


Small Tool Instruments and Data Management

INDEX


| | | | |
|--|-----------|-----------------------------------|----------|
| Gage Blocks | | Radius Gages-Sets | E-49 |
| Gage Block | E-2 – 4 | Standard Gages | E-50 |
| Metric Rectangular Gage Block Set | E-5, 6 | Tap and Drill Gage | E-50 |
| Inch Rectangular Gage Block Set | E-7 | Drill Point Gage | E-50 |
| Micrometer Inspection Gage Block Sets | E-8 | Thread Gage | E-50 |
| Bore Gage Calibration Kit | E-8 | Center Gage | E-51 |
| Individual Metric Rectangular Gage Block | E-9, 10 | Tap Wrench | E-51 |
| Individual Inch Rectangular Gage Block | E-11 | Parallel Clamps | E-51 |
| Rectangular Gage Block with CTE | E-12 | Fine-Adjust Compasses | E-51 |
| Rectangular Gage Block Accessories | E-13 – 15 | Scribers | E-52 |
| Metric Square Gage Block Set | E-16 | Center Punches | E-52 |
| Inch Square Gage Block Set | E-17 | Drive Pin Punches | E-52 |
| Individual Metric Square Gage Block | E-18 | Edge & Center Finders | E-53 |
| Individual Inch Square Gage Block | E-19 | Surface Gage | E-53 |
| Square Gage Block Accessories | E-20, 21 | Center Finder | E-54 |
| Ceraston | E-22 | Pin Vises | E-54 |
| Maintenance Kit for Gage Block | E-22 | Wiggler | E-54 |
| Step Master | E-23 | Optical Center Punch | E-54 |
| Made-to-order Block & Reference | E-23 | Digital Hand Tachometers | E-55 |
| Gage Block Comparator GBCD-250 | E-24 | Datatorq | E-56 |
| Gage Block Comparator GBCD-100A | E-24 | Bench Comparator | E-57 |
| Height Master | | Bench Center | E-57 |
| Height Master | E-25 | Digital Protractor | E-58 |
| CERA Height Master | E-26 | Granite Surface Plate | |
| Digital Height Master | E-27 | Granite Surface Plate Accessories | E-59 |
| Height Master E-Type | E-28 | Black Granite Surface Plate | E-60, 61 |
| Auxiliary Block Kit | E-28 | Steel Stands | E-61 |
| Riser Blocks | E-28 | | |
| Universal Height Master | E-29 | | |
| High Accuracy Check Master HMC-H | E-30 | | |
| CERA Straight Master SM-C | E-31 | | |
| Snap Gage Checker | E-32 | | |
| High Precision Square | E-32 | | |
| Square Master | E-33 | | |
| Reference Gages | | | |
| Standard Scales | E-34 | | |
| Working Standard Scales | E-34 | | |
| Steel Squares | E-35 | | |
| Knife Edge Straight Edge | E-36 | | |
| Precision Dial Square | E-36 | | |
| Spring Dividers and Calipers | E-36 | | |
| Thickness Gages | E-37 | | |
| Precision Levels | E-37 | | |
| Combination Square Set | E-38 | | |
| Steel Rules | E-39, 40 | | |
| Semi-Flexible Rules | E-41 | | |
| Hook Rules | E-41 | | |
| Pocket Steel Rule | E-41 | | |
| Digital Universal Protractor | E-42 | | |
| Universal Bevel Protractor | E-43 | | |
| Protractor | E-44 | | |
| Bevel Protractor | E-44 | | |
| Depth Gage, Adjustable Angle | E-45 | | |
| Zero-It | E-45 | | |
| Zero-Setter | E-45 | | |
| Angle Gages | E-46 | | |
| Angle Blocks | E-47 | | |
| Adjustable Parallels | E-47 | | |
| Radius Gages | E-48 | | |
| Pitch Gages | E-48 | | |



Gage Block



Height Master



Reference Gages



Granite Surface Plates & Bench Comparator

Gage Block

SERIES 516

FEATURES

Precision gage blocks are the primary standards vital to dimensional quality control in the manufacture of parts. Mitutoyo offers

a complete selection of gage blocks available in a choice of rectangular or square, metric or inch and steel or CERA (ceramic) types.

Accuracy

Gage blocks offered by an all-round precision measuring machine manufacturer, Mitutoyo, guarantee such a high accuracy that users can use them without anxiety. Needless to say, Mitutoyo has established a traceability system for our measurement products, up to the Metrology Management Center of the National Institute of Advanced Industrial Science and Technology (AIST) and we have been certified by the Japanese government as an accredited laboratory.

Wringing

The lapping technique is one of Mitutoyo's specialties. Our advanced lapping technique, developed for more than a half century, enables us to achieve the best flatness and surface roughness needed for gage blocks and realize a great wringing force.

Abrasion Resistance and Dimensional Stability

High-carbon high-chrome steel is employed to sufficiently satisfy a variety of material characteristics required for gage blocks. A high degree of hardness, obtained by our heat treatment technology and that reassures users, as well as methodically repeated heat treatment, have successfully reduced deterioration change over time to the minimum.

CERA Blocks

CERA blocks, made of ceramic materials with superior surface quality, that were developed by Mitutoyo's ultra precision machining techniques solve all problems that the steel gage block had.

1. Corrosion-Resistant

Anti-corrosion treatment is not required when handled normally (i.e. with fingers), resulting in simple maintenance and storage.

2. No Burrs Caused by Dents, etc.

Since the CERA Block is very hard, it will not scratch and is highly resistant to burrs. If a burr is formed, it can easily be removed with a ceramic deburring stone (Ceraston).

3. Abrasion Resistant

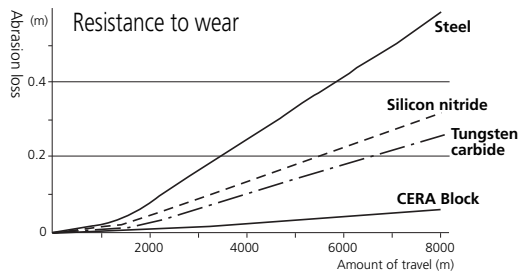
CERA Blocks have 10 times the abrasion resistance of steel gage blocks.

4. Dimensional Stability

CERA Blocks are free from dimensional change over time.

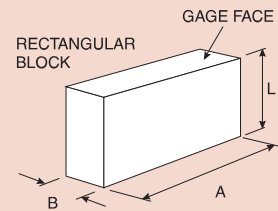
5. Marking

The black characters, indicating the nominal length, are inscribed by laser and are clearly visible against the white surface of the block.



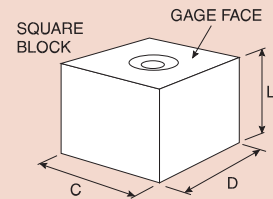
Selecting Gage Blocks

- Select gage blocks in accordance with the combination range required. If a large length is required, add a long block set.
- Select gage blocks in accordance with the minimum length step required. Add wear block sets if necessary.
- If a set containing a large number of gage blocks is selected, the number of combination gage blocks required for a length is reduced and the number of combinations is increased. The accuracy will be retained and damage will be reduced.
- The specific gage block set for micrometer inspection and caliper inspection is available.
- If using only one length repeatedly, it is a good idea to purchase discrete gage blocks.
- The 2mm-based gage blocks, which take the base of the minimum length step as 2mm, are easy to handle and will not warp, as compared to the 1mm-based gage blocks.



Rectangular Block

| Gage Size | Face Width (A) | Face Depth (B) |
|------------------------|----------------|----------------|
| Up to 2" | 1.181" | .355" |
| Over .2" up to 40" | 1.378" | .355" |
| Up to 10mm | 30mm | 9mm |
| Over 10mm up to 1000mm | 35mm | 9mm |



Square Block

| Gage Size | Face Width (C) | Face Depth (D) |
|-----------------------|----------------|----------------|
| Inch (up to 40") | .95" | .95" |
| Metric (up to 1000mm) | 24.1mm | 24.1mm |

Grade and Application

Refer to the following table to select the gage block grade according to usage.

| | Applications | Grade |
|-----------------|--|--------------|
| Workshop use | <ul style="list-style-type: none"> Mounting tools and cutters | AS-1 or AS-2 |
| | <ul style="list-style-type: none"> Manufacturing gages Calibrating instruments | 0 or AS-1 |
| Inspection use | <ul style="list-style-type: none"> Inspecting mechanical parts, tools, etc. | 0 or AS-1 |
| | <ul style="list-style-type: none"> Checking the accuracy of gages Calibrating instruments | 00 or 0 |
| Calibration use | <ul style="list-style-type: none"> Checking the accuracy of gage blocks for workshop Checking the accuracy of gage blocks for inspection Checking the accuracy of instruments | K or 00 |
| Reference use | <ul style="list-style-type: none"> Checking the accuracy of gage blocks for calibration For academic research | K |

Grade AS-1:

These gage blocks are intended for shop floor use to set and calibrate fixtures as well as precision instruments.

Grade 0:

This grade is used within an inspection area to verify the accuracy of plug and snap gages as well as for setting electronic measuring devices.

Grade 00:

These higher accuracy gages are intended for use within a controlled environment by skilled inspection staff. Mainly used as reference standards for setting high precision measuring equipment and for the calibration of lower grade gage blocks.

Grade K:

Gage blocks of this accuracy are intended for use within a temperature controlled inspection room or calibration laboratory. They should be used as masters with certificates against other gage blocks which are calibrated by comparison.

Combination of a Required Length

Multiple combinations of gage blocks can be used to make a required length. Care should be exercised in the following points.

- Use as few gage blocks as possible to obtain the required length. (= Select thick gage blocks whenever possible.)
- Select gage blocks starting with the one that has least significant digit required, and then work up to ones with more significant digits.
- There are multiple combinations for the integer part of a length. To prevent wear as much as possible, do not always use the same gage blocks.

Example combination

Required length = 45.6785mm

For the 1mm-based gage block set (112 pcs.)

| |
|-----------|
| 1.0005 |
| 1.008 |
| 1.17 |
| 17.5 |
| + 25 |
| 45.6785mm |

For the 2mm-based gage block set (112 pcs.)

| |
|-----------|
| 2.0005 |
| 2.008 |
| 2.17 |
| 14.5 |
| + 25 |
| 45.6785mm |

6. Anti-magnetic Nature Keeps Away Steel Powders

7. High wringing force

An even, dense tissue can maintain a strong wringing force.

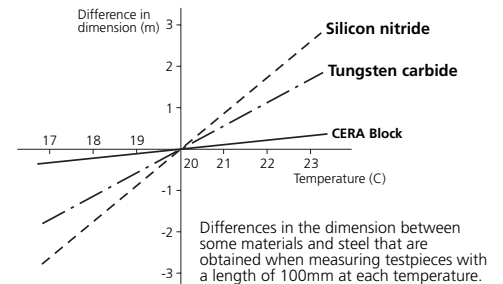


8. Material of CERA block

| Property | Material | CERA Block (ZrO ₂) | Steel (Fe) | Carbide (WC-Co) | Silicon nitride (Si ₃ N ₄) |
|--|----------|--------------------------------|------------|-----------------|---|
| Hardness (HV) | | 1350 | 800 | 1650 | 1500 |
| Coefficient of thermal expansion (10 ⁻⁶ /K) | | 9.3±0.5 | 10.8±0.5 | 5.5±1.0 | 2 |
| Flexural strength by 3-point bending (MPa) | | 1270 | 1960 | 1960 | 580 |
| Fracture toughness K1c (MPa•m ^{1/2}) | | 7 | 120 | 12 | 6.5 |
| Young's modulus x10 ⁴ (MPa) | | 20.6 | 20.6 | 61.8 | 28.4 |
| Poisson's ratio | | 0.3 | 0.3 | 0.2 | 0.3 |
| Specific gravity | | 6.0 | 7.8 | 14.8 | 3.2 |
| Thermal conductivity (W/m•k) | | 2.9 | 54.4 | 79.5 | 16.7 |

9. Closest Expansion Coefficient to Steel

The thermal expansion coefficient of a CERA Block is quite similar to that of a steel gage block.



10. Highly Resistant Against Drops and Other Shocks

The CERA Block material is one of the toughest ceramics materials. It is extremely difficult to crack under normal use.

Features of Square Gage Blocks

1. Perfect wringing is possible using the center hole.

After wringing the square gage blocks, an optional tie rod can be inserted through the center hole to fix the blocks using a screw.

2. A height reference standard can easily be made.

A precision height reference standard can be made easily and inexpensively using accessories such as the plain jaw and block base.

3. A dedicated inspection jig can be easily be made.

A dedicated inspection jig for periodic inspection of instruments can be made easily and inexpensively.

4. A wide measuring surface with cross section dimensions of [24.1 x 24.1mm / .95 x .95"] is available.

A square gage block can retain stable orientation both longitudinally and laterally. A wide range of application measurements can be made, including cutting tool positioning, angle measurement with a sine bar, taper measurement with a roller, and inspection of depth micrometers.



Long and Ultra-Thin Gage Blocks

Mitutoyo offers extra thin gage blocks from 0.10 mm to 0.99 mm (increments of 0.01 mm) as well as long gage blocks up to 1,000 mm as standard products.

Gage Block

SERIES 516

Accuracies of Mitutoyo Gage Blocks

All Mitutoyo gage blocks meet or exceed all known specifications. The flatness, parallelism and surface finish necessary to achieve the required accuracies are the same as or better than government requirements.

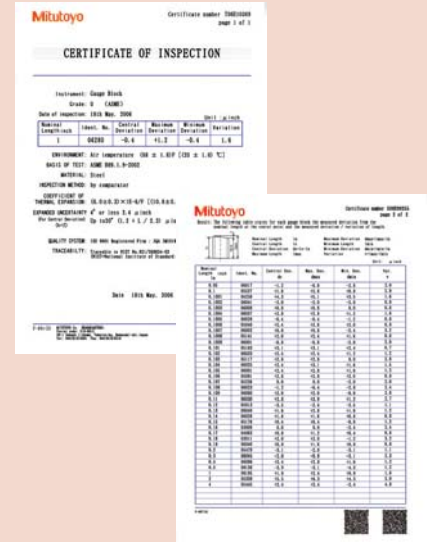
ASME (American Society of Mechanical Engineers) Deviations and Tolerance on Length for Metric and inch Gage Blocks: ASME B89.1.9-2002 (USA)

| Nominal Length Range l _n in inches | Calibration Grade K | | Grade 00 | | Grade 0 | | Grade AS-1 | | Grade AS-2 | |
|--|---|---|---|---|---|---|---|---|---|---|
| | Limit Deviations of Length at any Point From Nominal Length ± l _e μin. | Tolerance for the Variation In Length ± t _v μin. | Limit Deviations of Length at any Point From Nominal Length ± l _e μin. | Tolerance for the Variation In Length ± t _v μin. | Limit Deviations of Length at any Point From Nominal Length ± l _e μin. | Tolerance for the Variation In Length ± t _v μin. | Limit Deviations of Length at any Point From Nominal Length ± l _e μin. | Tolerance for the Variation In Length ± t _v μin. | Limit Deviations of Length at any Point From Nominal Length ± l _e μin. | Tolerance for the Variation In Length ± t _v μin. |
| l _n ≤ .05 | 12 | 2 | 4 | 2 | 6 | 4 | 12 | 6 | 24 | 12 |
| .05 l _n ≤ .4 | 10 | 2 | 3 | 2 | 5 | 4 | 8 | 6 | 18 | 12 |
| .45 l _n ≤ 1 | 12 | 2 | 3 | 2 | 6 | 4 | 12 | 6 | 24 | 12 |
| 1 l _n ≤ 2 | 16 | 2 | 4 | 2 | 8 | 4 | 16 | 6 | 32 | 12 |
| 2 l _n ≤ 3 | 20 | 2 | 5 | 3 | 10 | 4 | 20 | 6 | 40 | 14 |
| 3 l _n ≤ 4 | 24 | 3 | 6 | 3 | 12 | 5 | 24 | 8 | 48 | 14 |
| 4 l _n ≤ 5 | 32 | 3 | 8 | 3 | 16 | 5 | 32 | 8 | 64 | 16 |
| 5 l _n ≤ 6 | 32 | 3 | 8 | 3 | 16 | 5 | 32 | 8 | 64 | 16 |
| 6 l _n ≤ 7 | 40 | 4 | 10 | 4 | 20 | 6 | 40 | 10 | 80 | 16 |
| 7 l _n ≤ 8 | 40 | 4 | 10 | 4 | 20 | 6 | 40 | 10 | 80 | 16 |
| 8 l _n ≤ 10 | 48 | 4 | 12 | 4 | 24 | 6 | 48 | 10 | 104 | 18 |
| 10 l _n ≤ 12 | 56 | 4 | 14 | 4 | 28 | 7 | 56 | 10 | 112 | 20 |
| 12 l _n ≤ 16 | 72 | 5 | 18 | 5 | 36 | 8 | 72 | 12 | 144 | 20 |
| 16 l _n ≤ 20 | 88 | 6 | 20 | 6 | 44 | 10 | 88 | 14 | 176 | 24 |
| 20 l _n ≤ 24 | 104 | 6 | 25 | 6 | 52 | 10 | 104 | 16 | 200 | 28 |
| 24 l _n ≤ 28 | 120 | 7 | 30 | 7 | 60 | 12 | 120 | 18 | 240 | 28 |
| 28 l _n ≤ 32 | 136 | 8 | 34 | 8 | 68 | 12 | 136 | 20 | 260 | 32 |
| 32 l _n ≤ 36 | 152 | 8 | 38 | 8 | 76 | 14 | 152 | 20 | 300 | 36 |
| 36 l _n ≤ 40 | 160 | 10 | 40 | 10 | 80 | 16 | 168 | 24 | 320 | 40 |

| Nominal Length Range l _n in mm | Calibration Grade K | | Grade 00 | | Grade 0 | | Grade AS-1 | | Grade AS-2 | |
|--|---|---|---|---|---|---|---|---|---|---|
| | Limit Deviations of Length at any Point From Nominal Length ± l _e μm | Tolerance for the Variation In Length ± t _v μm | Limit Deviations of Length at any Point From Nominal Length ± l _e μm | Tolerance for the Variation In Length ± t _v μm | Limit Deviations of Length at any Point From Nominal Length ± l _e μm | Tolerance for the Variation In Length ± t _v μm | Limit Deviations of Length at any Point From Nominal Length ± l _e μm | Tolerance for the Variation In Length ± t _v μm | Limit Deviations of Length at any Point From Nominal Length ± l _e μm | Tolerance for the Variation In Length ± t _v μm |
| l _n ≤ 0.5 | 0.30 | 0.05 | 0.10 | 0.05 | 0.14 | 0.10 | 0.30 | 0.16 | 0.60 | 0.30 |
| 0.5 l _n ≤ 10 | 0.20 | 0.05 | 0.07 | 0.05 | 0.12 | 0.10 | 0.20 | 0.16 | 0.45 | 0.30 |
| 10 l _n ≤ 25 | 0.30 | 0.05 | 0.07 | 0.05 | 0.14 | 0.10 | 0.30 | 0.16 | 0.60 | 0.30 |
| 25 l _n ≤ 50 | 0.40 | 0.06 | 0.10 | 0.06 | 0.20 | 0.10 | 0.40 | 0.18 | 0.80 | 0.30 |
| 50 l _n ≤ 75 | 0.50 | 0.06 | 0.12 | 0.06 | 0.25 | 0.12 | 0.50 | 0.18 | 1.00 | 0.35 |
| 75 l _n ≤ 100 | 0.60 | 0.07 | 0.15 | 0.07 | 0.30 | 0.12 | 0.60 | 0.20 | 1.20 | 0.35 |
| 100 l _n ≤ 150 | 0.80 | 0.08 | 0.20 | 0.08 | 0.40 | 0.14 | 0.80 | 0.20 | 1.60 | 0.40 |
| 150 l _n ≤ 200 | 1.00 | 0.09 | 0.25 | 0.09 | 0.50 | 0.16 | 1.00 | 0.25 | 2.00 | 0.40 |
| 200 l _n ≤ 250 | 1.20 | 0.10 | 0.30 | 0.10 | 0.60 | 0.16 | 1.20 | 0.25 | 2.40 | 0.45 |
| 250 l _n ≤ 300 | 1.4 | 0.10 | 0.35 | 0.10 | 0.70 | 0.18 | 1.40 | 0.25 | 2.80 | 0.50 |
| 300 l _n ≤ 400 | 1.80 | 0.12 | 0.45 | 0.12 | 0.90 | 0.20 | 1.80 | 0.30 | 3.60 | 0.50 |
| 400 l _n ≤ 500 | 2.20 | 0.14 | 0.50 | 0.14 | 1.10 | 0.25 | 2.20 | 0.35 | 4.40 | 0.60 |
| 500 l _n ≤ 600 | 2.60 | 0.16 | 0.65 | 0.16 | 1.30 | 0.25 | 2.60 | 0.40 | 5.00 | 0.70 |
| 600 l _n ≤ 700 | 3.00 | 0.18 | 0.75 | 0.18 | 1.50 | 0.30 | 3.00 | 0.45 | 6.00 | 0.70 |
| 700 l _n ≤ 800 | 3.40 | 0.20 | 0.85 | 0.20 | 1.70 | 0.30 | 3.40 | 0.50 | 6.50 | 0.80 |
| 800 l _n ≤ 900 | 3.80 | 0.20 | 0.95 | 0.20 | 1.90 | 0.35 | 3.80 | 0.50 | 7.50 | 0.90 |
| 900 l _n ≤ 1000 | 4.20 | 0.25 | 1.00 | 0.25 | 2.00 | 0.40 | 4.20 | 0.60 | 8.00 | 1.00 |

Mitutoyo Gage Blocks and Inspection Certificates

A Certificate of Inspection is furnished with all Mitutoyo gage blocks with a serial number on the case and an identification number on each block. The deviation of each block is registered. For this inspection, each gage block is measured relative to the upper level master using a gage block comparator. Grade K gage blocks are manufactured by absolute measurement using an interferometer. The gage block set and discrete gage block are supplied with a Certificate of Calibration. The Certificate of Calibration specifies the deviation from the nominal length. (Comparative measurement, however, is performed for all square gage blocks.)



A Certificate of Accuracy, traceable to the NIST, is furnished with each MITUTOYO gage block set and individual block

Metric Rectangular Gage Block Set

SERIES 516 — 1mm Base Block Set



Steel 112-block set



Steel 103-block set



Steel 47-block set



CERA 112-block set



CERA 56-block set



CERA/Steel combination 47-block set



CERA/Steel combination 24-block set

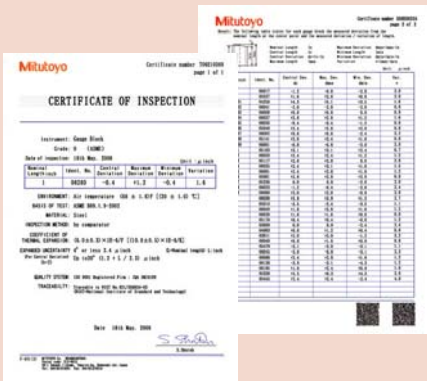


CERA/Steel combination 19-block set



CERA/Steel combination 10-block set

Provided with Inspection Certificate



SPECIFICATIONS

1mm Base Block Set

| Blocks per set | Order No. | | | Grade | Blocks included in set | | |
|----------------|------------|------------|------------------------------|-----------|------------------------|---------|--------|
| | Steel | CERA | Steel/CERA | | Size | Step | Qty. |
| 112 | 516-531-26 | 516-541-26 | — | K | 1.0005 | — | 1 |
| | 516-937-26 | 516-337-26 | — | 00 | 1.001 - 1.009 | 0.001 | 9 |
| | 516-938-26 | 516-338-26 | — | 0 | 1.01 - 1.49 | 0.01 | 49 |
| | 516-939-26 | 516-339-26 | — | AS-1 | 0.5 - 24.5 | 0.5 | 49 |
| | 516-940-26 | 516-340-26 | — | AS-2 | 25 - 100 | 25 | 4 |
| 103 | 516-533-26 | 516-542-26 | — | K | 1.005 | — | 1 |
| | 516-941-26 | 516-341-26 | — | 00 | 1.01 - 1.49 | 0.01 | 49 |
| | 516-942-26 | 516-342-26 | — | 0 | 0.5 - 24.5 | 0.5 | 49 |
| | 516-943-26 | 516-343-26 | — | AS-1 | 25 - 100 | 25 | 4 |
| | 516-944-26 | 516-344-26 | — | AS-2 | — | — | — |
| 87 | 516-535-26 | 515-543-26 | — | K | 1.001 - 1.009 | 0.001 | 9 |
| | 516-945-26 | 516-345-26 | — | 00 | 1.01 - 1.49 | 0.01 | 49 |
| | 516-946-26 | 516-346-26 | — | 0 | 0.5 - 9.5 | 0.5 | 19 |
| | 516-947-26 | 516-347-26 | — | AS-1 | 10 - 100 | 10 | 10 |
| | 516-948-26 | 516-348-26 | — | AS-2 | — | — | — |
| 56 | 516-536-26 | 516-544-26 | — | K | 0.5 | — | 1 |
| | 516-953-26 | 516-353-26 | — | 00 | 1.001 - 1.009 | 0.001 | 9 |
| | 516-954-26 | 516-354-26 | — | 0 | 1.01 - 1.09 | 0.01 | 9 |
| | 516-955-26 | 516-355-26 | — | AS-1 | 1.1 - 1.9 | 0.1 | 9 |
| | 516-956-26 | 516-356-26 | — | AS-2 | 1 - 24 | 1 | 24 |
| 47 | 516-537-26 | 516-545-26 | — | K | 1.005 | — | 1 |
| | 516-957-26 | 516-357-26 | — | 00 | 1.01 - 1.09 | 0.01 | 9 |
| | 516-958-26 | 516-358-26 | 516-958N-27** | 0 | 1.1 - 1.9 | 0.1 | 9 |
| | 516-959-26 | 516-359-26 | 516-959N-27** | AS-1 | 1 - 24 | 1 | 24 |
| | 516-960-26 | 516-360-26 | — | AS-2 | 25 - 100 | 25 | 4 |
| 24 | — | — | — | — | 1.01 - 1.09 | 0.01 | 9 |
| | — | — | — | — | 1.1 - 1.9 | 0.1 | 9 |
| | — | — | 516-488-27** 516-489-27** | 0 AS-1 | 1 - 5 10 | 1 1 | 5 1 |
| 19 | — | — | — | — | 1.1 - 1.9 | 0.1 | 9 |
| | — | — | — | — | 1 - 5 | 1 | 5 |
| | — | — | 516-484-27** 516-485-27** | 0 AS-1 | 10 - 20 25, 50, 100 | 10 — | 2 3 |
| 10 | — | — | — | — | 1 - 5 | 1 | 5 |
| | — | — | — | — | 10 - 20 | 10 | 2 |
| | — | — | 516-480-27** 516-481-27** | 0 AS-1 | 25, 50, 100 | — | 3 |

