

Mitutoyo General Catalog

Miscellaneous

Move to other products

- 1 SPC
- 2 Caliper
- 3 Depth gage
- 4 Height gage
- 5 Micrometer
- 6 Inside micrometer
- 7 Micrometer head
- 8 Indicator
- 9 Test indicator
- 10 Gage head
- 11 Gauge Block
- 12 Reference gage
- 13 Surface plate
- Miscellaneous
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- 16 Digimatic scale unit
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- 19 Contracer
- 20 Surftest
- 21 Formtracer
- 22 Roundtest
- 23 Hardness tester
- 24 CMM
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List of products

Square Master
SERIES 311



Precision Squares
SERIES 916



Precision Dial Square
SERIES 7



Spring Dividers
SERIES 950



CERA Straight Master
SERIES 311



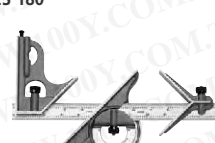
Bench Comparator
SERIES 162



Bench Centers
SERIES 967



Combination Square Sets
SERIES 180



Digimatic Universal Protractor
SERIES 187



Universal Bevel Protractor
SERIES 187



Bevel Protractor
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Precision Levels
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Thickness Gages
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Pocket Magnifiers
SERIES 183



Zoom Loupe
SERIES 183



Pocket Comparators
SERIES 183



Clear Loupe
SERIES 183



Litematic
SERIES 318



Litematic Head
SERIES 318



Neo-Derm
SERIES 179



Digi-Derm
SERIES 179



勝特力材料 886-3-5753170
勝特力电子(上海) 86-21-34970699
勝特力电子(深圳) 86-755-83298787
[Http://www.100y.com.tw](http://www.100y.com.tw)

Mitutoyo

Square Master

SERIES 311 — Squareness/Straightness Measuring Instrument

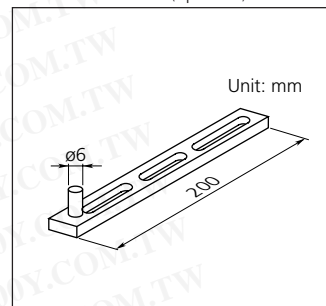


311-245

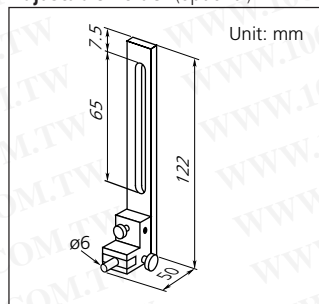
Riser block (optional)



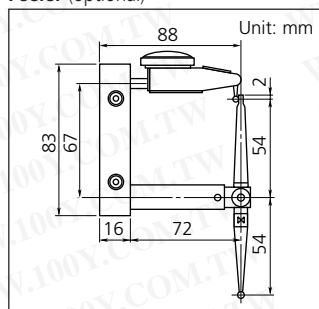
Extension holder (optional)



Adjustable holder (optional)



Feeler (optional)



FEATURES

- Squareness (perpendicularity) and straightness measurements can be performed accurately and efficiently by moving a lever. (Parallelism between surfaces can be determined from straightness measurements.)
- With a dial test indicator for reading displacements.
- Its own squareness is adjustable.

SPECIFICATIONS

Metric

| Vertical travel | Order No. | Squareness | Straightness | Dial test indicator (provided) Graduation | Range | Dial reading | Accuracy | Mass |
|-----------------|-----------|------------|--------------|--|-------|--------------|----------|--------|
| 150mm | 311-215 | 3μm | 2μm | 0.002mm | 0.2mm | 0-100-0 | 3μm | 13.7kg |
| 250mm | 311-225 | 6μm | 2.5μm | 0.002mm | 0.2mm | 0-100-0 | 3μm | 16.2kg |
| 450mm | 311-245 | 9μm | 3.5μm | 0.002mm | 0.2mm | 0-100-0 | 3μm | 24kg |

Inch

| Vertical travel | Order No. | Squareness | Straightness | Dial test indicator (provided) Graduation | Range | Dial reading | Accuracy | Mass |
|-----------------|-----------|------------|--------------|--|-------|--------------|----------|------------|
| 6" | 311-216 | .00012" | .00008" | .0001" | .008" | 0-4-0 | ±.0001" | 30.14 lbs. |
| 10" | 311-226 | .00024" | .0001" | .0001" | .008" | 0-4-0 | ±.0001" | 35.64 lbs. |
| 18" | 311-246 | .00036" | .00014" | .0001" | .008" | 0-4-0 | ±.0001" | 52.8 lbs. |

OPTIONAL ACCESSORIES

| Order No. | Description |
|-----------------|--|
| (See page 293.) | Riser blocks* |
| 517-665 | Granite square, 45 (W)x140 (D)x280 (H)mm |
| 900571 | Adjustable holder |
| 900551 | Extension holder |
| 900565 | Feeler** |

*Not available for 450mm (18") model.

**Adapter (902803) is required for metric model.

Precision Squares

SERIES 916



FEATURES

- Regular type and beveled-edge type squares are available.
- All edges are hardened and precision ground.

SPECIFICATIONS

Squares (Beveled-edge Type)

| Dimensions (HxW) | Order No. | Squareness Outside | Squareness Inside |
|------------------|----------------|--------------------|-------------------|
| 50x40mm | 916-100 | 2.5μm | 6μm |
| 75x50mm | 916-101 | 3μm | 6.5μm |
| 100x70mm | 916-102 | 3μm | 7μm |
| 150x100mm | 916-103 | 3.5μm | 8μm |
| 200x130mm | 916-104 | 4μm | 9μm |

Squares

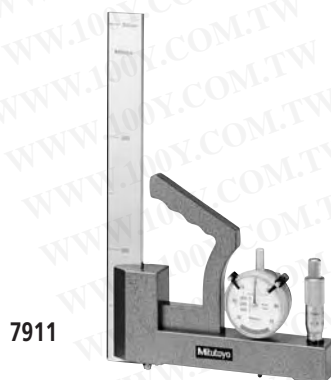
| Dimensions (HxW) | Order No. | Squareness Outside | Squareness Inside |
|------------------|----------------|--------------------|-------------------|
| 50x40mm | 916-211 | 6μm | 12.5μm |
| 75x50mm | 916-212 | 6.5μm | 14μm |
| 100x70mm | 916-213 | 7μm | 15μm |
| 150x100mm | 916-214 | 8μm | 17.5μm |
| 200x130mm | 916-215 | 9μm | 20μm |
| 250x165mm | 916-216 | 10μm | 22.5μm |
| 300x200mm | 916-217 | 11μm | 25μm |
| 400x250mm | 916-218 | 13μm | 30μm |

Squares with Stand

| Dimensions (HxW) | Order No. | Squareness Outside | Squareness Inside |
|------------------|----------------|--------------------|-------------------|
| 75x50mm | 916-401 | 6.5μm | 14μm |
| 100x70mm | 916-402 | 7μm | 15μm |
| 150x100mm | 916-403 | 8μm | 17.5μm |
| 200x130mm | 916-404 | 9μm | 20μm |
| 250x165mm | 916-405 | 10μm | 22.5μm |
| 300x200mm | 916-406 | 11μm | 25μm |
| 400x250mm | 916-407 | 13μm | 30μm |
| 500x300mm | — | 15μm | 35μm |
| 750x400mm | — | 20μm | 47.5μm |
| 1000x500mm | — | 25μm | 60μm |

Precision Dial Square

SERIES 7



FEATURES

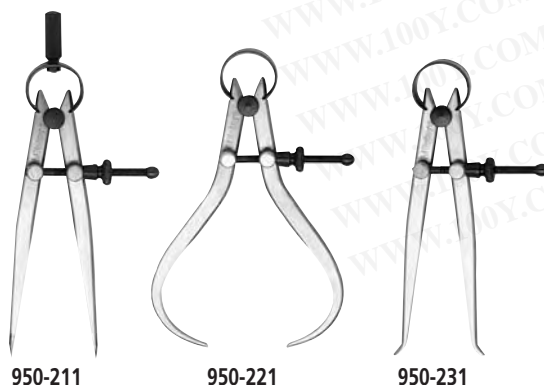
- Regular type and beveled-edge type blades are interchangeable.
- Squareness is indicated numerically on the dial.

