

Precision Measuring Tools

Catalog No. PMT 2005

Special Edition Catalog



Mitutoyo

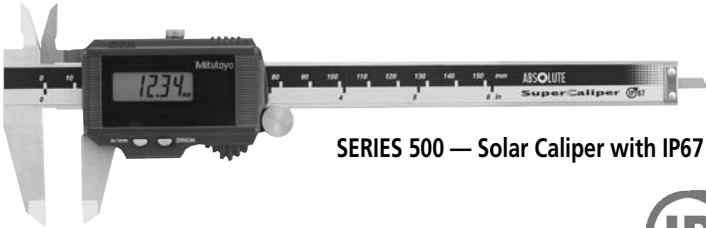
info@mitutoyo.ca
www.mitutoyo.ca

Table of Contents

Calipers	Page 1-7
Micrometers	8-12
Micrometer Heads	12
Inside Micrometers	13
Indicators	14-23
Gauge Stands	24-25
Linear Gauges	26
Height Gauges	27-29
Bore Gauges & Holtests	30-34
Depth Gauges	35-36
Gauge Blocks	37
Surface Plates	38
Thickness Gauges	39-40
Depth Micrometers	41
Combination Sets	42
Input Tool	43
Surface Testers	44-45
Profile Projectors	46-47
Digital Readout (DRO)	48-49

FEATURES

- World's first! Absolute solar coolant proof caliper with IP67 protection rating.
- Absolute measuring system.
- Protection cover for surface panel improves impact resistance.
- Eliminates the need for batteries. Solar powered caliper will operate for 70 minutes when charged at 500 lux for 60 minutes. Operates even in low light conditions (60 lux and up).



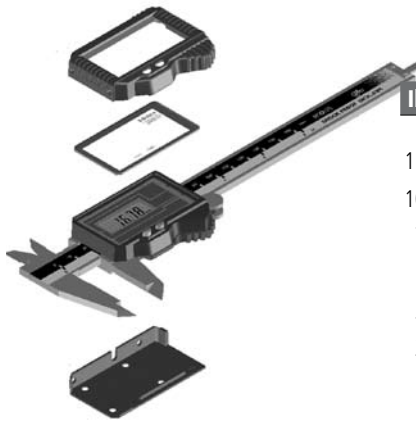
SERIES 500 — Solar Caliper with IP67 Protection



SPECIFICATIONS

Inch/Metric		Resolution	Accuracy	Remarks
Range 0 - 6" (0 - 150mm)	500-784	.0005"/0.01mm	±.001"	No data output
	500-786	.0005"/0.01mm	±.001"	With data output
Range 0 - 8" (0 - 200mm)	500-785	.0005"/0.01mm	±.001"	No data output
	500-787	.0005"/0.01mm	±.001"	With data output

Excluding quantizing error



Technical Data

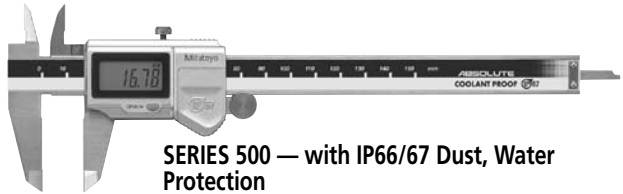
- Display:** LCD
- Functions:** Origin, inch/mm conversion, with/without data output
- Battery:** Solar battery (60 Lux and up for operation)
- Max. response speed:** Unlimited
- Alarm:** EEPROM error, stained
- Operating temperature:** 0°C to 40°C

Illuminance	Possible Work Site
1500	
1000	Design room, drawing room (Precise work)
750	
500	Conference room, Control room (General manufacture process)
300	
200	Machine room, Electrical room, Auditorium (Easy operation work)
150	
100	Corridor, Passageway, Stairs (Manufacture work is difficult)
75	
50	
30	Emergency staircase, Warehouse
20	

ABSOLUTE

FEATURES

- Can be used in workshop conditions exposed to coolant, water, dust or oil.
- Easy to use - no need to wipe or clean the scale.
- Advanced design styling.
- Incorporates absolute measurement system.
- Automatic power on/off.
- Data output function.



SERIES 500 — with IP66/67 Dust, Water Protection

SPECIFICATIONS

Inch/Metric		IP67 model		
Range	Order No.	Resolution	Accuracy	Remarks
0 - 6" (0 - 150mm)	500-752	.0005"/0.01mm	±.001"	With thumb roller
	500-762	.0005"/0.01mm	±.001"	With data output and thumb roller
0 - 8" (0 - 200mm)	500-753	.0005"/0.01mm	±.001"	With thumb roller
	500-763	.0005"/0.01mm	±.001"	With data output and thumb roller

Excluding quantizing error

Inch/Metric		IP66 model		
Range	Order No.	Resolution	Accuracy	Remarks
0 - 6" (0 - 150mm)	500-672	.0005"/0.01mm	±.001"	With thumb roller
	500-682	.0005"/0.01mm	±.001"	With data output and thumb roller
0 - 8" (0 - 200mm)	500-673	.0005"/0.01mm	±.001"	With thumb roller
	500-683	.0005"/0.01mm	±.001"	With data output and thumb roller
0 - 12" (0 - 300mm)	500-674	.0005"/0.01mm	±.001" (≤8")	With thumb roller
	500-684	.0005"/0.01mm	±.0015" (>8")	With data output and thumb roller

Excluding quantizing error

ABSOLUTE



Technical Data

- Display:** LCD
- Functions:** Origin-Set, Automatic power on/off, inch/mm conversion (inch/mm type)/Data output
- Battery:** SR44 (2 pc.) (938882)
- Battery life:** Approx. 1.5 years under normal use
- Max. response speed:** Unlimited
- Dust/Water protection level:** Conforming to IP66/IP67
- Alarm:** Low voltage, counting value composition error
- Operating temperature:** 0°C to 40°C

FEATURES

- Large and clear LCD readout.
- ZERO/ABS key: Allows the display to be Zero-Set at any slider position along the scale for incremental comparison measurements. This switch will also allow return to the absolute (ABS) coordinate and display of the true position from the origin point.
- With Data output function.
- Data Hold Unit (959143) is optional.



SERIES 500 — with data output function

SPECIFICATIONS

Inch/Metric					
Range	Order No.	Resolution	Accuracy	Remarks	
0 - 4" / 0 - 100mm	500-170-20	.0005"/0.01mm	±.0010"	With depth measuring rod (ø3/40")	
0 - 6" / 0 - 150mm	500-171	.0005"/0.01mm	±.0010"	With depth measuring bar (blade)	
	500-174*	.0005"/0.01mm	±.0010"	With depth measuring bar (blade)	
	500-155**	.0005"/0.01mm	±.0010"	With depth measuring bar (blade)	
	500-178-20	.0005"/0.01mm	±.0010"	With depth measuring rod (ø3/40")	
0 - 8" / 0 - 200mm	500-172-20	.0005"/0.01mm	±.0010"	With depth measuring bar (blade)	
	500-176-20*	.0005"/0.01mm	±.0010"	With depth measuring bar (blade)	
	500-177-20**	.0005"/0.01mm	±.0010"	With depth measuring bar (blade)	
0 - 12" / 0 - 300mm	500-173	.0005"/0.01mm	±.0015"	With depth measuring bar (blade)	
	500-167*	.0005"/0.01mm	±.0015"	With depth measuring bar (blade)	
	500-168**	.0005"/0.01mm	±.0015"	With depth measuring bar (blade)	
0 - 18" / 0 - 450mm	500-505-10	.0005"/0.01mm	±.0020"	---	
0 - 24" / 0 - 600mm	500-506-10	.0005"/0.01mm	±.0020"	---	
0 - 40" / 0 - 1000mm	500-507-10	.0005"/0.01mm	±.0030"	---	

*Provided with carbide-tipped jaws for OD measurement.

Excluding quantizing error

**Provided with carbide-tipped jaws for OD & ID measurements.

Technical Data

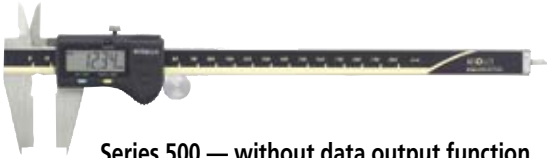
- Display:** LCD
- Functions:** Origin-Set, Zero-Set, power on/off, inch/mm conversion (inch/mm type) SPC data output, data hold (optional)
- Battery:** SR44 (1 pc.) **(938882)**
- Battery life:** Approx. 3.5 years under normal use
- Max. response speed:** Unlimited
- Alarm:** Low battery voltage, scale contamination, counting value composition error

Operating temperature: 0°C to 40°C

ABSOLUTE

FEATURES

- Large and clear LCD readout.
- Low price due to the design featuring only essential functions.
- ZERO/ABS key: Allows the display to be Zero-Set at any slider position along the scale for incremental comparison measurements. This switch will also allow return to the absolute mode and display of the true position from the origin point.



Series 500 — without data output function

SPECIFICATIONS

Inch/Metric		Order No.	Resolution	Accuracy	Remarks
0 - 4" / 0 - 100mm	500-195-20	.0005"/0.01mm	±.0010"	With depth rod (ø3/40")	
0 - 6" / 0 - 150mm	500-196-20	.0005"/0.01mm	±.0010"	With depth measuring bar (blade)	
	500-159-20*	.0005"/0.01mm	±.0010"	With depth measuring bar (blade)	
	500-160-20**	.0005"/0.01mm	±.0010"	With depth measuring bar (blade)	
0 - 8" / 0 - 200mm	500-197-20	.0005"/0.01mm	±.0010"	With depth measuring bar (blade)	
	500-163-20*	.0005"/0.01mm	±.0010"	With depth measuring bar (blade)	
	500-164-20**	.0005"/0.01mm	±.0010"	With depth measuring bar (blade)	
0 - 12" / 0 - 300mm	500-193	.0005"/0.01mm	±.0015"	With depth measuring bar (blade)	
	500-165*	.0005"/0.01mm	±.0015"	With depth measuring bar (blade)	
	500-166**	.0005"/0.01mm	±.0015"	With depth measuring bar (blade)	

*Provided with carbide-tipped jaws for OD measurement.

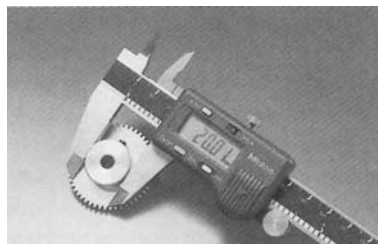
**Provided with carbide-tipped jaws for OD & ID measurements.

Excluding quantizing error

Technical Data

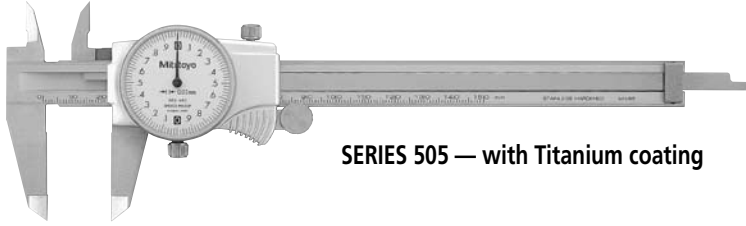
- Display:** LCD
- Functions:** Origin-Set, Zero-Set, power on/off, inch/mm conversion (inch/mm type)
- Battery:** SR44 (1 pc.) (938882)
- Battery life:** Approx. 20,000 hours under normal use
- Max. response speed:** Unlimited
- Alarm:** Low voltage, scale contamination, counting value composition error
- Operating temperature:** 0°C to 40°C

ABSOLUTE



FEATURES

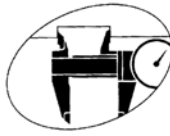
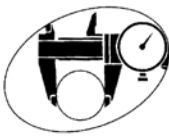
- New designed dial movement for ultra smooth sliding and high shock protection.
- Titanium coating is applied to the sliding surface to strengthen the durability (except for 0 - 300mm and 0 - 12" model).
- Can measure OD, ID, depth, and steps.
- Clamping screw atop the slider.
- Special models available with carbide-tipped OD and ID jaws.



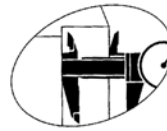
SERIES 505 — with Titanium coating

"Quadi" (4-way) Measurement

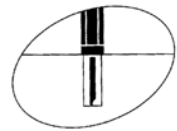
1. Outside measurement 2. Inside Measurement



3. Step measurement



4. Depth measurement



SPECIFICATIONS

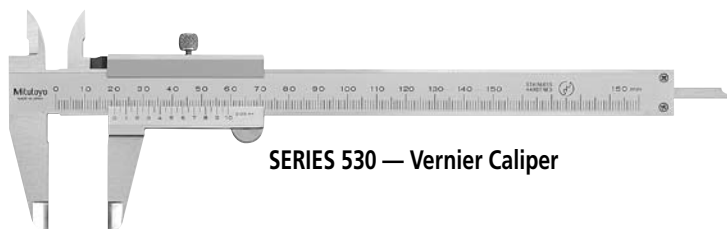
Inch				
Range	Order No.	Dial reading	Accuracy	Remarks
0 - 4"	505-674	.001", .1"/rev.	±.001"	With depth bar
0 - 6"	505-689	.001", .1"/rev.	±.001"	With depth bar
	505-675	.001", .1"/rev.	±.001"	With depth bar
	505-708*	.001", .1"/rev.	±.001"	With depth bar
	505-712**	.001", .1"/rev.	±.001"	With depth bar
	505-690	.001", .1"/rev.	±.002"	With depth bar
0 - 8"	505-676	.001", .1"/rev.	±.002"	With depth bar
	505-709*	.001", .1"/rev.	±.002"	With depth bar
	505-713**	.001", .1"/rev.	±.002"	With depth bar
	505-720	.001", .2"/rev.	±.002"	With depth bar
0 - 12"	505-677	.001", .1"/rev.	±.002"	With depth bar
	505-721*	.001", .2"/rev.	±.002"	With depth bar
	505-710*	.001", .1"/rev.	±.002"	With depth bar
	505-714**	.001", .1"/rev.	±.002"	With depth bar

*Provided with carbide-tipped jaws for OD measurement.

