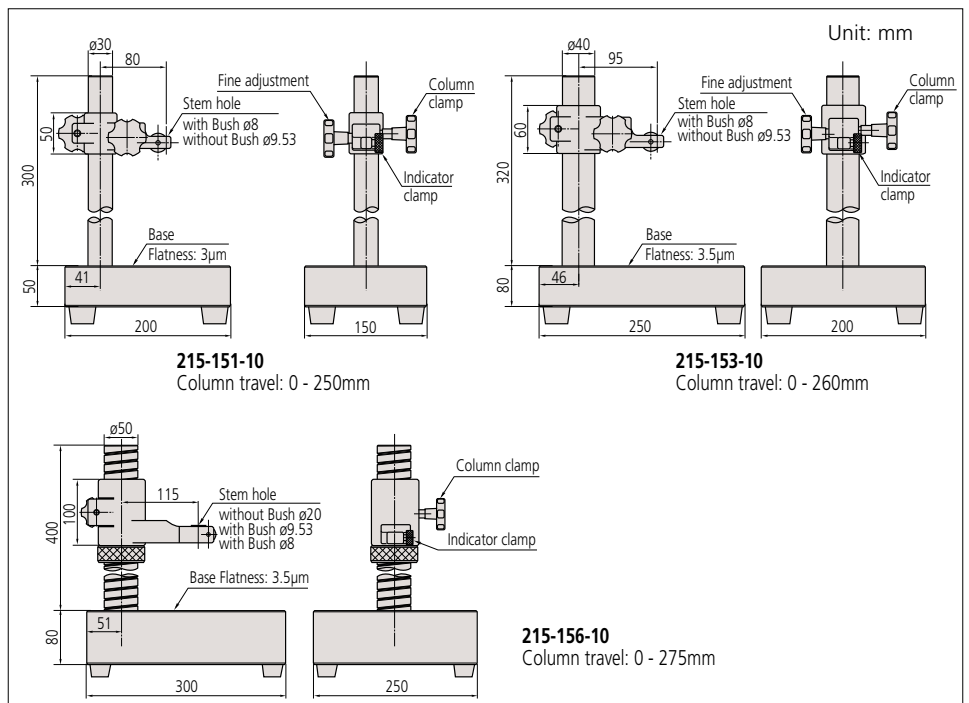
21JAA329:  $\varnothing 8$ mm bush  
 21JAA330:  $\varnothing 9.53$ mm bush  
 21JAA331:  $\varnothing 15$ mm bush  
 only available for 215-156-10



### 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 stable, cast-iron base which enables precise measurement.
- The partially serrated anvil prevents 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 110x110mm are supplied with **215-405-10**, and 150x150mm with **215-505-10** models.



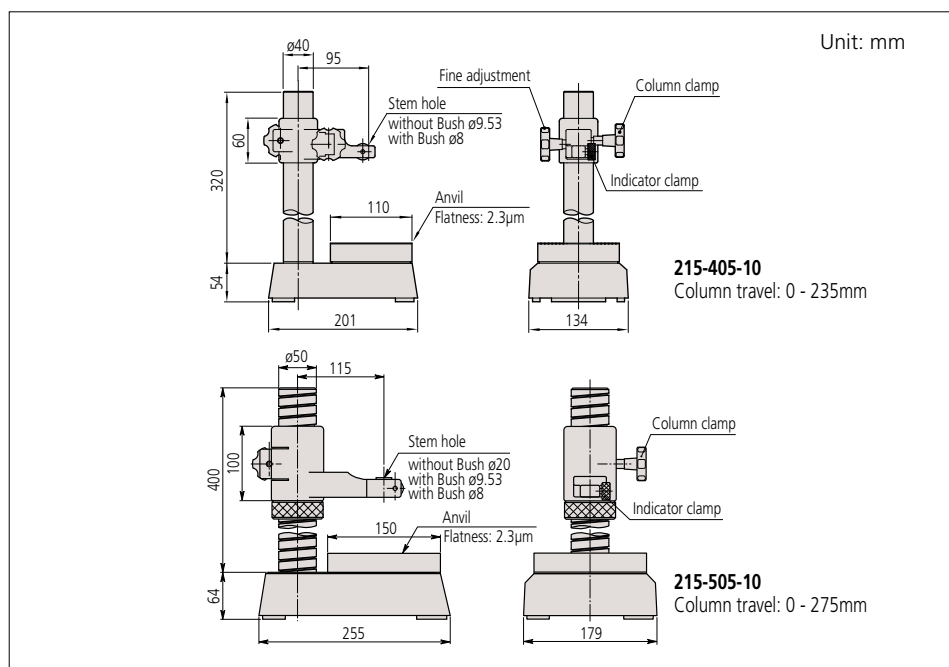
215-405-10

### SPECIFICATIONS

Order No.	Square anvil size (W x D)	Column travel	Stem hole	Remarks
215-405-10	110 x 110mm	235mm	ø8mm, ø9.53mm	With fine adjustment of 1mm range
215-505-10	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



Application example using Digimatic Indicator ID-H.

### 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 on the stands, it is possible to satisfy all manners of measuring assignment. The rigid granite base is free from burrs, pileups and rust, thereby preventing deterioration over time.

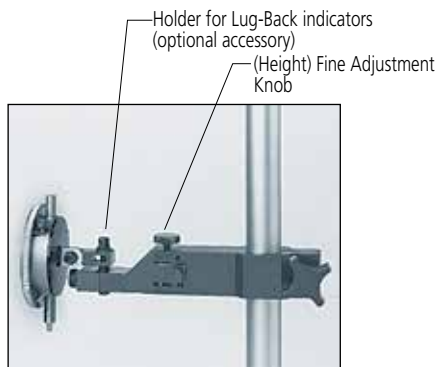
#### Optional Accessories

012580: Holder for Lug-Back indicator



### 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



# MITUTOYO INSTITUTE OF METROLOGY



The Mitutoyo Institute of Metrology, the educational department of Mitutoyo America, provides unrivaled educational seminars, courses and on-demand resources for a wide variety of metrology and measurement-related topics such as basic inspection techniques, principles of dimensional metrology, calibration methods and GD&T. This comprehensive curriculum meets the educational needs of manufacturing, quality and measurement professionals. These popular courses are scheduled regularly throughout the year.

The calibration expertise of Mitutoyo America is now available on-demand for anybody through our On-Demand Portal. Here, you can access metrology educational materials that leverages the available American National Standards in dimensional metrology.

Mitutoyo now offers online courses introducing important concepts in general calibration of micrometers and calipers. Mitutoyo also offers the first certified credentials in dimensional calibration in the United States, addressing both theory (Level 1 credential) and hands-on performance skills (Level 2 credential). These credentials satisfy auditors' requirements.

If you have any questions or would like more information regarding Mitutoyo Institute of Metrology, contact: [MIM@Mitutoyo.com](mailto:MIM@Mitutoyo.com)