SPECIFICATIONS

| Size | Order No. | Graduation | Range | Squareness |
|-------|-------------|------------|---------|--------------|
| 300mm | 7911 | 0.005mm | ±0.17mm | ±2.5μm/300mm |
| 600mm | 7912 | 0.025mm | ±0.24mm | ±5μm/600mm |

Spring Dividers, Outside Spring Calipers, Inside Spring Calipers

SERIES 950



FEATURES

- Spring Divider — Fully hardened and tempered joints, spring, washers and divider points.
- Outside Spring Caliper — Contact ends fully rounded to give accurate dimensions.
- Inside Spring Caliper — Ends fully rounded to give accurate contact with a workpiece.

SPECIFICATIONS

| Range | Order No. Spring divider | Order No. Outside spring calipers | Order No. Inside spring calipers |
|------------|-----------------------------|--------------------------------------|-------------------------------------|
| 4" (100mm) | 950-211 | 950-221 | 950-231 |
| 6" (150mm) | 950-212 | 950-222 | 950-232 |
| 8" (200mm) | 950-213 | 950-223 | 950-233 |

CERA Straight Master

SERIES 311 — Straightness Measuring Instrument



CERA Straight master is a master gage used for the straightness inspection of each axis movement such as a CMM, machine tool, semiconductor related equipment and form measuring machine. An alminac ceramic material is adopted to achieve the significant weight reduction compared with the conventional masters made from a stone or iron. Double faced type is laping the double face which can be used for straightness in horizontal and vertical as a reference square.

FEATURES

- Alminac ceramic made
- 50mm/100" pitch gradation scales
- Precision lapped measuring surface
- Little secular change
- Lightweight



| Metric | | High accuracy type | | |
|----------------|----------------|--------------------|--------------|-----------|
| Nominal length | Order No. | Section form | Straightness | Mass |
| 400mm | 311-332 | 35mm x 50mm | 0.2μm | 3.96 lbs. |
| 700mm | 311-335 | 35mm x 50mm | 0.4μm | 6.6 lbs. |
| 1000mm | 311-337 | 45mm x 80mm | 0.5μm | 17.6 lbs. |
| 1300mm | 311-339 | 45mm x 80mm | 0.7μm | 22 lbs. |

| Inch | | High accuracy type | | |
|----------------|----------------|--------------------|--------------|-----------|
| Nominal length | Order No. | Section form | Straightness | Mass |
| 16" | 311-342 | 1.38" x 1.97" | 8μin | 3.96 lbs. |
| 28" | 311-345 | 1.38" x 1.97" | 16μin | 6.6 lbs. |
| 40" | 311-347 | 1.78" x 3.15" | 20μin | 17.6 lbs. |
| 50" | 311-349 | 1.78" x 3.15" | 28μin | 22 lbs. |

SPECIFICATIONS

| Metric | | Standard type | | |
|----------------|----------------|---------------|--------------|-----------|
| Nominal length | Order No. | Section form | Straightness | Mass |
| 400mm | 311-302 | 35mm x 50mm | 0.3μm | 3.96 lbs. |
| 700mm | 311-305 | 35mm x 50mm | 0.5μm | 6.6 lbs. |
| 1000mm | 311-307 | 45mm x 80mm | 1μm | 17.6 lbs. |
| 1300mm | 311-309 | 45mm x 80mm | 1.5μm | 22 lbs. |

| Inch | | Standard type | | |
|----------------|----------------|---------------|--------------|-----------|
| Nominal length | Order No. | Section form | Straightness | Mass |
| 16" | 311-322 | 1.38" x 1.97" | 12μin | 3.96 lbs. |
| 28" | 311-325 | 1.38" x 1.97" | 20μin | 6.6 lbs. |
| 40" | 311-327 | 1.78" x 3.15" | 40μin | 17.6 lbs. |
| 50" | 311-329 | 1.78" x 3.15" | 60μin | 22 lbs. |

| Metric | | Double faced type | | |
|----------------|----------------|-------------------|--------------|-----------|
| Nominal length | Order No. | Section form | Straightness | Mass |
| 400mm | 311-352 | 45mm x 80mm | 0.3μm | 7.7 lbs. |
| 700mm | 311-355 | 45mm x 80mm | 0.5μm | 12.1 lbs. |
| 1000mm | 311-357 | 45mm x 80mm | 1μm | 17.6 lbs. |
| 1300mm | 311-359 | 45mm x 80mm | 1.5μm | 22 lbs. |

| Inch | | Double faced type | | |
|----------------|----------------|-------------------|--------------|-----------|
| Nominal length | Order No. | Section form | Straightness | Mass |
| 16" | 311-362 | 1.78" x 3.15" | 8μin | 3.96 lbs. |
| 28" | 311-365 | 1.78" x 3.15" | 16μin | 6.6 lbs. |
| 40" | 311-367 | 1.78" x 3.15" | 20μin | 17.6 lbs. |
| 50" | 311-369 | 1.78" x 3.15" | 28μin | 22 lbs. |

Bench Comparator

SERIES 162



162-101

SPECIFICATIONS

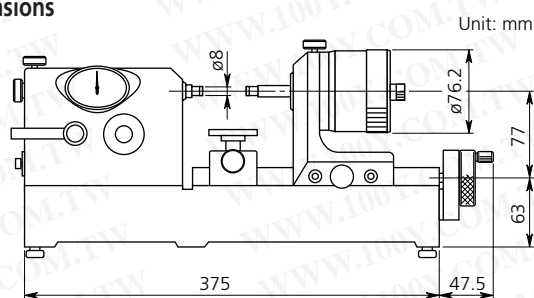
| Metric | | | | |
|--------------------------|-----------|----------------------|---------------------------|------|
| Maximum workpiece height | Order No. | Dial Indicator Range | Dial Indicator Graduation | Mass |
| 100mm | 162-101 | ±0.1mm | 0.001mm | 15kg |

| Inch | | | | |
|--------------------------|-----------|----------------------|---------------------------|---------|
| Maximum workpiece height | Order No. | Dial Indicator Range | Dial Indicator Graduation | Mass |
| 4" | 162-102 | ±.005" | .0001" | 33 lbs. |

FEATURES

- 25mm/1" stroke micrometer head (Graduation: 0.001mm/.0001") is provided.
- Retractable anvil with dial indicator for high accuracy inspection of mass-produced parts.
- Anvil pressure is variable.
- Adjustable workpiece stage height.
- Dial Indicator is shockproof.
- ø8mm (or 3/8") probe of Mitutoyo Mu-Checker can be attached for higher precision measurement if required.