**Provided with carbide-tipped jaws for OD & ID measurements.

FEATURES

- Plain and basic design.
- Can measure OD, ID, depth, and steps.
- The small vernier face angle (14°) provides easy reading.



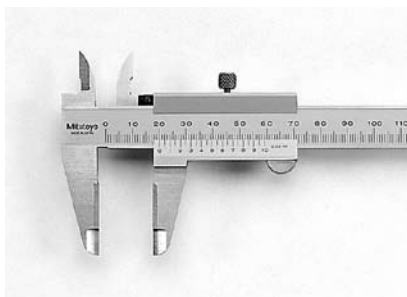
SERIES 530 — Vernier Caliper

- Clamping screw atop the slider.
- Carbide-tipped jaw type calipers are also available.

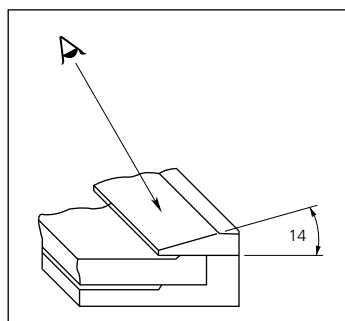
SPECIFICATIONS

Metric/Inch					
Range	Order No.	Vernier reading	Accuracy	Remarks	
0 - 150mm (0 - 6")	530-104	0.05mm, 1/128"	± 0.05 mm	With depth measuring bar (blade)	
	530-316*	0.05mm, 1/128"	± 0.05 mm	With depth measuring bar (blade)	
	530-312	0.02mm, .001"	± 0.03 mm	With depth measuring bar (blade)	
0 - 200mm (0 - 8")	530-114	0.05mm, 1/128"	± 0.05 mm	With depth measuring bar (blade)	
	530-118	0.02mm, .001"	± 0.03 mm	With depth measuring bar (blade)	
0 - 300mm (0 - 12")	530-115	0.05mm, 1/128"	± 0.08 mm	With depth measuring bar (blade)	
	530-119	0.02mm, .001"	± 0.04 mm	With depth measuring bar (blade)	

*Clamping screw below the slider.



Carbide-tipped jaw type



14° angle provides easy reading

FEATURES

- The slider moves only when the spring loaded thumb clamp is depressed.
- Can measure OD, ID, depth, and steps.



SERIES 531 — with Thumb Clamp

SPECIFICATIONS

Inch				
Range	Order No.	Vernier reading	Accuracy	Remarks
0 - 6"	531-113	.001", 1/128"	±0.015"	With depth bar
0 - 8"	531-114	.001", 1/128"	±0.015"	With depth bar

Metric/Inch				
Range	Order No.	Vernier reading	Accuracy	Remarks
0 - 150mm (0 - 6")	531-107	0.05mm, 1/128"	±0.05mm	With depth bar
	531-122*	0.05mm, 1/128"	±0.05mm	With depth bar
	531-128	0.02mm, .001"	±0.03mm	With depth bar
0 - 200mm (0 - 8")	531-108	0.05mm, 1/128"	±0.05mm	With depth bar
	531-129	0.02mm, .001"	±0.03mm	With depth bar
0 - 300mm (0 - 12")	531-109	0.05mm, 1/128"	±0.08mm	With depth bar
	531-112	0.02mm, .001"	±0.04mm	With depth bar

*mm/inch conversion table is labeled on the underside of slider.

FEATURES

- Provided with a fine-adjustment carriage to feed the slider finely.
- Can measure OD, ID, depth, and steps.



SERIES 532 — with Fine Adjustment

SPECIFICATIONS

Inch				
Range	Order No.	Vernier reading	Accuracy	Remarks
0 - 5"	532-104	.001"	1/128"	±.001" With depth bar
0 - 7"	532-105	.001"	1/128"	±.001" With depth bar
0 - 11"	532-106	.001"	1/128"	±.0015" With depth bar

Metric/Inch				
Range	Order No.	Vernier reading	Accuracy	Remarks
0 - 130mm (0 - 5")	532-119	0.02mm, .001"	±0.03mm	With depth bar
0 - 180mm (0 - 7")	532-120	0.02mm, .001"	±0.03mm	With depth bar
0 - 280mm (0 - 11")	532-121	0.02mm, .001"	±0.04mm	With depth bar

FEATURES

- IP65 protection level, enabling use in environments exposed to cutting oil, etc*.
- Measurement data output function is available with a water-resistant connection cable.
- Oil-resistant materials are used in all plastic components.
- Auto power ON/OFF function.
- $\pm 1 \mu\text{m}$ instrumental error (75 mm/3" or less range models)
- Certificate of Conformance is included. (50mm/2" or less range models)

*Anti-corrosion treatment is required after use.



IP65

Technical Data

- Display:** LCD
- Functions:** Origin-Set, Zero-Setting, Data hold, Automatic power on/off, inch/mm conversion (inch/mm type only), Data output
- Battery:** SR44 (1 pc.) (938882)
- Battery life:** Approx. 1-2 years under normal use
- Maximum response speed:** Unlimited
- Dust/Water protection level:** Conforming to IP65
- Alarm:** Low voltage, counting value composition error
- Operating temperature:** 0°C to 40°C

SPECIFICATIONS

Range	Inch/Metric _____ With data output			Resolution	Accuracy
	Order No. (ratchet stop)	(ratchet thimble)	(friction thimble)		
0 - 1"	293-330	293-334	293-335	.00005"/0.001mm	$\pm 0.0005"$
1" - 2"	293-331		293-336	.00005"/0.001mm	$\pm 0.0005"$
2" - 3"	293-332			.00005"/0.001mm	$\pm 0.0005"$
3" - 4"	293-333			.00005"/0.001mm	$\pm 0.001"$
4" - 5"	293-350			.00005"/0.001mm	$\pm 0.001"$
5" - 6"	293-351			.00005"/0.001mm	$\pm 0.001"$
6" - 7"	293-352			.00005"/0.001mm	$\pm 0.0015"$
7" - 8"	293-353			.00005"/0.001mm	$\pm 0.0015"$
8" - 9"	293-354			.00005"/0.001mm	$\pm 0.0015"$
9" - 10"	293-355			.00005"/0.001mm	$\pm 0.002"$
10" - 11"	293-356			.00005"/0.001mm	$\pm 0.002"$
11" - 12"	293-357			.00005"/0.001mm	$\pm 0.002"$

Range	Inch/Metric _____ Without data output			Resolution	Accuracy
	Order No. (ratchet stop)	(ratchet thimble)	(friction thimble)		
0 - 1"	293-340	293-344	293-348	.00005"/0.001mm	$\pm 0.0005"$
1" - 2"	293-341	293-345		.00005"/0.001mm	$\pm 0.0005"$
2" - 3"	293-342	293-346		.00005"/0.001mm	$\pm 0.0005"$
3" - 4"	293-343	293-347		.00005"/0.001mm	$\pm 0.001"$

FEATURES

- Ratchet function works both from the thimble and the speeder, allowing easy one-handed operation.
- Clearly audible ratchet operation for reassurance that measurement is being performed at constant, preset force.
- Provided with a Certificate of Conformance.



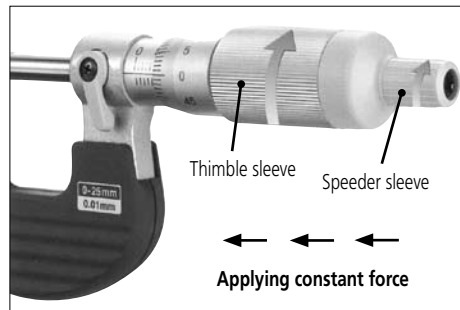
SERIES 101 — Smooth action Ratchet-Thimble

Measuring faces

- Flatness: 0.6 μ m (.000024")
- Parallelism: 2 μ m (.00008")
- Measuring force: 5-10N



Rotating the thimble/speeder sleeve when the workpiece is between the anvil and spindle causes the ratchet mechanism to tap the spindle and apply a constant measuring force to the workpiece.



SPECIFICATIONS

Inch			
Range	Order No.	Graduation	Accuracy
0 - 1"	101-711*	.001"	\pm .0001"
	101-717*	.0001"	\pm .0001"
0 - 1"	102-711	.001"	\pm .0001"
	102-717	.0001"	\pm .0001"

Note: 0.001mm (.0001") reading is obtained with vernier.

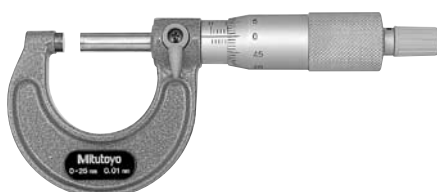
*Stain-chrome-finished frame model

FEATURES

- Hammetone green, baked-enamel finished frame.
- Carbide-tipped measuring faces.
- Clear graduations on satin-chrome finish.
- Positive locking clamp.
- Ratchet Stop or Friction Thimble for exact repetitive readings.
- Provided with a standard except for 1" (25mm) model.



SERIES 103 — Outside Micrometer



SPECIFICATIONS

Inch	With Ratchet Stop		
Range	Order No.	Graduation	Accuracy
0 - 1"	103-177	.001"	±.0001"
	103-260T	.0001"	±.0001"
1 - 2"	103-178	.001"	±.0001"
	103-132	.0001"	±.0001"
2 - 3"	103-179	.001"	±.0001"
3 - 4"	103-180	.001"	±.00015"
4 - 5"	103-181	.001"	±.00015"
5 - 6"	103-182	.001"	±.00015"
6 - 7"	103-183	.001"	±.0002"
7 - 8"	103-184	.001"	±.0002"
8 - 9"	103-185	.001"	±.0002"
9 - 10"	103-186	.001"	±.00025"
10 - 11"	103-187	.001"	±.00025"
11 - 12"	103-188	.001"	±.00025"
12 - 13"	103-189H	.001"	±.0003"
13 - 14"	103-190H	.001"	±.0003"
14 - 15"	103-191H	.001"	±.0003"
15 - 16"	103-192H	.001"	±.00035"
16 - 17"	103-193H	.001"	±.00035"
17 - 18"	103-194H	.001"	±.00035"
18 - 19"	103-195H	.001"	±.0004"
19 - 20"	103-196H	.001"	±.0004"

Note: 0.001mm (.0001") reading is obtained with vernier.

Measuring faces

- Flatness: 0.6 μ m (.000024") for models up to 12" (300mm)
1 μ m (.00004") for models over 300mm (12")
- Parallelism: (2+L/100) μ m [($.00008 + .00004 (L/4)$)]*

*L=Maximum measuring length (inch) [(mm)], Fraction rounded down

FEATURES

- Carbide faces.
- Ratchet stop or Friction thimble for exact repetitive readings.
- Baked enamel finished frame.
- Clear graduations on satin chrome finish.
- Complete with fitted carrying case.



SERIES 103 — Micrometer Sets

SPECIFICATIONS

Inch

Order No. 103-929 (0 - 3" Set)

Set Includes	Range	Resolution	Remarks
103-177	0 - 1"	.001"	} Ratchet Stop With Standards
103-178	1 - 2"	.001"	
103-179	2 - 3"	.001"	

Order No. 103-922T (0 - 3" Set)

Set Includes	Range	Resolution	Remarks
103-135T	0 - 1"	.0001"	} Friction Thimble
103-136T	1 - 2"	.0001"	
103-217T	2 - 3"	.0001"	} Ratchet Stop & Standards

Order No. 103-907T (0 - 6" Set)

Set Includes	Range	Resolution	Remarks
103-135T	0 - 1"	.0001"	} Friction Thimble
103-136T	1 - 2"	.0001"	
103-217T	2 - 3"	.0001"	} Ratchet stop with Standards
103-218T	3 - 4"	.0001"	
103-219	4 - 5"	.0001"	
103-220	5 - 6"	.0001"	

Order No. 103-909 (6 - 12" Set)

Set Includes	Range	Resolution	Remarks
103-221	6 - 7"	.0001"	} Ratchet stop with Standards
103-222	7 - 8"	.0001"	
103-223	8 - 9"	.0001"	
103-224	9 - 10"	.0001"	
103-225	10 - 11"	.0001"	
103-226	11 - 12"	.0001"	

Inch

Order No. 103-942 (0 - 3" Set)

Set Includes	Range	Resolution	Remarks
	0 - 1"	.0001"	} Ratchet Stop No Standards
	1 - 2"	.0001"	
	2 - 3"	.0001"	



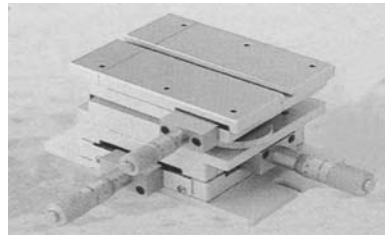
103-942 — Micrometer Set

Micrometer Heads

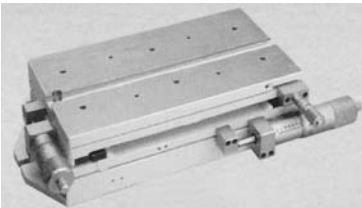
Mitutoyo

FEATURES

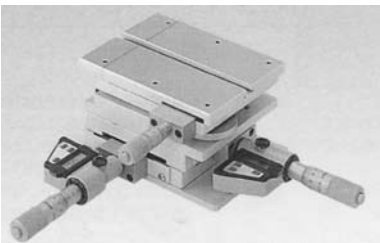
- The micrometer head has become a common measuring, feeding and positioning device for mounting on a measuring instrument or precision machine.
- Widely used in the precise feeding device, cross-travel stage of laser instruments and manipulators, not to mention measurement of jigs.
- In parallel with the application possibilities, every customer's need is varied. To meet these demands, Mitutoyo provides a variety of micrometer heads with different measuring ranges, stem types and body size, including custom built units according to customer specifications.