**CERA blocks are adopted for frequently-used blocks.
 47-block set: 1mm, 1.5mm, 2mm, 3mm, 4mm, 5mm, 10mm and 20mm
 32-block set: 1mm, 1.5mm, 2mm, 3mm, 4mm, 5mm, 10mm and 20mm
 24-block set: 1mm, 1.5mm, 2mm, 3mm, 5mm and 10mm
 19-block set: 1mm, 2mm, 3mm, 5mm and 10mm
 10-block set: 1mm, 2mm and 10mm



Metric Rectangular Gage Block Set

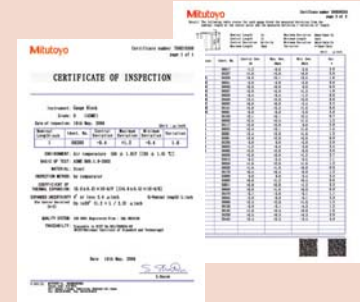
SERIES 516 — 2mm Base Block Set, 0.001mm Step Block Set

SPECIFICATIONS

2mm Base Block Set

| Blocks per set | Order No. | | GRADE | Blocks included in set | | |
|----------------|------------|------|-------|------------------------|-------|------|
| | Steel | CERA | | Size | Step | Qty. |
| 112 | 516-532-26 | — | K | 2.0005 | — | 1 |
| | 516-513-26 | — | 00 | 2.001 - 2.009 | 0.001 | 9 |
| | 516-514-26 | — | 0 | 2.01 - 2.49 | 0.01 | 49 |
| | 516-515-26 | — | AS-1 | 0.5 - 24.5 | 0.5 | 49 |
| | 516-516-26 | — | AS-2 | 25 - 100 | 25 | 4 |
| 88 | 516-534-26 | — | K | 2.0005 | — | 1 |
| | 516-517-26 | — | 00 | 2.001 - 2.009 | 0.001 | 9 |
| | 516-518-26 | — | 0 | 2.01 - 2.49 | 0.01 | 49 |
| | 516-519-26 | — | AS-1 | 0.5 - 9.5 | 0.5 | 19 |
| | 516-520-26 | — | AS-2 | 10 - 100 | 10 | 10 |
| 47 | 516-538-26 | — | K | 2.0005 | — | 1 |
| | 516-521-26 | — | 00 | 2.001 - 2.009 | 0.001 | 9 |
| | 516-522-26 | — | 0 | 2.01 - 2.09 | 0.01 | 9 |
| | 516-523-26 | — | AS-1 | 2.1 - 2.9 | 0.1 | 9 |
| | 516-524-26 | — | AS-2 | 1 - 9 | 1 | 9 |
| 33 | 516-539-26 | — | K | 2.005 | — | 1 |
| | 516-509-26 | — | 00 | 2.01 - 2.09 | 0.01 | 9 |
| | 516-510-26 | — | 0 | 2.1 - 2.9 | 0.1 | 9 |
| | 516-511-26 | — | AS-1 | 1 - 9 | 1 | 9 |
| | 516-512-26 | — | AS-2 | 10 - 30 | 10 | 3 |
| | | | | 60, 100 | | 2 |

Provided with Inspection Certificate



Metric Rectangular Gage Block Set

SERIES 516 — Long Block Set, Wear Block Set



CERA 8-block set



Steel 8-block set

SPECIFICATIONS

Long Block Set

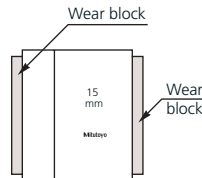
| Blocks per set | Order No. | | Grade | Blocks included in set | | |
|----------------|------------|------------|-------|------------------------|------|------|
| | Steel | CERA | | ASME | Size | Step |
| 8 | — | 516-547-26 | K | 25-200 | 25 | 8 |
| | — | 516-164-26 | 00 | — | — | — |
| | 516-115-26 | 516-165-26 | 0 | — | — | — |
| | 516-116-26 | 516-166-26 | AS-1 | — | — | — |
| 8 | 516-540-26 | 516-546-26 | K | 125 - 175 | 25 | 3 |
| | 516-701-26 | 516-731-26 | 00 | 200 - 250 | 50 | 2 |
| | 516-702-26 | 516-732-26 | 0 | 300 - 500 | 100 | 3 |
| | 516-703-26 | 516-733-26 | AS-1 | — | — | — |



CERA 2-block set



Steel 2-block



SPECIFICATIONS

Wear Block Set

| Blocks per set | Order No.* | | Grade | Blocks included in set | |
|----------------|------------|------------|-------|------------------------|------|
| | Carbide | CERA | | ASME | Qty. |
| 2 | 516-807-26 | 516-832-26 | 0 | 1 | 2 |
| | 516-806-26 | 516-833-26 | AS-1 | — | — |
| 2 | 516-803-26 | 516-830-26 | 0 | 2 | 2 |
| | 516-802-26 | 516-831-26 | AS-1 | — | — |

Inch Rectangular Gage Block Set

SERIES 516 — Inch Block Set, Thin Block Set, Long Block Set, Wear Block Set

SPECIFICATIONS

Inch Block Set

| Blocks per set | Order No. | | | Grade | Blocks included in set | | |
|----------------|------------|------------|---------------|-------|------------------------|-------|------|
| | Steel | CERA | Steel/CERA | | Size | Step | Qty. |
| 81 | 516-549-26 | 516-557-26 | — | K | .1001 – .1009 | .0001 | 9 |
| | 516-901-26 | 516-301-26 | — | 00 | .101 – .149 | .001 | 49 |
| | 516-902-26 | 516-302-26 | 516-302-27** | 0 | .05 – .95 | .05 | 19 |
| | 516-903-26 | 516-303-26 | — | AS-1 | 1 - 4 | 1 | 4 |
| | 516-904-26 | 516-304-26 | — | AS-2 | | | |
| 49 | — | — | — | — | .1001 – .1009 | .0001 | 9 |
| | — | — | — | — | .101 – .109 | .001 | 9 |
| | — | — | 516-910N-27** | 0 | .01 – .19 | .01 | 19 |
| | — | — | 516-911N-27** | AS-1 | .2 - .9 | .1 | 8 |
| 35 | 516-550-26 | 516-558-26 | — | K | .10005 | | 1 |
| | 516-913-26 | 516-313-26 | — | 00 | .1001 – .1009 | .0001 | 9 |
| | 516-914-26 | 516-314-26 | 516-914N-27** | 0 | .101 – .109 | .001 | 9 |
| | 516-915-26 | 516-315-26 | 516-915N-27** | AS-1 | .11 – .19 | .01 | 9 |
| | 516-916-26 | 516-316-26 | 516-916N-27** | AS-2 | .1 - .3 | .1 | 3 |
| | | | | | .5, 1, 2, 4 | | 4 |

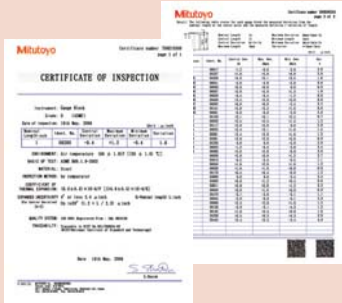
**CERA blocks are adopted for frequently-used blocks.

81-block set: All are CERA blocks. Except 2", 3", and 4" are Steel blocks

49-block set: .05, .1, .15, .2, .3, .5, 1, 2"

35-block set: .1, .15, .2, .3, .5, 1, 2"

Provided with Inspection Certificate



SPECIFICATIONS

Thin Block Set

| Blocks per set | Order No. | | Grade | Blocks included in set | | |
|----------------|------------|------|-------|------------------------|-------|------|
| | Steel | CERA | | Size | Step | Qty. |
| 28 | 516-551-26 | — | K | .02005 | | 1 |
| | 516-917-26 | — | 00 | .0201 – .0209 | .0001 | 9 |
| | 516-918-26 | — | 0 | .021 – .029 | .001 | 9 |
| | 516-919-26 | — | AS-1 | .01 – .09 | .01 | 9 |
| | 516-920-26 | — | AS-2 | | | |
| 10 | 516-926-26 | — | 0 | .005 - .050 | .005 | 10 |
| | 516-927-26 | — | AS-1 | | | |

SPECIFICATIONS

Long Block Set

| Blocks per set | Order No. | | Grade | Blocks included in set | | |
|----------------|------------|------------|-------|------------------------|------|------|
| | Steel | CERA | | Size | Step | Qty. |
| 8 | 516-126-26 | 516-176-26 | 0 | 1-8 | 1 | 8 |
| | 516-127-26 | 516-177-26 | AS-1 | | | |
| 8 | — | 516-564-26 | K | 5 - 7 | 1 | 3 |
| | — | 516-741-26 | 00 | 8, 10, 12 | 2 | 3 |
| | 516-712-26 | 516-742-26 | 0 | 16, 20 | 4 | 2 |
| | 516-713-26 | 516-743-26 | AS-1 | | | |

SPECIFICATIONS

Wear Block Set

| Blocks per set | Order No. | | Grade | Blocks included in set | |
|----------------|------------|------------|-------|------------------------|------|
| | Carbide | CERA | | Size | Qty. |
| 2 | 516-809-26 | 516-836-26 | 0 | .05 | 2 |
| | 516-808-26 | 516-837-26 | AS-1 | | |
| 2 | 516-805-26 | 516-834-26 | 0 | .1 | 2 |
| | 516-804-26 | 516-835-26 | AS-1 | | |

Micrometer Inspection Gage Block Sets

SERIES 516

- Can be fixed a series of gage blocks to be used for micrometer inspection.
- Can be measured in both vertical and horizontal posture.
- Parallelism is measured by attaching the optical parallel (optional accessory) to the GB set.

SPECIFICATIONS

Metric Micro Checker (holder only)

| Order No. | 516-607 |
|---------------------------------|---|
| Applicable gage block set | 516-106-26, 516-107-26, 516-156-26, 516-157-26 |
| Applicable gage block size (mm) | 2.5, 5.1, 7.7, 10.3, 12.9, 15, 17.6, 20.2, 22.8, 25 |

Inch/Metric Micro Checker (holder only)

| Order No. | 516-608 |
|-----------------------------------|--|
| Applicable gage block set | 516-921-26, 516-922-26, 516-923-26, 516-321-26, 516-322-26, 516-323-26 |
| Applicable gage block size (inch) | .105, .210, .315, .420, .5, .605, .815, .920 |

Metric Block Set

| Blocks per set | Order No. | | Grade | Blocks included in set |
|----------------|------------|------------|-------|--|
| | Steel | CERA | | |
| 10 | 516-103-26 | 516-152-26 | 0 | 1.00, 1.25, 1.50, 2, 3, 5, 10, 15, 20, 25mm |
| | 516-101-26 | 516-153-26 | AS-1 | |
| 10 | 516-106-26 | 516-156-26 | 0 | 2.5, 5.1, 7.7, 10.3, 12.9, 15, 17.6, 20.2, 22.8, 25mm • Optical parallel (t = 12mm) |
| | 516-107-26 | 516-157-26 | AS-1 | |

Inch Block Set

| Blocks per set | Order No. | | Grade | Blocks included in set |
|----------------|-------------|-------------|-------|--|
| | Steel | CERA | | |
| 10 | 516-552-26 | 516-559-26 | K | .105, .210, .315, .420, .500, .605, .710, .815, .920, 1" • Optical parallel (t = .5") |
| | 516-921-26 | 516-321-26 | 00 | |
| | 516-922-26 | 516-322-26 | 0 | |
| | 516-923-26 | 516-323-26 | AS-1 | |
| 10 | 516-529-26* | 516-319-26* | 0 | .087, .189, .307, .409, .472, .598, .669, .772, .890, 1" • Optical parallel (t = .5") |
| | | | | |
| 9 | 516-554-26 | 516-561-26 | K | .0625, .100, .125, .200, .250, .300, .500, 1, 2" • Optical parallel (t = .5") |
| | 516-929-26 | 516-333-26 | 00 | |
| | 516-930-26 | 516-334-26 | 0 | |
| | 516-931-26 | 516-335-26 | AS-1 | |
| 9 | — | 516-563-26 | K | .0625, .100, .125, .200, .250, .300, .500, 1, 2" |
| | — | 516-329-26 | 00 | |
| | 516-934-26 | 516-330-26 | 0 | |
| | 516-935-26 | 516-331-26 | AS-1 | |

* For QuantuMike

Micro Checker



(Gage Blocks are optional)

Bore Gage Calibration Kit

SERIES 516

SPECIFICATIONS

| Blocks per set | Order No. | Grade | Blocks included in set |
|----------------|------------|-------|--|
| | Carbide | | Size |
| 9 | 516-120-26 | 0 | .04", .08", .16", .2", .4", .8", 1", 2", 3" 2pcs. of 619970 (plain jaw) and 619004 (160mm holder) |

Individual Metric Rectangular Gage Block

FEATURES

- If using only one length repeatedly, it is a good idea to purchase discrete gage blocks.
- Each gage block is supplied with a Certificate of Inspection.
- Each Grade K gage block of ASME standard is specially supplied with a Certificate of Calibration which certifies that the gage block was manufactured through interferometry.



Suffix Number for Selecting Standard and Certificate Provided

| ASME | |
|-------|-------------|
| Grade | Steel, CERA |
| K | -516** |
| 00 | -521* |
| 0 | -531* |
| AS-1 | -541* |
| AS-2 | -551* |

* provided with Inspection Certificate

** provided with Calibration Certificate and Inspection Certificate

Example: 611821-521
0.1mm gage block in grade 00.

We make custom length gage block length:
0.1-1000mm



Inspection Certificate

SPECIFICATIONS

| Metric Block | | | Metric Block | | | Metric Block | | |
|--------------|-----------|--------|--------------|-----------|------|--------------|-----------|--------|
| Length (mm) | Order No. | | Length (mm) | Order No. | | Length (mm) | Order No. | |
| | Steel | CERA | | Steel | CERA | | Steel | CERA |
| 0.1 | 611821 | — | 0.53 | 611894 | — | 0.96 | 611937 | — |
| 0.11 | 611860 | — | 0.54 | 611895 | — | 0.97 | 611938 | — |
| 0.12 | 611861 | — | 0.55 | 611896 | — | 0.98 | 611939 | — |
| 0.13 | 611862 | — | 0.56 | 611897 | — | 0.99 | 611940 | — |
| 0.14 | 611863 | — | 0.57 | 611898 | — | 0.991 | 611551 | 613551 |
| 0.15 | 611822 | — | 0.58 | 611899 | — | 0.992 | 611552 | 613552 |
| 0.16 | 611864 | — | 0.59 | 611900 | — | 0.993 | 611553 | 613553 |
| 0.17 | 611865 | — | 0.6 | 611901 | — | 0.994 | 611554 | 613554 |
| 0.18 | 611866 | — | 0.61 | 611902 | — | 0.995 | 611555 | 613555 |
| 0.19 | 611867 | — | 0.62 | 611903 | — | 0.996 | 611556 | 613556 |
| 0.2 | 611823 | — | 0.63 | 611904 | — | 0.997 | 611557 | 613557 |
| 0.21 | 611868 | — | 0.64 | 611905 | — | 0.998 | 611558 | 613558 |
| 0.22 | 611869 | — | 0.65 | 611906 | — | 0.999 | 611559 | 613559 |
| 0.23 | 611870 | — | 0.66 | 611907 | — | 1 | 611611 | 613661 |
| 0.24 | 611871 | — | 0.67 | 611908 | — | 1.0005 | 611520 | 613520 |
| 0.25 | 611824 | — | 0.68 | 611909 | — | 1.001 | 611521 | 613521 |
| 0.26 | 611872 | — | 0.69 | 611910 | — | 1.002 | 611522 | 613522 |
| 0.27 | 611873 | — | 0.7 | 611911 | — | 1.003 | 611523 | 613523 |
| 0.28 | 611874 | — | 0.71 | 611912 | — | 1.004 | 611524 | 613524 |
| 0.29 | 611875 | — | 0.72 | 611913 | — | 1.005 | 611525 | 613525 |
| 0.3 | 611825 | — | 0.73 | 611914 | — | 1.006 | 611526 | 613526 |
| 0.31 | 611876 | — | 0.74 | 611915 | — | 1.007 | 611527 | 613527 |
| 0.32 | 611877 | — | 0.75 | 611916 | — | 1.008 | 611528 | 613528 |
| 0.33 | 611878 | — | 0.76 | 611917 | — | 1.009 | 611529 | 613529 |
| 0.34 | 611879 | — | 0.77 | 611918 | — | 1.01 | 611561 | 613561 |
| 0.35 | 611826 | — | 0.78 | 611919 | — | 1.02 | 611562 | 613562 |
| 0.36 | 611880 | — | 0.79 | 611920 | — | 1.03 | 611563 | 613563 |
| 0.37 | 611881 | — | 0.8 | 611921 | — | 1.04 | 611564 | 613564 |
| 0.38 | 611882 | — | 0.81 | 611922 | — | 1.05 | 611565 | 613565 |
| 0.39 | 611883 | — | 0.82 | 611923 | — | 1.06 | 611566 | 613566 |
| 0.4 | 611827 | — | 0.83 | 611924 | — | 1.07 | 611567 | 613567 |
| 0.41 | 611884 | — | 0.84 | 611925 | — | 1.08 | 611568 | 613568 |
| 0.42 | 611885 | — | 0.85 | 611926 | — | 1.09 | 611569 | 613569 |
| 0.43 | 611886 | — | 0.86 | 611927 | — | 1.1 | 611570 | 613570 |
| 0.44 | 611887 | — | 0.87 | 611928 | — | 1.11 | 611571 | 613571 |
| 0.45 | 611828 | — | 0.88 | 611929 | — | 1.12 | 611572 | 613572 |
| 0.46 | 611888 | — | 0.89 | 611930 | — | 1.13 | 611573 | 613573 |
| 0.47 | 611889 | — | 0.9 | 611931 | — | 1.14 | 611574 | 613574 |
| 0.48 | 611890 | — | 0.91 | 611932 | — | 1.15 | 611575 | 613575 |
| 0.49 | 611891 | — | 0.92 | 611933 | — | 1.16 | 611576 | 613576 |
| 0.5 | 611506 | 613506 | 0.93 | 611934 | — | 1.17 | 611577 | 613577 |
| 0.51 | 611892 | — | 0.94 | 611935 | — | 1.18 | 611578 | 613578 |
| 0.52 | 611893 | — | 0.95 | 611936 | — | 1.19 | 611579 | 613579 |

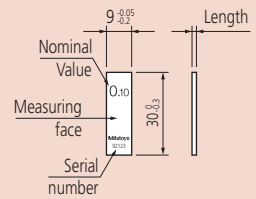
| Length (mm) | Order No. | | Length (mm) | Order No. | | Length (mm) | Order No. | |
|-------------|-----------|--------|-------------|-----------|--------|-------------|-----------|--------|
| | Steel | CERA | | Steel | CERA | | Steel | CERA |
| 1.2 | 611580 | 613580 | 2.17 | 611717 | — | 13 | 611623 | 613623 |
| 1.21 | 611581 | 613581 | 2.18 | 611718 | — | 13.5 | 611653 | 613653 |
| 1.22 | 611582 | 613582 | 2.19 | 611719 | — | 14 | 611624 | 613624 |
| 1.23 | 611583 | 613583 | 2.2 | 611720 | — | 14.5 | 611654 | 613654 |
| 1.24 | 611584 | 613584 | 2.21 | 611721 | — | 15 | 611625 | 613625 |
| 1.25 | 611585 | 613585 | 2.22 | 611722 | — | 15.5 | 611655 | 613655 |
| 1.26 | 611586 | 613586 | 2.23 | 611723 | — | 16 | 611626 | 613626 |
| 1.27 | 611587 | 613587 | 2.24 | 611724 | — | 16.5 | 611656 | 613656 |
| 1.28 | 611588 | 613588 | 2.25 | 611725 | — | 17 | 611627 | 613627 |
| 1.29 | 611589 | 613589 | 2.26 | 611726 | — | 17.5 | 611657 | 613657 |
| 1.3 | 611590 | 613590 | 2.27 | 611727 | — | 17.6 | 611854 | 613854 |
| 1.31 | 611591 | 613591 | 2.28 | 611728 | — | 18 | 611628 | 613628 |
| 1.32 | 611592 | 613592 | 2.29 | 611729 | — | 18.5 | 611658 | 613658 |
| 1.33 | 611593 | 613593 | 2.3 | 611730 | — | 19 | 611629 | 613629 |
| 1.34 | 611594 | 613594 | 2.31 | 611731 | — | 19.5 | 611659 | 613659 |
| 1.35 | 611595 | 613595 | 2.32 | 611732 | — | 20 | 611672 | 613672 |
| 1.36 | 611596 | 613596 | 2.33 | 611733 | — | 20.2 | 611855 | 613855 |
| 1.37 | 611597 | 613597 | 2.34 | 611734 | — | 20.5 | 611660 | 613660 |
| 1.38 | 611598 | 613598 | 2.35 | 611735 | — | 21 | 611631 | 613631 |
| 1.39 | 611599 | 613599 | 2.36 | 611736 | — | 21.5 | 611661 | 613661 |
| 1.4 | 611600 | 613600 | 2.37 | 611737 | — | 22 | 611632 | 613632 |
| 1.41 | 611601 | 613601 | 2.38 | 611738 | — | 22.5 | 611662 | 613662 |
| 1.42 | 611602 | 613602 | 2.39 | 611739 | — | 22.8 | 611856 | 613856 |
| 1.43 | 611603 | 613603 | 2.4 | 611740 | — | 23 | 611633 | 613633 |
| 1.44 | 611604 | 613604 | 2.41 | 611741 | — | 23.5 | 611663 | 613663 |
| 1.45 | 611605 | 613605 | 2.42 | 611742 | — | 24 | 611634 | 613634 |
| 1.46 | 611606 | 613606 | 2.43 | 611743 | — | 24.5 | 611664 | 613664 |
| 1.47 | 611607 | 613607 | 2.44 | 611744 | — | 25 | 611635 | 613635 |
| 1.48 | 611608 | 613608 | 2.45 | 611745 | — | 25.25 | 611754 | 613754 |
| 1.49 | 611609 | 613609 | 2.46 | 611746 | — | 30 | 611673 | 613673 |
| 1.5 | 611641 | 613641 | 2.47 | 611747 | — | 35 | 611755 | 613755 |
| 1.6 | 611516 | 613516 | 2.48 | 611748 | — | 40 | 611674 | 613674 |
| 1.7 | 611517 | 613517 | 2.49 | 611749 | — | 41.3 | 611857 | 613857 |
| 1.8 | 611518 | 613518 | 2.5 | 611642 | 613642 | 45 | 611756 | 613756 |
| 1.9 | 611519 | 613519 | 2.6 | 611750 | — | 50 | 611675 | 613675 |
| 2 | 611612 | 613612 | 2.7 | 611751 | — | 60 | 611676 | 613676 |
| 2.0005 | 611690 | — | 2.8 | 611752 | — | 70 | 611677 | 613677 |
| 2.001 | 611691 | — | 2.9 | 611753 | — | 75 | 611801 | 613801 |
| 2.002 | 611692 | — | 3 | 611613 | 613613 | 80 | 611678 | 613678 |
| 2.003 | 611693 | — | 3.5 | 611643 | 613643 | 90 | 611679 | 613679 |
| 2.004 | 611694 | — | 4 | 611614 | 613614 | 100 | 611681 | 613681 |
| 2.005 | 611695 | — | 4.5 | 611644 | 613644 | 125 | 611802 | 613802 |
| 2.006 | 611696 | — | 5 | 611615 | 613615 | 131.4 | 611858 | 613858 |
| 2.007 | 611697 | — | 5.1 | 611850 | 613850 | 150 | 611803 | 613803 |
| 2.008 | 611698 | — | 5.5 | 611645 | 613645 | 175 | 611804 | 613804 |
| 2.009 | 611699 | — | 6 | 611616 | 613616 | 200 | 611682 | 613682 |
| 2.01 | 611701 | — | 6.5 | 611646 | 613646 | 250 | 611805 | 613805 |
| 2.02 | 611702 | — | 7 | 611617 | 613617 | 300 | 611683 | 613683 |
| 2.03 | 611703 | — | 7.5 | 611647 | 613647 | 400 | 611684 | 613684 |
| 2.04 | 611704 | — | 7.7 | 611851 | 613851 | 500 | 611685 | 613685 |
| 2.05 | 611705 | — | 8 | 611618 | 613618 | 600 | 611840 | — |
| 2.06 | 611706 | — | 8.5 | 611648 | 613648 | 700 | 611841 | — |
| 2.07 | 611707 | — | 9 | 611619 | 613619 | 750 | 611842 | — |
| 2.08 | 611708 | — | 9.5 | 611649 | 613649 | 800 | 611843 | — |
| 2.09 | 611709 | — | 10 | 611671 | 613671 | 900 | 611844 | — |
| 2.1 | 611710 | — | 10.3 | 611852 | 613852 | 1000 | 611845 | — |
| 2.11 | 611711 | — | 10.5 | 611650 | 613650 | | | |
| 2.12 | 611712 | — | 11 | 611621 | 613621 | | | |
| 2.13 | 611713 | — | 11.5 | 611651 | 613651 | | | |
| 2.14 | 611714 | — | 12 | 611622 | 613622 | | | |
| 2.15 | 611715 | — | 12.5 | 611652 | 613652 | | | |
| 2.16 | 611716 | — | 12.9 | 611853 | 613853 | | | |

| Metric Wear Block | |
|-------------------|------------------|
| Length (mm) | Order No. |
| | Tungsten carbide |
| 1 | 612611 |
| 2 | 612612 |

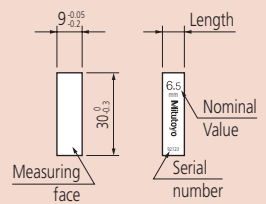
DIMENSIONS

Unit: mm

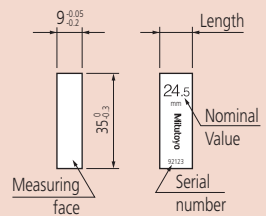
Nominal length:
0.1mm - 5.5mm



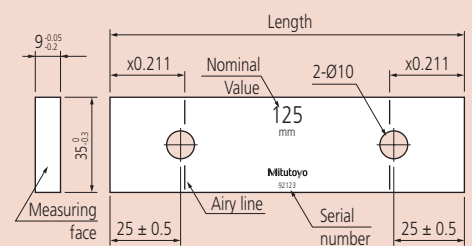
Nominal length:
6mm - 10mm



Nominal length:
10.3mm - 100mm



Nominal length 125mm - 1000mm



Suffix Number for Selecting Standard and Certificate Provided

| ASME | |
|-------|-------------|
| Grade | Steel, CERA |
| K | -516** |
| 00 | -521* |
| 0 | -531* |
| AS-1 | -541* |
| AS-2 | -551* |