Dimensions



Bench Centers

SERIES 967



967-201

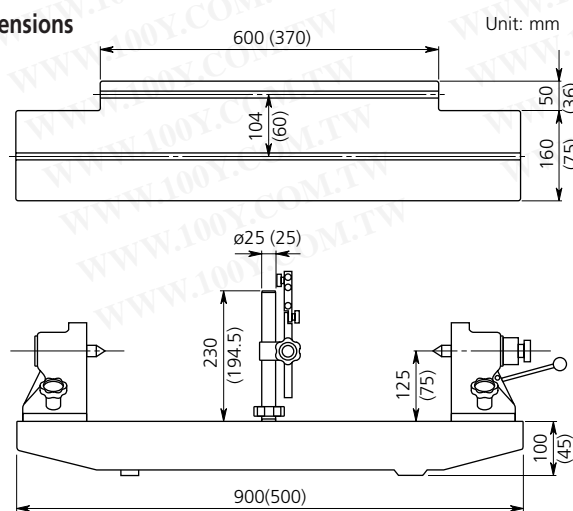
FEATURES

- Used with a dial test indicator (optional), the Bench Center provides precision measurement of concentricity verification on cylindrical workpieces.
- With an indicator clamp. (Holding stem diameter: 8mm)

SPECIFICATIONS

| Maximum workpiece height | Order No. | Maximum workpiece dia. | Mass |
|--------------------------|-----------|------------------------|------|
| 300mm | 967-201 | 150mm | 13kg |

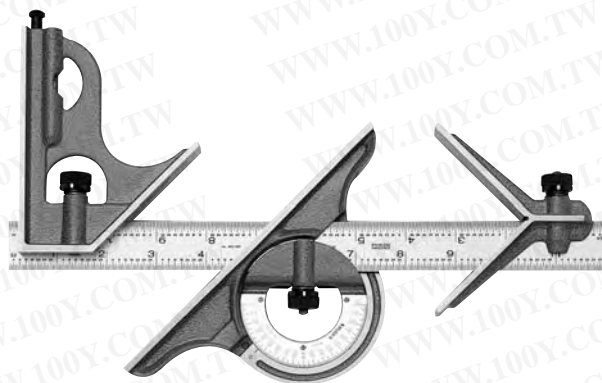
Dimensions



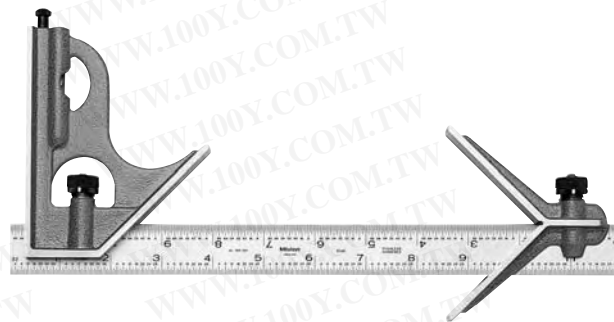
967-201

Combination Square Sets

SERIES 180



180-905 (Complete set)



180-903 (Semi-complete set)

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 degrees or 45 degrees to an edge of a workpiece.
Center head — Used to locate centers 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.

Blades (Individual)

| Range | Order No. | Graduation |
|-----------|----------------|-----------------------------|
| 150mm | 180-405 | 1mm, 0.5mm, 1mm, 0.5mm |
| 300mm | 180-505 | 1mm, 0.5mm, 1mm, 0.5mm |
| 450mm | 180-705 | 1mm, 0.5mm, 1mm, 0.5mm |
| 600mm | 180-605 | 1mm, 0.5mm, 1mm, 0.5mm |
| 6"/150mm | 180-403 | 1/32", 1/64", 1mm, 0.5mm |
| 12"/300mm | 180-503 | 1/32", 1/64", 1mm, 0.5mm |
| 18"/450mm | 180-703 | 1/32", 1/64", 1mm, 0.5mm |
| 24"/600mm | 180-603 | 1/32", 1/64", 1mm, 0.5mm |
| 6" | 180-401 | 1/8", 1/16", 1/32", 1/64" |
| 6" | 180-402 | 1/32", 1/50", 1/64", 1/100" |
| 12" | 180-501 | 1/8", 1/16", 1/32", 1/64" |
| 12" | 180-502 | 1/32", 1/50", 1/64", 1/100" |
| 18" | 180-701 | 1/8", 1/16", 1/32", 1/64" |
| 18" | 180-702 | 1/32", 1/50", 1/64", 1/100" |
| 24" | 180-601 | 1/8", 1/16", 1/32", 1/64" |
| 24" | 180-602 | 1/32", 1/50", 1/64", 1/100" |

Measuring Heads (Individual)

| Order No. | Description | Remarks |
|----------------|-----------------|--|
| 180-101 | Square head | For 150mm (6") blades |
| 180-102 | Square head | For 300mm (12"), 450mm (18"), 600mm (24") blades |
| 180-201 | Center head | For 150mm (6") blades |
| 180-202 | Center head | For 300mm (12"), 450mm (18"), 600mm (24") blades |
| 180-301 | Protractor head | For 300mm (12"), 450mm (18"), 600mm (24") blades |

SPECIFICATIONS

| Metric Combination Square Sets | | | |
|--------------------------------|--------------------|-------------------------|-------------------------------|
| Size | Order No. Complete | Order No. Semi-complete | Remarks |
| 150mm | — | 180-919 | With blade (180-405) |
| 300mm | 180-910 | 180-920 | With blade (180-505) |

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

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

Digimatic Universal Protractor

SERIES 187



FEATURES

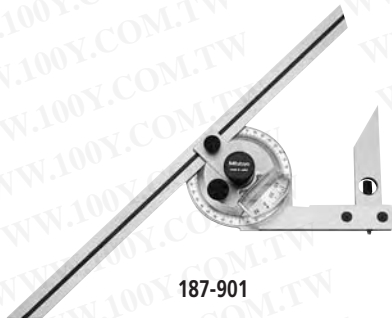
- Data output function make it easy to see the statistical data.
- Setting preset value.
- Removable blade.
- Can be attached to height gages.

SPECIFICATIONS

| Order No. | 187-501 | 187-502 | 187-551 | 187-552 |
|----------------------|--|---------|---|---------|
| Blade length | 150mm | 300mm | 6" | 12" |
| Measuring range | -360° to +360° | | | |
| Resolution | 1' (0.01°) | | | |
| Tolerance | ±2" (±0.03°) | | | |
| Repeatability | 1' | | | |
| IP | 40 | | | |
| Response speed | 3rps | | | |
| Battery | Lithium battery | | | |
| Battery life | 2,000 hours | | | |
| Thermal | 0°C to 40°C | | | |
| Function | Zero setting, Switchable direction, Data output, Data hold, presetting, sexagesimal/decimal notation | | | |
| Mass | 624g | 662g | 621g | 659g |
| Standard accessories | Battery, mm height gage holder (950750) | | Battery, inch height gage holder (950749) | |

Universal Bevel Protractor

SERIES 187



FEATURES

- High-precision angle gage for accurate angle measurement of machines, molds, and jigs.
- Can be attached to height gages.

SPECIFICATIONS

| Metric | | | |
|--------------|-----------|------------------------|-----------------------|
| Blade length | Order No. | Graduation | Remarks |
| 150, 300mm | 187-901 | 5 min. (0° - 90° - 0°) | w/60°, 45°, 30° edges |
| 150mm | 187-907 | 5 min. (0° - 90° - 0°) | w/60°, 45° edges |
| 300mm | 187-908 | 5 min. (0° - 90° - 0°) | w/60°, 45° edges |

| Inch | | | |
|--------------|-----------|------------------------|-----------------------|
| Blade length | Order No. | Graduation | Remarks |
| 6", 12" | 187-902 | 5 min. (0° - 90° - 0°) | w/60°, 45°, 30° edges |
| 6" | 187-904 | 5 min. (0° - 90° - 0°) | w/60°, 45° edges |
| 12" | 187-906 | 5 min. (0° - 90° - 0°) | w/60°, 45° edges |

Bevel Protractor

SERIES 187



FEATURES

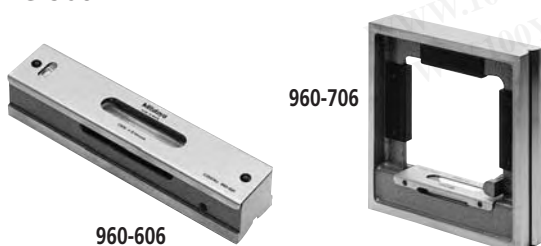
- Consists of three sheets of stainless steel, the middle one of which is made for angle measurements.