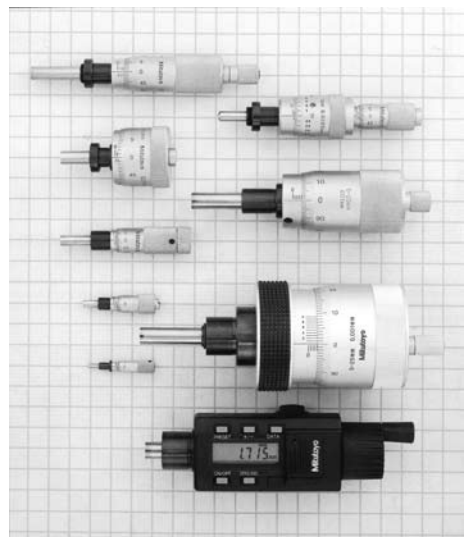
XY Leveling Table



Cross-Travel Table



Digimatic XY Leveling Table



The 141 Series Inside Micrometers are probably the most frequently used inside measuring instruments because of their wide range and simplicity in measuring operation.



FEATURES

- Wide range of ID measurements with interchangeable rods.
- Each interchangeable rod is marked with its measuring range.
- The sizes of interchangeable rods can be adjusted with spacing collars.
- Both micrometer head and furnished rods are satin-chrome



**141-233 —
Inside Micrometer**



**141-102—
Inside Micrometer**

Overall Accuracy

- .0004" up to 12" (300mm)
- .001" 12 - 40" (300-1000mm)

SPECIFICATIONS

Inch	Micrometer Heads		
Order No.	Head Travel	Resolution	Accuracy
141-002	.25"	.001"	±.0001"
141-026	.50"	.001"	±.0001"
141-010	1.00"	.001"	±.0001"

Inch	Inside Micrometers - Interchangeable Rod Type			
Order No.	Range	Spacing Collar	Diameter of Rods	Remarks
141-102	1 - 2"	.250"	.248"	Includes 141-002 and 2 rods
141-208	2 - 8"	.500"	.248"	Includes 141-026, 3 rods, 1" extended thimble
141-233	2 - 12"	.500"	.248"	Includes 141-026, 5 rods, 1" extended thimble
141-121	8 - 20"	1", 2"	.355"	Includes 141-010 and 3 rods
141-122	8 - 40"	1", 2"	.355"	Includes 141-010 and 8 rods

A conventional digimatic indicator simply displays a spindle displacement, but the Calculation-Type Digimatic Indicator incorporates an internal calculation function in place of spindle displacement.

FEATURES

- 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.
- The unique calculation feature allows you to read your measurements directly, without fumbling for conversions.
- With fixtures, measurements such as feeler, inside diameter and radius of curvature measurements can easily be obtained.



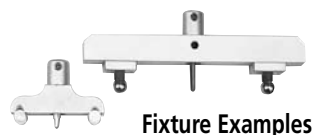
**SERIES 543 —
Calculation Type
with Absolute
and data output**

SPECIFICATIONS

ABSOLUTE

Inch/Metric		Resolution	Range	Order No.	Accuracy	Remarks
		.00001" - .05"/0.0002mm - 1mm	.5" (12.7mm)	543-286B	±.00012"	8mm (ISO/JIS)
		.00001" - .05"/0.0002mm - 1mm	.5" (12.7mm)	543-287B	±.00012"	3/8" (ANSI/AGD)
		.00001" - .05"/0.0002mm - 1mm	1" (25.4mm)	543-481B	±.00012"	8mm (ISO/JIS)
		.00001" - .05"/0.0002mm - 1mm	1" (25.4mm)	543-482B	±.00012"	3/8" (ANSI/AGD)
		.00001" - .05"/0.0002mm - 1mm	2" (50.8mm)	543-486B	±.00012"	8mm (ISO/JIS)
		.00001" - .05"/0.0002mm - 1mm	2" (50.8mm)	543-487B	±.00012"	3/8" (ANSI/AGD)

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



Technical Data

- Display:** LCD
- Functions:** Origin-Set (preset), Zero-Set, Power on/off, calculation, inch/mm conversion, SPC data output, counting direction switching, GO/±NG judgment
- Battery:** SR44 (1 pc.) **(938882)**
- Battery life:** Approx. 5,000 hours in continuous use
- Contact Point:** Carbide ball with M2.5x0.45 thread (ISO/JIS type) or steel ball with #4-48UNF thread (ANSI/AGD type)
- Alarm:** Low battery voltage, scale contamination, over-flow error, tolerance limit setting error
- Operating temperature:** 0°C to 40°C

The IDS Series Digimatic Indicator offers simple, error-free digital readings in a basic and economical package.

FEATURES

- Measurement error due to spindle over-speed is eliminated with the ABSOLUTE Encoder.
- As compact as standard Series 2 dial indicators.
- The IDS indicates the absolute position of the spindle from the origin point at power-on, allowing to start measurements.
- After the initial zero-setting with the ORIGIN button, the repeated absolute positioning is no longer necessary over the entire battery life.



**SERIES 543 —
Economical
Design**

ABSOLUTE

Technical Data

- Display:** LCD
- Functions:** Origin-Set, power on/off, counting direction switching, inch/mm conversion (inch/mm type only), SPC data output
- Battery:** SR44 (1 pc.) (938882)
- Battery life:** Approx. 20000 hours in continuous use
- Stem dia.:** 8mm (ISO/JIS type) or 3/8" (ANSI/AGD type)
- Contact point:** Carbide ball with M2.5x0.45 thread (ISO/JIS type) or steel ball with #4-48UNF thread (ANSI/AGD type)
- Dust/Water protection level:** Conforming to IP42
- Alarm:** Low battery voltage, scale contamination
- Operating temperature:** 0°C to 40°C

OPTIONAL ACCESSORIES

Order No.	Description
905338	SPC cable (1m)
905409	SPC cable (2m)
903424	Spindle lifting lever (ISO/JIS type)
903425	Spindle lifting lever (ANSI/AGD type)
540774	Spindle lifting cable
125317	Spare rubber boot (for dust-proof type)
02ACB420	Lug-on-center back (ISO/JIS type)
02ACB430	Lug-on-center back (ANSI/AGD type)
02ACB440	Flat back

SPECIFICATIONS

Inch/Metric		Order No.	Accuracy	Remarks	
Resolution	Range	Back w/lug	Flat-back		
.0005"/0.001mm	.5" (12.7mm)	543-691	543-691B	±.00012"	ISO/JIS
		543-695	543-695B	±.00012"	ISO/JIS, Dust-proof
	.5" (12.7mm)	543-692	543-692B	±.00012"	ANSI/AGD
		543-696	543-696B	±.00012"	ANSI/AGD, Dust-proof
.0001"/0.001mm	.5" (12.7mm)	543-693	543-693B	±.00012"	ANSI/AGD
.0005"/0.01mm	.5" (12.7mm)	543-682	543-682B	±.0008"	ISO/JIS
		543-683	543-683B	±.0008"	ANSI/AGD

Mitutoyo's IDC Series Digimatic Indicator presents error-free digital readings in measurements. Its ABSOLUTE Linear Encoder keeps track of the origin point once set over the entire battery life, allowing the large LCD screen to display the actual spindle position from the origin point at power-on.



FEATURES

- Large, easy-to-read LCD.
- ZERO/ABS key: Allows the display to be Zero-Set at any spindle position for comparison measurements. This switch will also allow return to the absolute coordinate and display of the true position from the origin point.
- GO/±NG judgment can be performed by setting upper and lower tolerance limits.
- The positive/negative count resulting from the spindle's up/down movement can be toggled.
- Unlimited response speed eliminates spindle over-speed errors.
- The IDC indicator face can be rotated 330° to an appropriate angle for easy reading.
- The measurement data can be output to an external data processor using the optional SPC cable.

SPECIFICATIONS

ABSOLUTE

Inch/Metric		Resolution	Range	Order No. Back w/lug	Order No. Flat-back	Accuracy	Remarks
		.00005"/0.001mm	.5" (12.7mm)	543-251	543-251B	±.00012"	ISO/JIS
				543-252	543-252B	±.00012"	ANSI/AGD
			1" (25.4mm)	—	543-451B	±.00012"	ISO/JIS
				—	543-452B	±.00012"	ANSI/AGD
			2" (50.8mm)	—	543-461B	±.00025"	ISO/JIS
				—	543-462B	±.00025"	ANSI/AGD
		.0001"/0.001mm	.5" (12.7mm)	543-253	543-253B	±.00012"	ANSI/AGD
			1" (25.4mm)	—	543-453B	±.00012"	ANSI/AGD
			2" (50.8mm)	—	543-463B	±.00025"	ANSI/AGD
		.0005"/0.01mm	.5" (12.7mm)	543-291	543-291B	±.0002"	ISO/JIS
				543-292	543-292B	±.0002"	ANSI/AGD
				543-271	543-271B	±.0008"	ISO/JIS
				543-272	543-272B	±.0008"	ANSI/AGD
			1" (25.4mm)	—	543-458B	±.0002"	ISO/JIS
				—	543-459B	±.0002"	ANSI/AGD
				—	543-455B	±.0012"	ISO/JIS
			2" (50.8mm)	—	543-456B	±.0012"	ANSI/AGD
				—	543-465B	±.0016"	ISO/JIS
				—	543-466B	±.0016"	ANSI/AGD

Note: A .0005"/0.01mm reading type IDC is available with a measuring accuracy equal to that of the .00005"/0.001mm type.

IDH High Accuracy Digimatic Indicator



This new generation digital indicator offers the excellent accuracy and functionality expected from this class of indicator. Take advantage of its high accuracy backed up by 0.5µm resolution, remote control functionality via a handheld controller (or RS-232C interface) and easy runout measurements with the well-established analog bar display.

NEW!



FEATURES

- GO/±NG judgment can be performed by setting upper and lower tolerance limits.
- If out of tolerance value is detected, the backlight turns red to highlight this fact and help with workpiece sorting operations.
- Measures maximum value, minimum value and runout.
- The indicator can be operated remotely by using the optional remote controller, or PC via the built-in RS-232C interface.
- The setting conditions can be locked to prevent accidental change during use.
- Selectable resolution.

SPECIFICATIONS

SERIES 543 — High Accuracy Indicator

Inch/Metric		Order No.	Range	Accuracy	Remarks
Selectable Resolution					
.0002"/0.0005mm	543-562A	1.2"(30mm)	±.00006"	ANSI/AGD type	
or .00005"/0.001mm	543-564A	2.4"(60mm)	±.0001"	ANSI/AGD type	

Building an Advanced Control System via the RS-232C Interface

An advanced, remote control system can be built with the built-in RS-232C interface and a PC. A stable, high-accuracy measurement system can be implemented without touching any indicator in the system. (Optional, dedicated cables are required.)

Since the indicator supports RS-232C interface commands with key operations, the indicator can be operated from the PC using these commands. It is also possible to perform statistical processing and management of measurement data by installing a control program in the PC.

RS-232C Specifications

1. Pin Assignments in the dedicated cable

Pin No.	Signal Name	Input/ Output	Definition (Purpose)
1	N.C.	---	No connection
2	TXD	OUT	Transmit data
3	RXD	IN	Receive data
4	DSR	IN	Data set ready
5	GND	---	Ground
6	DTR	OUT	Data terminal ready
7	CTS	IN	Clear to send
8	RTS	OUT	Request to send
9	N.C.	---	No connection

2. Communication protocol

Home Position	DCE (modern definition) dedicated cable to be used
Communication method	Half-duplex, TTY protocol
Baud rate	4800, 9600bps
Bit configuration	Start bit: 1 Data bit: (7 or 8) ASCII, upper case Parity bit: None, even or odd Stop bit: 2
Communication condition setting	Setting with a parameter

IDN Slim Type Coolant Proof Digimatic Indicator

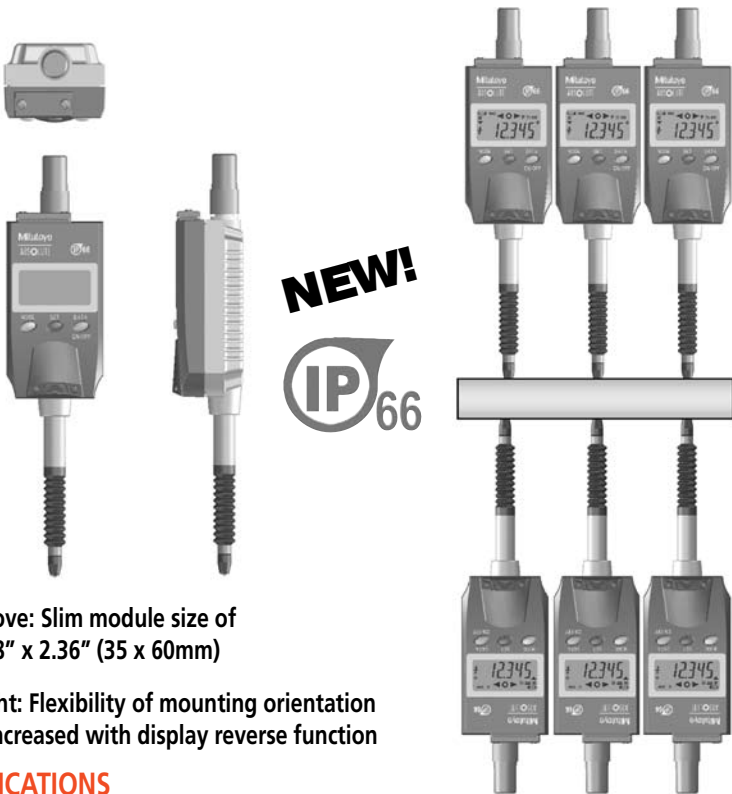


This digital indicator answers the need for superior shop-floor performance in even the harshest conditions, with its IP66 protection rating. The compact width of 1.38" is an ideal advantage for multiple measuring applications.