* provided with Inspection Certificate
 ** provided with Calibration Certificate and Inspection Certificate

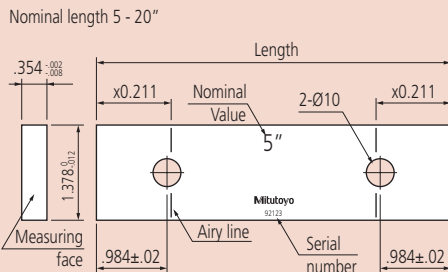
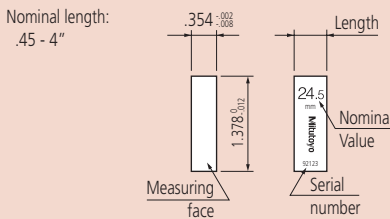
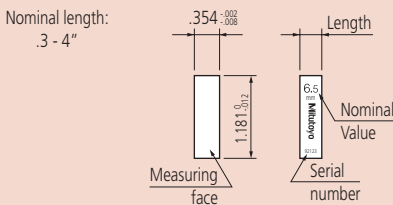
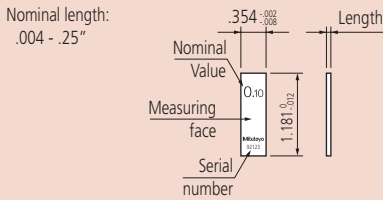
Example: 611310-521
 .1" gage block in grade 00.
 We make custom length gage block length:
 .004 - 20"



Inspection Certificate

DIMENSIONS

Unit: Inch



Individual Inch Rectangular Gage Block

SPECIFICATIONS

| Length (inch) | Order No. | |
|----------------|-----------|--------|
| | Steel | CERA |
| .004 | 611304 | — |
| .005 | 611305 | — |
| .006 | 611306 | — |
| .007 | 611307 | — |
| .008 | 611308 | — |
| .009 | 611309 | — |
| .01 | 611310 | — |
| .011 | 611311 | — |
| .012 | 611312 | — |
| .013 | 611313 | — |
| .014 | 611314 | — |
| .015 | 611315 | — |
| .016 | 611316 | — |
| .017 | 611317 | — |
| .018 | 611318 | — |
| .019 | 611319 | — |
| .02 | 611320 | — |
| .02005 | 611240 | — |
| .0201 | 611231 | — |
| .0202 | 611232 | — |
| .0203 | 611233 | — |
| .0204 | 611234 | — |
| .0205 | 611235 | — |
| .0206 | 611236 | — |
| .0207 | 611237 | — |
| .0208 | 611238 | — |
| .0209 | 611239 | — |
| .021 | 611321 | — |
| .022 | 611322 | — |
| .023 | 611323 | — |
| .024 | 611324 | — |
| .025 | 611325 | — |
| .026 | 611326 | — |
| .027 | 611327 | — |
| .028 | 611328 | — |
| .029 | 611329 | — |
| .03 | 611330 | — |
| .031 | 611331 | — |
| .03125 (1/32) | 611101 | 613103 |
| .032 | 611332 | — |
| .033 | 611333 | — |
| .034 | 611334 | — |
| .035 | 611335 | — |
| .036 | 611336 | — |
| .037 | 611337 | — |
| .038 | 611338 | — |
| .039 | 611339 | — |
| .04 | 611340 | — |
| .041 | 611341 | — |
| .042 | 611342 | — |
| .043 | 611343 | — |
| .044 | 611344 | — |
| .045 | 611345 | — |
| .046 | 611346 | — |
| .046875 (3/64) | 611102 | 613104 |
| .047 | 611347 | — |
| .048 | 611348 | — |
| .049 | 611349 | — |
| .05 | 611105 | 613105 |

| Length (inch) | Order No. | |
|----------------|-----------|--------|
| | Steel | CERA |
| .06 | 611106 | — |
| .0625 | 611303 | 613303 |
| .07 | 611107 | — |
| .078125 (5/64) | 611103 | 613100 |
| .08 | 611108 | — |
| .09 | 611109 | — |
| .09375 (3/32) | 611104 | 613101 |
| .1 | 611191 | 613191 |
| .100025 | 611111 | 613110 |
| .10005 | 611135 | 613135 |
| .100075 | 611112 | 613111 |
| .1001 | 611121 | 613121 |
| .1002 | 611122 | 613122 |
| .1003 | 611123 | 613123 |
| .1004 | 611124 | 613124 |
| .1005 | 611125 | 613125 |
| .1006 | 611126 | 613126 |
| .1007 | 611127 | 613127 |
| .1008 | 611128 | 613128 |
| .1009 | 611129 | 613129 |
| .101 | 611141 | 613141 |
| .102 | 611142 | 613142 |
| .103 | 611143 | 613143 |
| .104 | 611144 | 613144 |
| .105 | 611145 | 613145 |
| .106 | 611146 | 613146 |
| .107 | 611147 | 613147 |
| .108 | 611148 | 613148 |
| .109 | 611149 | 613149 |
| .109375 (7/64) | 611110 | 613102 |
| .11 | 611150 | 613150 |
| .111 | 611151 | 613151 |
| .112 | 611152 | 613152 |
| .113 | 611153 | 613153 |
| .114 | 611154 | 613154 |
| .115 | 611155 | 613155 |
| .116 | 611156 | 613156 |
| .117 | 611157 | 613157 |
| .118 | 611158 | 613158 |
| .119 | 611159 | 613159 |
| .12 | 611160 | 613160 |
| .121 | 611161 | 613161 |
| .122 | 611162 | 613162 |
| .123 | 611163 | 613163 |
| .124 | 611164 | 613164 |
| .125 | 611165 | 613165 |
| .126 | 611166 | 613166 |
| .127 | 611167 | 613167 |
| .128 | 611168 | 613168 |
| .129 | 611169 | 613169 |
| .13 | 611170 | 613170 |
| .131 | 611171 | 613171 |
| .132 | 611172 | 613172 |
| .133 | 611173 | 613173 |
| .134 | 611174 | 613174 |
| .135 | 611175 | 613175 |
| .136 | 611176 | 613176 |
| .137 | 611177 | 613177 |
| .138 | 611178 | 613178 |

| Length (inch) | Order No. | |
|---------------|-----------|--------|
| | Steel | CERA |
| .139 | 611179 | 613179 |
| .14 | 611180 | 613180 |
| .141 | 611181 | 613181 |
| .142 | 611182 | 613182 |
| .143 | 611183 | 613183 |
| .144 | 611184 | 613184 |
| .145 | 611185 | 613185 |
| .146 | 611186 | 613186 |
| .147 | 611187 | 613187 |
| .148 | 611188 | 613188 |
| .149 | 611189 | 613189 |
| .15 | 611115 | 613115 |
| .16 | 611116 | 613116 |
| .17 | 611117 | 613117 |
| .18 | 611118 | 613118 |
| .19 | 611119 | 613119 |
| .2 | 611192 | 613192 |
| .21 | 611221 | 613221 |
| .25 | 611212 | 613212 |
| .3 | 611193 | 613193 |
| .315 | 611209 | 613209 |
| .35 | 611213 | 613213 |
| .375 (3/8) | 611113 | 613112 |
| .4 | 611194 | 613194 |
| .420 | 611210 | 613210 |
| .45 | 611214 | 613214 |
| .5 | 611195 | 613195 |
| .55 | 611215 | 613215 |
| .6 | 611196 | 613196 |
| .605 | 611211 | 613211 |
| .65 | 611216 | 613216 |
| .7 | 611197 | 613197 |
| .710 | 611220 | 613220 |
| .75 | 611217 | 613217 |
| .8 | 611198 | 613198 |
| .815 | 611226 | 613226 |
| .85 | 611218 | 613218 |
| .9 | 611199 | 613199 |
| .920 | 611227 | 613227 |
| .95 | 611219 | 613219 |
| 1 | 611201 | 613201 |
| 2 | 611202 | 613202 |
| 3 | 611203 | 613203 |
| 4 | 611204 | 613204 |
| 5 | 611205 | 613205 |
| 6 | 611206 | 613206 |
| 7 | 611207 | 613207 |
| 8 | 611208 | 613208 |
| 10 | 611222 | 613222 |
| 12 | 611223 | 613223 |
| 16 | 611224 | 613224 |
| 20 | 611225 | 613225 |

| Inch Wear Block | | |
|-----------------|------------------|--|
| Length (inch) | Order No. | |
| | Tungsten carbide | |
| .05 | 612105 | |
| .1 | 612191 | |

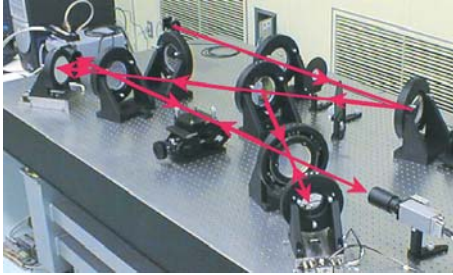


Rectangular Gage Block with CTE

Gage Blocks with Thermal Expansion Coefficient Data

FEATURES

- Mitutoyo offers top-level gage blocks (steel and ceramic) which are superior to the K class blocks, with their quality supported by Mitutoyo's best technologies.
- Comes with a highly accurate thermal expansion coefficient measured with a high accuracy double-faced interferometer (DFI).
- The high accuracy gage block interferometer (GBI) guarantees a high dimensional accuracy.
- Mitutoyo offers rectangular gage blocks, having nominal values from 100 to 500mm Grade: K class in ASME
 Uncertainty of thermal expansion coefficient: $0.035 \times 10^{-6}/K$ ($k = 2$)
 Uncertainty of dimension measurement: 30nm ($k = 2$), for 100mm block



double-faced interferometer (DFI)

SPECIFICATIONS

Metric Block with CTE

| Length (mm) | Order No. Steel | Order No. CERA |
|-------------|-----------------|----------------|
| 100 | 611681-51B | 613681-51B |
| 125 | 611802-51B | 613802-51B |
| 150 | 611803-51B | 613803-51B |
| 175 | 611804-51B | 613804-51B |
| 200 | 611682-51B | 613682-51B |
| 250 | 611805-51B | 613805-51B |
| 300 | 611683-51B | 613683-51B |
| 400 | 611684-51B | 613684-51B |
| 500 | 611685-51B | 613685-51B |

Inch Block with CTE

| Length (inch) | Order No. Steel | Order No. CERA |
|---------------|-----------------|----------------|
| 4 | 611204-51B | 613204-51B |
| 5 | 611205-51B | 613205-51B |
| 6 | 611206-51B | 613206-51B |
| 7 | 611207-51B | 613207-51B |
| 8 | 611208-51B | 613208-51B |
| 10 | 611222-51B | 613222-51B |
| 12 | 611223-51B | 613223-51B |
| 16 | 611224-51B | 613224-51B |
| 20 | 611225-51B | 613225-51B |

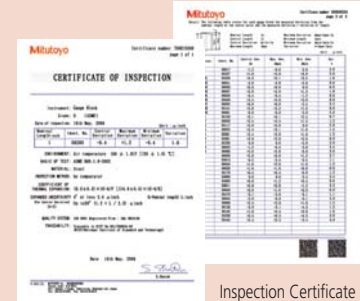


*Suffix Number for Selecting Standard and Certificate Provided

ASME

| | |
|---------|-------------|
| Grade K | Steel, CERA |
| | -51B |

-51B: provided with JCSS Calibration Certificate and Inspection Certificate



Inspection Certificate



Rectangular Gage Block Accessories

SERIES 516 – For Gage Blocks over 100mm

Specially designed for the long gage blocks over 100mm which have two holes on the body for coupling.

SPECIFICATIONS

Accessories for gage blocks over 100mm

| Order No. 516-605 | Included in set |
|-------------------|------------------------------|
| 1 pc. | Holder A (619031) |
| 1 pc. | Holder B (619032) |
| 1 pc. | Holder C (619033) |
| 1 pc. | Holder D (619034) |
| 1 pc. | Holder E (619035) |
| 3 pcs. | Adaptor (619036) |
| 1 pc. | Holder base 35mm (619009) |
| 2 pcs. | Half round jaw 12mm (619013) |
| 2 pcs. | Plain jaw (619018) |
| 1 pc. | Scriber point (619019) |

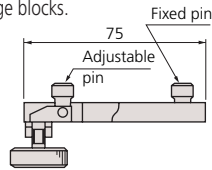
Note: These accessories can be used for inch rectangular gage blocks.



516-605

Holder A: 619031

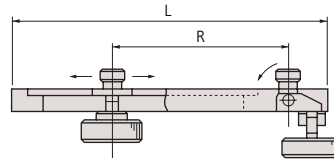
Used for coupling two long gage blocks.



Holder B and C:

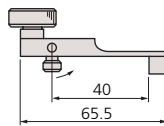
Used for coupling two long gage blocks together with other gage blocks up to 35mm (Holder B) or 140mm (Holder C). Also used for attaching jaws with two adapters.

| | Order No. | R (max.) | L |
|----------|-----------|----------|-------|
| Holder B | 619032 | 90mm | 126mm |
| Holder C | 619033 | 200mm | 236mm |



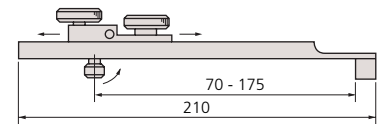
Holder D: 619034

Used for attaching to the holder base.

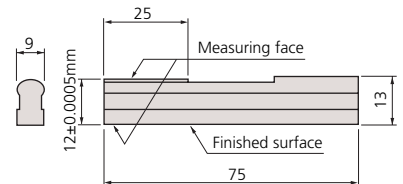


Holder E: 619035

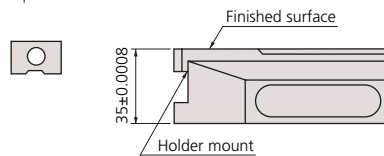
Used for attaching to the holder base together with other gage blocks up to 125mm. Used for attaching jaws with one adapter.



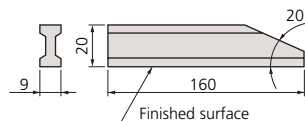
Half round jaw: 619013



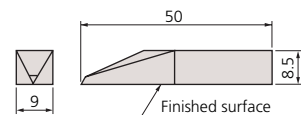
Holder base: 619009 Adaptor: 619036



Plain jaw: 619018



Scriber point: 619019



Rectangular Gage Block Accessories

SERIES 516

To expand the variety of rectangular gage block (steel and CERA) applications, Mitutoyo offers the gage block accessories set. By assembling the items in the set, you can easily and quickly build up a precision measuring instrument.



516-601



516-602



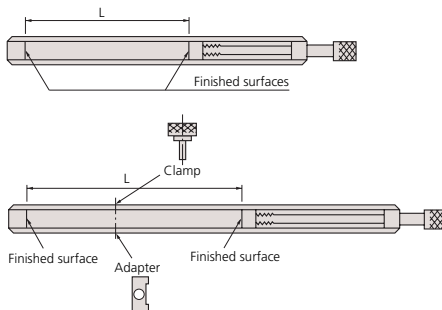
SPECIFICATIONS

Assortment of Accessories

| Order No. | Accessories | Inch Set Order No. | | Metric Set Order No. | | Accessory (s) included in a set |
|-----------|------------------------------------|--------------------|---------|----------------------|---------|---------------------------------|
| | | 516-603 | 516-604 | 516-601 | 516-602 | |
| 619102 | Holder 2.24" | • | | | | 1 pc. |
| 619103 | Holder 4" | • | • | | | 1 pc. |
| 619104 | Holder 6" | • | • | | | 1 pc. |
| 619105 | Holder 10" | • | • | | | 1 pc. |
| 619002 | Holder 60mm | | | | • | 1 pc. |
| 619003 | Holder 100mm | | | • | • | 1 pc. |
| 619004 | Holder 160mm | | | • | • | 1 pc. |
| 619005 | Holder 250mm | | | • | • | 1 pc. |
| 619109 | Holder Base 1.375" | • | • | | | 1 pc. |
| 619009 | Holder Base 35mm | | | • | • | 2 pcs. |
| 619110 | Half round jaw .100" | • | • | | | 2 pcs. |
| 619010 | Half round jaw 2mm | | | • | • | 2 pcs. |
| 619111 | Half round jaw .200" | • | • | | | 2 pcs. |
| 619011 | Half round jaw 5mm | | | • | • | 2 pcs. |
| 619112 | Half round jaw .250" | • | • | | | 2 pcs. |
| 619012 | Half round jaw 8mm | | | • | • | 2 pcs. |
| 619113 | Half round jaw .500" | | • | | | 2 pcs. |
| 619013 | Half round jaw 12mm | | | • | | 2 pcs. |
| 619114 | Half round jaw .750" | | • | | | 2 pcs. |
| 619014 | Half round jaw 20mm | | | • | | 2 pcs. |
| 619118 | Plain jaw 6" | | • | | | 2 pcs. |
| 619018 | Plain jaw 160mm | | | • | | 2 pcs. |
| 619019 | Scriber point | • | • | • | • | 1 pc. |
| 619020 | Center point | • | • | • | • | 1 pc. |
| 619021 | Tram point | | • | • | | 2 pcs. |
| 619122 | Triangular straightness edge 4" | • | • | | | 1 pc. |
| 619022 | Triangular straightness edge 100mm | | | • | • | 1 pc. |
| 619123 | Triangular straight edge 6" | | • | | | 1 pc. |
| 619023 | Triangular straight edge 160mm | | | • | | 1 pc. |
| | Total Qty. in set | 14 pcs. | 22 pcs. | 22 pcs. | 14 pcs. | |

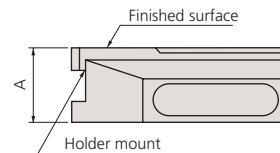
Rectangular Gage Block Accessories

Holder:
Used as a clamp if using plain jaws, scriber point, etc.



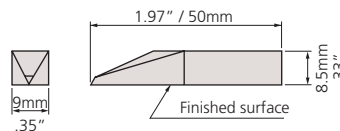
| Order No. | L |
|-----------|---------------|
| 619102 | .59 - 2.40" |
| 619002 | 15 - 61mm |
| 619103 | .16 - 4.17" |
| 619003 | 4 - 106mm |
| 619104 | 2.44 - 6.50" |
| 619004 | 62 - 165mm |
| 619105 | 6.02 - 10.08" |
| 619005 | 153 - 256mm |

Holder base 35mm: **619009**
Measures a height on the surface plate and scribes a workpiece if used with the holder.

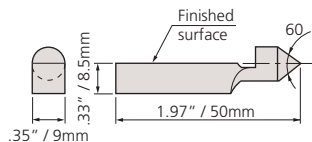


| Order No. | A |
|-----------|--------------|
| 619009 | 35±0.005mm |
| 619109 | 1.375±.0002" |

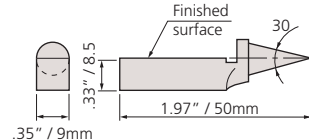
Scriber point: **619019**
Scribes a workpiece if used with the holder and holder base.



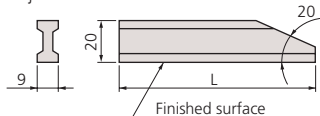
Center point: **619020**
Scribes a workpiece if used with the holder and holder base.



Tram point: **619021**
Inspects the scale of the height gage, etc., if used with the holder and holder base.

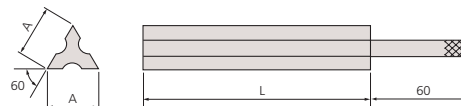


Plain jaw: **619018**
Measures an outside or inside diameter if used with a pair of jaws and the holder.



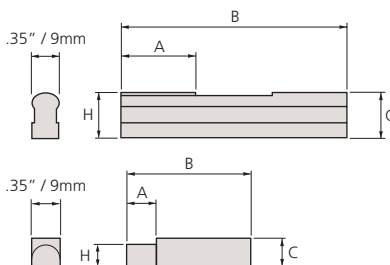
| Order No. | L |
|-----------|-------|
| 619018 | 160mm |
| 619118 | 6" |

Triangular straight edge: Measures parallelism.



| Order No. | L |
|-----------|-------|
| 619022 | 100mm |
| 619023 | 160mm |
| 619122 | 4" |
| 619123 | 6" |

Half round jaw:
Measures an outside or inside diameter if used with a pair of jaws and the holder.



| Order No. | H | A | B | C |
|-----------|--------------|------|-------|--------|
| 619010 | 2±0.0005mm | 6mm | 40mm | 8mm |
| 619011 | 5±0.0005mm | 6mm | 50mm | 8mm |
| 619012 | 8±0.0005mm | 12mm | 60mm | 8mm |
| 619013 | 12±0.0005mm | 25mm | 75mm | 13mm |
| 619014 | 20±0.0005mm | 25mm | 125mm | 20.5mm |
| 619110 | .1±.000028" | .24" | 1.57" | .31" |
| 619111 | .2±.000028" | .24" | 1.97" | .31" |
| 619112 | .25±.000028" | .47" | 2.36" | .31" |
| 619113 | .5±.000028" | .98" | 2.95" | .51" |
| 619114 | .75±.000028" | .98" | 4.92" | .81" |

Metric Square Gage Block Set

SERIES 516 — Metric Block Set, Long Block Set, Wear Block Set

A Square Gage Block can retain stable orientation both longitudinally and laterally. A wide range of application measurements can be made, including cutting tool positioning, angle measurement with a sine bar, taper measurement with a roller, and inspection of depth micrometers.



Steel 32-block set



Steel 76-block set



Steel 103-block set



Steel 112-block set

SPECIFICATIONS

Metric Block Set

| Blocks per set | Order No. | | Grade | Blocks included in set | | |
|----------------|------------|------|-------|------------------------|-------|------|
| | Steel | CERA | | Size | Step | Qty. |
| 112 | 516-437-26 | — | 00 | 1.005 | — | 1 |
| | 516-438-26 | — | 0 | 1.001 - 1.009 | 0.001 | 9 |
| | 516-439-26 | — | AS-1 | 1.01 - 1.49 | 0.01 | 49 |
| | 516-440-26 | — | AS-2 | 0.5 - 24.5 | 0.5 | 49 |
| | — | — | — | 25 - 100 | 25 | 4 |
| 103 | 516-441-26 | — | 00 | 1.005 | — | 1 |
| | 516-442-26 | — | 0 | 1.01 - 1.49 | 0.01 | 49 |
| | 516-443-26 | — | AS-1 | 0.5 - 24.5 | 0.5 | 49 |
| | 516-444-26 | — | AS-2 | 25 - 100 | 25 | 4 |
| | — | — | — | — | — | — |
| 76 | 516-449-26 | — | 00 | 1.005 | — | 1 |
| | 516-450-26 | — | 0 | 1.01 - 1.49 | 0.01 | 49 |
| | 516-451-26 | — | AS-1 | 0.5 - 9.5 | 0.5 | 19 |
| | 516-452-26 | — | AS-2 | 10 - 40 | 10 | 4 |
| | — | — | — | 50 - 100 | 25 | 3 |
| 47 | 516-457-26 | — | 00 | 1.005 | — | 1 |
| | 516-458-26 | — | 0 | 1.01 - 1.09 | 0.01 | 9 |
| | 516-459-26 | — | AS-1 | 1.1 - 1.9 | 0.1 | 9 |
| | 516-460-26 | — | AS-2 | 1 - 24 | 1 | 24 |
| | — | — | — | 25 - 100 | 25 | 4 |
| 32 | 516-465-26 | — | 00 | 1.005 | — | 1 |
| | 516-466-26 | — | 0 | 1.01 - 1.09 | 0.01 | 9 |
| | 516-467-26 | — | AS-1 | 1.1 - 1.9 | 0.1 | 9 |
| | 516-468-26 | — | AS-2 | 1 - 9 | 1 | 9 |
| | — | — | — | 10 - 30 | 10 | 3 |
| | — | — | — | 60 | — | 1 |

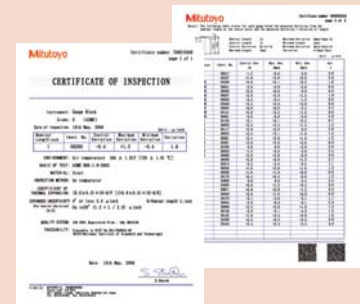
Metric Long Block Set

| Blocks per set | Order No. | | Grade | Blocks included in set | | |
|----------------|------------|------|-------|------------------------|------|------|
| | Steel | CERA | | Size | Step | Qty. |
| 8 | 516-751-26 | — | 00 | 125, 150, 175 | 25 | 3 |
| | 516-752-26 | — | 0 | 200, 250 | 50 | 2 |
| | 516-753-26 | — | AS-1 | 300, 400, 500 | 100 | 3 |
| | 516-754-26 | — | AS-2 | — | — | — |
| | — | — | — | — | — | — |

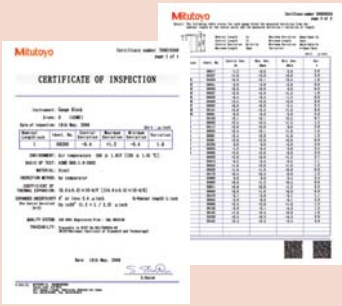
Metric Wear Block Set

| Blocks per set | Order No. | | Grade | Blocks included in set | | |
|----------------|------------|------|-------|------------------------|------|------|
| | Steel | CERA | | Size | Step | Qty. |
| 2 | 516-820-26 | — | 0 | 1 | — | 2 |
| | 516-821-26 | — | AS-1 | — | — | — |
| 2 | 516-822-26 | — | 0 | 2 | — | 2 |
| | 516-823-26 | — | AS-1 | — | — | — |