SPECIFICATIONS

| Blade length | Order No. | Graduation | Remarks |
|--------------|-----------|------------------------|------------------|
| 135mm | 187-201 | 5 min. (0° - 90° - 0°) | w/60°, 30° edges |

Precision Levels

SERIES 960



FEATURES

- High precision longitudinal and transverse vials make it possible to check or level surfaces.

SPECIFICATIONS

| Order No. | Sensitivity | Accuracy of graduations | Dimensions (WxDxH) |
|-----------|-------------|-------------------------|--------------------|
| 960-606 | 0.02mm/m | ±0.7 | 200x44x38.2mm |
| 960-706 | 0.02mm/m | ±0.3 | 200x44x200mm |

Steel Rules

SERIES 182



182-101



182-103



182-102



182-105



182-201



182-202



182-205

FEATURES

- Clear graduations on satin-chrome finish.
- Stainless tempered.

SPECIFICATIONS

| Metric | Wide Rigid Rules | | |
|----------------------------|------------------|-----------|-------|
| Graduations | Range | Order No. | Width |
| 1mm, 0.5mm (on both faces) | 150mm | 182-111 | 19mm |
| | 300mm | 182-131 | 25mm |
| | 450mm | 182-151 | 30mm |
| | 600mm | 182-171 | 30mm |

| Inch/Metric | Wide Rigid Rules | | |
|---------------------------|------------------|-----------|-------|
| Graduations | Range | Order No. | Width |
| 1/32", 1/64", 1mm, 0.5mm | 6"/150mm | 182-105 | .75" |
| | 12"/300mm | 182-125 | .98" |
| | 18"/450mm | 182-145 | 1.18" |
| | 24"/600mm | 182-165 | 1.18" |
| 1/50", 1/100", 1mm, 0.5mm | 6"/150mm | 182-106 | .75" |
| | 12"/300mm | 182-126 | .98" |
| 1/10", 1/100", 1mm, 0.5mm | 6"/150mm | 182-107 | .75" |
| 1/10", 1/50", 1mm, 0.5mm | 6"/150mm | 182-108 | .75" |

| Inch | Wide Rigid Rules | | |
|-----------------------------|------------------|-----------|-------|
| Graduations | Range | Order No. | Width |
| 1/8", 1/16", 1/32", 1/64" | 6" | 182-101 | .75" |
| | 12" | 182-121 | .98" |
| | 18" | 182-241 | 1.18" |
| | 24" | 182-161 | 1.18" |
| 1/50", 1/100", 1/32", 1/64" | 6" | 182-102 | .75" |
| | 12" | 182-122 | .98" |
| | 18" | 182-142 | 1.18" |
| | 24" | 182-162 | 1.18" |
| 1/10", 1/100", 1/32", 1/64" | 6" | 182-103 | .75" |
| | 12" | 182-123 | .98" |
| | 18" | 182-143 | 1.18" |
| | 24" | 182-163 | 1.18" |
| 1/10", 1/50", 1/32", 1/64" | 6" | 182-104 | .75" |
| | 12" | 182-124 | .98" |

| Metric | Full-Flexible Rules | | |
|----------------------------|---------------------|-----------|-------|
| Graduations | Range | Order No. | Width |
| 1mm, 0.5mm (on both faces) | 150mm | 182-211 | 12mm |
| | 300mm | 182-231 | 12mm |
| | 450mm | 182-251 | 18mm |
| | 600mm | 182-271 | 18mm |

| Inch/Metric | Full-Flexible Rules | | |
|---------------------------|---------------------|-----------|-------|
| Graduations | Range | Order No. | Width |
| 1/32", 1/64", 1mm, 0.5mm | 6"/150mm | 182-205 | .47" |
| | 12"/300mm | 182-225 | .47" |
| | 18"/450mm | 182-245 | .71" |
| | 24"/600mm | 182-265 | .71" |
| 1/50", 1/100", 1mm, 0.5mm | 6"/150mm | 182-206 | .47" |
| | 12"/300mm | 182-226 | .47" |
| 1/10", 1/100", 1mm, 0.5mm | 6"/150mm | 182-207 | .47" |
| 1/10", 1/50", 1mm, 0.5mm | 6"/150mm | 182-208 | .47" |

| Inch | Full-Flexible Rules | | |
|-----------------------------|---------------------|-----------|-------|
| Graduations | Range | Order No. | Width |
| 1/8", 1/16", 1/32", 1/64" | 6" | 182-201 | .47" |
| | 12" | 182-221 | .47" |
| | 18" | 182-241 | .71" |
| | 24" | 182-261 | .71" |
| 1/50", 1/100", 1/32", 1/64" | 6" | 182-202 | .47" |
| | 12" | 182-222 | .47" |
| | 18" | 182-242 | .71" |
| | 24" | 182-262 | .71" |
| 1/10", 1/100", 1/32", 1/64" | 6" | 182-203 | .47" |
| | 12" | 182-223 | .47" |
| | 18" | 182-243 | .71" |
| | 24" | 182-263 | .71" |
| 1/10", 1/50", 1/32", 1/64" | 6" | 182-204 | .47" |
| | 12" | 182-224 | .47" |

Semi-Flexible Rules



182-302

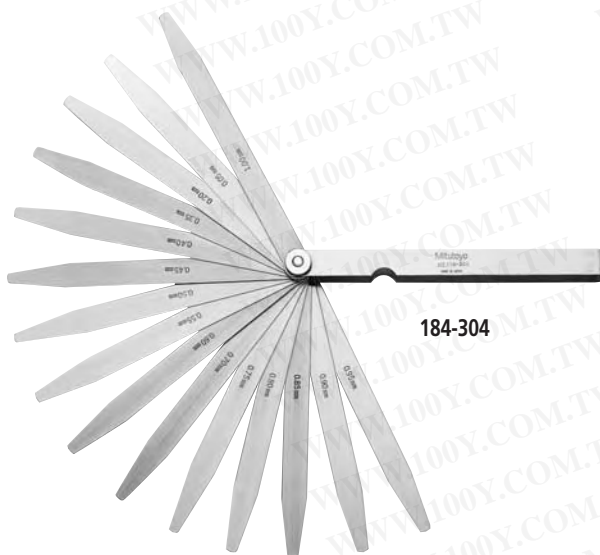
Inch/Metric

| Graduations* | Range | Order No. | Width |
|------------------------------------|------------|-----------|-------|
| 1/16", 1/32", 1/64", 1mm, 0.5mm | 6"/150mm | 182-302 | .51" |
| | 8"/200mm | 182-303 | .51" |
| | 12"/300mm | 182-305 | .59" |
| | 20"/500mm | 182-307 | .59" |
| | 40"/1000mm | 182-309 | .59" |

* Engraved on the frontside only.

Thickness Gages

SERIES 184



184-304

FEATURES

- Metric thickness gages are available with tapered leaves.
- Inch thickness gages are tapered or straight leaves.
- Each leaf is marked with its thickness.
- Each leaf is detachable if necessary.