FEATURES

- IP66 protection rating for coolant proof performance.
- Slim style is only 1.38" (35mm) wide.
- Absolute sensor eliminates troublesome origin set during multi-point measurement.
- Display reversing function (0°, 180°)
- Functions include +/- Direction, Zero/ABS, Preset, Data/Hold, Tolerance, External Zero.

ABSOLUTE



Above: Slim module size of 1.38" x 2.36" (35 x 60mm)

Right: Flexibility of mounting orientation is increased with display reverse function

SPECIFICATIONS

Inch/Metric		Order No.	Range	Accuracy	Remarks
Selectable Resolution	.00005"/0.001mm or .0005"/0.01mm	*Note	.5"(12.7mm)	±.00012"	ANSI/AGD type
	.0005"/0.01mm	*Note	.5"(12.7mm)	±.0008"	ANSI/AGD type

***Note: Planned product release is September 2005**

IDB Back Plunger Coolant Proof Digimatic Indicator

This digital indicator answers the need for superior shop-floor performance in even the harshest conditions, with its IP66 protection rating. The compact width of 1.38" is an ideal advantage for multiple measuring applications.

FEATURES

- IP66 protection rating for coolant proof performance.
- Slim style is only 1.38" (35mm) wide.
- Absolute sensor eliminates troublesome origin set during multi-point measurement.
- Display reversing function (0°, 180°)
- Functions include +/- Direction, Zero/ABS, Preset, Data/Hold, Tolerance, External Zero.



NEW!



180°



0°

Above: Back plunger style with upward facing display

Right: Flexibility of mounting orientation is increased with display reverse function and back plunger's space saving style

ABSOLUTE

SPECIFICATIONS

Inch/Metric		Order No.	Range	Accuracy	Remarks
.00005"/0.001mm or .0005"/0.01mm	*Note		.2"(5mm)	±.00012"	ANSI/AGD
.0005"/0.01mm	*Note		.2"(5mm)	±.0008"	ANSI/AGD

***Note: Planned product release is September 2005**

SERIES 2

Series 2 dial indicators are Mitutoyo's most popular, and have the widest application. Especially the "One-Revolution" dial indicator, developed for in-process measuring. This indicator features a hand that makes only one revolution throughout the entire spindle range. This prevents costly measuring errors with indicators whose hands make as many as 2-1/2 revolutions.



SPECIFICATIONS

Inch (Stem Diameter 3/8") ANSI Standard

Graduation	Total Range	Order No.	Range/Rev.	Dial	Accuracy (+/-) 2 1/3 Rev.	Total Rev.	Remarks
.0001"	.05"	2923S-10	.01"	0-5-0	.0001"	.0002"	
.0005"	1"	2776S	.05"	0-50	.0005"	.002"	
.001"	.5"	2414S	.1"	0-100	.001"	.001"	
.001"	1"	2416S	.1"	0-100	.001"	.002"	
.001"	1"	2904S	.1"	100-0	.001"	.002"	
.001"	2"	2424S-10	.1"	0-100	.001"	.003"	

Metric

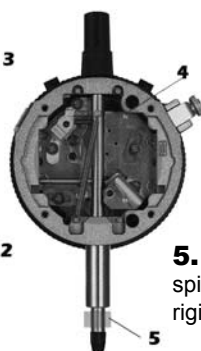
Graduation	Total Range	Order No.	Range/Rev.	Dial	Accuracy (+/-) 2 1/3 Rev.	Total Rev.	Remarks
0.01mm	10mm	2046S	1mm	0-100	0.013mm		ISO/JIS
0.01mm	10mm	2046S-01	1mm	0-100	0.010mm	0.013mm	ANSI
0.01mm	25mm	2056S-01	1mm	0-100	0.010mm	0.025mm	ANSI

High Precision Type	Reverse Reading	Balanced Dial	Continuous Dial	One Revolution
Damper at Lowest Rest Point	Shockproof	Adjustable Hand	Waterproof	Doubled Scale Spacing
Coaxial Revolution Counter	Peak Retaining	Long Stem	Dustproof	Jeweled
Low Force				

1. Revolutionary stem-bush design for trouble free clamping (longer clamping range).

2. No through screw-hole on the frame for high dust resistance.

3. Involute curved lifting lever for smooth movement of spindle and dovetail joint for tool-less connection.



5. $\phi 4.8\text{mm}$ spindle rigidity increases rigidity

4. Greater rigidity in the bearing plate for reducing the retracing error (20%) and 4-screw mounting for increased impact resistance.



Contact Points for Dial & Digimatic Indicators

Extension Rod 4-48UNF

L	Order No.
1/2"	139167
1"	301655
2"	301657
4"	301659

$\phi .16"$ Ball Point 4-48UNF

Order No.
900032

Flat Point 4-48UNF

D	L	Order N
$\phi 1/2"$	3/8"	101188
$\phi 3/8"$	3/8"	101189

Extension Rod M2.5 x 0.45mm

L	Order No.
10mm	303611
20mm	303612
30mm	303613
100mm	303614

Roller Point 4-48UNF

Order No.
901991

Flat Point M2.5 x 0.45mm

D	L	Order No.
$\phi 10\text{mm}$	10mm	101117

Roller Point M2.5 x .045mm

Order No.
901954

Point Conversion

From/To	Order No.
M2.5 x 0.45mm - 4-48UNFI	21AAA011
4-48UNFI - M2.5 x 0.45mm	21AAA012

Needle Point 4-48UNF

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

Ball Point $\phi .118"$ ($\phi 3\text{mm}$) 4-48UNF

L	Carbide	Sapphire	Ruby	Plastic
.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	---	---	900030*
8mm	120045	120046	120047	---
15mm	120049	120050	120051	---
25mm	120053	120054	120055	---

*Furnished with standard metric dial indicators

FEATURES

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



513-405E

SPECIFICATIONS

Metric

Graduation	Range	Order No. Basic unit	Order No. Full set	Dial reading	Accuracy	Remarks
0.01mm	0.5mm	513-424E	513-424T	0-25-0	5μm	
		513-414E	513-414T	0-25-0	10μm	
		513-466E	---	0-25-0	5μm	
	0.8mm	513-404E	513-404T	0-40-0	8μm	
		513-464E	---	0-40-0	8μm	
	1mm	513-415E	513-415T	0-50-0	10μm	
1.5mm	513-426E	---	0-25-0	8μm		
0.002mm	0.2mm	513-405E	513-405T	0-100-0	3μm	
		513-465E	---	0-100-0	3μm	
	0.6mm	513-425E	---	0-100-0	6μm	
0.001mm	0.14mm	513-401E	---	0-70-0	3μm	

Inch

Graduation	Range Basic unit	Order No. Full set	Order No.	Dial reading	Accuracy	Remarks
.0005"	.03"	513-402	513-402T	0-15-0	±.0005"	
		513-412	513-412T	0-15-0	±.0005"	
		513-462	---	0-15-0	±.0005"	
.0001"	.008"	513-403	513-403T	0-4-0	±.0001"	
		513-463	---	0-4-0	±.0001"	

Inch/Metric

Graduation	Range	Order No. Basic unit	Order No. Full set	Dial reading	Accuracy	Remarks
.0005"/0/01mm	.03"/0.7mm	513-406	513-406T	0-15-0/0-35-0	3μm	

Metric/Inch

Graduation	Range	Order No. Basic unit	Order No. Full set	Dial reading	Accuracy	Remarks
0.002mm/.0001"	0.2mm/.0075"	513-409	513-409T	0-10-0/0-38-0	±.0005"	



High Precision Type



Doubled Scale Spacing



Long Contact Point



Revolution Counter



Compact Type



Dustproof



Jeweled



Anti-Magnetic



Water Resistance



513-424E
513-414E
513-466E



513-404E
513-464E



513-415E



513-426E



513-405E
513-465E



513-425E



513-401E



513-409

Set Configurations Metric (Metric/Inch)

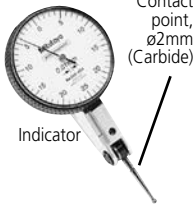
Inch (Inch/Metric)

Full Set

Full Set

Basic Unit

Basic Unit



Contact point, $\varnothing 2\text{mm}$ (Carbide)



Contact point, $\varnothing 1\text{mm}$



Contact point, $\varnothing 3\text{mm}$



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



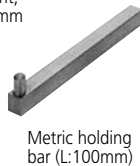
Knurled clamp ring



Stem, $\varnothing 8\text{mm}$



Stem, $\varnothing 4\text{mm}$



Metric holding bar (L: 100mm)



Contact point, $.079''$ DIA. (Carbide)



Contact point, $.039''$ DIA.



Contact point, $.118''$ DIA.



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



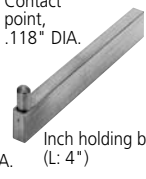
Knurled clamp ring



Stem, $3/8''$ DIA.



Stem, $.157''$ DIA.



Inch holding bar (L: 4")

Dial Indicator & Magnetic Base Set

SPECIFICATIONS

Magnetic Stand and Indicator Set

Order No.

Includes:

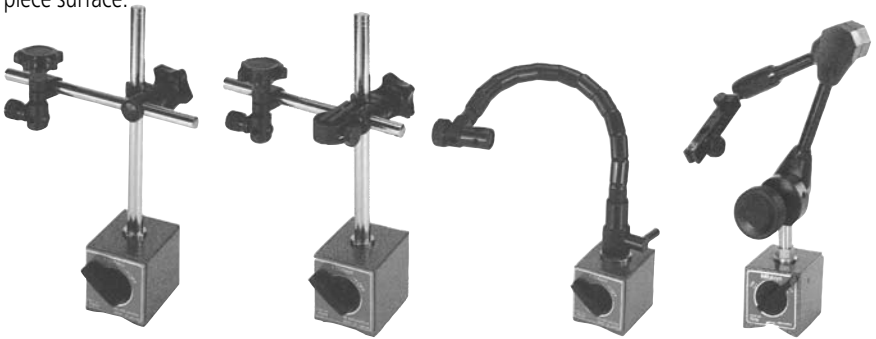
7046PCK

2416S Indicator (Graduation .001")
7010SN Magnetic Stand
Custom Tool Case



7046PCK Set

Mitutoyo's Magnetic Stands accept all dial indicators and test indicators. The On/Off switch offers instant mounting and dismounting without any adverse effect to the indicator or work-piece surface.



**7010SN—
Magnetic Stand**

**7011SN—
Magnetic Stand**

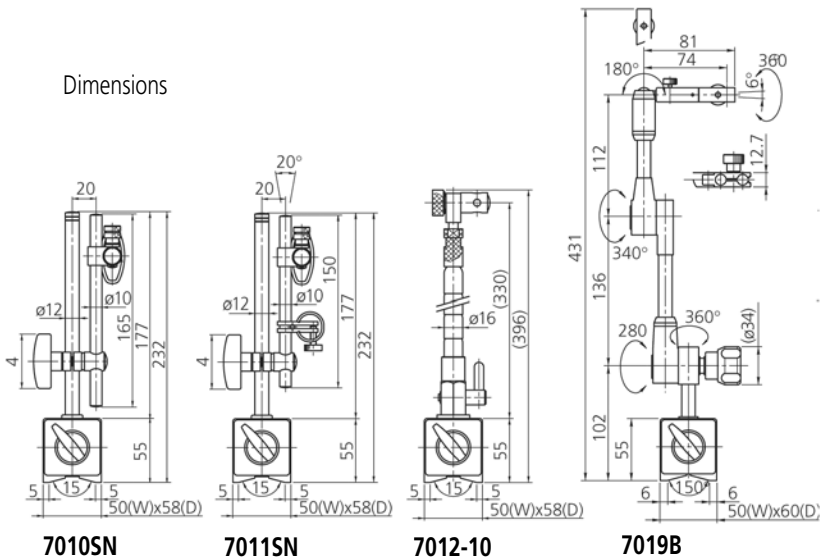
**7012-10—
Magnetic Flexi-Stand
(for Dial Test Indicator)**

**7019B—
Universal
Magnetic Stand**

SPECIFICATIONS

Order No.	Description	Applicable Holding Stem	Dovetail Groove	Remarks
7010SN	Magnetic Stand	φ8mm, φ4.5mm, 3/8" DIA.	---	
7011SN	Magnetic Stand	φ8mm, φ4.5mm, 3/8" DIA.	---	With fine adjustment
7012-10	Magnetic Flexi-Stand	φ8mm, φ6mm, 3/8" DIA.	---	For Dial Test Indicator
7019B	Universal Magnetic Stand	φ8mm, 3/8" DIA.	Provided	With Hydraulic Position Lock

Dimensions



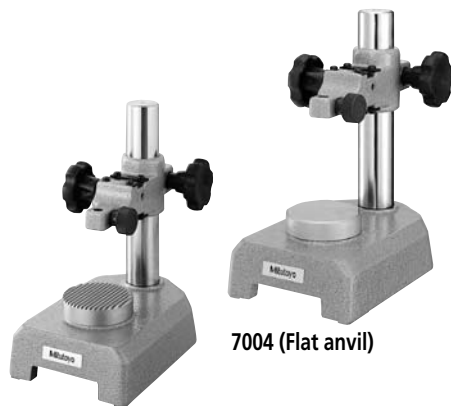
Dial Gauge & Transfer Stands

Mitutoyo

These Dial Gauge Stands and Transfer Stands are designed for comparison measurements of height using a dial indicator or Digimatic Indicator.