Provided with Inspection Certificate



Provided with Inspection Certificate



Inch Square Gage Block Set

SERIES 516 — Inch Block Set, Long Block Set, Wear Block Set

SPECIFICATIONS

Inch Block Set

| Blocks per set | Order No. | | Grade | Blocks included in set | | |
|----------------|------------|------------|-------------|------------------------|-------|------|
| | Steel | CERA | | Size | Step | Qty. |
| 81 | 516-401-26 | 516-201-26 | 00 | .1001 - .1009 | .0001 | 9 |
| | 516-402-26 | 516-202-26 | 0 | .101 - .149 | .001 | 49 |
| | 516-403-26 | 516-203-26 | AS-1 | .05 - .95 | .05 | 19 |
| | 516-404-26 | 516-204-26 | AS-2 | 1 - 4 | 1 | 4 |
| 36 | 516-421-26 | 516-221-26 | 00 | .05" | | 1 |
| | 516-422-26 | 516-222-26 | 0 | .1001 - .1009 | .0001 | 10 |
| | 516-423-26 | 516-223-26 | AS-1 | .101 - .109 | .001 | 9 |
| | 516-424-26 | 516-224-26 | AS-1 | .11 - .19 | .01 | 9 |
| | | | AS-2 | .1 - .5 | .1 | 5 |
| | | | 1, 2, 4 | 1 | 3 | |
| 28 | 516-417-26 | — | 00 | .02005" | | 1 |
| | 516-418-26 | — | 0 | .0201 - .0209" | .0001 | 9 |
| | 516-419-26 | — | AS-1 | .021 - .029" | .001 | 9 |
| | 516-420-26 | — | AS-2 | .021 - .029" | .01 | 9 |
| | | | .10 - .090" | | | |



Steel 47-block set

Inch Long Block Set

| Blocks per set | Order No. | | Grade | Blocks included in set | | |
|----------------|------------|------|-------|------------------------|------|------|
| | Steel | CERA | | Size | Step | Qty. |
| 8 | 516-762-26 | — | 0 | 5 - 7 | 1 | 3 |
| | 516-763-26 | — | AS-1 | 8, 10, 12 | 2 | 3 |
| | | | | 16, 20 | 4 | 2 |



Steel 8-block set

Inch Wear Block Set

| Blocks per set | Order No. | | Grade | Blocks included in set | | |
|----------------|------------|------------|-------|------------------------|------|------|
| | Carbide | CERA | | Size | Step | Qty. |
| 2 | 516-824-26 | 516-846-26 | 0 | .05 | — | 2 |
| | 516-825-26 | 516-847-26 | AS-1 | | | |
| 2 | 516-826-26 | 516-844-26 | 0 | .1 | — | 2 |
| | 516-827-26 | 516-845-26 | AS-1 | | | |



Carbide 2-block set

92 pcs. Gage Blocks with accessories set in wooden box

| Blocks in set | Order No. | Grade | Blocks included in set | | | Individual No. | Description | Qty. | | | |
|---------------|------------|-------|------------------------|---------------|------|----------------|-------------|---------------|------------------------|------------------|---|
| | | | Steel | Size | Step | | | | Qty. | | |
| 92 | 516-405-26 | 0 | | .0625 | | | 1 | 619052 | Plain Jaw .500" | 2 | |
| | | | | .078125 | | | 1 | 619051 | Half round jaw .250" | 2 | |
| | | | | .09375 | | | 1 | 619055 | Holder base .500" | 1 | |
| | | | | .100025 | | | 1 | 619057 | Flat head screw 1 1/4" | 2 | |
| | | | | .10005 | | | 1 | 619058 | Flat head screw 5/8" | 2 | |
| | | | | .100075 | | | 1 | 619056 | Stud | 2 | |
| | | | | .109375 | | | 1 | 619066 | Knurled head screw | 2 | |
| | | | | .1001 - .1009 | | | .0001 | 9 | 619059 | Slotted head nut | 2 |
| | | | | .101 - .149 | | | .001 | 49 | 619062 | Tie rod 3" | 1 |
| | | | | .05 - .95 | | | .05 | 4 | 619063 | Tie rod 2 1/4" | 1 |
| | | | | .16 - .19 | | | .01 | 19 | 619064 | Tie rod 1 1/2" | 1 |
| | | | | 1 4 | | | 1 | 4 | 619065 | 3/4" | 1 |

Individual Metric Square Gage Block



SPECIFICATIONS

Metric Block

| Length (mm) | Order No. | | Length (mm) | Order No. | | Length (mm) | Order No. | |
|-------------|-----------|------|-------------|-----------|------|-------------|-----------|------|
| | Steel | CERA | | Steel | CERA | | Steel | CERA |
| 0.5 | 614506 | — | 1.33 | 614593 | — | 13 | 614623 | — |
| 1 | 614611 | — | 1.34 | 614594 | — | 13.5 | 614653 | — |
| 1.0005 | 614520 | — | 1.35 | 614595 | — | 14 | 614624 | — |
| 1.001 | 614521 | — | 1.36 | 614596 | — | 14.5 | 614654 | — |
| 1.002 | 614522 | — | 1.37 | 614597 | — | 15 | 614625 | — |
| 1.003 | 614523 | — | 1.38 | 614598 | — | 15.5 | 614655 | — |
| 1.004 | 614524 | — | 1.39 | 614599 | — | 16 | 614626 | — |
| 1.005 | 614525 | — | 1.4 | 614600 | — | 16.5 | 614656 | — |
| 1.006 | 614526 | — | 1.41 | 614601 | — | 17 | 614627 | — |
| 1.007 | 614527 | — | 1.42 | 614602 | — | 17.5 | 614657 | — |
| 1.008 | 614528 | — | 1.43 | 614603 | — | 18 | 614628 | — |
| 1.009 | 614529 | — | 1.44 | 614604 | — | 18.5 | 614658 | — |
| 1.01 | 614561 | — | 1.45 | 614605 | — | 19 | 614629 | — |
| 1.02 | 614562 | — | 1.46 | 614606 | — | 19.5 | 614659 | — |
| 1.03 | 614563 | — | 1.47 | 614607 | — | 20 | 614672 | — |
| 1.04 | 614564 | — | 1.48 | 614608 | — | 20.5 | 614660 | — |
| 1.05 | 614565 | — | 1.49 | 614609 | — | 21 | 614631 | — |
| 1.06 | 614566 | — | 1.5 | 614641 | — | 21.5 | 614661 | — |
| 1.07 | 614567 | — | 1.6 | 614516 | — | 22 | 614632 | — |
| 1.08 | 614568 | — | 1.7 | 614517 | — | 22.5 | 614662 | — |
| 1.09 | 614569 | — | 1.8 | 614518 | — | 23 | 614633 | — |
| 1.1 | 614570 | — | 1.9 | 614519 | — | 23.5 | 614663 | — |
| 1.11 | 614571 | — | 2 | 614612 | — | 24 | 614634 | — |
| 1.12 | 614572 | — | 2.5 | 614642 | — | 24.5 | 614664 | — |
| 1.13 | 614573 | — | 3 | 614613 | — | 25 | 614635 | — |
| 1.14 | 614574 | — | 3.5 | 614643 | — | 30 | 614673 | — |
| 1.15 | 614575 | — | 4 | 614614 | — | 40 | 614674 | — |
| 1.16 | 614576 | — | 4.5 | 614644 | — | 50 | 614675 | — |
| 1.17 | 614577 | — | 5 | 614615 | — | 60 | 614676 | — |
| 1.18 | 614578 | — | 5.5 | 614645 | — | 75 | 614801 | — |
| 1.19 | 614579 | — | 6 | 614616 | — | 100 | 614681 | — |
| 1.2 | 614580 | — | 6.5 | 614646 | — | 125 | 614802 | — |
| 1.21 | 614581 | — | 7 | 614617 | — | 150 | 614803 | — |
| 1.22 | 614582 | — | 7.5 | 614647 | — | 175 | 614804 | — |
| 1.23 | 614583 | — | 8 | 614618 | — | 200 | 614682 | — |
| 1.24 | 614584 | — | 8.5 | 614648 | — | 250 | 614805 | — |
| 1.25 | 614585 | — | 9 | 614619 | — | 300 | 614683 | — |
| 1.26 | 614586 | — | 9.5 | 614649 | — | 400 | 614684 | — |
| 1.27 | 614587 | — | 10 | 614671 | — | 500 | 614685 | — |
| 1.28 | 614588 | — | 10.5 | 614650 | — | | | |
| 1.29 | 614589 | — | 11 | 614621 | — | | | |
| 1.3 | 614590 | — | 11.5 | 614651 | — | | | |
| 1.31 | 614591 | — | 12 | 614622 | — | | | |
| 1.32 | 614592 | — | 12.5 | 614652 | — | | | |

Metric Wear Block

| Length (mm) | Order No. Tungsten carbide |
|-------------|----------------------------|
| 1 | 615611 |
| 2 | 615612 |

Suffix Number for Selecting Standard and Certificate Provided

ASME

| Grade | Steel |
|-------|-------|
| K | — |
| 00 | -521* |
| 0 | -531* |
| AS-1 | -541* |
| AS-2 | -551* |

* provided with Inspection Certificate

Example: 614611-521
1mm gage block in grade 00.

We make custom length gage block length:
0.5 - 500mm.



Inspection Certificate

Individual Inch Square Gage Block

Suffix Number for Selecting Standard and Certificate Provided

| ASME | |
|-------|-------------|
| Grade | Steel, CERA |
| K | — |
| 00 | -521* |
| 0 | -531* |
| AS-1 | -541* |
| AS-2 | -551* |

* provided with Inspection Certificate

Example: 614310-521
.01" gage block in grade 00.

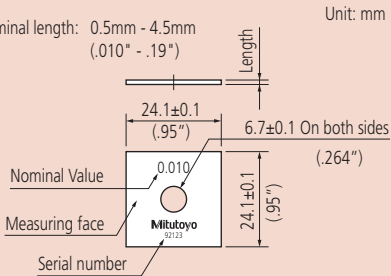
We make custom length gage block length:
.01 - 20"



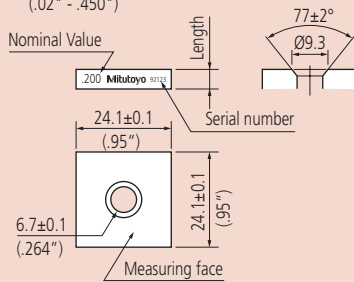
Inspection Certificate

DIMENSIONS

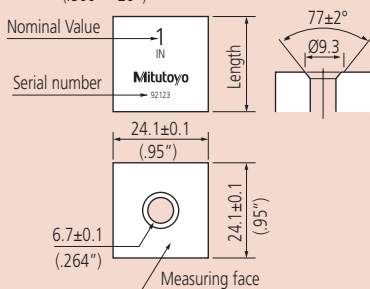
Nominal length: 0.5mm - 4.5mm
(.010" - .19")



Nominal length: 5mm - 14.5mm
(.02" - .450")



Nominal length: 15mm - 500mm
(.500" - 20")



SPECIFICATIONS

Inch Block

| Length (inch) | Order No. | | Length (inch) | Order No. | | Length (inch) | Order No. | |
|----------------|-----------|--------|----------------|-----------|--------|---------------|-----------|--------|
| | Steel | CERA | | Steel | CERA | | Steel | CERA |
| .01 | 614310 | — | .106 | 614146 | 616146 | .25 | 614212 | 616212 |
| .02005 | 614240 | — | .107 | 614147 | 616147 | .3 | 614193 | 616193 |
| .0201 | 614231 | — | .108 | 614148 | 616148 | .35 | 614213 | 616213 |
| .0202 | 614232 | — | .109 | 614149 | 616149 | .375 (3/8) | 614309 | — |
| .0203 | 614233 | — | .109375 (7/64) | 614306 | — | .4 | 614194 | 616194 |
| .0204 | 614234 | — | .11 | 614150 | 616150 | .45 | 614214 | 616214 |
| .0205 | 614235 | — | .111 | 614151 | 616151 | .5 | 614195 | 616195 |
| .0206 | 614236 | — | .112 | 614152 | 616152 | .55 | 614215 | 616215 |
| .0207 | 614237 | — | .113 | 614153 | 616153 | .6 | 614196 | 616196 |
| .0208 | 614238 | — | .114 | 614154 | 616154 | .65 | 614216 | 616216 |
| .0209 | 614239 | — | .115 | 614155 | 616155 | .7 | 614197 | 616197 |
| .02 | 614320 | — | .116 | 614156 | 616156 | .75 | 614217 | 616217 |
| .021 | 614321 | — | .117 | 614157 | 616157 | .8 | 614198 | 616198 |
| .022 | 614322 | — | .118 | 614158 | 616158 | .85 | 614218 | 616218 |
| .023 | 614323 | — | .119 | 614159 | 616159 | .9 | 614199 | 616199 |
| .024 | 614324 | — | .12 | 614160 | 616160 | .95 | 614219 | 616219 |
| .025 | 614325 | — | .121 | 614161 | 616161 | 1 | 614201 | 616201 |
| .026 | 614326 | — | .122 | 614162 | 616162 | 2 | 614202 | 616202 |
| .027 | 614327 | — | .123 | 614163 | 616163 | 3 | 614203 | 616203 |
| .028 | 614328 | — | .124 | 614164 | 616164 | 4 | 614204 | 616204 |
| .029 | 614329 | — | .125 | 614165 | 616165 | 5 | 614205 | — |
| .03 | 614330 | — | .126 | 614166 | 616166 | 6 | 614206 | — |
| .03125 (1/32) | 614301 | — | .127 | 614167 | 616167 | 7 | 614207 | — |
| .04 | 614340 | — | .128 | 614168 | 616168 | 8 | 614208 | — |
| .046875 (3/64) | 614302 | — | .129 | 614169 | 616169 | 10 | 614222 | — |
| .05 | 614105 | 616105 | .13 | 614170 | 616170 | 12 | 614223 | — |
| .06 | 614106 | — | .131 | 614171 | 616171 | 16 | 614224 | — |
| .0625 | 614303 | 616303 | .132 | 614172 | 616172 | 20 | 614225 | — |
| .07 | 614107 | — | .133 | 614173 | 616173 | | | |
| .078125 (5/64) | 614304 | — | .134 | 614174 | 616174 | | | |
| .08 | 614108 | — | .135 | 614175 | 616175 | | | |
| .09 | 614109 | — | .136 | 614176 | 616176 | | | |
| .09375 (3/32) | 614305 | — | .137 | 614177 | 616177 | | | |
| .1 | 614191 | 616191 | .138 | 614178 | 616178 | | | |
| .100025 | 614307 | — | .139 | 614179 | 616179 | | | |
| .10005 | 614135 | 616135 | .14 | 614180 | 616180 | | | |
| .100075 | 614308 | — | .141 | 614181 | 616181 | | | |
| .1001 | 614121 | 616121 | .142 | 614182 | 616182 | | | |
| .1002 | 614122 | 616122 | .143 | 614183 | 616183 | | | |
| .1003 | 614123 | 616123 | .144 | 614184 | 616184 | | | |
| .1004 | 614124 | 616124 | .145 | 614185 | 616185 | | | |
| .1005 | 614125 | 616125 | .146 | 614186 | 616186 | | | |
| .1006 | 614126 | 616126 | .147 | 614187 | 616187 | | | |
| .1007 | 614127 | 616127 | .148 | 614188 | 616188 | | | |
| .1008 | 614128 | 616128 | .149 | 614189 | 616189 | | | |
| .1009 | 614129 | 616129 | .15 | 614115 | 616115 | | | |
| .101 | 614141 | 616141 | .16 | 614116 | 616116 | | | |
| .102 | 614142 | 616142 | .17 | 614117 | 616117 | | | |
| .103 | 614143 | 616143 | .18 | 614118 | 616118 | | | |
| .104 | 614144 | 616144 | .19 | 614119 | 616119 | | | |
| .105 | 614145 | 616145 | .2 | 614192 | 616192 | | | |

Inch Wear Block

| Length (inch) | Order No. Tungsten carbide |
|---------------|----------------------------|
| .05 | 615105 |
| .1 | 615191 |

Square Gage Block Accessories

SERIES 516

To expand the variety of Square Gage Block applications, Mitutoyo offers the Gage Block Accessories Set. By assembling the items in the set, you can easily and quickly build up a precision measuring instrument.

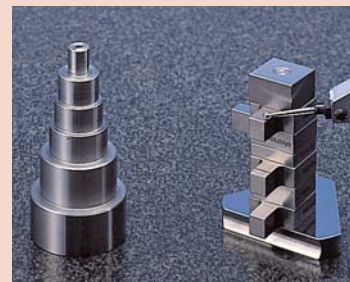
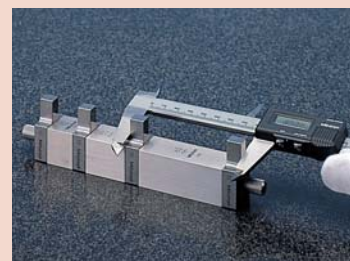


516-611

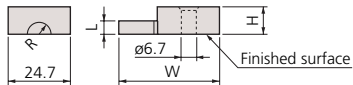
SPECIFICATIONS

| Metric | |
|-------------------|------------------------------------|
| Order No. 516-611 | Included in set |
| 2 pcs. | Half round jaw 2mm (619070) |
| 2 pcs. | Half round jaw 5mm (619071) |
| 2 pcs. | Plain jaw (619072) |
| 1 pc. | Center point (619073) |
| 1 pc. | Scriber point (619054) |
| 1 pc. | Block base (619074) |
| 2 pcs. | Flat head screw 1-1/4" (619057) |
| 2 pcs. | Flat head screw 5/8" (619058) |
| 2 pcs. | Slotted head nut (619059) |
| 2 pcs. | Adjustable tie rod 6" (619060) |
| 2 pcs. | Adjustable tie rod 4-1/2" (619061) |
| 1 pc. | Tie rod 3" (619062) |
| 1 pc. | Tie rod 2-1/4" (619063) |
| 1 pc. | Tie rod 1-1/2" (619064) |
| 1 pc. | Tie rod 3/4" (619065) |
| 2 pcs. | Stud (619056) |
| 2 pcs. | Knurled head screw (619066) |

| Inch | |
|-------------------|------------------------------------|
| Order No. 516-612 | Included in set |
| 2 pcs. | Half round jaw .125" (619050) |
| 2 pcs. | Half round jaw .25" (619051) |
| 2 pcs. | Plain jaw (619052) |
| 1 pc. | Center point (619053) |
| 1 pc. | Scriber point (619054) |
| 1 pc. | Block base (619055) |
| 2 pcs. | Flat head screw 1-1/4" (619057) |
| 2 pcs. | Flat head screw 5/8" (619058) |
| 2 pcs. | Slotted head nut (619059) |
| 2 pcs. | Adjustable tie rod 6" (619060) |
| 2 pcs. | Adjustable tie rod 4-1/2" (619061) |
| 1 pc. | Tie rod 3" (619062) |
| 1 pc. | Tie rod 2-1/4" (619063) |
| 1 pc. | Tie rod 1-1/2" (619064) |
| 1 pc. | Tie rod 3/4" (619065) |
| 2 pcs. | Stud (619056) |
| 2 pcs. | Knurled head screw (619066) |

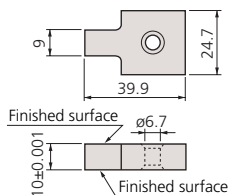


Half round jaw:
Used to measure an inside or outside diameter.

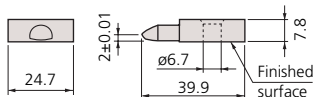


| Order No. | R | L | W | H |
|-----------|--------|-------|--------|--------|
| 619070 | 1.95mm | 2mm | 33.6mm | 5.3mm |
| 619071 | 4.95mm | 5mm | 39.9mm | 10.3mm |
| 619050 | .123" | .125" | 33.6mm | 5.3mm |
| 619051 | .248" | .25" | 39.9mm | 10.3mm |

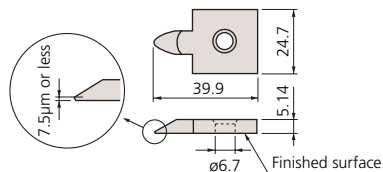
Plain jaw: **619072** (10mm), **619052** (.5")
Used to measure an inside or outside diameter.



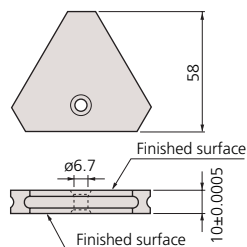
Center point: **619073** (2mm), **619053** (.1")
Used to scribe a workpiece.



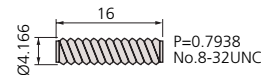
Scriber point: **619054**
Used to scribe a workpiece.



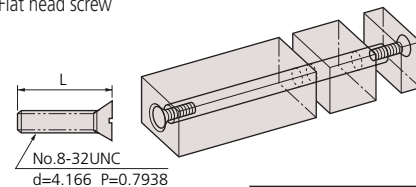
Base: **619074** (10mm), **619054** (.5")
Used as clamps by inserting them into the center hole of a square gage block.



Stud: **619056**

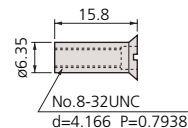


Flat head screw

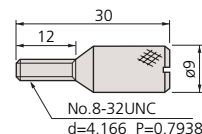


| Order No. | L |
|-----------|--------|
| 619057 | 31.6mm |
| 619058 | 15.8mm |

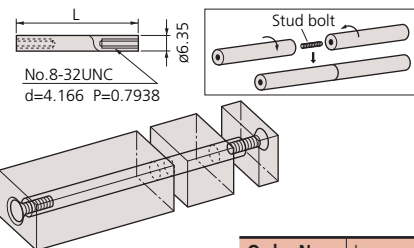
Slotted head nut: **619059**



Knurled head screw: **619066**

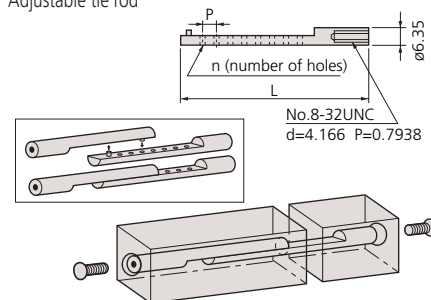


Tie rod



| Order No. | L |
|-----------|------|
| 619065 | 19mm |
| 619064 | 38mm |
| 619063 | 57mm |
| 619062 | 76mm |

Adjustable tie rod



| Order No. | L | P | n |
|-----------|---------|--------|----|
| 619060 | 124.5mm | 6.35mm | 14 |
| 619061 | 86.5mm | 6.35mm | 8 |

Ceraston

Accessory for Gage Blocks

FEATURES

- Alumina-ceramic grinding stone for removing burrs from hard materials such as ceramics that ordinary grinding stones cannot handle.
- Can be used both for steel gage blocks and CERA Blocks.



SPECIFICATIONS

| Order No. | Dimensions (W x D x H) | Mass |
|-----------|------------------------|------|
| 601645 | 100 x 25 x 12mm | 110g |
| 601644 | 150 x 50 x 20mm | 530g |

Maintenance Kit for Gage Block

SERIES 516

FEATURES

- Includes all necessary maintenance tools for daily care and storage of gage blocks.
- Supplied in a fitted wooden case for portable use.



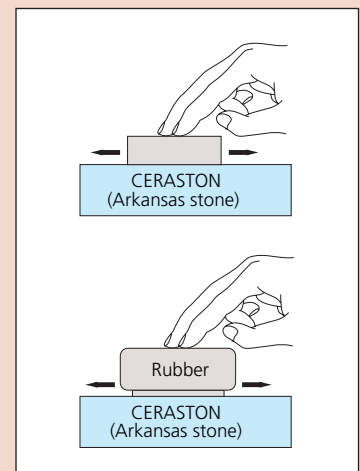
SPECIFICATIONS

| Order No. | Assortment of tools and accessories |
|-----------|---|
| 516-650E | Ceraston (601645): Used for removing burrs on the measuring surface |
| | Optical flat (600003): Used for checking whether burrs exist. |
| | Tweezers (600004): Used for handling thin gage blocks. |
| | Blower brush (600005): Used for blowing out dust on the measuring surface. |
| | Cleaning paper (600006): Used for wiping off rust preventive oil and contamination. |
| | Artificial leather mat (600007): Used as a gage block mat. |
| | Reagent bottle (600008): Bottle of wiping solution (100mL) |
| | Gloves |



Removing burrs

- (1) Wipe any dust and oil films from the gage block and the Ceraston (or Arkansas stone) using a solvent.
- (2) Place the gage block on the Ceraston so that the measuring face that has burrs is on the abrasive surface of the stone. While applying light pressure, move the gage block to and fro about ten times (Fig. 1). Use a block rubber for thin gage blocks to apply even pressure (Fig. 2).
- (3) Check the measuring face for burrs with an optical flat. If the burrs have not been removed, repeat step (2). If burrs are too large, they may not be removed with a grinding stone. If so, discard the gage block.



Note: The abrasive surface of a Ceraston must be made flat by lapping it from time to time. After lapping the Ceraston, the lapping powder must be completely removed from the surface to prevent the surface of the gage block from being scratched. Mitutoyo does not handle the Arkansas stone.



Step Master

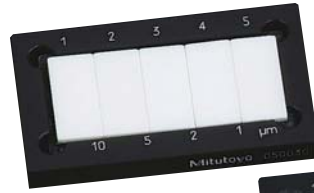
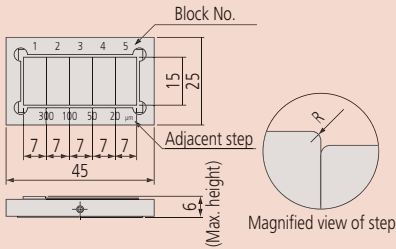
SERIES 516

FEATURES

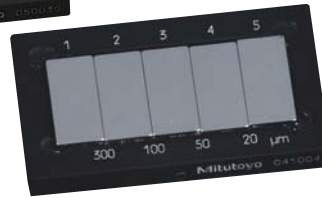
Step master is a master gage used for the z-axis (vertical direction) calibration of optical instruments.

- Each adjacent step is measured down to 0.01 μ m by using an interferometer within $\pm 0.20\mu$ m allowance.
- Steel and ceramic types are available.