SPECIFICATIONS

| Metric | | | |
|-----------------------------|-----------|---|-----------|
| Range | Order No. | Composition of leaves | Remarks |
| 0.05 - 1mm (28 leaves) | 184-313S | 0.05 - 0.15mm by 0.01mm, 0.2 - 1mm by 0.05mm | — |
| | 184-303S | 0.05 - 0.15mm by 0.01mm, 0.2 - 1mm by 0.05mm | Long leaf |
| 0.05 - 1mm (20 leaves) | 184-304S | 0.05 - 1mm by 0.05mm | Long leaf |
| 0.05 - 1mm (13 leaves) | 184-305S | 0.05 - 0.3mm by 0.05mm, 0.4 - 1mm by 0.1mm | — |
| | 184-301S | 0.05 - 0.3mm by 0.05mm, 0.4 - 1mm by 0.1mm | Long leaf |
| 0.05 - 0.8mm (10 leaves) | 184-306S | 0.05 - 0.2mm by 0.05mm, 0.3 - 0.8mm by 0.1mm | — |
| | 184-308S | 0.05 - 0.2mm by 0.05mm, 0.2 - 0.5mm by 0.1mm | Long leaf |
| 0.03 - 0.5mm (13 leaves) | 184-307S | 0.03 - 0.1mm by 0.01mm, 0.2 - 0.5mm by 0.1mm 0.15mm | — |
| | 184-302S | 0.03 - 0.1mm by 0.01mm, 0.2 - 0.5mm by 0.1mm 0.15mm | Long leaf |

Radius Gages

SERIES 186



186-105



186-110

FEATURES

- Radius size is stamped on each gage.
- Both concave and convex radius gages become a pair.
- With a locking clamp.

SPECIFICATIONS

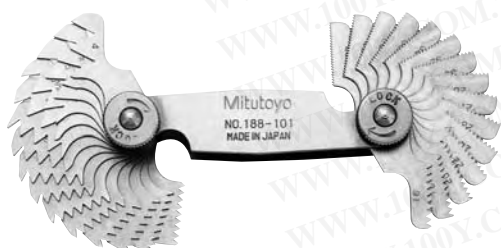
| Metric | | | |
|---------------------------|----------------|--|----------|
| Range | Order No. | Composition of leaves | Remarks |
| 0.4 - 6mm (18 pairs) | 186-110 | 0.4, 0.8, 1, 1.2, 1.5, 1.6mm, 1.75 - 3mm by 0.25mm, 3.5 - 6mm by 0.5mm | 90° arc |
| 0.5 - 13mm (26 pairs) | 186-902 | 0.5 - 13mm by 0.5mm | 90° arc |
| 1 - 7mm (34 pairs) | 186-105 | 1 - 3mm by 0.25mm 3.5 - 7mm by 0.5mm | 180° arc |
| 7.5 - 15mm (32 pairs) | 186-106 | 7.5 - 15mm by 0.5mm | 180° arc |
| 15.5 - 25mm (30 pairs) | 186-107 | 15.5 - 20mm by 0.5mm, 21 - 25mm by 1mm | 180° arc |

| Inch | | | |
|------------------------------|-----------------|---|----------|
| Range | Order No. | Composition of leaves | Remarks |
| 1/32" - 17/64" (16 pairs) | 186-103 | 1/32" - 17/64" by 64ths | 90° arc |
| 1/32" - 1/4" (15 pairs) | 186-101 | 1/32" - 1/4" by 64ths | 180° arc |
| 17/64" - 1/2" (16 pairs) | 186-102 | 17/64" - 1/2" by 64ths | 180° arc |
| 9/32" - 33/64" (16 pairs) | 186-104 | 9/32" - 33/64" by 64ths | 90° arc |
| 1/64" - 1/2" (25 leaves) | 186-901* | 1/64" - 17/64" by 64ths, 9/32" - 1/2" by 32nds | — |

*Each gage has five measuring locations.

Pitch Gages

SERIES 188



188-101

FEATURES

- Thread pitch size is stamped on each gage.
- Metric, Unified, and Whitworth screw pitch gages.

SPECIFICATIONS

Metric Screw Pitch Gages

| Range | Order No. | Composition of leaves |
|---------------------------|----------------|---|
| 0.35 - 6mm (22 leaves) | 188-130 | 0.35, 0.4, 0.45, 0.5, 0.6, 0.7, 0.75, 0.8, 1, 1.25, 1.5, 1.75, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6mm and 60° angle gage |
| 0.4 - 7mm (21 leaves) | 188-122 | 0.4, 0.5, 0.7, 0.75, 0.8, 0.9, 1, 1.25, 1.5, 1.75, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7mm |
| 0.4 - 7mm (18 leaves) | 188-121 | 0.4, 0.5, 0.75, 1, 1.25, 1.5, 1.75, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7mm |

Unified Screw Pitch Gages

| Range | Order No. | Composition of leaves |
|---------------------------|----------------|---|
| 4 - 42 TPI (30 leaves) | 188-111 | 4, 4½, 5, 5½, 6, 7, 8, 9, 10, 11, 11½, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38, 40, 42 TPI |

Note: Metric and Unified Pitch Gage Set (**188-151**) is available. It consists of **188-122** (Metric) and **188-111** (Unified).

Whitworth Screw Pitch Gages

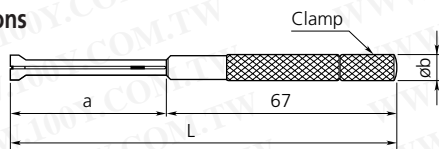
| Range | Order No. | Composition of leaves |
|---------------------------|----------------|---|
| 4 - 42 TPI (30 leaves) | 188-101 | 4, 4½, 5, 5½, 6, 7, 8, 9, 10, 11, 11½, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38, 40, 42 TPI |
| 4 - 60 TPI (28 leaves) | 188-102 | 4, 4½, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 22, 24, 25, 26, 28, 30, 32, 34, 36, 40, 48, 60 TPI |

Small Hole Gage Set

SERIES 154



Dimensions



Unit: mm

| Order No. | L | a | b |
|-----------|-------|------|-----|
| 154-101 | 90 | 22.5 | 5.5 |
| 154-102 | 97.6 | 30 | 5.5 |
| 154-103 | 102.8 | 35 | 8.5 |
| 154-104 | 108 | 40 | 8.5 |

FEATURES

- Used with an outside micrometer for measuring inside diameter of bores.
- 4 sizes of gages are supplied in a fitted case.
- Extra long for gaging deep and shallow holes, slots, and similar workpieces.
- Gaging surface is fully hardened to insure long tool life.

SPECIFICATIONS

| Metric | Order No. | Assortment of gages |
|--------------|----------------|-------------------------------------|
| Total range | | |
| ø3 - 13mm | 154-902 | ø3 - 5mm gage (154-101) |
| (4-gage set) | | ø5 - 7.5mm gage (154-102) |
| | | ø7.5 - 10mm gage (154-103) |
| | | ø10 - 13mm gage (154-104) |

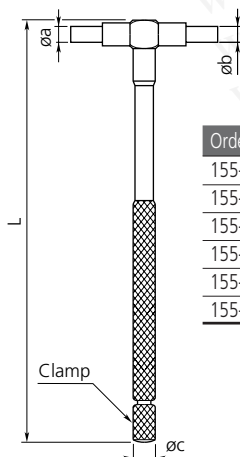
| Inch | Order No. | Assortment of gages |
|------------------|----------------|--|
| Total range | | |
| .125" - .5" DIA. | 154-902 | .125" - .2" DIA. gage (154-105) |
| (4-gage set) | | .2" - .3" DIA. gage (154-106) |
| | | .3" - .4" DIA. gage (154-107) |
| | | .4" - .5" DIA. gage (154-108) |

Telescoping Gage Set

SERIES 155



Dimensions



Unit: mm

| Order No. | L | a | b | c |
|-----------|-----|-----|-----|-----|
| 155-127 | 110 | 4 | 3 | 5 |
| 155-128 | 110 | 5 | 3.5 | 5.5 |
| 155-129 | 110 | 5 | 3.5 | 5.5 |
| 155-130 | 150 | 7.5 | 6 | 8 |
| 155-131 | 150 | 7.5 | 6 | 8 |
| 155-132 | 150 | 7.5 | 6 | 8 |

FEATURES

- Spring-loaded plunger expands within the bore (or groove), allowing determination of the internal diameter (or groove width).
- With a knurled clamp.