FEATURES

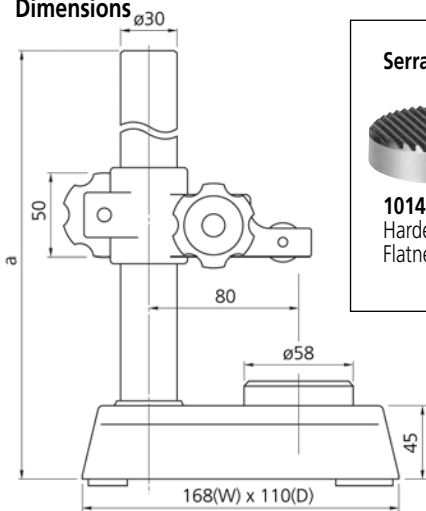
- Vertical travel of the gage holder — Dial Gauge Stand: 100mm (4"), Transfer Stand: 335mm (13.19")
- Fine-adjustment of 1mm available for zero-setting of the indicator.
- With an interchangeable anvil. Domed anvil (**101463**) is optional.



7003 (Serrated anvil)

7004 (Flat anvil)

Dimensions



Serrated Anvil



101462
Hardened steel
Flatness: 1 μ m

Flat Anvil



101461
Hardened steel
Flatness: 1 μ m

Domed Anvil



101463
Hardened steel

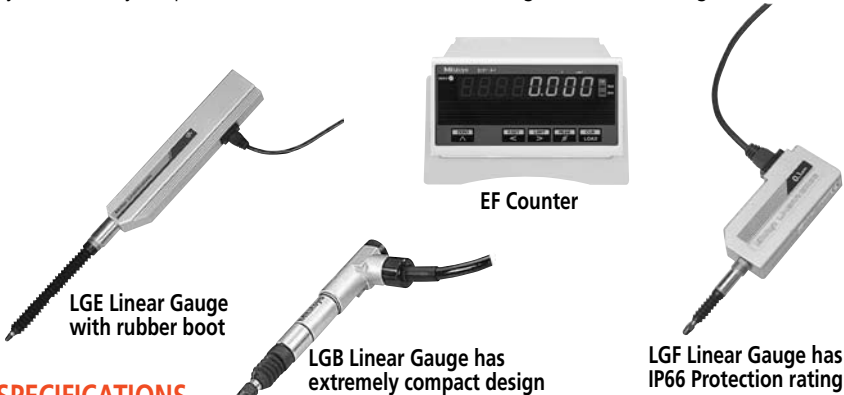
Units: mm

Order No.	a
7001	205
7002	205
519-109M	430

SPECIFICATIONS

Metric		Dial Gauge Stands		
Order No.	Applicable holding stem	Mass	Remarks	
7001	$\phi 8$ mm	4kg	w/Serrated anvil (101462)	
7002	$\phi 8$ mm	4kg	w/Flat anvil (101461)	
Inch		Dial Gauge Stands		
Order No.	Applicable holding stem	Mass	Remarks	
7003	3/8" DIA.	8.8 lbs.	w/Serrated anvil (101462)	
7004	3/8" DIA.	8.8 lbs.	w/Flat anvil (101461)	
Inch		Transfer Stand		
Order No.	Applicable holding stem	Mass	Remarks	
519-109E	3/8" DIA.	7.5kg	w/Serrated anvil (101462)	

These dimension sensors offer superb durability and environmental resistance, suitable for in-line measurements. Linear gauges are offered in several ranges, resolutions and models (see chart below). Counters offer a range of output types; I/O, BCD, RS-232C, Digimatic SPC, and RS link for multiple counter/gauge measurements. Please consult your Mitutoyo representative for more info on configuration and integration details.



SPECIFICATIONS

Resolution	Gauge	5mm (.2")	10mm (.4")	25mm (1")	50mm (2")	100mm (4")
0.00001mm	LGH		LGH LGH Low Force			
0.0001mm	LGK LGB2 LG LGH Long Stroke Series (Motor Drive)	LGB2	LGK LGF LGH LGH: Low Force	LGF		LG LGM LGM Motor Drive
0.0005mm	LGK LGF		LGK LGF	LGF	LGF LGF	
0.001mm	LGK LGF LGB Straight LGB2: Nut Clamp LGB2 LGB2: High Accuracy LGB2: Low Force LGB2: Sign Wave LGB2: Air Drive Long Stroke Series (Motor Drive)	LGB LGB2	LGK LGF LGB: High Accuracy LGB: Low Force LGB: Sign Wave LGB: Air Drive LGB2 LGB2: High Accuracy LGB2: Low Force LGB2: Sign Wave LGB2: Air Drive	LGF	LGF	LG LGM: Motor Drive
0.01mm	LGE		LGE LGE: Air Drive	LGE	LGE	
0.0005mm	LGF: ABS Marked		LGF	LGF	LGF	
0.001mm	LGF: ABS Marked		LGF	LGF	LGF	
0.01mm	LGD: Low Cost LGD LGS		LGD LGD: Air Drive LGS	LGD	LGD	

QM-Height High Precision Digital Height Gauge

FEATURES

- High accuracy and high resolution Absolute type linear encoder for position detection.
- Easy reference icon keys.
- Possible to measure inside/outside diameter via a unique process (detect the circle apex and process by tracing measurement).
- Various types of probes (optional).
- Large size LCD.
- GO/±NG judgment is performed by setting the upper and lower tolerances. If a judgment result is out of tolerance, the display backlight changes from green to red so tolerance judgment can be made at a glance.
- Slider elevation knob/wheel.
- Digimatic and RS-232C output.

SPECIFICATIONS

ABSOLUTE

Inch/Metric		
Order No.	518-225	518-227
Range	0-14" (0-350mm)	0-24" (0-600mm)
Resolution	.00005", .0001", .0002", 0.001mm, 0.005mm	
Accuracy	±(2.8 + 5L/1000)μm	
Repeatability	2σ 1.8μm	
Display	LCD	
Functions	Zero-setting, +/- switching, Presetting, Data hold, Probe tip diameter compensation, inch/mm conversion, data output	
Perpendicularity	0.008mm	0.013mm
Measuring Force	1.6 ± 0.5N	
Data Output	SPC, RS-232C	
Power Supply	AC adapter (optional accessory)/Battery (LR6 x 4)	
Battery Life	Approx. 800 hrs. (when backlight is not used) Approx. 260 hrs. (when backlight is used in the power saving mode) Approx. 6 hrs. (when backlight is used in the Full-Time Turn-On mode)	
Standard Accessory	ø5mm stepped probe (05HZA148) 4 pcs. AA Alkaline Batteries (LR6) Setting block for ball probe (12AAA715)	
Dimensions	8.27 x 13.78 x 30.39"	8.27 x 13.78 x 40.24"
Mass	22kg	27kg



SERIES 518 — QM-Height

FEATURES

- Highly versatile multi-function type.
- A carbide-tipped long scribe is provided.
- Rigid construction ensures repeatable measurement.
- Coarse/Fine Feed switching.
- Two-directional touch signal probe is an optional accessory. It can quickly and accurately measure steps, inside width, and outside width.
- With SPC data output.

Technical Data

Display: LCD

Functions: Zero-Set, presetting, preset value recalling, ABS/INC measurement mode switching, SPC data output, data hold, two-directional touch signal probe, counting direction switching, power on/off, inch/mm conversion (inch/mm type)

Battery: CR2032 lithium battery (1 pc.) (055AA217)

Battery life: Approx. 2000 hours in continuous use

Max. response speed: Approx. 500mm/s

Alarm: Low battery voltage, counting error

Operating temperature: 0°C to 40°C



SERIES 192 — Multi-function type with Data Output



SPECIFICATIONS

Inch/Metric					
Range	Order No.	Resolution	Accuracy*	Remarks	
0 - 12" (0 - 300mm)	192-670	.0005"/0.01mm	±.001"	} Standard accessories: Scribe (905201) and scribe clamp (901385)	
0 - 18" (0 - 450mm)	192-671	.0005"/0.01mm	±.0015"		
0 - 24" (0 - 600mm)	192-672	.0005"/0.01mm	±.0015"		
0 - 40" (0 - 1000mm)	192-673	.0005"/0.01mm	±.0025"		

*Excluding quantizing error

FEATURES

- Built-in Absolute scale.
- Rigid column structure ensures high measuring accuracy.
- Carbide tipped scriber.
- Large LCD display.
- With SPC data output.
- Includes Scriber (900258), Scriber clamp (901385) and SR-44 battery (1 pc.)

ABSOLUTE



Technical Data

- Display:** LCD
- Functions:** Origin setting, ABS/INC measurement mode switching, data hold, power on/off, inch/mm conversion (inch/mm type only)
- Battery:** SR44 battery (1 pc) (938882)
- Battery life:** Approx. 2000 hours in continuous use
- Max. response speed:** Unlimited
- Alarm:** Low battery voltage

SERIES 570 — Digimatic Height Gauge with Data Output



Smooth slider feed wheel



Large clamp lever

SPECIFICATIONS

Inch/Metric

Range	Order No.	Resolution	Accuracy*
0 - 12" (0 - 300mm)	570-312	.0005"/0.01mm	±.0015"
0 - 18" (0 - 450mm)	570-313	.0005"/0.01mm	±.002"
0 - 24" (0 - 600mm)	570-314	.0005"/0.01mm	±.002"

*Excluding quantizing error

FEATURES

- LCD readout .00005"/0.001mm.
- Carbide tipped contact points (models < 12mm), Titanium coated contact points (models > 12mm)
- Efficient measurement using two measurement modes - ABS (absolute) and INC (incremental) modes.
- Can be linked to Mitutoyo SPC program.
- Rotatable display unit for easy reading at any angle.
- Functions include; Origin setting, Origin restoration, Zero-setting, Presetting, Data Hold, Error alarm.



ABSOLUTE

Technical Data

Display: LCD
Functions: Origin setting, origin restoration, zero-setting, presetting, data hold, error alarm, low battery alarm, data output
Battery: SR-44 battery (1 pc)
Max. response speed: Unlimited



SERIES 568 — Borematic Set

SPECIFICATIONS

Inch/Metric			
Range	Order No.	Individual Range	
.275-.5" (6.985-12.7mm)	568-976	.275-.35"/6.985-8.89mm	177-179 (.35")
		.35-.425"/8.89-10.795mm	177-283 (.425")
		.425-.5"/10.795-12.7mm	
.5-1" (12.7-25.4mm)	568-977-10	.5-.65"/12.7-16.51mm	177-182 (.65")
		.65-.8"/16.51-20.32mm	177-287 (.8")
		.8-1"/20.32-25.4mm	
1-2" (25.4-50.8mm)	568-978-10	1-1.2"/25.4-30.48mm	177-289 (1.2")
		1.2-1.6"/30.48-40.64mm	177-291 (1.6")
		1.6-2"/40.64-50.8mm	
2-4"/50.8-101.6mm	568-979-10	2-2.5"/50.8-63.5mm	177-315 (2.5")
		2.5-3"/63.5-76.2mm	
		3-3.5"/76.2-88.9mm	177-319 (3.5")
		3.5-4"/88.9-101.6mm	
2-4"/50.8-101.6mm	568-980-10	2.0-2.5"/50.8-63.5mm	177-315 (2.5")
		2.5-3"/63.5-76.2mm	
		3-3.5"/76.2-88.9mm	177-319 (3.5")
		3.5-4"/88.9-101.6mm	

FEATURES

- Interchangeable anvils and necessary accessories to perform close tolerance I.D. measurements.
- Carbide ball contact point for durability.
- Optional extension rods can be attached.
- A digimatic indicator can be attached in place of the dial gauge.
- Accuracy: $.0002''/5\mu\text{m}$.

Inch		Dial		Measuring Range	Number of Anvils	Number of Spacers	Probe Depth
Order No.	Order No.	Order No.	Order No.				
No Gauge	w/2922SB	w/2923SB-10	w/2923SB-10				
	Graduation .0005"		Graduation: .0001"				
511-105	511-160	511-164		1.4 - 2.5"	6 pcs.	4	6"
511-107	511-162	511-166		2 - 6"	11 pcs. 2" Sub-Anvil	4	6"

Metric		Dial		Measuring Range	Number of Anvils	Number of Spacers	Probe Depth
Order No.	Order No.	Order No.	Order No.				
No Gauge	w/2046SB	w/2109SB-10	w/2109SB-10				
	Graduation 0.01mm		Graduation: 0.001mm				
511-126	511-171	511-167		18 - 35mm	9 pcs.	2	100mm
511-127	511-172	511-168		35 - 60mm	6 pcs.	4	150mm

FEATURES

- $.00012''$ (0.003mm) or less wide range accuracy.
- Anvil displacement is directly detected by the ultra-compact built-in sensor (no mechanical transmitter is used).
- Maximum extension up to 78.74" (2000mm).
- Reaches deep holes easily!
- Simple to operate - can preset 3 reference (master) values and set upper/lower tolerance limited for each.
- IP-53 dust/water protection.