Dimension



516-498
Ceramic type



516-199
Steel type



SPECIFICATIONS

Metric

| Order No. | Step value between adjacent blocks | | | | Remarks |
|----------------|------------------------------------|---------------|---------------|---------------|--------------|
| | No. 1 - No. 2 | No. 2 - No. 3 | No. 3 - No. 4 | No. 4 - No. 5 | |
| 516-198 | 10 μ m | 5 μ m | 2 μ m | 1 μ m | Steel type |
| 516-199 | 300 μ m | 100 μ m | 50 μ m | 20 μ m | Steel type |
| 516-498 | 10 μ m | 5 μ m | 2 μ m | 1 μ m | Ceramic type |
| 516-499 | 300 μ m | 100 μ m | 50 μ m | 20 μ m | Ceramic type |

Available Dimension

Nominal size: .004 to 20" / 0.1 to 1000mm (steel)
.1 to 20" / 0.5 to 500mm (ceramic)

Nominal pitch: 0.0005mm (up to 100mm)
0.001mm (over 100mm)

Minimum section dimension:
Approx. .24 x .24" / 6 x 6mm

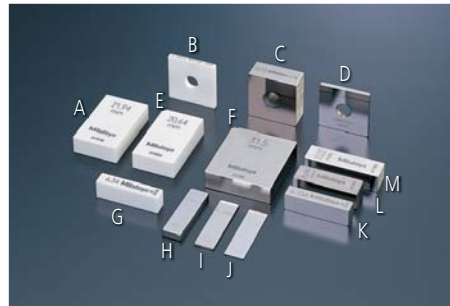
Maximum section dimension:
Approx. 5.5 x 5.5" / 140 x 140mm (steel)
Approx. 6.3" Dia. / ϕ 160mm (steel, cylindrical)
Approx. 3.94 x 1.97" / 100 x 50mm (ceramic)
Approx. .24" Dia. / ϕ 60mm (ceramic, cylindrical)

Accuracy: Gage Block Grade level

Special materials of low expansion glass and low expansion ceramic are available.

FEATURES

- Mitutoyo can provide Gage Blocks and reference gages to you size and design.



- A: Ceramic rectangular gage block (21.94mm)
- B: Ceramic square gage block (2.1005mm)
- C: Steel square gage block (10.72mm)
- D: Steel square gage block (2.2065mm)
- E: Ceramic rectangular gage block (20.64mm)
- F: Steel rectangular gage block (31.5mm)
- G: Ceramic rectangular gage block (6.34mm)
- H: Steel rectangular gage block (3.603mm)
- I: Steel rectangular gage block (1.1505mm)
- J: Steel rectangular gage block (0.555mm)
- K: Steel rectangular gage block (6.156mm)
- L: Steel rectangular gage block (9.694mm)
- M: Steel rectangular gage block (10.02mm)



- O: Steel Long rectangular block (15 x 10 x 200mm)
- P: Ceramic square block (24.1 x 24.1 x 12.3mm)
- Q: Steel thin rectangular block (30 x 6 x 1.9mm)
- R: Steel square block (9 x 9 x 6mm)
- S: Steel thin rectangular block (30 x 6 x 2.1mm)
- T: Steel cylindrical block (ϕ 13.08 x 12mm)



- U: Cylindrical reference block for depth micrometer (ϕ 60 x 150mm)
- V: Ceramic reference plate (50 x 50 x 50mm, flatness 0.3 μ m)
- W: Ceramic stepped block (30 x 18 x 5mm, step: 0.15mm)

Gage Block Comparator GBCD-250

SERIES 565 — Manual Type Comparator with Dual Gage Heads

FEATURES

- Gage blocks between 0.1mm and 250mm can be easily compared with the standard gage block on the GBCD-250.
- The differential dual gaging heads assure the operator of a high-accuracy measurement with ease of use.

SPECIFICATIONS

| Inch/Metric | |
|---------------------------------|--|
| Model No. | GBCD-250 |
| Order No. | 565-150A |
| Range | 0.1mm - 250mm / .004 - 10" |
| Resolution | 0.00001mm (0.01 μ m) / .000001" |
| Accuracy in narrow range (20°C) | $\pm(0.03+0.3L/1000)\mu\text{m}^*$ L = Gage block length (mm) |
| Measuring units | Laser Hologage (upper), Mu-checker (lower) |
| Operating condition | Temperature: 20°C \pm 1°C Humidity: 58%RH \pm 15%RH |
| Data output | Via SPC output port |
| Dimensions (W x D x H) | Main unit: 455 x 318 x 691mm Display unit: 345 x 397 x 187mm |
| Mass | Main unit: Approx. 50kg Display unit: Approx. 9kg |

* Uncertainty of measurement is 95% (not including the calibration error of the standard gage block).



Optional Accessories

- 962723: Gage head calibration kit
 02ASD130: Square gage block holder kit
 02ASF040: Heat protection shield
 02ASD100: Gage block set for accuracy inspection PC System
 02ASG610A: GBPAP-M*
 * Included: Software
 Foot Switch (937179T)
 MUX-10F (264-002A)
 Connecting cable (936937)

Gage Block Comparator GBCD-100A

SERIES 565 — Automatic Type Comparator with Dual Gage Heads

SPECIFICATIONS

| | |
|---------------------------------|---|
| Model No. | GBCD-100A |
| Order No. | 565-111A |
| Resolution | 0.00001mm (0.01 μ m) / .000001" |
| Range | 0.5mm - 100mm / .02 - 4" |
| Measuring unit | Differential (dual-head) type Mu-Checker |
| Accuracy in narrow range (20°C) | $\pm(0.03+0.3L/1000)\mu\text{m}^*$ L = Gage block length (mm) * Uncertainty of measurement is 95% (not including the calibration error of the standard gage block). |
| Measuring force | Upper gage head: 1N (100gf) Lower gage head: 0.6N (60gf) |
| Air requirement | 400kPa (4kgf/cm ²) |
| Operating condition | Temperature: 20°C \pm 1°C Humidity: 58%RH \pm 15%RH |
| Dimensions (W x D x H) | Main unit: 710 x 366 x 783mm Electronic unit: 160 x 410 x 382mm |
| Mass | Main unit: 120kg Electronic unit: 14kg |



Standard Accessories

GBPAP-A (software)

Optional Accessories

- 962723: Gage block set for probe calibration
 962764: Gage block holder for probe calibration
 611615-02: 5mm gage block (glade 0) for origin setting
 243989: Auxiliary stage (size: 360 x 253mm)
 218-007: Work bench PC System

The GBCD-100A Automatic Gage Block Comparator is an easy-to-operate dual-head type gage block inspecting system. It automatically compares workpieces with a standard gage block and determines accuracies of such as central length, maximum length, minimum length, and parallelism through the operation of an optional personal computer.



Technical Data

Graduation: .0001" or 0.001mm
 Counter resolution: .001" or 0.01mm
 Character Height: .16" / 4mm
 Micrometer Head
 Travel stroke: 1" or 20mm
 Pitch: .025"/rev or 0.5mm/rev
 Hysteresis: .00004" or 1µm
 Provided with inspection certificate.

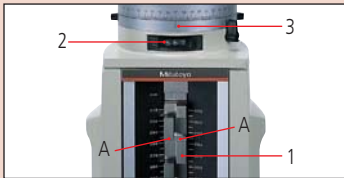
Standard Accessories

Reference Block: 11mm for 515-322
 Reference Block: .3" for 515-310, 515-311

Optional Accessories

515-112: Auxiliary block kit for bore gage (mm)
 515-119: Auxiliary block kit for bore gage (for 515-310)
 515-121: Auxiliary block kit for bore gage (for 515-311)
 ———: Riser block

Reading



Height A

1. Scale 280. mm
 2. Counter 5.67 mm
 3. Thimble 0.000 mm

285.670 mm



Height Master

SERIES 515

FEATURES

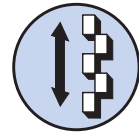
- Models with staggered arrangement of block stack have two measuring faces on the same level, one facing up and the other down (except for 515-310).
- Each Height Master is supplied with a gage block for zero-setting.
- Supplied in fitted wooden case.



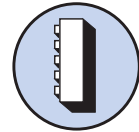
515-322



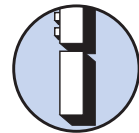
515-310



Staggered 20mm blocks (movable)



Vertical orientation



Riser block

SPECIFICATIONS

Metric

| Range (H) | Order No. | Block step | Graduation | Block Pitch Accuracy | Parallelism of Block | Micrometer Head Accuracy | Mass (kg) |
|---------------|-----------|------------------|------------|----------------------|----------------------|--------------------------|-----------|
| 5 < H ≤ 310mm | 515-322 | 20mm (staggered) | 0.001mm | ±1.5µm | 1µm | ±1µm | 23 |

Inch

| Range (H) | Order No. | Block step | Graduation | Block Pitch Accuracy | Parallelism of Block | Micrometer Head Accuracy | Mass (kg) |
|-----------------|-----------|----------------|------------|----------------------|----------------------|--------------------------|-----------|
| .2" < H ≤ 12.2" | 515-310 | .5" (straight) | .00001" | ±.00005" | .00004" | ±.00005" | 23 |
| .2" < H ≤ 12.2" | 515-311 | 1" (staggered) | .00001" | ±.00005" | .00004" | ±.00005" | 23 |

CERA Height Master

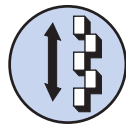
SERIES 515

FEATURES

- The measuring blocks are made from a zirconia-based ceramic material which is highly resistant to corrosion and wear, and free from deterioration over time.
- The CERA Height Master features the staggered arrangement of block stack which has two measuring faces on the same level, one facing up and the other facing down.
- With SPC output.
- Supplied in fitted wooden case.



515-342A



Staggered 20mm blocks (movable)



Vertical orientation

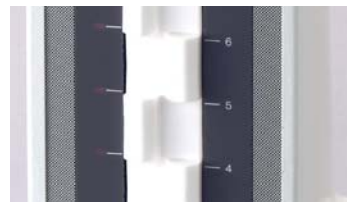


Riser block



Fine feeding

Coarse feeding



LED block indication



LED display

SPECIFICATIONS

Metric

| Range (H) | Order No.* | Block step | Resolution | Block Pitch Accuracy | Parallelism of block | Micrometer Head Accuracy | Mass (kg) |
|---------------|------------|------------------|------------|----------------------|----------------------|--------------------------|-----------|
| 5 < H ≤ 310mm | 515-341A | 20mm (staggered) | 0.0001mm | ±0.5µm | 0.5µm | ±0.5µm | 18 |

Inch/Metric

| Range (H) | Order No.* | Block step | Resolution | Block Pitch Accuracy | Parallelism of block | Micrometer Head Accuracy | Mass (kg) |
|---------------|------------|----------------|------------|----------------------|----------------------|--------------------------|-----------|
| .2" < H ≤ 12" | 515-342A | 1" (staggered) | .000005" | ±.00002" | .00002" | ±.00002" | 18 |



Technical Data

Two Travel Wheels

Coarse: .02"/rev or 0.5mm/rev

Fine: .0006"/rev or 0.01mm/rev

Dimensions: 150(W) x 140(D) x 465(H) mm

Display: LED

Function

Zero-setting, Presetting, ABS/INC switching, Data hold, Data output, inch/mm conversion (on inch/metric models only)

Standard Accessories

613671-02: Reference Block (10mm CERA Block) 515-341A

613193-531: Reference Block (.3" CERA Block) 515-342A

526688A: AC Adapter

601920: Dust Cover

Provided with inspection certificate.

Optional Accessories

—: Riser block (see page E-28.)

936937: SPC cable (40" / 1m)

965014: SPC cable (80" / 2m)

940269: RS-232C interface unit

515-112: Auxiliary Block for Bore Gage (515-341A)

515-121: Auxiliary Block for Bore Gage (515-342A)



Digital Height Master

SERIES 515

FEATURES

- Standard model with a digital display, featuring all essential specifications required for versatile height standard.
- With SPC output.
- Each Height Master is supplied with a gage block for zero setting.

Technical Data

Resolution (LCD): .0001" or 0.001mm
 Graduation: .0001" or 0.002mm
 Character Height .21" / 5.4mm

Micrometer Head

Travel Stroke: 1" or 20mm
 Pitch: .025"/rev or 0.5mm/rev
 Hysteresis: .0001" For all inch models
 0.002mm for 300mm models
 0.0025mm for 450 & 600mm models

Battery: SR44 (2 pcs.), **938882**
 Battery life: Approx. 1.8 years under normal use

Function

Zero-setting, Presetting, ABS/INC switching, Data hold, Data output, inch/mm conversion (on inch/metric models only)
 Alarm: Low voltage, Counting value composition error

Standard Accessories

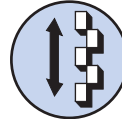
Reference Block: 11mm for Metric Height Master
 Reference Block: .6" for for Inch Height Master
 Provided with inspection certificate.

Optional Accessories

- 515-111:** Auxiliary block kit for bore gage (mm)
- 515-120:** Auxiliary block kit for bore gage (inch)
- : Riser block (see page E-28.)
- 937387:** SPC cable (40" / 1m)
- 965013:** SPC cable (80" / 2m)
- 050019:** Fitted Mohogany case for 12" / 300mm model
- 050059:** Fitted Mohogany case for 18" / 450mm model
24" / 600mm model



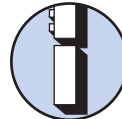
515-354



Staggered 20mm blocks (movable)



Vertical orientation



Riser block



SPECIFICATIONS

Metric

| Range (H) | Order No. | Block step | Resolution | Block Pitch Accuracy | Parallelism | Micrometer Head Accuracy | Mass (kg) |
|----------------|----------------|------------------|------------|----------------------|-------------|--------------------------|-----------|
| 10 < H ≤ 310mm | 515-354 | 20mm (staggered) | 0.001mm | ±1.5µm | 2µm | ±2µm | 9.5 |
| 10 < H ≤ 460mm | 515-356 | 20mm (staggered) | 0.001mm | ±2.5µm | 2.5µm | ±2µm | 13.6 |
| 10 < H ≤ 610mm | 515-358 | 20mm (staggered) | 0.001mm | ±3.5µm | 2.5µm | ±2.5µm | 16.0 |

Inch/Metric

| Range (H) | Order No. | Block step | Resolution | Block Pitch Accuracy | Parallelism | Micrometer Head Accuracy | Mass (kg) |
|---------------|----------------|----------------|------------------|----------------------|-------------|--------------------------|-----------|
| .5" < H ≤ 12" | 515-355 | 1" (staggered) | .0001" / 0.001mm | ±.0001" | .00005" | ±.0001" | 9.5 |
| .5" < H ≤ 18" | 515-357 | 1" (staggered) | .0001" / 0.001mm | ±.0001" | .0001" | ±.0001" | 13.6 |
| .5" < H ≤ 24" | 515-359 | 1" (staggered) | .0001" / 0.001mm | ±.0001" | .0001" | ±.0001" | 16.0 |

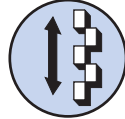
Height Master E-Type

SERIES 515



FEATURES

- Models with staggered arrangement of block stack have two measuring faces on the same level, one facing up and the other down.



Staggered 20mm blocks (movable)



Vertical orientation



Riser block

SPECIFICATIONS

| Inch | | | | | | | |
|-------------|----------------|----------------|------------|----------------------|----------------------|--------------------------|-----------|
| Range (H) | Order No. | Block step | Graduation | Block Pitch Accuracy | Parallelism of Block | Micrometer Head Accuracy | Mass (kg) |
| 5 < H ≤ 12" | 515-319 | 1" (staggered) | .0001" | ±.0001" | .00005" | ±.0001" | 9 |



Technical Data

Graduation: .00001"
 Counter resolution: .001"
 Character Height: .098"

Micrometer Head
 Travel stroke: 1"
 Pitch: .025"/rev
 Hysteresis: .0001"

Standard Accessories

Reference Block: .6"
 Provided with inspection certificate.

Optional Accessories

515-119: Auxiliary block kit for bore gage
050019: Fitted mahogany case
 —: Riser block

Auxiliary Block Kit

SERIES 515 — for Bore Gage

FEATURES

- Used for efficient zero-setting of dial bore gages and tubular inside micrometers (18 - 150mm) on a Height Master.



515-112

SPECIFICATIONS

| Metric | |
|----------------|--------------------------|
| Order No. | Applicable height master |
| 515-110 | Universal Height Master |
| 515-111 | Digimatic Height Master |
| 515-112 | Height Master |

| Inch | |
|----------------|--|
| Order No. | Applicable height master |
| 515-119 | Universal Height Master, Height Master (515-311) |
| 515-120 | Digimatic Height Master |
| 515-121 | Height Master (515-310) |

Riser Blocks

SERIES 515

FEATURES

- These riser blocks are specially designed for standard/Digimatic height masters.



515-113 515-114 515-115

SPECIFICATIONS

| Metric | | | |
|--------|----------------|--------------------|-----------|
| Height | Order No. | Accuracy of height | Mass (kg) |
| 150mm | 515-113 | ±0.6µm | 5.7 |
| 300mm | 515-114 | ±1.0µm | 11.3 |
| 600mm | 515-115 | ±2.0µm | 31 |

| Inch | | | |
|--------|----------------|--------------------|-----------|
| Height | Order No. | Accuracy of height | Mass (kg) |
| 6" | 515-116 | ±20µin | 5.7 |
| 12" | 515-117 | ±40µin | 11.3 |
| 24" | 515-118 | ±80µin | 31 |

Bore gage zero-setting





Universal Height Master

SERIES 515 — Usable in Vertical and Horizontal Orientations

FEATURES

- The Universal Height Master is designed for both vertical and horizontal orientations, providing a wide range of applications such as accuracy checking of machine tool table movements.
- Fitted wooden case supplied.

Technical Data

Graduation: 0.001mm or .00001"
 Counter Resolution: .001" or 0.01mm
 Character Height: .16" / 4mm
 Block arrangement: Straight arrangement

Micrometer Head

Travel stroke: 1" or 20mm
 Pitch: .025"/rev or 0.5mm/rev
 Hysteresis: .00004" / 1.2µm up to 24.2" / 610mm
 .00006" / 1.5µm for 40.2" / 1010mm

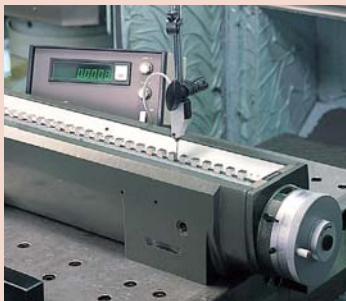
Block pitch accuracy: ±1.5µm (0 < R ≤ 310mm)
 ±2.5µm (310 < R ≤ 610mm)
 ±3.5µm (610 < R ≤ 1010mm)

Parallelism of blocks: 1.0µm (0 < R ≤ 310mm)
 2.5µm (310 < R ≤ 1010mm)

Provided with inspection certificate.

Optional Accessories

- 900574:** Supporting base for vertical operation
 Mass: 3kg
 (*supplied as a standard for **515-523** and **515-513**)
- 515-112:** Auxiliary block kit for bore gage (mm)
515-119: Auxiliary block kit for bore gage (inch)



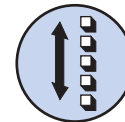
Using in horizontal orientation



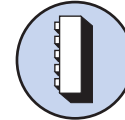
Supporting base



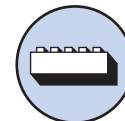
515-520



Single-row 10mm blocks (movable)



Vertical orientation



Horizontal orientation



Riser block

SPECIFICATIONS

| Metric | | | | | | | |
|----------------|----------------|-----------------|------------|----------------------|----------------------|--------------------------|-----------|
| Range (R) | Order No. | Block step | Graduation | Block Pitch Accuracy | Parallelism of Block | Micrometer Head Accuracy | Mass (kg) |
| 5 < R ≤ 610mm | 515-520 | 10mm (straight) | 0.001mm | ±1.5µm | 1.0µm | ±1.2µm | 42 |
| 5 < R ≤ 1010mm | 515-523 | 10mm (straight) | 0.001mm | ±3.5µm | 2.5µm | ±1.5µm | 63.5 |

| Inch | | | | | | | |
|-----------------|----------------|----------------|------------|----------------------|----------------------|--------------------------|-----------|
| Range (R) | Order No. | Block step | Graduation | Block Pitch Accuracy | Parallelism of Block | Micrometer Head Accuracy | Mass (kg) |
| .2" < R ≤ 18.2" | 515-512 | .5" (straight) | .00001" | ±.00005" | .00006" | ±.00004" | 42 |
| .2" < R ≤ 24.2" | 515-510 | .5" (straight) | .00001" | ±.0001" | .00006" | ±.00004" | 50 |
| .2" < R ≤ 40.2" | 515-513 | .5" (straight) | .00001" | ±.00015" | .00008" | ±.00006" | 63.5 |

High Accuracy Check Master HMC-H

SERIES 515

FEATURES

- Designed to check the accuracy of table movements of machine tools and calibrate CMMs. Permanently wrung stack of gage blocks is housed in a rigid frame.
- Can be used in either vertical and horizontal orientation.
- Fitted wooden case supplied.



Single-row
10mm (.5") blocks



Vertical
orientation



Horizontal
orientation



Specifications for Ceramic Check Master:

- Each measuring block is made of zirconia-based ceramic that requires no anti-corrosion treatment for measuring faces.
- Free from deterioration and dimensional changes over time.



Technical Data

Measuring range (R): Refer to the list of specifications.
 Block pitch accuracy: $\pm 1.2\mu\text{m}$ ($0 < R \leq 310\text{mm}$)
 $\pm 1.8\mu\text{m}$ ($310 < R \leq 610\text{mm}$)
 $\pm 2.5\mu\text{m}$ ($610 < R \leq 1010\text{mm}$)
 $\pm 4.0\mu\text{m}$ ($1010 < R \leq 1510\text{mm}$)
 Parallelism of blocks: $1.0\mu\text{m}$ ($0 < R \leq 450\text{mm}$)
 $1.5\mu\text{m}$ ($450 < R \leq 1010\text{mm}$)
 $2.0\mu\text{m}$ ($1010 < R \leq 1510\text{mm}$)
 Provided with inspection certificate.

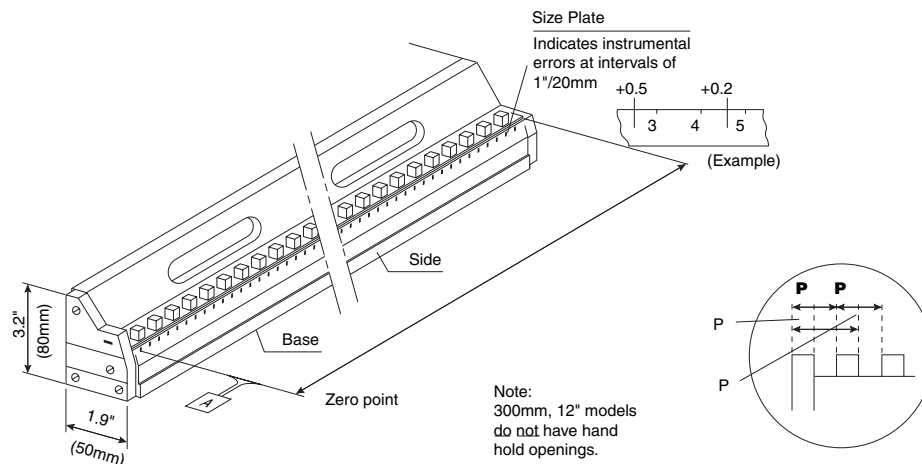
SPECIFICATIONS

Metric

| Range (R) | Order No. | | Pitch | | Accuracy of block pitch for the range shown below as measured from the bottom block | | | | Length | Parallelism | Mass (kg) |
|-----------|-----------|---------|-------|------|---|----------------------|----------------------|----------------------|--------|------------------|-----------|
| | Steel | Ceramic | P | P | up to 300mm | 300-600mm | 600-1000mm | 1000-1500mm | | | |
| 300mm | 515-740 | 515-760 | 20mm | 10mm | $\pm 1.2\mu\text{m}$ | — | — | — | 331mm | $1\mu\text{m}$ | 3.6 |
| 450mm | 515-741 | 515-761 | 20mm | 10mm | $\pm 1.2\mu\text{m}$ | $\pm 1.8\mu\text{m}$ | — | — | 482mm | $1\mu\text{m}$ | 5.4 |
| 600mm | 515-742 | 515-762 | 20mm | 10mm | $\pm 1.2\mu\text{m}$ | $\pm 1.8\mu\text{m}$ | — | — | 631mm | $1.5\mu\text{m}$ | 7.2 |
| 1000mm | 515-743 | 515-763 | 20mm | 10mm | $\pm 1.2\mu\text{m}$ | $\pm 1.8\mu\text{m}$ | $\pm 2.5\mu\text{m}$ | — | 1037mm | $1.5\mu\text{m}$ | 12.0 |
| 1500mm | 515-744 | 515-764 | 20mm | 10mm | $\pm 1.2\mu\text{m}$ | $\pm 1.8\mu\text{m}$ | $\pm 2.5\mu\text{m}$ | $\pm 4.0\mu\text{m}$ | 1546mm | $2\mu\text{m}$ | 18.0 |

Inch

| Range (R) | Order No. | | Pitch | | Accuracy of block pitch for the range shown below as measured from the bottom block | | | | Length | Parallelism | Mass (kg) |
|-----------|-----------|---------|-------|-----|---|----------------------|-----------------------|-----------------------|--------|------------------|-----------|
| | Steel | Ceramic | P | P | up to 12" | 12-24" | 24-40" | 40-60" | | | |
| 12" | 515-730 | 515-750 | 1" | .5" | $\pm 50\mu\text{in}$ | — | — | — | 13.0" | $40\mu\text{in}$ | 3.4 |
| 18" | 515-731 | 515-751 | 1" | .5" | $\pm 50\mu\text{in}$ | $\pm 70\mu\text{in}$ | — | — | 19.0" | $40\mu\text{in}$ | 5.2 |
| 24" | 515-732 | 515-752 | 1" | .5" | $\pm 50\mu\text{in}$ | $\pm 70\mu\text{in}$ | — | — | 25.0" | $60\mu\text{in}$ | 6.9 |
| 40" | 515-733 | 515-753 | 1" | .5" | $\pm 50\mu\text{in}$ | $\pm 70\mu\text{in}$ | $\pm 100\mu\text{in}$ | — | 41.0" | $60\mu\text{in}$ | 11.5 |
| 60" | 515-734 | 515-754 | 1" | .5" | $\pm 50\mu\text{in}$ | $\pm 70\mu\text{in}$ | $\pm 100\mu\text{in}$ | $\pm 158\mu\text{in}$ | 61.5" | $80\mu\text{in}$ | 17.3 |

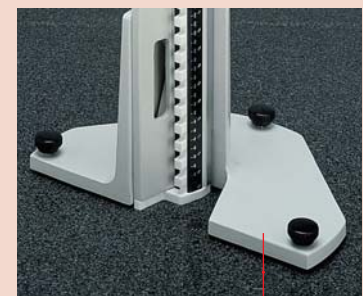


Optional Accessories

601167: Supporting base for vertical operation
 (*supplied as a standard for 515-523 and 515-513)

Dimensions: 14.2" (W) x 8.7" (D) x 8.3" (H)
 360mm (W) x 220mm (D) x 210mm (H)

Mass: 3kg



Supporting base



CERA Straight Master SM-C

SERIES 311 — Straightness Measuring Instrument

FEATURES

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.