SPECIFICATIONS

| Metric | Order No. | Assortment of gages |
|--------------|----------------|-------------------------------------|
| Total range | | |
| 8 - 150mm | 155-905 | 8 - 12.7mm gage (155-127) |
| (6-gage set) | | 12.7 - 19mm gage (155-128) |
| | | 19 - 32mm gage (155-129) |
| | | 32 - 54mm gage (155-130) |
| | | 54 - 90mm gage (155-131) |
| | | 90 - 150mm gage (155-132) |

| Inch | Order No. | Assortment of gages |
|---------------|----------------|--|
| Total range | | |
| .313" - 6" | 155-903 | .313" - .5" gage (155-121) |
| (6-gage set)* | | .5" - .75" gage (155-122) |
| | | .75" - 1.25" gage (155-123) |
| | | 1.25" - 2.125" gage (155-124) |
| | | 2.125" - 3.5" gage (155-125) |
| | | 3.5" - 6" gage (155-126) |

*4-gage set (Total range: .313" - 2.125" (**155-907**)) and 5-gage set (Total range: .5" - 6" (**155-904**)) are also available.

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

| Range | Minimum reading | Order No. Standard type | Order No. Peak-hold type |
|--------------|-----------------|----------------------------|-----------------------------|
| 6 - 50 mN | 2 mN | 546-112 | — |
| 10 - 100 mN | 5 mN | 546-113 | 546-133 |
| 30 - 300 mN | 10 mN | 546-114 | 546-134 |
| 0.06 - 0.5 N | 0.02 N | 546-115 | 546-135 |
| 0.1 - 1 N | 0.05 N | 546-116 | 546-136 |
| 0.15 - 1.5 N | 0.05 N | 546-117 | 546-137 |
| 0.3 - 3 N | 0.1 N | 546-118 | 546-138 |
| 0.6 - 5 N | 0.2 N | 546-119 | 546-139 |

Micro Jack

SERIES 7



FEATURES

- Used for accurate leveling of machines, surface plates, and other precision instruments.
- Easy adjustment under heavy load.

SPECIFICATIONS

| Metric | | | |
|-------------------|-------------|------------|--------------|
| Height adjustment | Order No. | Graduation | Maximum load |
| 60 - 75mm | 7850 | 0.01mm | 400kgf |
| Inch | | | |
| Height adjustment | Order No. | Graduation | Maximum load |
| 2.5" - 3" | 7851 | .001" | 880 lbs. |

V-Block Sets

SERIES 181



FEATURES

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

SPECIFICATIONS

| Metric | | | |
|------------------------|----------------|----------|---------------|
| Maximum workpiece dia. | Order No. | Mass | Remarks |
| 25mm | 181-902 | 0.3kg | With clamp |
| 50mm | 181-947 | 4.2kg | Magnetic type |
| Inch | | | |
| Maximum workpiece dia. | Order No. | Mass | Remarks |
| 1" | 181-901 | .66 lbs. | With clamp |

Pocket Magnifiers

SERIES 183



FEATURES

- Suitable for inspecting metal surfaces.

SPECIFICATIONS

| Magnification | Order No. | Remarks |
|---------------|----------------|------------|
| 25X | 183-201 | Pen type |
| | 183-202 | With stand |
| 50X | 183-203 | With stand |

Zoom Loupe

SERIES 183



183-304

Recicle provided

FEATURES

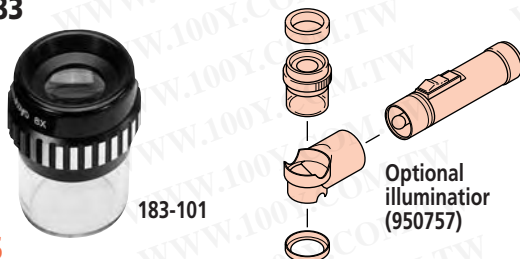
- Allows the user 8X-16X zoomable observation.
- Magnification indicator is provided for 8X, 10X, 12X, 14X, and 16X observation.
- Metric and inch scales are provided for measuring.
- Comes with a carrying case.

SPECIFICATIONS

| Magnification | Order No. | Remarks |
|-----------------|----------------|--|
| 8X - 16X (zoom) | 183-304 | With recicle (Scale graduation: 0.1mm, .0005") |

Pocket Comparators

SERIES 183



183-101

Optional illuminator (950757)

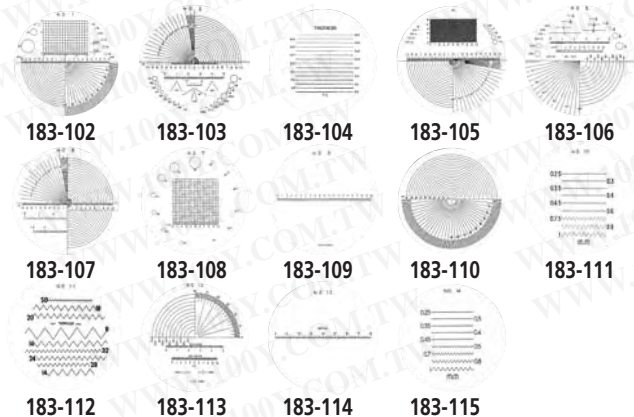
FEATURES

- By replacing optional reticles, dimensional, angle, and other types of measurements can be performed.
- Illuminator (**950757**) is available.

SPECIFICATIONS

| Magnification | Order No. | Remarks |
|---------------|----------------|------------------------------|
| 8X | 183-101 | Optional reticles available. |
| 9X | 183-121 | Optional reticles available. |
| 10X | 183-131 | Optional reticles available. |

Reticles



Clear Loupe

SERIES 183



183-301

183-302

183-303

SPECIFICATIONS

| Magnification | Order No. | Remarks |
|---------------|----------------|--------------------|
| 7X | 183-301 | Drawtube removable |
| 10X | 183-302 | Drawtube removable |
| 15X | 183-303 | Drawtube removable |

Litematic

SERIES 318



318-201



FEATURES

- The Litematic is suitable for measuring easily-deformed workpieces and high-precision parts such as pin gages, thin-wall bearings, plastic parts, and springs.
- Extra-low measuring force of 0.01N (1gf).
- Ceramic anvil is free from corrosion and easy to maintain.
- Provided with an SPC output port.