SPECIFICATIONS

Inch/Metric	Digimatic
Order No.	511-521
Range	1.8 - 4" (45-100mm)
Contact Point Stroke	.048"/1.2mm
Resolution	.00005"/0.001mm
Measuring Force	5N or less
Repeatability	± 1 count
Protection Level	IP-53

Standard Accessories

Anvils	14 pcs.
Spacer	4 pcs. .02", .04", .08", .12"

SERIES 511 — Digimatic Bore Gauge



SERIES 511 — Dial Bore Gauge

Optional Accessories

905338	SPC cable 40" (1m)
905409	SPC cable 80" (2m)
21DZA089	Extension rod 9.84" (250mm)
21DZA081	Extension rod 19.69" (500mm)

Digimatic Holtest Interchangeable Head Sets

FEATURES

- Efficient measurement using two measurement modes; ABS (absolute) and INC (incremental).
- Provides digital readout to .0001"/0.001mm and can be linked to SPC program.
- Measurements can be taken nearly up to the bottom of the bore.
- The display automatically turns off idle after 20 minutes.
- Can measure deep holes by attaching an extension rod (optional).
- Carbide tipped contact points (models < 12mm). Titanium coated contact points (models > 12mm).



SERIES 468 Holtest

Technical Data

Thimble Graduation: .0002"

Display: LCD

LCD Readout Up to 4": .00005"/0.001mm
Over 4": .0001"/0.001mm

Functions: Zero-setting, Preset, Data Hold, Inch/mm conversion, Error alarm, Data Output

Battery: SR44 battery (1 pc)

SPECIFICATIONS

Inch/Metric

Range: .275-.5"/6.985-12.7mm

Set Order No. 468-956

982332	Display & Thimble Unit
952909	Interchangeable Head .275-.35"/6.985-8.89mm
952910	Interchangeable Head .35-.425"/8.89-10.795mm
952911	Interchangeable Head .425-.5"/10.795-12.7mm
177-179	Setting Ring .350" DIA.
177-283	Setting Ring .425" DIA.
952322	Extension Rod 3.94" (100mm)
210187	Spanners (one pair)
202863	Hex Wrench
938882	SR44 Battery

Range: .5-.8"/12.7-20.32mm

Set Order No. 468-957-10

982333	Display & Thimble Unit
952670	Interchangeable Head .5-.65"/12.7-16.51mm
952671	Interchangeable Head .65-.8"/16.51-20.32mm
177-182	Setting Ring .650" DIA.
952621	Extension Rod 5.9" (150mm)
210188	Spanners (one pair)
202863	Hex Wrench
938882	SR44 Battery

Range: .8-2"/20.32-50.8mm

Set Order No. 468-958-10

982334	Display & Thimble Unit
952672	Interchangeable Head .8-1"/20.32-25.4mm
952673	Interchangeable Head 1-1.2"/25.4-30.48mm
982150	Interchangeable Head 1.6-2"/40.64-50.8mm
177-184	Setting Ring 1" DIA.
177-291	Setting Ring 1.6" DIA.
952622	Extension Rod 5.9" (150mm)
210189	Spanners (one pair)
202863	Hex Wrench
938882	SR44 Battery

Range: 2-4"/50.8-101.6mm

Set Order No. 468-959-10

982335	Display & Thimble Unit
982178	Interchangeable Head 2-2.5"/50.8-63.5mm
952179	Interchangeable Head 2.5-3"/63.5-76.2mm
982180	Interchangeable Head 3-3.5"/76.2-88.9mm
982181	Interchangeable Head 3.5-4"/88.9-101.6mm
177-315	Setting Ring 2.5" DIA.
177-319	Setting Ring 3.5" DIA.
952623	Extension Rod 5.9" (150mm)
210189	Spanners (one pair)
202863	Hex Wrench
938882	SR44 Battery

Range: 4-8"/101.6-203.2mm

Set Order No. 468-960-10

982336	Display & Thimble Unit
953263	Interchangeable Head 4-5"/101.6-127mm
953264	Interchangeable Head 5-6"/127-152.4mm
953265	Interchangeable Head 6-7"/152.4-177.8mm
953266	Interchangeable Head 7-8"/177.8-203.2mm
177-299	Setting Ring 5" DIA.
177-303	Setting Ring 7" DIA.
952623	Extension Rod 5.9" (150mm)
210189	Spanners (one pair)
202863	Hex Wrench
938882	SR44 Battery



SERIES 468 Holtest Set

These Holtests are versatile, three-point internal micrometers for the accurate and efficient direct measurement of internal diameters. Three anvils, evenly spaced 120° apart, contact the internal wall surfaces and find true alignment with the axis of the bore for accurate ID measurement.



368-103 Holtest

FEATURES

- Measurements can be taken nearly up to the bottom of the bore.
- Highly durable because of carbide/titanium tipped contact points. Carbide tipped contact points (< 12mm models), Titanium coated contact points (> 12mm models).
- Ratchet stop for constant measuring force.
- Can measure deep holes by attaching an extension rod which is available on models with over 6mm measuring range.



368-901 Holtest Set

SPECIFICATIONS

Range	Accuracy
.275-.8"	.00008"
6-20mm	0.002mm
.8-4"	.00012"
20-100mm	0.003mm
4-12"	.0002"
100-300mm	0.005mm

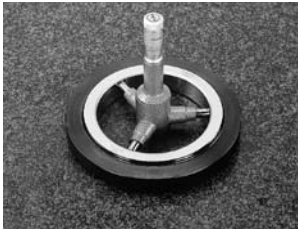
Range	Measuring Force (per Anvil)
.275-.5"	4-20N
6-12mm	4-20N
.5-4"	15-45N
12-100mm	15-45N
4-12"	30-75N
100-300mm	30-75N

Inch

Order No.	Range	Individual Order No.	Graduation	Accessories Included in Set
368-921-10	.275-.350"	368-201-10	.0001"	177-179 Setting Ring .350" DIA.
	.350-.425"	368-202-10	.0001"	177-180 Setting Ring .500" DIA.
	.425-.500"	368-203-10	.0001"	952322 Extension Rod 4" 205289 Spanners (pair) 202863 Hex Wrench

Metric

Order No.	Range	Individual Order No.	Graduation	Accessories Included in Set
368-901-10	6-8mm	368-101-10	0.001mm	177-125 Setting Ring 8mm DIA.
	8-10mm	368-102-10	0.001mm	177-126 Setting Ring 10mm DIA.
	10-12mm	368-103-10	0.001mm	952322 Extension Rod 100mm 205289 Spanners (pair) 202863 Hex Wrench



FEATURES

- Accessories for Inside Micrometers, Holtest and Dial Bore Gauges.
- Used for quick zero adjustment of dial bore gauges, Holtest, and inside micrometers.
- Actual inside diameter is marked on each ring.
- Setting Rings also available in metric sizes.

SPECIFICATIONS

Inch			
Size	Order No.	Accuracy	Mass
.1"	177-209	±.00004"	.059lbs.
.16"	177-206	±.00004"	.057lbs.
.24"	177-207	±.00004"	.055lbs.
.275"	177-281	±.00004"	.055lbs.
.35"	177-179	±.00004"	.127lbs.
.425"	177-293	±.00004"	.123lbs.
.50"	177-180	±.00004"	.116lbs.
.60"	177-181	±.00004"	.162lbs.
.65"	177-182	±.00004"	.242lbs.
.70"	177-183	±.00004"	.242lbs.
.80"	177-287	±.00004"	.220lbs.
1.0"	177-184	±.00004"	.440lbs.
1.2"	177-289	±.00004"	.836lbs.
1.4"	177-185	±.00004"	.770lbs.
1.6"	177-291	±.00004"	.682lbs.
1.8"	177-186	±.00004"	1.034lbs.
2.0"	177-187	±.00004"	1.254lbs.

Size	Order No.	Accuracy	Mass
2.4"	177-293	±.00004"	2.420lbs.
2.5"	177-315	±.00006"	2.200lbs.
2.8"	177-188	±.00006"	2.024lbs.
3.0"	177-317	±.00006"	3.300lbs.
3.2"	177-295	±.00006"	3.080lbs.
3.5"	177-319	±.00006"	3.960lbs.
3.6"	177-189	±.00006"	3.740lbs.
4.0"	177-297	±.00008"	5.060lbs.
5.0"	177-299	±.00008"	11.660lbs.
6.0"	177-301	±.00008"	12.980lbs.
7.0"	177-303	±.00010"	14.740lbs.
8.0"	177-305	±.00010"	22.000lbs.
9.0"	177-307	±.00010"	23.980lbs.
10.0"	177-309	±.00012"	26.180lbs.
11.0"	177-311	±.00012"	35.860lbs.
12.0"	177-313	±.00012"	37.840lbs.

Ceramic setting rings



177-424

177-429

177-432

Ceramic Setting Rings are also available. No more anticorrosion treatment is required when handling Ceramic Setting Rings normally, resulting in simple maintenance and storage.

Technical Data

Tolerance between the nominal size and the actual diameter:

- ±0.01mm for ø1 - 45mm setting rings
- ±0.02mm for ø50 - 300mm setting rings
- ±.0004" for .1" - 1.8" DIA. setting rings
- ±.0008" for 2" - 12" DIA. setting rings

Cylindricity:

- 1.0µm for ø1 - 60mm setting rings
- 1.5µm for ø62 - 90mm setting rings
- 2.0µm for ø100 - 150mm setting rings
- 2.5µm for ø175 - 225mm setting rings
- 3.0µm for ø250 - 300mm setting rings
- .00004" for .1" - 2.4" DIA. setting rings
- .00006" for 2.5" - 3.6" DIA. setting rings
- .00008" for 4" - 6" DIA. setting rings
- .00010" for 7" - 9" DIA. setting rings
- .00012" for 10" - 12" DIA. setting rings

Digimatic Depth Gauge

Mitutoyo

The Digimatic Depth Gauge with Absolute Encoder features many functions as well as a 330° rotating face

FEATURES

- Uses IDC Series Digimatic Indicator. This offers many special functions including presetting, GO/±NG judgment and SPC data output.
- With the supplied extension rods, depths up to 7.87" (200mm) can be measured.



547-217 — Depth Gauge

SPECIFICATIONS

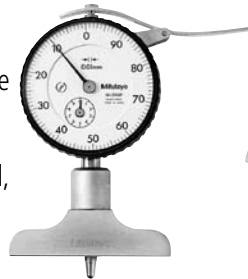
ABSOLUTE

Inch/Metric		Order No.	Spindle Stroke	Remarks
Graduation	Range			
.00005"/0.001mm	0-8"/0-200mm	547-257	.5"	w/Angular base (2.5 x .63")
.00005"/0.001mm	0-8"/0-200mm	547-258	.5"	w/Angular base (4 x .63")
.0005"/0.01mm	0-8"/0-200mm	547-217	.5"	w/Angular base (2.5 x .63")
.0005"/0.01mm	0-8"/0-200mm	547-218	.5"	w/Angular base (4 x .63")

Dial Depth Gauge

FEATURES

- Wide probing range is available with the supplied extension rod.
- Contact point is made of alloyed steel.
- Bottom surface of the base is hardened, ground and lapped for the highest degree of flatness.



7211



7214

SPECIFICATIONS

Inch		Order No.	Spindle stroke	Remarks
Graduation	Range			
.001"	0 - 8"*	7217	1"	w/Angular base (2.5 x .63")
		7218	1"	w/Angular base (4 x .63")

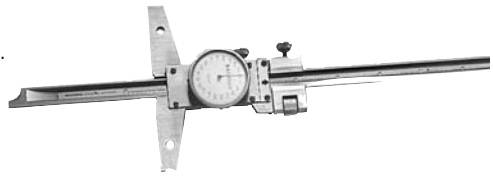
*Available with extension rods

Metric		Order No.	Spindle stroke	Remarks
Graduation	Range			
0.01mm	0 - 200mm*	7211	10mm	w/Angular base (63.5x16mm)
		7212	10mm	w/Angular base (101.6x16mm)

*Available with extension rods

FEATURES

- Easier and faster reading Depth Gauge.
- Made of hardened stainless steel.
- Base and measuring faces are hardened and micro-lapped.
- Extension Bases are available.



SERIES 527 — with Fine Adjustment

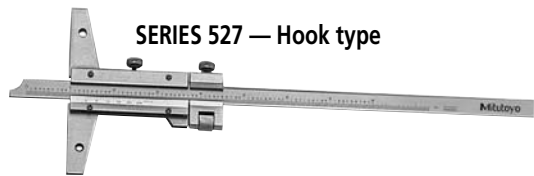
SPECIFICATIONS

Inch				
Range	Order No.	Dial reading	Accuracy	Remarks
0 - 6"	527-311-50	.001", .2"/rev.	±.001"	—
0 - 8"	527-312-50	.001", .2"/rev.	±.001"	—
0 - 12"	527-313-50	.001", .2"/rev.	±.0015"	—

Vernier Depth Gauge

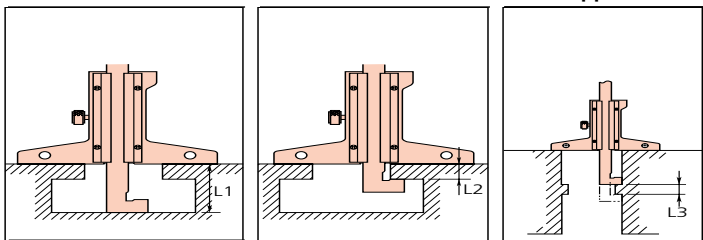
FEATURES

- The end of the main scale is hook-shaped to allow depth and thickness measurements of a projected portion or lip in a hole, in addition to standard depth measurement.
- Base and measuring faces are hardened and micro-lapped.
- Extension Bases are available.