- Made from Alumina ceramic
- 50mm/2" pitch gradation scales

- Precision lapped measuring surface
- Double faced type is lapping the double face which can be used for straightness in horizontal and vertical as a reference square.
- Lightweight
- Supplied with fitted wooden case.



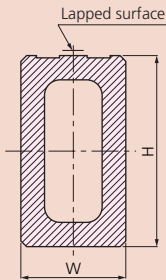
SPECIFICATIONS

| Metric | | Inch | | High accuracy model | | |
|----------------|------------|----------------|------------|---------------------|------------------|-------|
| Nominal length | Order No.* | Nominal length | Order No.* | Straightness | Size (L x H x W) | Mass |
| 400mm | 311-302-33 | 16" | 311-322-33 | 0.3μm | 440 x 35 x 50mm | 1.8kg |
| 700mm | 311-305-33 | 28" | 311-325-33 | 0.5μm | 740 x 35 x 50mm | 3kg |
| 1000mm | 311-307-33 | 40" | 311-327-33 | 1.0μm | 1040 x 45 x 80mm | 8kg |
| 1300mm | 311-309-33 | 52" | 311-329-33 | 1.5μm | 1340 x 45 x 80mm | 10kg |

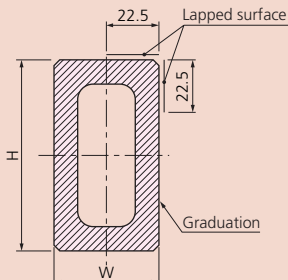
Technical Data

Provided with inspection certificate.

Cross section



Double faced type



| Metric | | Inch | | Ultra high accuracy model | | |
|----------------|------------|----------------|------------|---------------------------|------------------|-------|
| Nominal length | Order No.* | Nominal length | Order No.* | Straightness | Size (L x H x W) | Mass |
| 400mm | 311-332-33 | 16" | 311-342-33 | 0.2μm | 440 x 35 x 50mm | 1.8kg |
| 700mm | 311-335-33 | 28" | 311-345-33 | 0.4μm | 740 x 35 x 50mm | 3kg |
| 1000mm | 311-337-33 | 40" | 311-347-33 | 0.5μm | 1040 x 45 x 80mm | 8kg |
| 1300mm | 311-339-33 | 52" | 311-349-33 | 0.7μm | 1340 x 45 x 80mm | 10kg |

Double faced type



SPECIFICATIONS

| Metric | | Inch | | Double faced model | | |
|----------------|------------|----------------|------------|--------------------|------------------|-------|
| Nominal length | Order No.* | Nominal length | Order No.* | Straightness | Size (L x H x W) | Mass |
| 400mm | 311-352-33 | 16" | 311-362-33 | 0.3μm | 440 x 45 x 80mm | 3.2kg |
| 700mm | 311-355-33 | 28" | 311-365-33 | 0.5μm | 740 x 45 x 80mm | 5.5kg |
| 1000mm | 311-357-33 | 40" | 311-367-33 | 1.0μm | 1040 x 45 x 80mm | 8kg |
| 1300mm | 311-359-33 | 52" | 311-369-33 | 1.5μm | 1340 x 45 x 80mm | 10kg |

Snap Gage Checker

SERIES 515

FEATURES

- Capable of inspecting the snap gage quickly and accurately with resolution down to 0.0001mm.
- The digital display and constant-force measurement capability allow skill-free operation.
- Ceramic zirconia measuring blocks ensure a long service life with minimized maintenance service.
- With an SPC output.



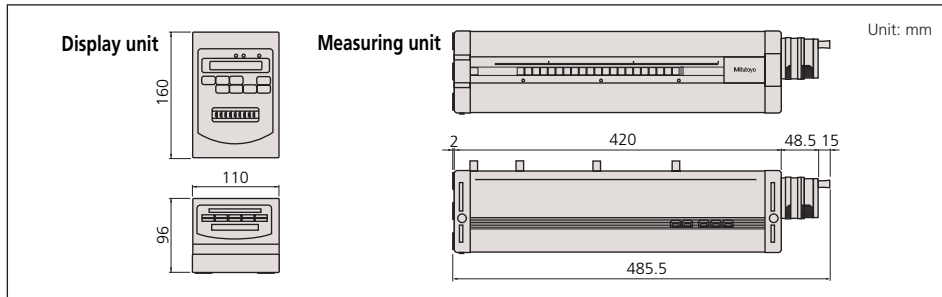
515-611A

SPECIFICATIONS

| Metric | | |
|------------|-----------|------------------|
| Range | Order No. | Block step |
| 20 - 320mm | 515-611A | 20mm (staggered) |

| Inch | | |
|-------------|-----------|----------------|
| Range | Order No. | Block step |
| .8" - 12.8" | 515-612A | 1" (staggered) |

DIMENSIONS



High Precision Square

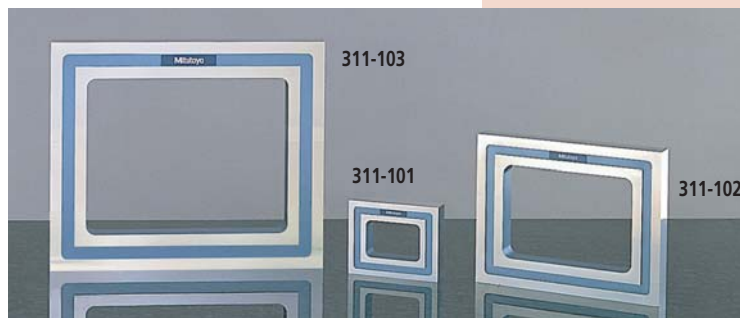
SERIES 311

FEATURES

- High precision square is a master gage used for the straightness and perpendicularity inspection of each axis movement such as a CMM and machine tool.
- Precision lapped 4 measuring surfaces
 - Less than 1 μ m/300mm straightness and perpendicularity.

SPECIFICATIONS

| Metric | | |
|-----------|-----------------------|-------|
| Order No. | Dimension (W x L x T) | Mass |
| 311-101 | 80 x 100 x 25mm | 1.1kg |
| 311-102 | 160 x 200 x 25mm | 3.5kg |
| 311-103 | 250 x 300 x 30mm | 8.6kg |



Technical Data

| | |
|-------------------------|---|
| Range: | .8 - 12.8" / 20 - 320mm |
| Resolution: | .00001 / .0001" or 0.0001 / 0.001mm |
| Block travel stroke: | 4" / 100mm |
| Block pitch accuracy: | \pm .00004" / \pm 0.001mm |
| Parallelism of blocks*: | .00004" / 0.001mm (*between the anvil block and the 1st measuring block) |
| Block feeding error: | \pm .00008" / \pm 0.002mm |
| Power supply: | Via AC adaptor |
| Mass: | 12.5kg |

Function

Data output

Optional Accessories

- 936937: SPC cable (40" / 1m)
- 965014: SPC cable (80" / 2m)
- 990554: Workpiece rest

Square Master

SERIES 311 — Squareness / Straightness Measuring Instrument

Technical Data

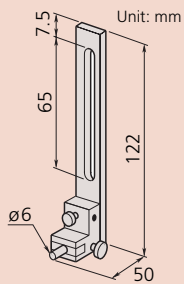
Squareness: Refer to the list of specifications
 Straightness: Refer to the list of specifications
 Dial test indicator provided
 Range: 0.2mm or .008"
 Graduation: 0.002mm or .0001"
 Accuracy: 3 μ m or \pm .0001"
 Dial reading: 0-100-0 (metric) or 0-4-0 (inch)

Optional Accessory

—: Riser blocks (see page 213.)*
517-665: Granite square, 45 (W) x 140 (D) x 280 (H) mm
900571: Adjustable holder
900551: Extension holder
900565: Feeler**
 *Not available for 450mm (18") model.
 Adapter (902803**) is required for metric model.

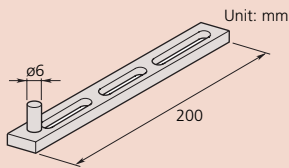
Adjustable holder

No.900571



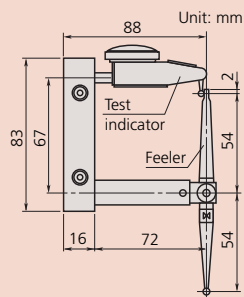
Extension holder

No.900551



Feeler

No.900565



FEATURES

- Squareness (perpendicularity) and straightness measurements can be performed accurately and efficiently by moving a lever.
- With a dial test indicator for reading displacements.
- Its own squareness is adjustable for high accuracy measurement.



311-215



311-225



311-245

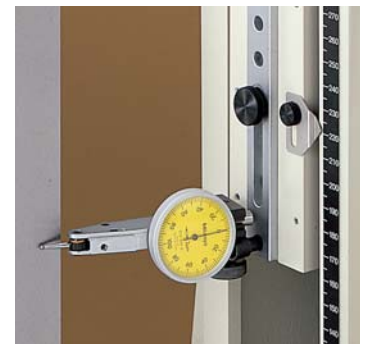
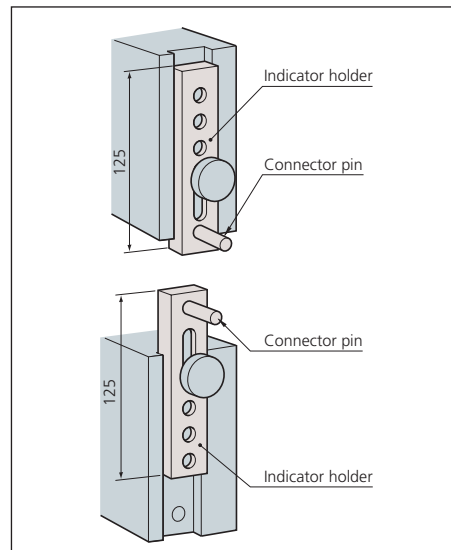
SPECIFICATIONS

Metric

| Vertical travel | Order No. | Squareness | Straightness | Mass (kg) |
|-----------------|----------------|------------|--------------|-----------|
| 150mm | 311-215 | 3 μ m | 2 μ m | 13.7 |
| 250mm | 311-225 | 6 μ m | 2.5 μ m | 16.2 |
| 450mm | 311-245 | 9 μ m | 3.5 μ m | 24 |

Inch

| Vertical travel | Order No. | Squareness | Straightness | Mass (kg) |
|-----------------|----------------|------------|--------------|-----------|
| 6" | 311-216 | .00012" | .00008" | 13.7 |
| 10" | 311-226 | .00024" | .0001" | 16.2 |
| 18" | 311-246 | .00036" | .00014" | 24 |



Standard Scales

SERIES 182 — Made of Low Expansion Glass

FEATURES

- High precision glass scales manufactured under Mitutoyo's leading-edge Linear Scale production technology.
- High accuracy is guaranteed to be used as a standard for calibrating graduated scales.



Technical Data

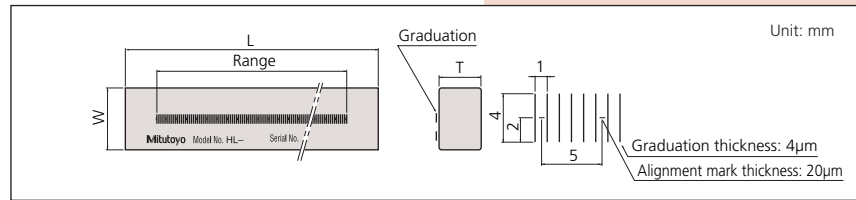
Accuracy (at 20°C): $(0.5+L/1000)\mu\text{m}$,
 L = Measured length (mm)
 Glass material: Low expansion glass
 Thermal expansion coefficient: $8 \times 10^{-6}/\text{K}$
 Graduation: 1mm
 Graduation thickness: $4\mu\text{m}$
 Mass: 0.75kg (250mm), 1.8kg (500mm)

SPECIFICATIONS

| Metric | | | | |
|--------|-------------|-------|------|------|
| Range | Order No. | L | W | T |
| 250mm | 182-501-50 | 280mm | 20mm | 10mm |
| 250mm | 182-501-60* | 280mm | 20mm | 10mm |
| 500mm | 182-502-50 | 530mm | 30mm | 20mm |
| 500mm | 182-502-60* | 530mm | 30mm | 20mm |

*with English JCSS certificate.

DIMENSIONS

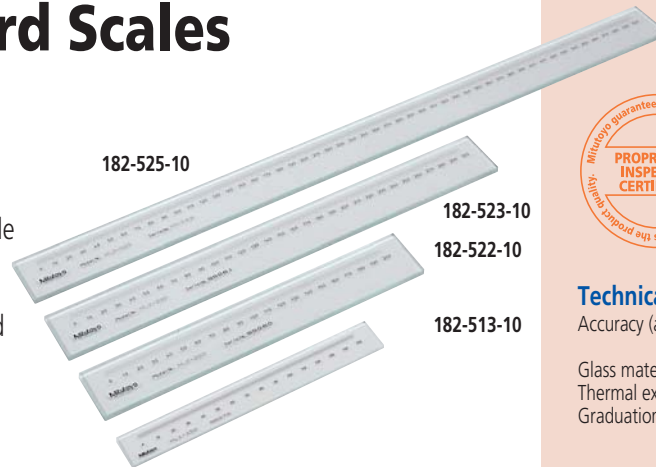


Working Standard Scales

SERIES 182

FEATURES

- High precision glass scales manufactured under Mitutoyo's leading-edge Linear Scale production technology.
- Ideal for checking magnification accuracy of profile projectors and microscopes, and the table feeding accuracy of measuring equipment.



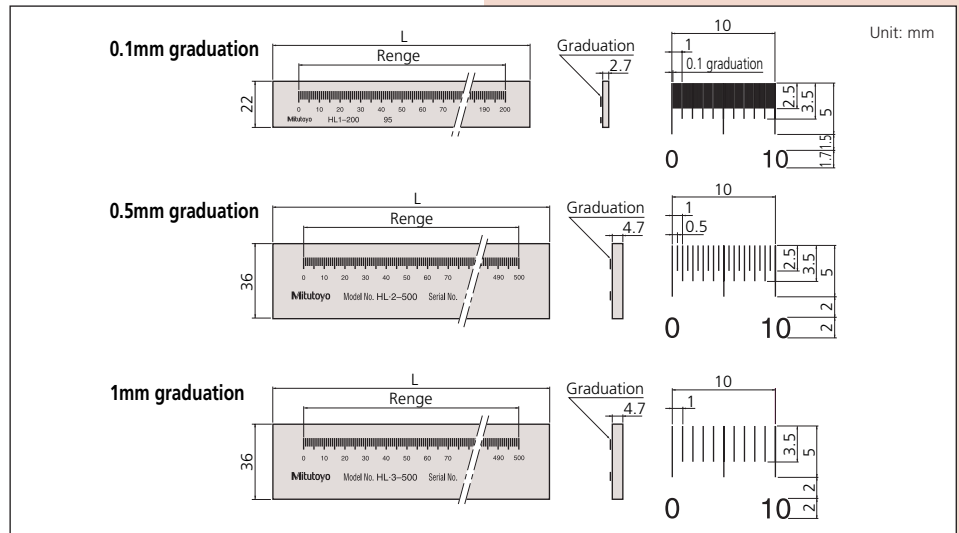
Technical Data

Accuracy (at 20°C): $(1.5+2L/1000)\mu\text{m}$,
 L = Measured length (mm)
 Glass material: Sodium glass
 Thermal expansion coefficient: $8.5 \times 10^{-6}/\text{K}$
 Graduation: 0.1mm (thickness: $20\mu\text{m}$)
 0.5mm (thickness: $50\mu\text{m}$)
 1mm (thickness: $100\mu\text{m}$)

SPECIFICATIONS

| Metric | | | | |
|--------|------------|------------|--------|--------|
| Range | Order No. | Graduation | L | Mass |
| 50mm | 182-511-10 | 0.1mm | 75mm | 0.23kg |
| 100mm | 182-512-10 | 0.1mm | 125mm | 0.24kg |
| 150mm | 182-513-10 | 0.1mm | 175mm | 0.35kg |
| 200mm | 182-514-10 | 0.1mm | 225mm | 0.36kg |
| 100mm | 182-521-10 | 0.5mm | 130mm | 0.27kg |
| 200mm | 182-522-10 | 0.5mm | 230mm | 0.32kg |
| 300mm | 182-523-10 | 0.5mm | 330mm | 0.57kg |
| 400mm | 182-524-10 | 0.5mm | 430mm | 0.71kg |
| 500mm | 182-525-10 | 0.5mm | 530mm | 0.86kg |
| 250mm | 182-531-10 | 1mm | 280mm | 0.55kg |
| 500mm | 182-532-10 | 1mm | 530mm | 0.86kg |
| 750mm | 182-533-10 | 1mm | 780mm | 1.22kg |
| 1000mm | 182-534-10 | 1mm | 1030mm | 1.54kg |

DIMENSIONS



Steel Squares

SERIES 916

Regular type and beveled-edge type steel squares.

All edges are hardened and precision ground. (Only blade is hardened on engineers Square)

SPECIFICATIONS

Beveled Edge Squares

Inch

| Size | Order No. | Outside Dim. | Squareness |
|------|-----------|--------------|------------|
| 2" | 916-100 | 2 x 1.6" | .00010" |
| 3" | 916-101 | 3 x 2" | .00011" |
| 4" | 916-102 | 4 x 2.75" | .00012" |
| 6" | 916-103 | 6 x 4" | .00014" |
| 8" | 916-104 | 8 x 5" | .00018" |

Regular Squares

Inch

| Size | Order No. | Outside Dim. | Squareness |
|------|-----------|--------------|------------|
| 3" | 916-401 | 2.9 x 1.9" | .00026" |
| 4" | 916-402 | 3.9 x 2.7" | .00028" |
| 6" | 916-403 | 5.9 x 3.9" | .00032" |
| 8" | 916-404 | 7.8 x 5.1" | .00036" |
| 10" | 916-405 | 9.8 x 6.5" | .00040" |
| 12" | 916-406 | 11.8 x 7.8" | .00044" |
| 16" | 916-407 | 15.7 x 9.8" | .00052" |
| 20" | 916-408 | 19.6 x 11.8" | .00059" |
| 30" | 916-409 | 29.7 x 15.7" | .00080" |
| 40" | 916-410 | 39.3 x 19.6" | .00116" |

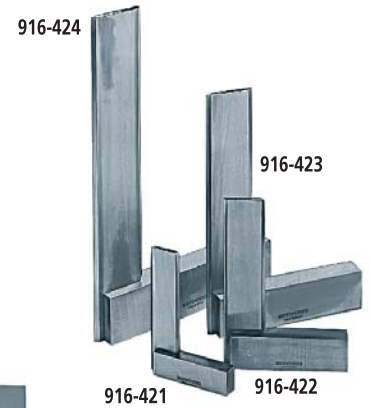
Regular Squares "Engineers Square"

| Size | Order No. | Outside Dim. | Squareness |
|------------------|-----------|----------------|------------|
| 2" | 916-590 | 2.70 x 1.98" | .00063" |
| 3" | 916-591 | 3.73 x 2.38" | .00063" |
| 4" | 916-592 | 4.65 x 2.97" | .00063" |
| 6" | 916-593 | 6.85 x 3.93" | .00063" |
| 9" | 916-594 | 10.50 x 6.30" | .0008" |
| 12" | 916-595 | 13.63 x 8.25" | .001" |
| 18" | 916-596 | 20.25 x 10.50" | .0012" |
| 24" | 916-597 | 26.83 x 13.35" | .0015" |
| 2, 3, 4, 6" Set | 916-598 | | |
| 4, 6, 9, 12" Set | 916-599 | | |

Beveled Edge Squares with Beam

Inch

| Size | Order No. | Outside Dim. | Squareness |
|------|-----------|--------------|------------|
| 3" | 916-421 | 3 x 2" | .000091" |
| 4" | 916-422 | 4 x 2.75" | .000094" |
| 6" | 916-423 | 6 x 4" | .00010" |
| 8" | 916-424 | 8 x 5" | .00011" |



Knife Edge Straight Edge

SERIES 528

The test edge is approximately .004" in thickness, a cross section of which has radius to provide a straight line contact with the work surface. Straightness is $\pm .00005"$.

For ease of inspection, the blade is dyed in black, and the upper edge is covered with a grip plate. The acute angle is 30 degrees.

SPECIFICATIONS

| Length | Order No. | Remarks |
|--------|-----------|-----------------------|
| 4" | 528-102 | with protective cover |
| 6" | 528-103 | with protective cover |
| 8" | 528-104 | with protective cover |
| 10" | 528-105 | with protective cover |



Precision Dial Square

SERIES 7

FEATURES

- Regular type and beveled-edge type blades are interchangeable.
- Dial indicator shows squareness directly.

SPECIFICATIONS

| Size | Order No. | Range | Squareness |
|-------|-----------|---------------------|-----------------------------------|
| 300mm | 7911 | $\pm 0.17\text{mm}$ | $\pm 2.5\mu\text{m}/300\text{mm}$ |
| 600mm | 7912 | $\pm 0.24\text{mm}$ | $\pm 5\mu\text{m}/600\text{mm}$ |



Spring Dividers and Calipers

SERIES 950

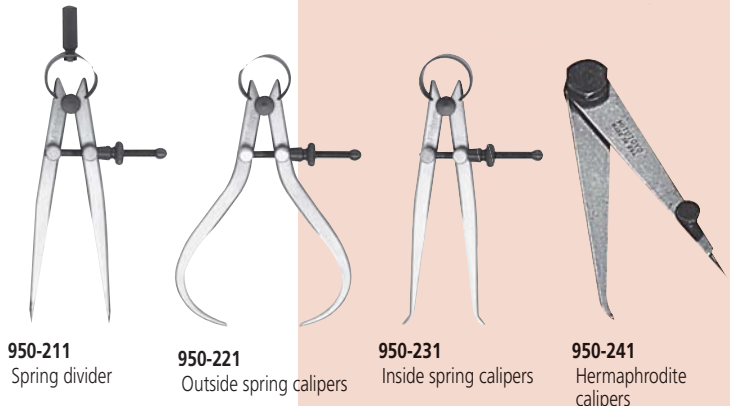
FEATURES

- 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 | Outside spring calipers | Inside spring calipers | Hermaphrodite calipers |
| 4" (100mm) | 950-211 | 950-221 | 950-231 | 950-241 |
| 6" (150mm) | 950-212 | 950-222 | 950-232 | 950-242 |
| 8" (200mm) | 950-213 | 950-223 | 950-233 | |
| 10" (250mm) | 950-214 | 950-224 | 950-234 | |
| 12" (300mm) | 950-215 | 950-225 | 950-235 | |
| 6" (150mm) | — | — | 950-236* | — |

* Quick nut model.

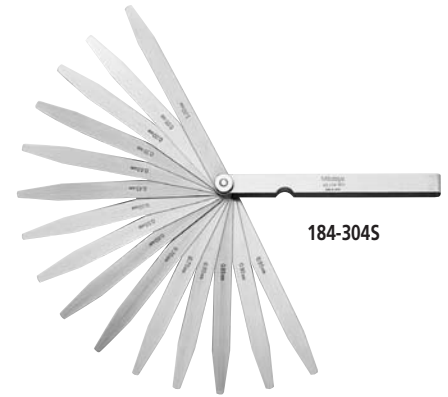


Thickness Gages

SERIES 950, 184

FEATURES

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



Technical Data

Accuracy of Leaves Thickness
Metric

| Nominal Thickness | Tolerance |
|-----------------------------|-----------|
| 0.03mm to less than 0.15mm: | ±0.005mm |
| 0.15mm to less than 0.5mm: | ±0.012mm |
| 0.5mm to less than 1mm: | ±0.02mm |
| Inch | |
| .0015 to less than .007": | ±.0002" |
| .007 to less than .015": | ±.0003" |
| .015 to less than .025": | ±.0004" |
| .026 to less than .030": | ±.00045" |
| .031 to less than .040": | ±.0005" |
| .041 to less than .075": | ±.00055" |
| .076 to less than .100": | ±.0006" |
| .101 to less than .200": | ±.00065" |
| .200" and over : | ±.00075" |

SPECIFICATIONS

Inch

| Range | Order No. | Type of Blade | Blade Length | Composition of leaves |
|-------------------------------|----------------|------------------------------|--------------|--|
| .002" - .035" (26 leaves) | 950-251 | Straight 1/2" width | 3" | .002 thru .018" by .001" step plus .022, .024, .025, .028, .030, .032, .035" |
| .0015" - .025" (26 leaves) | 950-252 | Tapered 1/4" width at tip | 3" | .002 thru .025" by .001" step plus .0015, .0025" |
| .0015" - .200" (15 leaves) | 950-254 | Straight 1/2" width | 3" | .0015, .002, .003, .004, .006, .008, .010, .012, .015, .020, .030, .040, .075, .100, .200" |
| .0015" - .200" (13 leaves) | 950-255 | Straight 1/2" width | 4.5" | .0015, .002, .003, .004, .006, .008, .010, .020, .030, .040, .075, .100, .200" |
| .0015" - .015" (8 leaves) | 950-256 | Straight 1/2" width | 6" | .0015, .002, .003, .004, .008, .010, .012, .015" |

Metric

| Range | Order No. | Type of Blade | Blade Length | Composition of leaves |
|--------------|-----------------|------------------------|--------------|---|
| 0.05 - 1mm | 184-313S | Straight 13mm width | 100mm | 28 leaves: 0.05 - 0.15mm by 0.01mm, 0.2 - 1mm by 0.05mm |
| | 184-303S | | 150mm | 28 leaves: 0.05 - 0.15mm by 0.01mm, 0.2 - 1mm by 0.05mm |
| 0.05 - 1mm | 184-304S | Straight 13mm width | 100mm | 20 leaves: 0.05 - 1mm by 0.05mm |
| | 184-305S | | 150mm | 13 leaves: 0.05 - 0.3mm by 0.05mm, 0.4 - 1mm by 0.1mm |
| 0.05 - 1mm | 184-301S | Straight 13mm width | 100mm | 13 leaves: 0.05 - 0.3mm by 0.05mm, 0.4 - 1mm by 0.1mm |
| | 184-301S | | 150mm | 13 leaves: 0.05 - 0.3mm by 0.05mm, 0.4 - 1mm by 0.1mm |
| 0.05 - 0.8mm | 184-306S | Straight 13mm width | 100mm | 10 leaves: 0.05 - 0.2mm by 0.05mm, 0.3 - 0.8mm by 0.1mm |
| | 184-308S | | 150mm | 10 leaves: 0.05 - 0.2mm by 0.05mm, 0.3 - 0.8mm by 0.1mm |
| 0.03 - 0.5mm | 184-307S | Straight 13mm width | 100mm | 13 leaves: 0.03 - 0.1mm by 0.01mm, 0.2 - 0.5mm by 0.1mm, 0.15mm |
| | 184-302S | | 150mm | 13 leaves: 0.03 - 0.1mm by 0.01mm, 0.2 - 0.5mm by 0.1mm, 0.15mm |

Precision Levels

SERIES 960

FEATURES

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



960-614



960-706

SPECIFICATIONS

| Order No. | Sensitivity | Accuracy | Dimensions (W x D x H) |
|----------------|-------------|----------|------------------------|
| 960-706 | 0.02mm/m | ±0.006mm | 200 x 44 x 200mm |

| Order No. | Sensitivity | Accuracy | Dimensions | | |
|----------------|-------------|----------|------------|-------|-------|
| | | | W | D | H |
| 960-614 | .0012"/12" | ±.0006" | 7.87" | 1.73" | 1.50" |
| 960-615 | .0006"/12" | ±.0003" | 7.87" | 1.73" | 1.50" |
| 960-616 | .00024"/12" | ±.00017" | 7.87" | 1.73" | 1.50" |

Combination Square Set

SERIES 180

FEATURES

- Three measuring heads are attached to the stainless steel rule (blade), allowing versatile measurements on various types of workpieces.