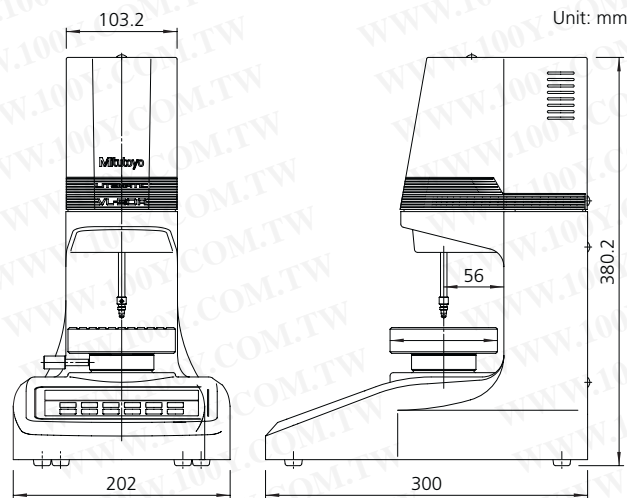
SPECIFICATIONS

| Metric | | |
|-----------------------|--|-----------|
| Order No. | 318-201 ■ | 318-213 ■ |
| Range | 0 - 50mm | |
| Resolution | 0.001mm, 0.0001mm (switchable) | |
| Accuracy | 1μm | |
| Repeatability (σ) | 0.08μm (normal measurement mode) | |
| Measuring force | 0.01N (1gf) | |
| Spindle up/down speed | Normal feed: 3mm/s Fast feed: 10mm/s | |
| Contact point | ø3mm carbide steel ball (interchangeable) | |
| Workpiece table | ø100mm ceramic (grooved replaceable) | — |
| Display | LED | |
| Functions | Zero-setting, Presetting, MAX/MIN measurement, Runout (TIR) measurement, Data hold, Inch/mm conversion (on inch/mm model only) | |
| Data output | SPC | |
| Power supply | 85 - 264V AC, 50/60Hz | |
| Mass | 19kg | 5kg |

| Inch/Metric | | |
|-------------------|--|--|
| Order No. | 318-202 ■ | |
| Range | 0 - 2" | |
| Resolution | .00005", .00001", 0.001mm, 0.0001mm (switchable) | |
| Accuracy | .00004" | |
| Repeatability (σ) | .000004" (normal measurement mode) | |

Note: To denote your AC line voltage fill the blank of order number with the following suffixes (e.g. **318-201A**). **A** for 120V, **D** for 220V, **E** for 240V. No suffix is required for 100V.

Dimensions



OPTIONAL ACCESSORIES

| Order No. | Description |
|-----------|--|
| 936937 | SPC cable (1m) |
| 965014 | SPC cable (2m) |
| 101118 | Contact point, Shell |
| 120066 | Contact point, ø0.45mm needle (carbide) |
| 120065 | Contact point, ø1mm needle (carbide) |
| 120064 | Contact point, ø1.5mm needle (carbide) |
| 137257 | Contact point, ø2mm needle (carbide) |
| 120059 | Contact point, ø7mm spherical (carbide) |
| 120060 | Contact point, ø10.5mm spherical (carbide) |

Note: Measuring force varies (0.01N - 0.06N) according to the interchangeable contact point selected.

Litematic Head

SERIES 318



318-205



FEATURES

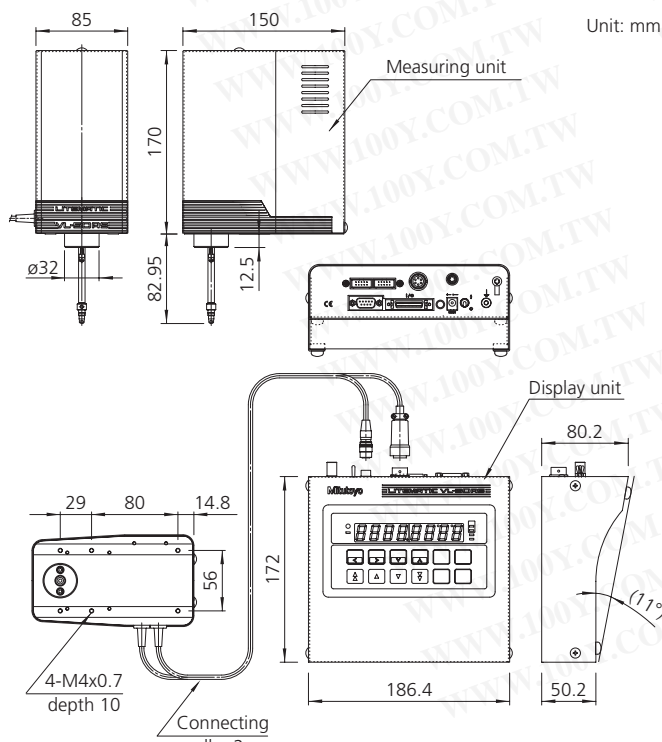
- Two-piece version of Mitutoyo's popular, low force table-top measuring instrument Litematic.
- The measuring unit can be mounted onto fixtures or an optional stand to allow great flexibility of use.

SPECIFICATIONS

| Metric | | |
|-----------------------|--|----------|
| Order No. | 100V AC | 318-213 |
| | 120V AC | 318-213A |
| | 220V AC | 318-213D |
| | 240V AC | 318-213E |
| Range | 0 - 50mm | 0 - 5mm |
| Resolution | 0.001mm, 0.0001mm (switchable) | |
| Accuracy | 1μm | |
| Repeatability (σ) | 0.08μm (normal measurement mode) | |
| Measuring force | 0.01N (1gf) | |
| Spindle up/down speed | Normal feed: 3mm/s Fast feed: 10mm/s | |
| IP protection level | (Not guaranteed) | IP-64* |
| Contact point | ø3mm carbide ball (interchangeable) | |
| Display | LED | |
| Functions | Zero-setting, Presetting, MAX/MIN measurement, Runout (TIR) measurement, Data hold, Inch/mm conversion (on inch/mm model only) | |
| Data output | SPC | |
| Power supply | 85 - 264V AC, 50/60Hz | |
| Mass | Measuring unit: 2.7kg Display unit: 2.2kg | |

*Measuring unit only

Dimensions



Unit: mm

- Display unit: 180(W)x258(D)x84(H)mm

OPTIONAL ACCESSORIES

| Order No. | Description |
|-----------|---|
| 936937 | SPC cable (1m) |
| 965014 | SPC cable (2m) |
| 957460 | 300x250mm granite stand with bracket (957463) |
| 101118 | Contact point, Shell |
| 120066 | Contact point, ø0.45mm needle (Carbide) |
| 120065 | Contact point, ø1mm needle (Carbide) |
| 120064 | Contact point, ø1.5mm needle (Carbide) |
| 137257 | Contact point, ø2mm needle (Carbide) |
| 120059 | Contact point, ø7mm ball (Carbide) |
| 120060 | Contact point, ø10.5mm ball (Carbide) |

Note: Measuring force varies according to the interchangeable contact point selected

Neo-Derm

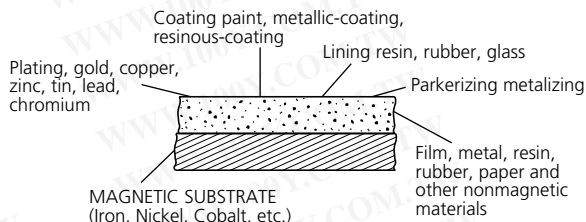
SERIES 179 — Electronic Coating Thickness Gage



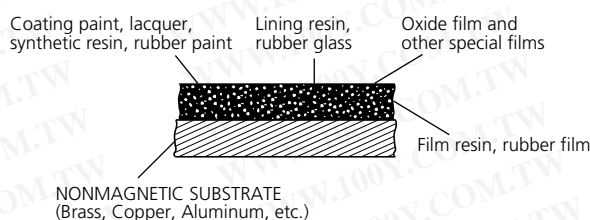
179-701

APPLICATIONS

Nonmagnetic coatings on magnetic substrata



Nonconductive coatings on nonmagnetic substrata



FEATURES

- Battery operated, compact coating thickness gage.
- A set of calibration films and a metallic base is provided for each Neo-Derm.
- Measures the thickness of nonmagnetic coating on magnetic substrata or a layer of nonconductive material on nonmagnetic substrata.