SERIES 527 — Hook type

Applications



SPECIFICATIONS

Inch				
Range	Order No.	Vernier reading	Accuracy	Remarks
0 - 6"	527-111	.001"	±.001"	With Fine Adjustment
0 - 8"	527-112	.001"	±.001"	With Fine Adjustment
0 - 12"	527-113	.001"	±.0015"	With Fine Adjustment
0 - 24"	527-114	.001"	±.002"	With Fine Adjustment
0 - 40"	527-115	.001"	±.003"	With Fine Adjustment

Mitutoyo offers a complete selection of gauge blocks available in a choice of rectangular or square, metric or inch and steel (Gauge Blocks) or ceramic (CERA Blocks) types. Mitutoyo CERA Blocks are some of the finest gauge blocks available anywhere in the world.

Inspection Certificates

It is an absolute necessity that each gauge block carries its own Serial Number for calibration purposes, and to determine the actual size to the closest millionth of an inch. Please note all Mitutoyo blocks are serialized regardless of the grade classification. A Certificate of Accuracy, traceable to the NIST is furnished with each Mitutoyo gauge block set and individual block.



516-902-26 Gauge Block Set

Suggested Replacement Grade Cross Reference as per ASME

Former Federal Grade (GGG-G-15C)	Grade (This Standard)
No. Equivalent	K
0.5	No Equivalent
1	00
2	0
3	AS-1
No Equivalent	AS-2

SPECIFICATIONS

Blocks	Blocks included in Set	Grade	Order No. Steel	Order No. CERA
81	Step of .0001": .1001 - .1009" (9 pcs.)	Grade K	516-549-56	516-557-56
	Step of .001": .101 - .149" (49 pcs.)	Grade 00	516-901-26	516-301-26
	Step of .05": .05 - .95" (19 pcs.)	Grade 0	516-902-26	516-302-26
	Step of 1": 1-4" (4 pcs.)	Grade AS-1	516-903-26	516-303-26
			Grade AS-2	516-904-26
35	.10005" (1 pc.)	Grade K	516-550-56	516-558-56
	Step of .0001": .1001-.1009" (9 pcs.)	Grade 00	516-913-26	516-313-26
	Step of .001": .101-.109" (9 pcs.)	Grade 0	516-914-26	516-314-26
	Step of .01": .10-.19" (10 pcs)	Grade AS-1	516-915-26	516-315-26
	.20, .30, .50, 1.0, 2.0 and 4.0" (6 pcs.)	Grade AS-2	516-916-26	516-316-26
28	.02005" (1 pc.)	Grade K	516-551-56	---
	Step of .0001": .0201-.0209" (9 pcs.)	Grade 00	516-917-26	---
	Step of .001": .021-.029" (9 pcs.)	Grade 0	516-918-26	---
	Step of .010": .010-.090" (9 pcs.)	Grade AS-1	516-919-26	---
		Grade AS-2	516-920-26	---

Please refer to the Mitutoyo full line catalog for the complete selection of gauge blocks and sets available.

Natural granite seasoned for thousands of years, is free from deterioration or dimensional change over time. Granite surface plates have many advantages over cast iron surface plates:

FEATURES

- Twice as hard as cast iron.
- Minimal changes in dimension due to temperature changes.
- Free from wringing, so there is no interruption of work. Free from burrs or protrusions because of the fine grain structure and insignificant stickiness; this ensures a high degree of flatness over a long service life and causes no damage to other parts or instruments.
- Trouble-free operation for use with magnetic materials.
- Long life and rust free, resulting in low maintenance costs.

**Granite Surface Plate.
Stand sold separately.**



SPECIFICATIONS

Granite Surface Plates

Order No.	Size	Grade
517-801	9 x 12 x 3"	A
517-803	12 x 18 x 4"	A
517-805	18 x 24 x 4"	A
517-808	24 x 36 x 5"	A
517-814	36 x 48 x 6"	A
517-819	48 x 72 x 12"	A
517-708	24 x 36 x 6"	AA
517-714	36 x 48 x 8"	AA

Steel Stands

Order No.	Size	Weight
517-950	12 x 18"	42 lbs.
517-952	18 x 24"	50 lbs.
517-956	24 x 36"	73 lbs.
517-964	36 x 48"	105 lbs.
517-969	48 x 72"	205 lbs.

Accuracy=Overall Accuracy (millionth of an inch) Other sizes and grades are available

- Mitutoyo Granite Surface Plates meet or exceed Federal Specification GGG-P-463c. Each Surface Plate is shipped with a Certificate of Accuracy which guarantees its accuracy and verifies its traceability to the National Institute of Standards and Technology.
- All plates from 48" x 108" and larger are Machine Base Gray Granite. Smaller plates are Black Granite.
- Surface Plates, to size of specifications other than standard are available on special order.
- Surface Plates, with the bolt screws, available on special order

Surface Plate Cleaner

Size	Order no.
Gallon	517-001
Quart	517-001-1-L

Provided with MSDS Sheet





547-400



547-300



547-320

The Digimatic Thickness Gauges incorporate Mitutoyo's popular IDC and IDS Series Digimatic Indicators to provide error-free LCD readings as well as data output for SPC analysis.

FEATURES

- Wide range of applications with various types of measuring faces (on the spindle and anvil).
- **547-400** is ideally suited for measuring thicknesses of paper, film, wire, sheet metal and similar materials.

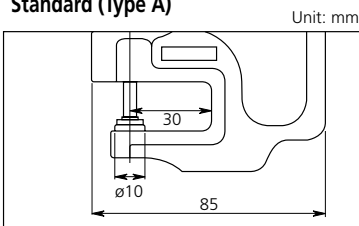
ABSOLUTE

SPECIFICATIONS

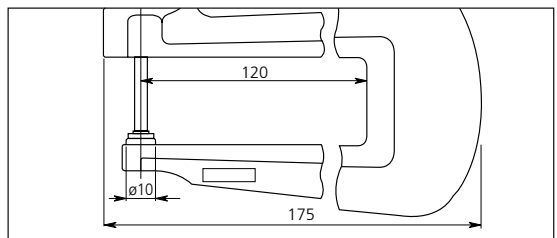
Inch/Metric		Absolute Digimatic Thickness Gages (IDC Type)		
LCD resolution	Range	Order No.	Mass	Remarks (Applications)
.00005"/0.001mm	0 - .47" (0 - 12mm)	547-400	.62 lbs.	For paper (film, wire) thickness
.0005"/0.01mm	0 - .4" (0 - 10mm)	547-300	.48 lbs.	Type A: Standard type
		547-320	.86 lbs.	Type B: Deep throat type
		547-312	.53 lbs.	Type C: For lens thickness
		547-316	.51 lbs.	Type D: For groove thickness
		547-361	.46 lbs.	Type E: For tube thickness

Inch/Metric		Absolute Digimatic Thickness Gages (IDS Type)		
LCD resolution	Range	Order No.	Mass	Remarks (Applications)
0.01mm	0 - .47" (0 - 12mm)	547-500	.44 lbs.	Type A: Standard type
		547-520	.81 lbs.	Type B: Deep throat type
		547-512	.48 lbs.	Type C: For lens thickness
		547-516	.46 lbs.	Type D: For groove thickness
		547-561	.42 lbs.	Type E: For tube thickness

Dimensions (Digimatic & Dial) Standard (Type A)



Deep throat (Type B)



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

SPECIFICATIONS

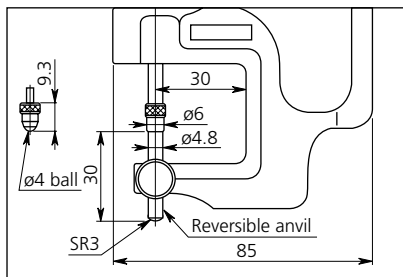
Metric			
Graduation	Range	Order No.	Remarks (Applications)
0.001mm	0 - 1mm	7327	Type A: Standard type
0.01mm	0 - 10mm	7301	Type A: Standard type
		7321	Type B: Deep throat type
		7313	Type C: For lens thickness
		7315	Type D: For groove thickness
		7360	Type E: For tube thickness
0 - 20mm		7305	Type A: Standard type
		7323	Type B: Deep throat type

Inch			
Graduation	Range	Order No.	Remarks (Applications)
.0001"	0 - .05"	7326S	For paper (film, wire) thickness
.001"	0 - .4"	7300S	Type A: Standard type
		7320	Type B: Deep throat type
0 - 1"		7304S	Type A: Standard type

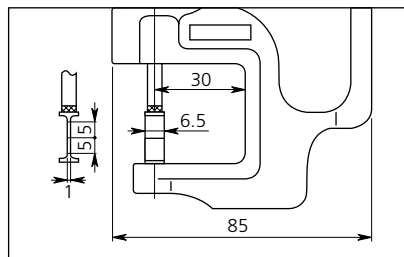


Dimensions (Digimatic & Dial) continued

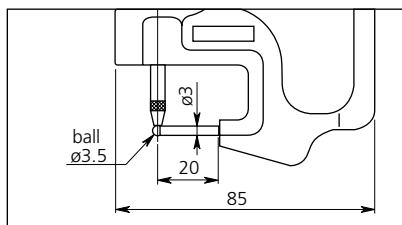
Lens thickness (Type C)



Groove (Type D)

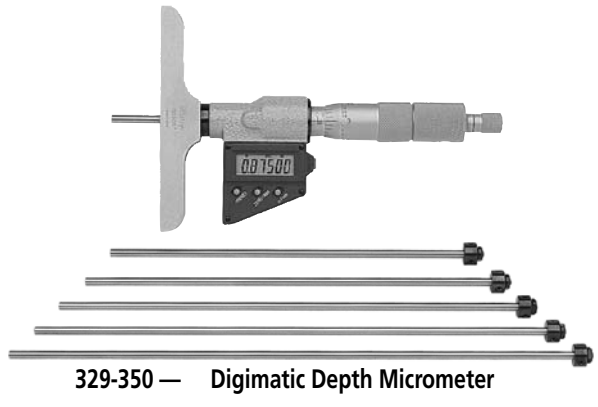


Tube thickness (Type E)





**129-131 —
Depth Micrometer**



329-350 — Digimatic Depth Micrometer

FEATURES

- Rod length can be adjusted in 1" (25mm) increments.
- Ratchet stop for consistent force.
- .157" DIA. (ø4mm) interchangeable rods with lapped measuring end provide a wide measuring range.
- Crisp, clear graduations on the thimble.
- 329 Series (LCD readout type) are provided with SPC output.

SPECIFICATIONS

Inch				
Range	Order No.	Graduation	Dimensions of Reference Face	Remarks
0-3"	129-126	.001"	2.5 x .63"	with 3 rods
	129-130	.001"	4 x .63"	with 3 rods
0-4"	129-127	.001"	2.5 x .63"	with 4 rods
	129-131	.001"	4 x .63"	with 4 rods
0-6"	129-128	.001"	2.5 x .63"	with 6 rods
	129-132	.001"	4 x .63"	with 6 rods
0-12"	129-149	.001"	2.5 x .63"	with 12 rods
	129-150	.001"	4 x .63"	with 12 rods

Inch/Metric (Digimatic)				
Range	Order No.	Graduation	Dimensions of Reference Face	Remarks
0-6"	329-350	.00005"/0.001mm	4 x .63"	with 6 rods
0-12"	329-351	.0001"/0.001mm	4 x .63"	with 12 rods

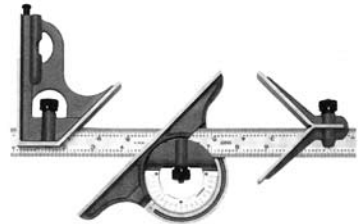
Combination Square sets are available in a large variety of styles and sizes. Blades and heads are also sold separately.

FEATURES

- Three measuring heads are attached to the stainless steel rule (blade), allowing versatile measurements on various types of workpieces.
 Square Head - Used to set the rule at 90° or 45° to an edge of a workpiece.
 Centre Head - Used to locate centres of round workpieces.
 Protractor Head - Used to set the rule at a desired angle to an edge of a workpiece. Also used for measuring angles.
- The measuring heads are hardened.
- Economy sets not including a protractor head are also available.

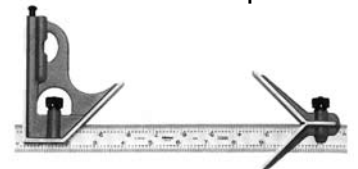
SPECIFICATIONS

Inch			
Size	Order No.		Remarks
	Complete	Semi-Complete	
6"	---	180-901	With blade (180-401)
6"	---	180-902	With blade (180-402)
12"	180-905	180-903	With blade (180-501)
12"	180-906	180-904	With blade (180-502)



180-905 — Complete Set

Inch/Metric			
Size	Order No.		Remarks
	Complete	Semi-Complete	
6"/150mm	---	180-915	With blade (180-403)
12"/300mm	180-907	180-909	With blade (180-503)



180-903 — Semi-Complete Set

Steel Rules

Rules are available in many styles, sizes and finishes. See the Mitutoyo full-line catalog for all Pocket Steel Rules, Steel Rules including rigid, semi-flexible and full flexible types.



SPECIFICATIONS

Inch and Metric					
Size	Order No.	Graduations	Width	Remarks	
6" (4R)	182-101	1/8, 1/16, 1/32, 1/64"	.75"	Wide Rigid Rule	
6" x 150mm	182-105	1/32, 1/64", 1mm, 0.5mm	.75"	Wide Rigid Rule	
12" x 300mm	182-125	1/32, 1/64", 1mm, 0.5mm	.98"	Wide Rigid Rule	
24" (5R)	182-163	1/10, 1/100, 1/32, 1/64"	1.18"	Wide Rigid Rule	
6" (4R)	182-201	1/8, 1/16, 1/32, 1/64,"	.47"	Full Flexible	
12" (4R)	182-221	1/8, 1/16, 1/32, 1/64,"	.47"	Full Flexible	
6" x 150mm	182-302	1/16, 1/32, 1/64", 1mm, 0.5mm.	51"	Semi Flexible	

By simply connecting the Input Tool to the connector of your PC and measuring gauge, the measurement data can be directly transmitted to the PC. The USB and PS/2 signal conversion types allow you direct input of the measurement data into a spreadsheet, such as "MS-Excel" and "Lotus 123" running on the PC. The RS-232C conversion type is available.