- The measuring heads are hardened.
- Economy sets not including a protractor head are also available.

Technical Data

- 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.

SPECIFICATIONS

Inch _____ Heads only (hardened cast iron)

| Order No. | Description |
|-----------|-----------------------------------|
| 180-101 | Square Head for 6" models |
| 180-102 | Square Head for 12" to 24" models |
| 180-201 | Center Head for 6" models |
| 180-202 | Center Head for 12" to 24" models |

Inch _____ Heads only (cast iron-not hardened)

| Order No. | Description |
|-----------|---------------------------------------|
| 180-111 | Square Head for 6" models |
| 180-112 | Square Head for 12" to 24" models |
| 180-211 | Center Head for 6" models |
| 180-212 | Center Head for 12" to 24" models |
| 180-301 | Protractor Head for 12" to 24" models |

Inch / Metric _____ Blades only

| Order No. | Length | Graduations | Accuracy (length) |
|-----------|-------------|--------------------------|---|
| 180-401 | 6" | 8, 16, 32, 64ths (4R) | +0.004" (+0.1mm) |
| 180-402 | 6" | 32, 64, 50, 100ths (16R) | |
| 180-403 | 6" x 150mm | 32, 64ths, 1, 0.5mm | -0.0035" (-0.09mm) |
| 180-405 | 150mm | 1, .5, 1, 0.5mm | |
| 180-501 | 12" | 8, 16, 32, 64ths (4R) | +0.005" (+0.13mm) -0.0035" (-0.09mm) |
| 180-502 | 12" | 32, 64, 50, 100ths (16R) | |
| 180-503 | 12" x 300mm | 32, 64ths, 1, 0.5mm | |
| 180-505 | 300mm | 1, .5, 1, 0.5mm | +0.006" (+0.15mm) -0.0035" (-0.09mm) |
| 180-701 | 18" | 8, 16, 32, 64ths (4R) | +0.007" (+0.18mm) |
| 180-702 | 18" | 32, 64, 50, 100ths (16R) | |
| 180-703 | 18" x 450mm | 32, 64ths, 1, 0.5mm | |
| 180-705 | 450mm | 1, .5, 1, 0.5mm | |
| 180-601 | 24" | 8, 16, 32, 64ths (4R) | +0.007" (+0.18mm) |
| 180-602 | 24" | 32, 64, 50, 100ths (16R) | |
| 180-603 | 24" x 600mm | 32, 64ths, 1, 0.5mm | -0.0035" (-0.09mm) |
| 180-605 | 600mm | 1, .5, 1, 0.5mm | |

Inch _____ Combination Square Sets

| Set No. | Blade | Square Head | Center Head | Protractor Head | |
|---------|-----------|-------------|-------------|-----------------|----------|
| 180-801 | 6" 4(R) | 180-401 | 180-111† | 180-211† | |
| 180-802 | 6" 16(R) | 180-402 | 180-111† | 180-211† | |
| 180-803 | 12" 4(R) | 180-501 | 180-112† | 180-212† | |
| 180-804 | 12" 16(R) | 180-502 | 180-112† | 180-212† | |
| 180-805 | 12" 4(R) | 180-501 | 180-112† | 180-212† | 180-301† |
| 180-806 | 12" 16(R) | 180-502 | 180-112† | 180-212† | 180-301† |
| 180-901 | 6" 4(R) | 180-401 | 180-101* | 180-201* | |
| 180-902 | 6" 16(R) | 180-402 | 180-101* | 180-201* | |
| 180-903 | 12" 4(R) | 180-501 | 180-102* | 180-202* | |
| 180-904 | 12" 16(R) | 180-502 | 180-102* | 180-202* | |
| 180-905 | 12" 4(R) | 180-501 | 180-102* | 180-202* | 180-301† |
| 180-906 | 12" 16(R) | 180-502 | 180-102* | 180-202* | 180-301† |

Inch / Metric _____

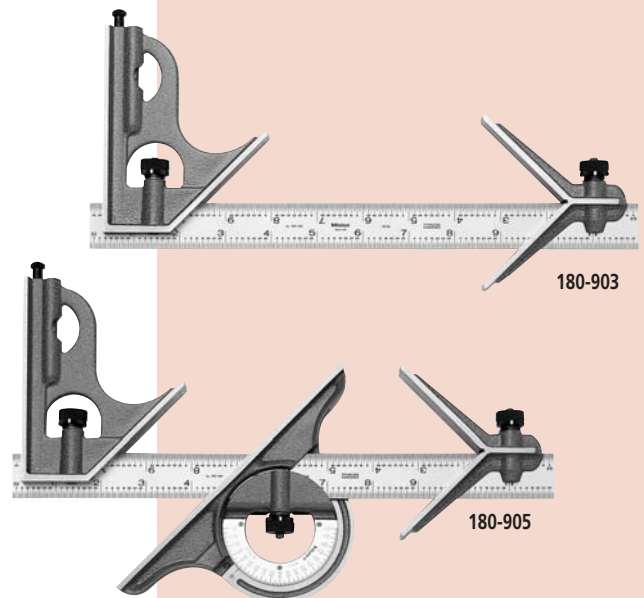
| Set No. | Blade | Square Head | Center Head | Protractor Head |
|---------|---------------------|-------------|-------------|-----------------|
| 180-807 | 12" / 300mm 180-503 | 180-112† | 180-212† | 180-301† |
| 180-907 | 12" / 300mm 180-503 | 180-102* | 180-202* | 180-301† |

Metric _____

| Set No. | Blade | Square Head | Center Head | Protractor Head |
|---------|---------------|-------------|-------------|-----------------|
| 180-810 | 300mm 180-505 | 180-112† | 180-212† | 180-301† |
| 180-910 | 300mm 180-505 | 180-102* | 180-202* | 180-301† |

*Hardened cast iron heads.

†non hardened head.



Steel Rules

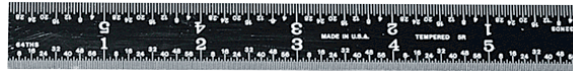
SERIES 182

FEATURES

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



182-125



182-110

SPECIFICATIONS

Wide Rigid Rules (thickness 3/64")

| Order No. | Black Chrome Rule Order No. | Size | Graduations | | | | Width | Accuracy (Length) |
|-----------|-----------------------------|----------------|-------------|-------|------|---------|--------|---|
| | | | 1/8 | 1/16 | 1/32 | 1/64th | | |
| 182-101 | 182-109 | 6"(4R) | 1/8 | 1/16 | 1/32 | 1/64th | 3/4" | +0.004" / -0.0035" (+0.1mm / -0.09mm) |
| 182-102 | 182-112 | 6"(16R) | 1/32 | 1/64 | 1/50 | 1/100th | 3/4" | |
| 182-103 | 182-110 | 6"(5R) | 1/32 | 1/64 | 1/10 | 1/100th | 3/4" | |
| 182-104 | 182-113 | 6"(3R) | 1/32 | 1/64 | 1/10 | 1/50th | 3/4" | |
| 182-105 | 182-114 | 6" x 150mm | 1/32 | 1/64 | 1mm | 0.5mm | 3/4" | |
| 182-106 | — | 6" x 150mm | 1/50 | 1/100 | 1mm | 0.5mm | 3/4" | |
| 182-107 | — | 6" x 150mm | 1/10 | 1/100 | 1mm | 0.5mm | 3/4" | |
| 182-108 | — | 6" x 150mm | 1/10 | 1/50 | 1mm | 0.5mm | 3/4" | |
| 182-111 | 182-115 | 150mm | 1mm | 0.5mm | 1mm | 0.5mm | 19mm | |
| 182-121 | 182-127 | 12"(4R) | 1/8 | 1/16 | 1/32 | 1/64th | 1" | |
| 182-122 | 182-129 | 12"(16R) | 1/32 | 1/64 | 1/50 | 1/100th | 1" | |
| 182-123 | 182-128 | 12"(5R) | 1/32 | 1/64 | 1/10 | 1/100th | 1" | |
| 182-124 | — | 12"(3R) | 1/32 | 1/64 | 1/10 | 1/50th | 1" | |
| 182-125 | 182-130 | 12" x 300mm | 1/32 | 1/64 | 1mm | 0.5mm | 1" | |
| 182-126 | — | 12" x 300mm | 1/50 | 1/100 | 1mm | 0.5mm | 1" | |
| 182-131 | 182-132 | 300mm | 1mm | 0.5mm | 1mm | 0.5mm | 25mm | +0.006" / -0.0035" (+0.15mm / -0.09mm) |
| 182-241 | 182-146 | 18"(4R) | 1/8 | 1/16 | 1/32 | 1/64 | 13/16" | |
| 182-142 | 182-148 | 18"(16R) | 1/32 | 1/64 | 1/50 | 1/100th | 13/16" | |
| 182-143 | 182-147 | 18"(5R) | 1/32 | 1/64 | 1/10 | 1/100th | 13/16" | |
| 182-144 | — | 18"(3R) | 1/32 | 1/64 | 1/10 | 1/100th | 13/16" | |
| 182-145 | — | 18" x 450mm | 1/32 | 1/64 | 1mm | 0.5mm | 13/16" | |
| 182-151 | — | 450mm | 1mm | 0.5mm | 1mm | 0.5mm | 30mm | +0.007" / -0.0035" (+0.18mm / -0.09mm) |
| 182-161 | 182-166 | 24"(4R) | 1/8 | 1/16 | 1/32 | 1/64 | 13/16" | |
| 182-162 | 182-168 | 24"(16R) | 1/32 | 1/64 | 1/50 | 1/100th | 13/16" | |
| 182-163 | 182-167 | 24"(5R) | 1/32 | 1/64 | 1/10 | 1/100th | 13/16" | |
| 182-164 | — | 24"(3R) | 1/32 | 1/64 | 1/10 | 1/50th | 13/16" | |
| 182-165 | — | 24" x 600mm | 1/32 | 1/64 | 1mm | 0.5mm | 13/16" | |
| 182-171 | — | 600mm | 1mm | 0.5mm | 1mm | 0.5mm | 30mm | |
| 182-401 | — | 36"(4R) | 1/8 | 1/16 | 1/32 | 1/64 | 11/4" | |
| 182-403 | — | 36"(16R) | 1/32 | 1/64 | 1/50 | 1/100th | 11/4" | |
| 182-405 | — | 36"(5R) | 1/32 | 1/64 | 1/10 | 1/100th | 11/4" | |
| 182-406 | — | 36" x 900mm | 1/32 | 1/64 | 1mm | 0.5mm | 11/4" | +0.008" / -0.004" (+0.2mm / -0.1mm) |
| 182-402 | — | 48"(4R) | 1/8 | 1/16 | 1/32 | 1/64 | 11/4" | |
| 182-404 | — | 48"(16R) | 1/32 | 1/64 | 1/50 | 1/100th | 11/4" | |
| 182-407 | — | 48" x 1219.2mm | 1/32 | 1/64 | 1mm | 0.5mm | 11/4" | |

Steel Rules

SERIES 182

FEATURES

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



182-265



182-223

SPECIFICATIONS

Full-Flexible Rules (thickness 1/64")

| Order No. | Black Chrome Rule Order No. | Size | Graduations | | | | Width | Accuracy (Length) |
|-----------|-----------------------------|-------------|-------------|-------|------|---------|-------|---|
| 182-201 | 182-212 | 6"(4R) | 1/8 | 1/16 | 1/32 | 1/64th | 1/2" | +0.004" / -0.0035" (+0.1mm / -0.09mm) |
| 182-202 | 182-214 | 6"(16R) | 1/32 | 1/64 | 1/50 | 1/100th | 1/2" | |
| 182-203 | 182-213 | 6"(5R) | 1/32 | 1/64 | 1/10 | 1/100th | 1/2" | |
| 182-204 | 182-215 | 6"(3R) | 1/32 | 1/64 | 1/10 | 1/50th | 1/2" | |
| 182-205 | 182-216 | 6" x 150mm | 1/32 | 1/64 | 1mm | 0.5mm | 1/2" | |
| 182-206 | — | 6" x 150mm | 1/50 | 1/100 | 1mm | 0.5mm | 1/2" | |
| 182-207 | — | 6" x 150mm | 1/10 | 1/100 | 1mm | 0.5mm | 1/2" | |
| 182-208 | — | 6" x 150mm | 1/10 | 1/50 | 1mm | 0.5mm | 1/2" | |
| 182-211 | 182-209 | 150mm | 1mm | 0.5mm | 1mm | 0.5mm | 12mm | +0.005" / -0.0035" (+0.13mm / -0.09mm) |
| 182-221 | 182-217 | 12"(4R) | 1/8 | 1/16 | 1/32 | 1/64th | 1/2" | |
| 182-222 | 182-219 | 12"(16R) | 1/32 | 1/64 | 1/50 | 1/100th | 1/2" | |
| 182-223 | 182-218 | 12"(5R) | 1/32 | 1/64 | 1/10 | 1/100th | 1/2" | |
| 182-224 | — | 12"(3R) | 1/32 | 1/64 | 1/10 | 1/50th | 1/2" | |
| 182-225 | 182-220 | 12" x 300mm | 1/32 | 1/64 | 1mm | 0.5mm | 1/2" | |
| 182-226 | — | 12" x 300mm | 1/50 | 1/100 | 1mm | 0.5mm | 1/2" | +0.006" / -0.0035" (+0.15mm / -0.09mm) |
| 182-231 | 182-210 | 300mm | 1mm | 0.5mm | 1mm | 0.5mm | 12mm | |
| 182-141 | 182-246 | 18"(4R) | 1/8 | 1/16 | 1/32 | 1/64 | 3/4" | |
| 182-242 | 182-248 | 18"(16R) | 1/32 | 1/64 | 1/50 | 1/100th | 3/4" | |
| 182-243 | 182-247 | 18"(5R) | 1/32 | 1/64 | 1/10 | 1/100th | 3/4" | |
| 182-244 | — | 18"(3R) | 1/32 | 1/64 | 1/10 | 1/50th | 3/4" | +0.007" / -0.0035" (+0.18mm / -0.09mm) |
| 182-245 | — | 18" x 450mm | 1/32 | 1/64 | 1mm | 0.5mm | 3/4" | |
| 182-251 | — | 450mm | 1mm | 0.5mm | 1mm | 0.5mm | 18mm | |
| 182-261 | 182-266 | 24"(4R) | 1/8 | 1/16 | 1/32 | 1/64 | 3/4" | +0.007" / -0.0035" (+0.18mm / -0.09mm) |
| 182-262 | 182-268 | 24"(16R) | 1/32 | 1/64 | 1/50 | 1/100th | 3/4" | |
| 182-263 | 182-267 | 24"(5R) | 1/32 | 1/64 | 1/10 | 1/100th | 3/4" | |
| 182-264 | — | 24"(3R) | 1/32 | 1/64 | 1/10 | 1/50th | 3/4" | |
| 182-265 | — | 24" x 600mm | 1/32 | 1/64 | 1mm | 0.5mm | 3/4" | |
| 182-271 | — | 600mm | 1mm | 0.5mm | 1mm | 0.5mm | 18mm | |

Flexible Rules

| | | | | | | | | |
|---------|---|-------------|------|------|------|---------|------|---|
| 182-411 | — | 36"(4R) | 1/8 | 1/16 | 1/32 | 1/64 | 3/4" | +0.007" / -0.0035" (+0.18mm / -0.09mm) |
| 182-413 | — | 36"(16R) | 1/32 | 1/64 | 1/50 | 1/100th | 3/4" | |
| 182-415 | — | 36"(5R) | 1/32 | 1/64 | 1/10 | 1/100th | 3/4" | |
| 182-416 | — | 36" x 900mm | 1/32 | 1/64 | 1mm | 0.5mm | 3/4" | +0.008" / -0.004" (+0.2mm / -0.1mm) |
| 182-412 | — | 48"(4R) | 1/8 | 1/16 | 1/32 | 1/64 | 3/4" | |
| 182-414 | — | 48"(16R) | 1/32 | 1/64 | 1/50 | 1/100th | 3/4" | |

Semi-Flexible Rules

SERIES 182

FEATURES

- Engraved on frontside only



182-304

SPECIFICATIONS

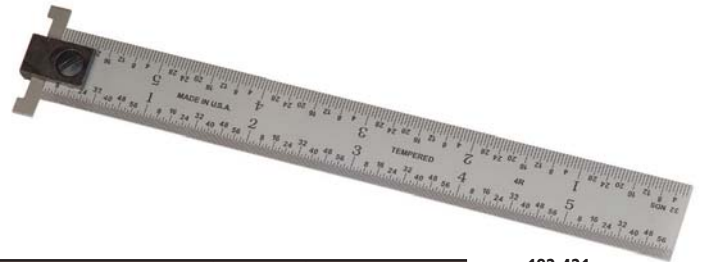
| Inch/Metric | | | | | | | | |
|-------------|--------------|-------------|-----|------|------|--------|-------|--|
| Order No. | Size | Graduations | | | | | Width | Accuracy (Length) |
| 182-301 | 4" x 100mm | 1/2mm | 1mm | 1/32 | 1/64 | 1/16th | 5/8" | +0.004" / -0.0035" |
| 182-302 | 6" x 150mm | 1/2mm | 1mm | 1/32 | 1/64 | 1/16th | 5/8" | (+0.1mm / -0.09mm) |
| 182-304 | 10" x 250mm | 1/2mm | 1mm | 1/32 | 1/64 | 1/16th | 5/8" | +0.005" / -0.0035" |
| 182-305 | 12" x 300mm | 1/2mm | 1mm | 1/32 | 1/64 | 1/16th | 5/8" | +0.13mm / -0.09mm) |
| 182-307 | 20" x 500mm | 1/2mm | 1mm | 1/32 | 1/64 | 1/16th | 5/8" | +0.007" / -0.0035" (+0.18mm / -0.09mm) |
| 182-309 | 40" x 1000mm | 1/2mm | 1mm | 1/32 | 1/64 | 1/16th | 5/8" | +0.008" / -0.004" (+0.2mm / -0.1mm) |

Hook Rules

SERIES 182

FEATURES

- Hardened and tempered tool steel.
- Hard chrome finish.
- Furnished with adjustable hook.



182-421

SPECIFICATIONS

| Order No. | Size | Graduations | | | | Width | Accuracy (Length) |
|-----------|---------|-------------|------|------|------|--------|--------------------|
| 182-421 | 6"(4R) | 1/8 | 1/16 | 1/32 | 1/64 | 3/4" | +0.004" / -0.0035" |
| 182-422 | 12"(4R) | 1/8 | 1/16 | 1/32 | 1/64 | 1" | +0.005" / -0.0035" |
| 182-423 | 18"(4R) | 1/8 | 1/16 | 1/32 | 1/64 | 1-1/8" | +0.006" / -0.0035" |

Pocket Steel Rule

SERIES 950

FEATURES

- Engraved on frontside only.
- Backside: Inch/Metric equivalents



950-300

SPECIFICATIONS

| Order No. | Size | Graduation | | Width | Accuracy (Length) |
|-----------|------------|------------|---------|-------|---------------------------------------|
| 950-300 | 6" x 150mm | 1mm | 1/64ths | 1/2" | +0.004" / -0.0035" (+0.1mm / -0.09mm) |
| 950-301 | 6" | 1/32nds | 1/64ths | 1/2" | +0.004" / -0.0035" |

Digital Universal Protractor

SERIES 187

FEATURES

- Data output function make it easy to see the statistical data.
- Can be attached to height gages. gage holder (950750, metric)
- Setting preset value.
- Removable blade.

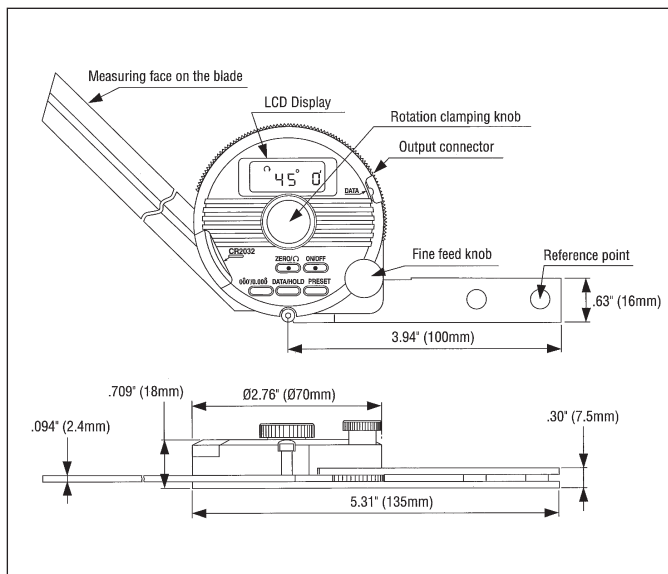


187-552

SPECIFICATIONS

| Code No. | 187-552 |
|-------------------------------|--|
| Model | BP-D300E |
| Blade | 12" (187-103) |
| Display | LCD - 5 digit, (-) sign, character height 6.5mm |
| Measuring range | -360° ~ +360° |
| Resolution | 1' (0.01°) |
| Accuracy | ± 2' (±0.03°) |
| Repeatability | 1' (0.01°) |
| Mass | 1.45 lbs (659g) |
| Dust / Water protection level | IP40 |
| Function | Zero, Direction select, Data output / Data hold, Preset, Switchable Seagesimal or Decimal Notation |
| Max. response speed | 3 rps |
| Battery | Lithium battery (CR2032) 1 pc. (Part No. 05SAA217) |
| Battery life | 2,000 hours |
| Alarm | Battery voltage low, Over speed error (Err) |
| Temperature | Operation temperature: 0 to 40°C Storage temperature: -10 to 60°C |

DIMENSIONS



Technical Data

| | |
|----------------|-----------------|
| Range: | -360° to +360° |
| Tolerance: | ±2' (±0.03°) |
| Repeatability: | 1' |
| Resolution: | 1' (0.01°) |
| Battery: | Lithium Battery |
| Battery life: | 2,000 hours |

Function

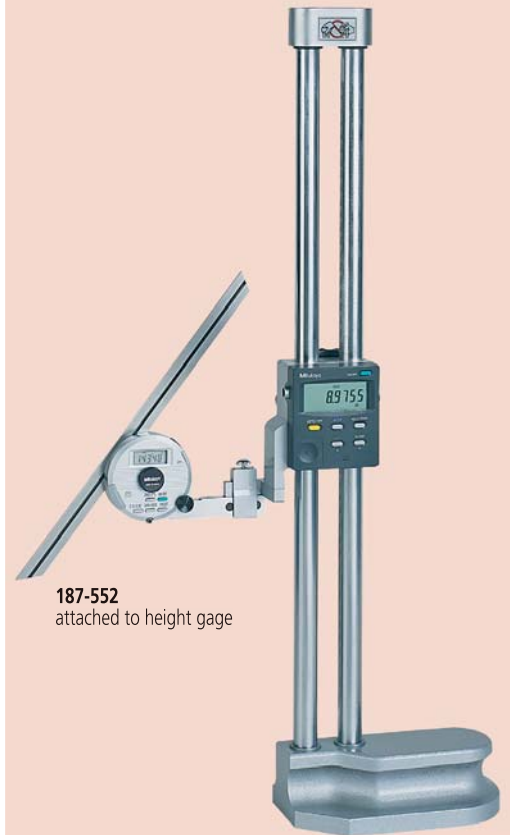
Presetting

Standard Accessories

- 12" Blade (Code No. 187-103)
- Battery (CR2032) (Part No. 05SAA217)
- Clamp box for Inch Height Gage (Part No. 950749)
- Plastic Case

Optional Accessories

- 187-104 6" blade
- 187-105 Acute angle attachment
- 950750 Clamp box for Metric Height Gage
- 905338 Connecting cable (40" / 1m)
- 905409 Connecting cable (80" / 2m)



187-552 attached to height gage

Universal Bevel Protractor

SERIES 187

Technical Data

| | |
|--------------------|---------------------------|
| Graduation: | 5min. (0° - 90° - 0°) |
| Accuracy | |
| Vernier | ±5' |
| Straightness | [.00016" + (.00005xL/2)]" |
| Parallelism | [.00016" + (.00005xL/2)]" |
| L = Length in inch | |
| Diameter: | 2.56" / 70mm |

FEATURES

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



187-904



SPECIFICATIONS

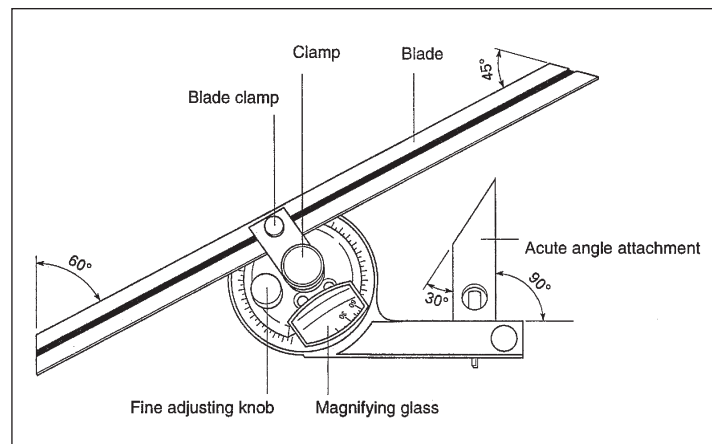
Universal Bevel Protractors

| Graduation | | | |
|------------|------|---------|---|
| Order No. | Dial | Vernier | Remarks |
| 187-904 | 1° | 5 min | with 6" blade (187-104) and Clamp box for Inch Height Gages (950749) |
| 187-906 | 1° | 5min | with 12" blade (187-103) and Clamp box for Inch Height Gages (950749) |

Universal Bevel Protractor Accessories and Parts

| Order No. | Remarks |
|-----------|-----------------------------------|
| 187-103 | 12" Blade. |
| 187-104 | 6" Blade. |
| 187-105 | Acute angle attachment |
| 950749 | Clamp box for Inch Height Gages |
| 950750 | Clamp box for Metric Height Gages |

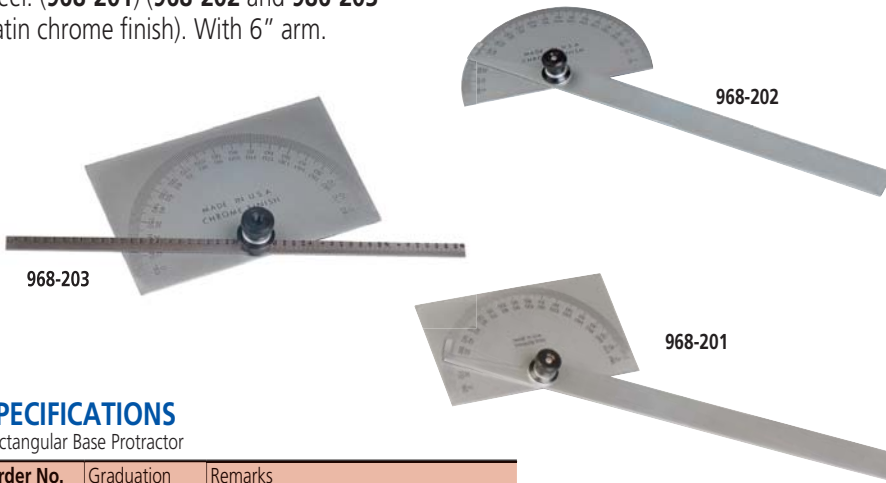
DIMENSIONS



Protractor

SERIES 968

Basegular Base Protractor's scale plate and indicator blade are made entirely of stainless steel. (968-201) (968-202 and 968-203 Satin chrome finish). With 6" arm.