OPTIONAL ACCESSORIES

| Order No. | Description |
|----------------|---|
| 732135* | Special probe for inside wall measurement of bore |
| 526688 | AC adapter (100V AC) |
| 526688A | AC adapter (120V AC) |
| 526688D | AC adapter (220V AC) |
| 526688E | AC adapter (220/240V AC) |

*Cannot be used with **179-721**.

SPECIFICATIONS

| Metric | Neo-Derm | | | |
|------------------------------------|--|--|--|---|
| Order No. | 179-700 | 179-701 | 179-702 | 179-721 |
| Applications on magnetic substrata | Nonmagnetic coatings on magnetic substrata | Nonmagnetic coatings on magnetic substrata | Nonmagnetic coatings on nonmagnetic substrata* | Nonmagnetic coatings |
| Range | 0 - 50μm | HIGH: 0 - 100μm LOW: 50 - 500μm | HIGH: 0 - 600μm LOW: 0.5 - 2mm | HIGH: 0 - 100μm LOW: 0 - 500μm |
| Accuracy | ±1μm (up to 20μm), ±5% of reading (over 20μm) | ±1.5μm (up to 30μm), ±5% of reading (over 30μm) | ±2.5μm (up to 50μm), ±5% of reading (over 50μm) | ±3% of full scale |
| Minimum coating area | ø5mm | ø5mm | ø5mm | ø8mm |
| Minimum radius of curved workpiece | Convex: 3mm Concave: 25mm | Convex: 3mm Concave: 25mm | Convex: 3mm Concave: 25mm | Convex: 7mm Concave: 25mm |
| Calibration films provided | 25μm, 50μm | 25μm, 50μm, 100μm, 250μm, 250μm | 100μm, 250μm, 0.5mm, 1.0mm, 2.0mm | 25μm, 50μm, 100μm, 250μm, 250μm |
| Power supply | Battery (9V DC)/ via AC adapter (optional) | Battery (9V DC)/ via AC adapter (optional) | Battery (9V DC)/ via AC adapter (optional) | Battery (9V DC)/ via AC adapter (optional) |
| Dimensions (WxDxH) | 106x62x163mm | 106x62x163mm | 106x62x163mm | 106x62x163mm |
| Mass | 600g | 600g | 600g | 600g |

*Measurement is impossible if the substrate is an austenitic stainless steel.

| Inch/Metric | Neo-Derm | | |
|--------------|----------|--|---|
| Order No. | — | 179-711 | 179-712 |
| Applications | — | Nonmagnetic coatings on magnetic substrata | Nonmagnetic coatings on magnetic substrata |
| Range | — | HIGH: 0 - .004"/0 - 100μm LOW: .002" - .02"/50-500μm | HIGH: 0 - .025"/0 - 600μm LOW: .02" - .08"/0.5 - 2mm |
| Accuracy | — | ±.00006" (up to .0012"), ±5% of reading (over .0012") | ±.0001" (up to .002"), ±5% of reading (over .002") |

Digi-Derm

SERIES 179 — Electronic Coating Thickness Gage

勝特力材料 886-3-5753170
 勝特力电子(上海) 86-21-34970699
 勝特力电子(深圳) 86-755-83298787
[Http://www.100y.com.tw](http://www.100y.com.tw)



179-755

FEATURES

- Measurements are displayed on the clear LCD screen and can be output for SPC data analysis.
- Battery powered for portable use and can also operate on AC power with an optional adapter.
- A set of calibration films and a metallic base is provided for each Digi-Derm.
- Special probe for measuring the coating thickness on the inside wall of bores is optional (**732135**).

SPECIFICATIONS

| Metric | Digi-Derm | |
|---------------------------------|--|---|
| Order No. | 179-745* | 179-755 |
| Applications | Nonmagnetic coatings on magnetic substrata | Nonconductive coatings on nonmagnetic substrata** |
| Range | 0 - 1.5mm | 0 - 1.0mm |
| Resolution | 0.001mm | 0.001mm |
| Accuracy | ±2μm (up to 0.1mm), ±2% of readout (up to 1.1mm over 0.1mm), ±3% of readout (over 1.1mm) | ±2μm (up to 0.1mm), ±2% of readout (over 0.1mm) |
| Min. coating area | ø5mm | ø8mm |
| Min. radius of curved workpiece | Convex: 3mm Concave: 25mm | Convex: 7mm Concave: 25mm |
| Calibration films provided | 25μm, 50μm, 100μm, 250μm, 0.5mm, 1.0mm, 1.5mm | 25μm, 50μm, 100μm, 250μm, 0.5mm, 1.0mm |
| Display | LCD | LCD |
| Data output | SPC | SPC |
| Power supply | 4 batteries (6V DC)/ via AC adapter (optional) | 4 batteries (6V DC)/ via AC adapter (optional) |
| Dimensions (WxDxH) | 100x44x180mm | 100x44x180mm |
| Mass | 500g | 500g |

*Economy model without SPC output (**179-741**) is also available.

**Measurement is impossible if the substrate is an austenitic stainless steel.

| Inch/Metric | Digi-Derm | |
|--------------|--|---|
| Order No. | 179-746 | 179-756 |
| Applications | Nonmagnetic coatings on magnetic substrata | Nonconductive coatings on nonmagnetic substrata** |
| Range | 0 - .059" | 0 - .039" |
| Resolution | .00005"/0.001mm | .00005"/0.001mm |
| Accuracy | ±.00008" (up to .0039"), ±2% of readout (up to .043" over .0039"), ±3% of readout (over .043") | ±.00008" (up to .0039"), ±2% of readout (over .0039") |

**Measurement is impossible if the substrate is an austenitic stainless steel.

Minimum hole diameter: 30mm
 Maximum measuring depth: 200mm



732135

OPTIONAL ACCESSORIES

| Order No. | Description |
|-----------|---|
| 936937 | SPC cable (1m) |
| 965014 | SPC cable (2m) |
| 732135* | Special probe for inside wall measurement of bore |
| 528041 | AC adapter (100V AC) |
| 528041A | AC adapter (120V AC) |
| 528041D | AC adapter (220V AC) |
| 528041E | AC adapter (220/240V AC) |

*Cannot be used with **179-755** or **179-756**.

Consumables of Neo-Derm/Digi-Derm

| Order No. | Description | Qty. |
|-----------|--|-------|
| 527599 | Calibration film (25μm) | 1 pc. |
| 527600 | Calibration film (50μm) | 1 pc. |
| 527601 | Calibration film (100μm) | 1 pc. |
| 527602 | Calibration film (250μm) | 1 pc. |
| 527603 | Calibration film (0.5mm) | 1 pc. |
| 527604 | Calibration film (1.0mm) | 1 pc. |
| 527605 | Calibration film (2.0mm) | 1 pc. |
| 685013 | Calibration film (1.5mm) | 1 pc. |
| 933038 | Metallic base for calibration film (Magnetic) | 1 pc. |
| 937305 | Metallic base for calibration film (Nonmagnetic) | 1 pc. |
| 937287 | Calibration film set (25μm, 50μm) | 1 set |
| 937288 | Calibration film set (25μm, 50μm, 100μm, 250μm, 250μm) | 1 set |
| 937289 | Calibration film set (100μm, 250μm, 0.5mm, 1.0mm, 2.0mm) | 1 set |
| 945014 | Calibration film set (25μm, 50μm, 100μm, 250μm, 0.5mm, 1.0mm, 1.5mm) | 1 set |
| 945049 | Calibration film set (25μm, 50μm, 100μm, 250μm, 0.5mm, 1.0mm) | 1 set |