FEATURES

- An interface unit to directly enter the measurement data of Mitutoyo digimatic gauges to a PC.
- The data entered is available for a spreadsheet software.
- Three choices of data communication methods.
- Data input via the Input Tool is output to an inspection certificate using optional MeasureReport (02AR141) program.
- Optional MeasurLINK SPC-Light (02ARA150) offers GO/NG judgment, process capability value, control chart, etc. which are processed and displayed in real time on the measurement instruction screen using a bit map.



Series 264 Input Tool shown connected to PC

SPECIFICATIONS

Order No.	264-005	264-007	264-012*
Data input port	1 channel for Mitutoyo Digimatic gauge		
Data output port	Digimatic - PS/2	Digimatic RS-232C	Digimatic USB
Power Supply	Supplied from PC	Supplied from PC	Supplied from PC
Dimensions	72 (W) x 43 (D) x 23.5 (H)mm		

*Applicable to US keyboard. Please contact Mitutoyo when using other type of keyboard

- The operating system of the PC (Windows®98 or later) automatically recognizes the Input Tool, when it is connected to the PC's USB connector so tedious configuration of new hardware, such as driver settings, is no longer necessary.



Digimatic USB signal conversion type (264-012)

- Data is entered in specified cell by simply pressing the data switch. An Enter code is added to the value displayed by the measuring gauge when the value is output to the PC. Therefore, in Excel, the cursor automatically moves to the next cell after data has been entered, if such a setting is selected in the program.

FEATURES

- High accuracy measurements with a hand-held tester.
- Confirmation of measurement results and an assessed profile without printout.
- Roughness parameters that conform to international standards.
- Measurement/evaluation of stepped features and straightness
- Advanced data processing with an extended analyzing program.
- Evaluation parameters; Ra, Ry, Rz, Rq, Pc, Rz, mr, Rt, Rp, Rv, Sm, S, δc , Rk, Rpk, Rvk, Mr1, Mr2, A1, A2, Lo, Ppi, R, AR, Rx, Δa , Δq , Ku, HSC, mrd, Sk, W, AW, Wte, Wx, Vo

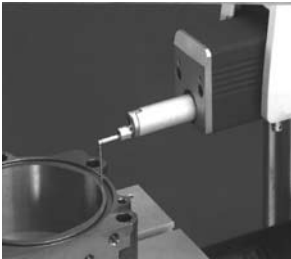
SJ-401 Surftest



SPECIFICATIONS

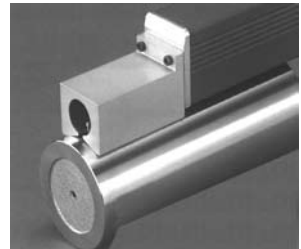
Order No.		SJ-401 178-947-3A	SJ-402 178-945-2A
Measuring Method		Skidless/Skid measurement	
Measuring Range	Z axis	32000 μ m, 3200 μ m, 320 μ m(800 μ m, 80 μ m, 8 μ m) (Up to 2400 μ m with an option stylus)	
Measuring Range	X Axis	1" (25mm)	2" (50mm)
Drive method	Straightness	12 μ m/1" (0.3 μ m/25mm)	20 μ m/2" (0.5 μ m/50mm)
Height-Tilt	Tilt Adjustment range Height adjustment amount	$\pm 1.5^\circ$.39" (10mm)	

Measurement Applications



Deep groove measurement

Cylinder measurement with a support foot



Measurement with a stand and leveling table



Upside down measurement



FEATURES

- Portable surface roughness tester takes the lab to the shop floor.
- Large characters are displayed on the large easy-to-view LCD.
- Precision roughness specimen is supplied.
- Available in three traverse styles; longitudinal, lateral or front lift.
- Selectable Auto-Sleep function to save battery life.
- SJ-301 units allow for measurement of parts with small surface interruptions.

Feature	SJ-201P 178-923-2A	SJ-301 178-954-3A
Measuring Range	Z axis X Axis	12000 μ m (350 μ m) .5" (12.5mm)
Evaluation Parameters	19	36
Conforms to various standards	■	■
Stores measurement conditions and data	■	■
Reads profiles in the LCD window	■	■
High-speed thermal printer	Optional	Built-in
Statistical Analysis function	■	■
Auto calibration	■	■
GO/NG judgment	■	■
Customization function	■	■
Arbitrary evaluation length	■	■
One-step detector replacement	■	■
Selectable language for display/printout	■	■
Operator selectable Auto-sleep function	■	■
Choose between 3 styles of drive units (Standard Drive, S-Drive, Front Lift Drive)	■	■
Two-place inclination compensation function		■
Data deletion function		■



S-Drive quickly measures the surface roughness in the axial direction



One-step detector replacement

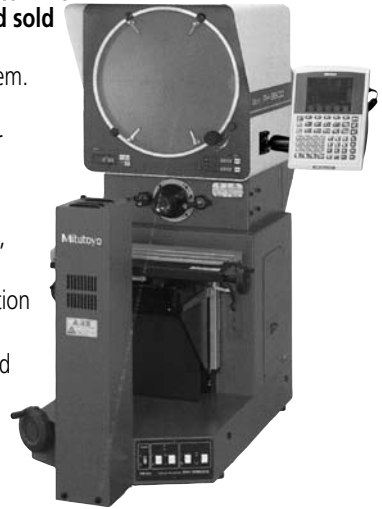
PH3515F Profile Projector

Mitutoyo

PH-3515F Projector with QM- Data. Stand sold separately.

FEATURES

- Heavy duty, bench-top model with horizontal optical system.
- Erect image on day-bright screen.
- 14" (356mm) dia. protractor screen with crosshair line for easy alignment.
- Digital angle measurement to 1' or 0.01°.
- Floating type workstage incorporates linear scales for fast, accurate measurement.
- Contour illumination with halogen bulb. Surface illumination with halogen bulb.
- Suitable for thread pitch measurements - free from blurred or distorted images when the workpiece is angled.
- Wide range of accessories for various applications.
- Workstage travel 10" x 6".



SPECIFICATIONS

Model	PH-3515F	
Order No.	172-848-1A	
Protractor Screen	Diameter	14" (356mm)
Material	Fine ground glass with crosshair lines	
Angle Disp.	Digital ($\pm 370'$, 1' or 0.010 selectable)	
Function	Zero-setting, ABS/INC mode selection	
Illumination	Contour	24V, 150W halogen lamp, telecentric illumination, 2 stage brightness selector, heat absorbing filter
	Surface	24V, 150W halogen lamp
Magnifications	5X, 10X, 20X, 50X	
Magnification Accuracy	Contour 0.1% or less Surface 0.15% or less	
Workstage	Table travel: 10" (254mm) Table size: 17.7 x 5.7" (450 x 146mm)	
	$\pm 10^\circ$ Swivel table 100 lb. max. loading weight	
	Built-in measuring unit: Linear Scale AT-111	
Y-Axis	Vertical travel: 6" (153mm) Built-in measuring unit: Linear Scale AT-111	
XY Counter	Option	

QM-DATA FEATURES

- Geometric readout/analysis unit for optical instruments like profile projectors.
- Measurement data is displayed on the back-lit LCD with graphical interfaces.
- The geometric feature that you select is displayed with the probing navigator.
- Measurement map and indicator shows the probing points and sequences. Simply probe the points you want and click by following the indicator.



QM-Data

FEATURES

- Mitutoyo's lens technology and workmanship combine to provide a bright, crisp image for error free inspection.
- Generous X,Y workstage travel (8" x 4") provides users with ample range to cover application needs.
- New location of the Y-axis handle improves ease of operation.
- Workstage provides high accuracy and can handle a workload of up to 100 lbs.

**PH-A14 Projector with QM- Data.
Stand sold separately.**



SPECIFICATIONS

Model	PH-A14	
Order No.	172-810A	
Projected Image	Inverted image	
Protractor Screen	Diameter	14" (356mm)
	Angle	Vernier reading, Resolution .2'
Illumination	Contour	24V, 150W halogen lamp, telecentric illumination
	Surface	24V, 150W halogen lamp Twin fiber-optic illuminator
Magnifications	10X (Standard), 20X, 50X, 100X (Option)	
Magnification Accuracy	Contour	0.1% or less
	Surface	0.15% or less
Workstage (X-Axis)	Table travel	8" (203mm)
	Table size:	16" x 6" (407 x 153mm)
	Reading Unit	Linear Scale
	Resolution	.00005" (0.001m)*
Workstage (Y-Axis)	Table travel	4" (102mm)
	Reading Unit	Linear Scale
	Resolution	.00005" (0.001m)*
	Workstage (Z-Axis)	Focus travel
XY Counter	Option	

* Set by XY counter

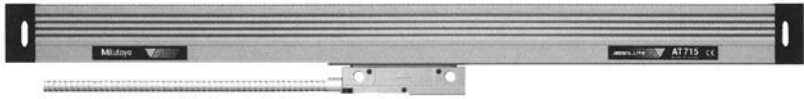


QM-Data

QM-DATA FEATURES

- Geometric readout/analysis unit for optical instruments like profile projectors.
- Measurement data is displayed on the back-lit LCD with graphical interfaces.
- The geometric feature that you select is displayed with the probing navigator.
- Measurement map and indicator shows the probing points and sequences. Simply probe the points you want and click by following the indicator.

Using new Electro-magnetic Induction Detection Method with improved reliability and contamination protection, the AT715 Linear Scale is ideal for even the harshest shop condtions.



AT-715 Linear Scale

SPECIFICATIONS



AT Series Linear Scale

Specifications	
Detection Method	Electro-magnetic Induction System
Interface	Mitutoyo Original Serial Interface (Connectable only to KA Counter)
Range Available	4" (100mm) to 72" (1800mm)
Accuracy (20°)	7 + 13 x LO/1000mm (LO: Effective Length)
Dust/Water Proof	IP-55

The affordable KA counter is a high performance counter with both Mill and Lathe functions Connectable with AT715 scales as Electro-magnetic Induction system and AT100 series scales as Photo-electric system.

SPECIFICATIONS

KA Counter

Specifications	174-173A (2-Axis)	174-175A (3-Axis)
Connectable Linear Scale	AT715 and AT100 Series	
Standard Resolution	.001"/.0005"/.0002"/.0001"/.00005" (0.010mm/0.005mm/0.002mm/0.001mm): When connecting AT715 and AT100 Series .002"/.0010"/.0005"/.0004"/.0002"/.0001" (0.020mm/0.010mm/0.004mm/0.002mm) When connecting AT715 and AT100 (DIA.)	
Display	Seven segment Green LED	
Display Range	X, Y, Z Axis ±999.9999"/±9999.999mm	

FEATURES

- Bolt Hole Circle calculation
- Diameter Display and Tool Offsets (Parameter mode)
- Memory compensation value
- Selecting coordinates 0 to 10
- Preset
- Detection reference*
- Hold reference*
- Touch Signal Probe Set and Hold*
- Zero Approach machining
- Pitch Approach machining
- 1/2 calculation
- inch/mm

*when connecting to AT100 Series



AT-715 Linear Scale with KA Counter

DRO PACKAGES WITH: AT715 ELECTRO-MAGNETIC INDUCTION SYSTEM

2 Axis, KA Counter Milling System Package Includes:

- KA Counter
- AT715 Linear Scales
- Brackets for Scales
- Tray Kit

ABSOLUTE



**KA Counter with
AT-715 Electro-magnetic
Induction Scale**

SPECIFICATIONS

DRO Package:

With Electro-Magnetic Induction AT715 Scales

Specifications	D950-970	D950-971
X Axis Travel	30" (750mm)	36" (900mm)
Y Axis Travel	12" (300mm)	16" (400mm)

DRO PACKAGES WITH: AT115 LINEAR GLASS SCALES

2 Axis, KA Counter Milling System Package Includes:

- KA Counter
- AT115 Linear Scales
- Brackets for Scales
- Tray Kit



**KA Counter with
AT-115 Photo-electric
Glass Scale**

SPECIFICATIONS

DRO Package:

With Linear Glass Scales

Specifications	D950-960	D950-961
X Axis Travel	30" (750mm)	36" (900mm)
Y Axis Travel	12" (300mm)	16" (400mm)

Coordinate Measuring Machines

Vision Measuring Systems

Surface, Form and Contour
Measurement

Optical Measuring

Sensor Systems

Hardness Measuring

Digital Scale and DRO Systems

Small Tool Instruments and Data
Management

09/2005 Printed in Canada

ABSOLUTE

This symbol is a registered trade mark. Absolute System is patented by Mitutoyo in Japan.

Note: All information regarding our products, and in particular the illustrations, drawings, dimensional and performance data contained in this pamphlet, as well as other technical data are to be regarded as approximate average values. We therefore reserve the right to make changes to the corresponding designs, dimensions and weights. The stated standards, similar technical regulations, descriptions and illustrations of the products were valid at the time of printing.

Mitutoyo Canada Inc.

2121 Meadowvale Blvd.
Mississauga, ON L5N 5N1
Phone (905) 821-1261
Fax (905) 821-4968

7075 Place Robert-Joncas, Suite 129
Montreal, Quebec H4M 2Z2
Phone (514) 337-5994
Fax (514) 337-4998

info@mitutoyo.ca
www.mitutoyo.ca

Mitutoyo

Precision is our Profession