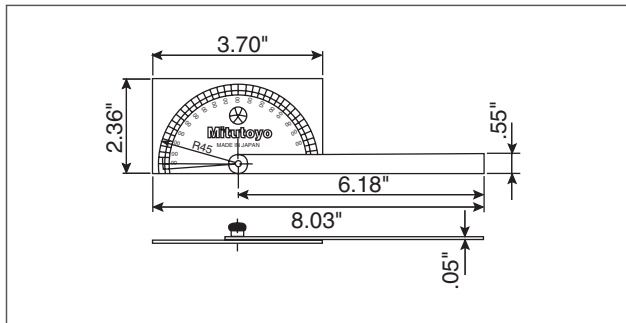
SPECIFICATIONS

Rectangular Base Protractor

| Order No. | Graduation | Remarks |
|-----------|------------|---|
| 968-201 | 1° | Protractor Graduation: 0°-90°, 90°-180°, 180°-90°, 90°-0° |
| 968-202 | 1° | Semi-Circle: 0°-180°, 180°-0° |
| 968-203* | | Rectangle: 0°-180°, 180°-0° |

*6" Arm with graduation rule.

DIMENSIONS



Bevel Protractor

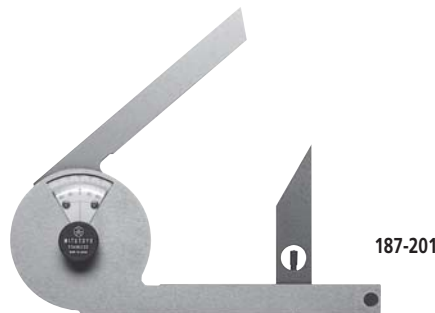
SERIES 187

FEATURES

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

SPECIFICATIONS

| Order No. | Graduation | Remarks |
|-----------|------------|---|
| 187-201 | 1° / 5 min | Center black knob locks the blade position Protractor Graduation: 0°-90°, 90°-0° |



Technical Data

Graduation: 5 min. (0° - 90° - 0°)
Blade edge angle: 30° and 60°
Diameter: 2.56" / 70mm

Depth Gage, Adjustable Angle

SERIES 950

FEATURES

- Head made of hardened steel.
- Base surface measures 2-1/2" x 1/8" thick.
- Includes 6" rule: 7/32" wide and .041" thick.
- Includes 6" rod: 3/32" diameter.

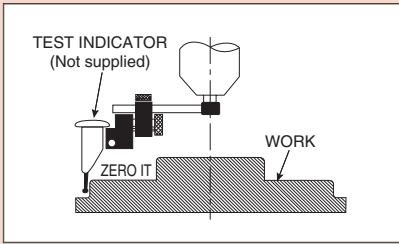


SPECIFICATIONS

| Order No. | Protractor Graduation | Rule Graduation |
|-----------|-----------------------|-----------------|
| 950-271 | 30°, 45°, 60° | 1/32", 1/64" |

Zero-It

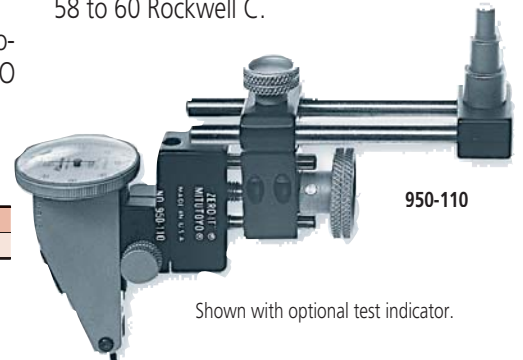
SERIES 950



"Zero-It" is specially designed for MITUTOYO Test Indicators with Dovetails, and functions as a quick and practical work positioning device.

Attach "Zero-It" directly to the collet, then zero in the work position by reading MITUTOYO

Test Indicator. The hardened clamping post consists of three ODs, from top, 1/4", 3/8" and 1/2", and has hardness of approximately 58 to 60 Rockwell C.



Shown with optional test indicator.

SPECIFICATIONS

| Order No. | Coarse | Fine |
|-----------|--------|------|
| 950-110 | 10° | 3/8" |

Zero-Setter

SERIES 950

Fast and sure establishment of "0" reference point with built-in indicator.

Spring loaded setting face to safe guard against damage from over run.

Body dia. 1.44" (36.5mm)

Wooden case included.



SPECIFICATIONS

| Order No. | Height | Graduation |
|-----------|--------|------------|
| 950-111 | 1" | .0005" |
| 950-112 | 25mm | 0.01mm |

Angle Gages

SERIES 186

FEATURES

- Manufactured from stainless steel, satin finished.
- 18 individual gages for easy use.
- Eight gaging surfaces per gage.
- Precision finished edges for accurate checking.
- Each gage checks primary, 1/2 primary and complementary angles.
- Sharp cornered workpieces can be checked at all 8 angles except below 50° on primary angle 2.
- Quick and accurate inspection of angles and I.D. or O.D. chamfers—in or out of the machine.
- Positioning of lathe tools for chamfers.
- Inspecting angles on ground form tools and cutters.
- Fast set-ups and fixturing of workpieces.
- Eliminates time consuming measuring set-ups.



186-910

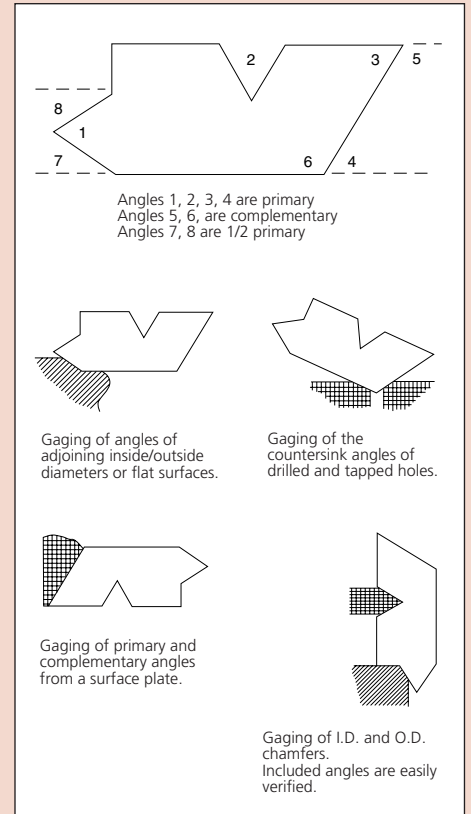
SPECIFICATIONS

| Set Order No. | Description | No. of Leaves |
|---------------|-----------------------|---------------|
| 186-910 | Angle Gage Set w/case | 18 |

Individual Part No.

| Inch | | | | |
|----------|---------------|-------------------|----------|---------------------|
| Part No. | Primary Angle | 1/2 Primary Angle | Accuracy | Complementary Angle |
| 051000* | 5° | 2° 30' | ±5' | 175° |
| 051001* | 10° | 5° | ±5' | 170° |
| 051002* | 15° | 7° 30' | ±5' | 165° |
| 051003 | 20° | 10° | ±5' | 160° |
| 051004 | 35° | 12° 30' | ±5' | 155° |
| 051005 | 30° | 15° | ±5' | 150° |
| 051006 | 35° | 17° 30' | ±5' | 145° |
| 051007 | 40° | 20° | ±5' | 140° |
| 051008 | 45° | 22° 30' | ±5' | 135° |
| 051009 | 50° | 25° | ±5' | 130° |
| 051010 | 55° | 27° 30' | ±5' | 125° |
| 051011 | 60° | 30° | ±5' | 120° |
| 051012 | 65° | 32° 30' | ±5' | 115° |
| 051013 | 70° | 35° | ±5' | 110° |
| 051014 | 75° | 37° 30' | ±5' | 105° |
| 051015 | 80° | 40° | ±5' | 100° |
| 051016 | 85° | 42° 30' | ±5' | 95° |
| 051017 | 90° | 45° | ±5' | 90° |
| 051018 | Vinyl Case | | | |

* Angle 2 omitted



Angle Blocks

SERIES 981

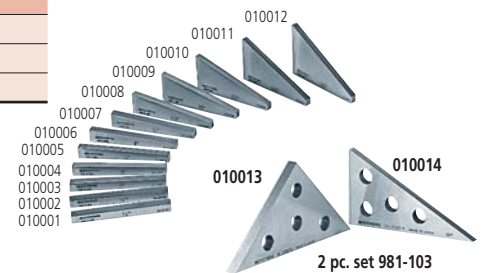
SPECIFICATIONS

| Order No. | Angle | Accuracy | Remarks |
|-----------|---------------|----------|---|
| 010001 | 1/4° | ±20 sec | Hardened steel over HRC 55 Precision ground throughout |
| 010002 | 1/2° | | |
| 010003 | 1° | | |
| 010004 | 2° | | |
| 010005 | 3° | | |
| 010006 | 4° | | |
| 010007 | 5° | | |
| 010008 | 10° | | |
| 010009 | 15° | | |
| 010010 | 20° | | |
| 010011 | 25° | | |
| 010012 | 30° | | |
| 010013 | 45°, 45°, 90° | ± 40 sec | |
| 010014 | 30°, 60°, 90° | | |



981-102

| Set Order No. | Remarks |
|---------------|--------------------------------------|
| 981-101 | 10 pc. Set (Order No. 010003-010012) |
| 981-102 | 12 pc. Set (Order No. 010001-010012) |
| 981-103 | 2 pc. Set (Order No. 010013-010014) |



2 pc. set 981-103

Adjustable Parallels

SERIES 985

FEATURES

- Consists of two precision ground pieces which slide smoothly on each other.

- Locked into position by set screws.
- Can be quickly inserted into openings and expanded to exact size, then measured with a micrometer.

SPECIFICATIONS

| Order No. | Remarks |
|-----------|---|
| 985-130 | 4 pcs. Adjustable Parallel Set 3/8 – 1-15/16" |
| 985-131 | 6 pcs. Adjustable Parallel Set 3/8 – 2-1/4" |
| 985-132 | Adjustable Parallel 3/8 – 1/2" |
| 985-133 | Adjustable Parallel 1/2 – 11/16" |
| 985-134 | Adjustable Parallel 11/16 – 15/16" |
| 985-135 | Adjustable Parallel 15/16 – 1-5/16" |
| 985-136 | Adjustable Parallel 1-5/16 – 1-3/4" |
| 985-137 | Adjustable Parallel 1-3/4 – 2-1/4" |



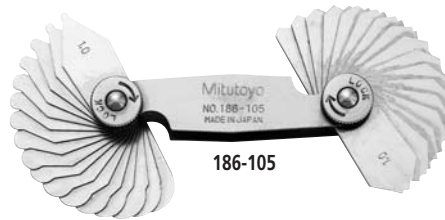
985-131

Radius Gages

SERIES 186

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 | 186-110 | 18 leaves: 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 | 186-902 | 26 leaves: 0.5 - 13mm by 0.5mm | 90° arc |
| 1 - 7mm | 186-105 | 34 pairs: 1 - 3mm by 0.25mm 3.5 - 7mm by 0.5mm | 180° arc |
| 7.5 - 15mm | 186-106 | 32 pairs: 7.5 - 15mm by 0.5mm | 180° arc |
| 15.5 - 25mm | 186-107 | 30 pairs: 15.5 - 20mm by 0.5mm, 21 - 25mm by 1mm | 180° arc |

Inch

| Range | Order No. | Composition of leaves | Remarks |
|----------------|----------------|------------------------------------|----------|
| 1/32" - 17/64" | 186-103 | 16 leaves: 1/32" - 17/64" by 64ths | 90° arc |
| 1/32" - 1/4" | 186-101 | 15 pairs: 1/32" - 1/4" by 64ths | 180° arc |
| 17/64" - 1/2" | 186-102 | 16 pairs: 17/64" - 1/2" by 64ths | 180° arc |
| 9/32" - 33/64" | 186-104 | 16 leaves: 9/32" - 33/64" by 64ths | 90° arc |

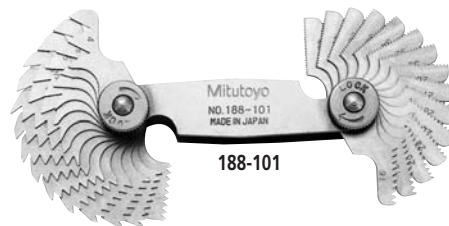


Pitch Gages

SERIES 188, 950

FEATURES

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



SPECIFICATIONS

Metric Screw Pitch Gages (60°)

| Range | Order No. | Composition of leaves |
|--------------|----------------|--|
| 0.25 - 2.5mm | 188-153 | 28 leaves: 0.25, 0.30, 0.35, 0.40, 0.45, 0.50, 0.55, 0.60, 0.65, 0.70, 0.75, 0.80, 0.85, 0.90, 1.00, 1.10, 1.20, 1.25, 1.30, 1.40, 1.50, 1.60, 1.70, 1.75, 1.80, 1.90, 2.00, 2.50 mm |
| 0.35 - 6mm | 188-130 | 22 leaves: 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 | 188-122 | 21 leaves: 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 | 188-121 | 18 leaves: 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 (60°)

| Range | Order No. | Composition of leaves |
|------------|----------------|--|
| 4 - 42 TPI | 188-111 | 30 leaves: 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 - 84 TPI | 950-253 | 51 leaves: 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, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84 TPI |

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

Metric and Unified Screw Pitch Gage Set (60°)

| Range | Order No. | Composition of leaves |
|------------------------|----------------|---|
| 0.4 - 7mm / 4 - 42 TPI | 188-151 | 51 leaves: Set of 188-122 and 188-111 |
| 0.5 - 6mm / 4 - 56 TPI | 188-152 | 28 leaves: 4, 6, 8, 10, 11, 11-1/2, 12, 13, 16, 20, 28, 32, 40, 56 TPI 0.50, 0.75, 1.00, 1.23, 1.50, 1.75, 2.00, 2.50, 3.00, 3.50, 4.00, 4.50, 5.00, 6.00 mm |

Whitworth Screw Pitch Gages (55°)

| Range | Order No. | Composition of leaves |
|------------|----------------|--|
| 4 - 42 TPI | 188-101 | 30 leaves: 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 | 188-102 | 28 leaves: 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 |

Radius Gages-Sets

SERIES 186

FEATURES

Decimal Radius Gages to 1" Fractional Radius Gages to 1"

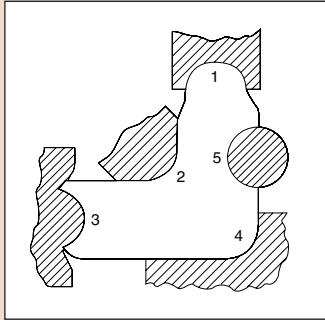
MITUTOYO Radius Gages are recommended for checking or laying out concave or convex radii. An individual gage for each dimension makes it possible to verify radius or fillet dimensions easier, faster and more accurately in machining, layout, inspection and pattern-making work. The measuring surfaces are precisely finished with smooth, accurate edges. The Radius Gages are available separately or in six handy sets. Each Radius Gage has five measuring locations, and it is identified with its particular radius dimensions. The gages have a satin or dull-chrome finish.

The Holding Cases, provided to protect the sets of Radius Gages, have indexed pockets to facilitate the selection of the proper size gage. A 4" long holder is furnished with Set No. 186-901 to make it possible to check radii in confined or hard-to-reach locations.



186-901

Accuracy: $\pm 0.0016'' / 0.04\text{mm}$



5 concave and convex radii per each leaf.

SPECIFICATIONS

| Order No. | No. of Leaves | Sizes | Remarks |
|-----------|---------------|--|---------|
| 186-901 | 25 | 1/64"–17/64" by 64ths and 9/32"–1/2" by 32nds | Holder |
| 186-903 | 17 | 1/64"–17/64" by 64ths | |
| 186-904 | 8 | 9/32"–1/2" by 32nds | |
| 186-905 | 8 | 9/16"–1" by 16ths | Holder |
| 186-906 | 26 | .010–.030" by .005" .040–.100" by .010" .120–.300" by .020" .350–.500" by .050" | Holder |
| 186-907 | 10 | .550–1" by .050" | |

Decimal

| Radius | Part No. | Radius | Part No. |
|--------|----------|--------|----------|
| .010" | 211798 | .240" | 211816 |
| .015" | 211799 | .260" | 211817 |
| .020" | 211800 | .280" | 211818 |
| .025" | 211801 | .300" | 211819 |
| .030" | 211802 | .350" | 211820 |
| .040" | 211803 | .400" | 211821 |
| .050" | 211804 | .450" | 211822 |
| .060" | 211805 | .500" | 211823 |
| .070" | 211806 | .550" | 211824 |
| .080" | 211807 | .600" | 211825 |
| .090" | 211808 | .650" | 211826 |
| .100" | 211809 | .700" | 211827 |
| .120" | 211810 | .750" | 211828 |
| .140" | 211811 | .800" | 211829 |
| .160" | 211812 | .850" | 211830 |
| .180" | 211813 | .900" | 211831 |
| .200" | 211814 | .950" | 211832 |
| .220" | 211815 | 1.000" | 211833 |

Fraction

| Radius | Part No. | Radius | Part No. |
|--------|----------|--------|----------|
| 1/64" | 201441 | 5/16" | 201459 |
| 1/32" | 201442 | 11/32" | 201460 |
| 3/64" | 201443 | 3/8" | 201461 |
| 1/16" | 201444 | 13/32" | 201462 |
| 5/64" | 201445 | 7/16" | 201463 |
| 3/32" | 201446 | 15/32" | 201464 |
| 7/64" | 201447 | 1/2" | 201465 |
| 1/8" | 201448 | 9/16" | 211790 |
| 9/64" | 201449 | 5/8" | 211791 |
| 5/32" | 201450 | 11/16" | 211792 |
| 11/64" | 201451 | 3/4" | 211793 |
| 3/16" | 201452 | 13/16" | 211794 |
| 13/64" | 201453 | 7/8" | 211795 |
| 7/32" | 201454 | 15/16" | 211796 |
| 15/64" | 201455 | 1" | 211797 |
| 1/4" | 201456 | | |
| 17/64" | 201457 | | |
| 9/32" | 201458 | | |

Standard Gages

SERIES 950

FEATURES

- Made of high quality steel.
- Satin chrome finish.

SPECIFICATIONS

| Inch | | |
|-----------|-----------------------------|-----------------|
| Order No. | Type | Size |
| 950-202 | American Standard Wire Gage | Gage Range 0-36 |
| 950-203 | U.S. Standard Wire Gage | Gage Range 0-36 |



950-202



950-203

Tap and Drill Gage

SERIES 950

FEATURES

- Each drill gage is marked with drill size in fractions and decimals.
- Satin chrome finish.
- Tap and drill gage shows the correct tap drill for National Fine or National Coarse thread series.
- Approximate plate size is 6-3/8" x 2-1/2" x 5/64".

SPECIFICATIONS

| Inch/Metric | | |
|-------------|--------------------------------|---------------------------------|
| Order No. | Type | Size |
| 950-200 | Twist Drill and Drill Rod Gage | 61-80 Twist Drill and Drill Rod |
| 950-204 | Drill Gage / Mach. Screw Gage | Tap Size 2-56 to 1/4-28 |
| 950-206 | Fractional Drill Gage | Drill Size 1/16" to 1/2" |
| 950-207 | Metric Drill Gage | 1.5 to 12.5mm 30 holes |
| 950-208 | Metric Drill Gage | 1.0 to 5.9mm 57 holes |
| 950-209 | A to Z Alphabet Drill Gage | Drill size A to Z |
| 950-276 | Twist Drill and Drill Rod Gage | 1-60 Twist Drill and Drill Rod |



950-209



950-204

Drill Point Gage

SERIES 950

FEATURES

- For measuring properly grounded 59° drill tips.
- Rule and slide made of steel.
- Satin chrome finish.
- Slide graduated in 32nds.
- End clip is adjustable and removable.
- Versatile - Can be used as Rule, Hook Rule, Try Square, Depth Gage or Caliper, and for Layout

SPECIFICATIONS

| Order No. | Size | Rule Graduation |
|-----------|------|-----------------------|
| 950-275 | 6" | 1/8, 1/16, 1/32, 1/64 |



950-275

Thread Gage

SERIES 950

FEATURES

Used for grinding and setting tools when cutting acme threads whose side have an inclination of 14-1/2° (29° included angle)

SPECIFICATIONS

| Order No. | Description |
|-----------|----------------------------|
| 950-257 | 29° Acme screw thread gage |



950-257

Center Gage

SERIES 950

FEATURES

- Hardened with lapped edges and notches.
- Meets requirements of the American

National and US 60° Standards.

- Scales with 14ths and 20ths graduations provided on one side, 24ths and 32nds on reverse side.

SPECIFICATIONS

| Inch | |
|-----------|-------------|
| Order No. | Type |
| 950-201 | Center Gage |

950-201

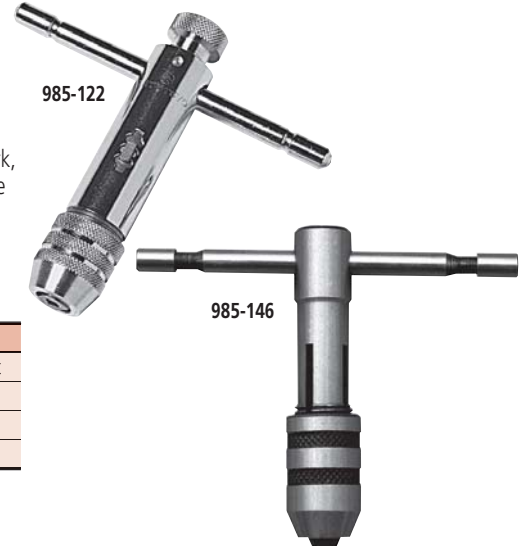


Tap Wrench

SERIES 985

T-Handle

MITUTOYO Tap Wrenches, for small, finishing work, have ratchet action to left or right and may also be locked. Chuck is hardened for resistance to abuse and for long-lasting service.



985-122

985-146

SPECIFICATIONS

| Order No. | Clamping Capacity | Remarks |
|-----------|-------------------|--------------|
| 985-122 | .315" - .551" | with Ratchet |
| 985-145 | 1/16" - 5/32" | — |
| 985-146 | 5/32" - 1/4" | — |
| 985-147 | 1/4" - 1/2" | — |

Parallel Clamps

SERIES 985

FEATURES

- Material: hardened steel.
- Black-oxide finish.

SPECIFICATIONS

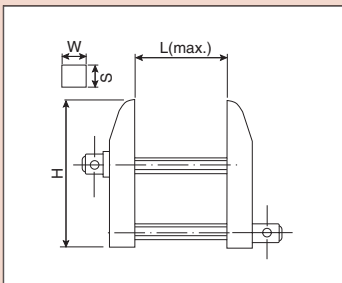
| Order No. | Dimensions | | | |
|-----------|------------|---------|------|------|
| | H | L (Max) | W | S |
| 985-126 | 1.96" | 1.18" | .39" | .39" |
| 985-127 | 2.95" | 2.36" | .47" | .47" |
| 985-128 | 3.93" | 2.75" | .55" | .55" |
| 985-129 | 4.92" | 3.15" | .63" | .63" |



985-128

985-127

DIMENSIONS



985-140

985-141

Fine-Adjust Compasses

SERIES 985

FEATURES

- Solid brass legs with durable satin chrome finish.
- Legs are jointed for increased range.

- Supplied in custom fitted case, complete with spare lead.

SPECIFICATIONS

| Order No. | Diameter | Description |
|-----------|--------------|--|
| 985-140 | 1/16" - 1/2" | Compass with pen adapter |
| 985-141 | 1/16" - 24" | Compass with pen adapter & lengthening arm |

Scribers

SERIES 985

MITUTOYO provides a full line of scribers to accommodate every shop need. All the scribers, with the exception of the **985-105**, have tungsten-carbide tips. The **985-105** has a diamond tip.

SPECIFICATIONS

| Order No. | Length | Replacement Point |
|-----------|--------|-------------------|
| 985-101 | 6.75" | No. 050561 |
| 985-102 | 6.12" | — |
| 985-103 | 8.87" | — |
| 985-104* | 5.75" | No. 050562 |
| 985-105* | 5.12" | No. 050563 |

* Retractable



Center Punches

SERIES 985

SPECIFICATIONS

| Order No. | Length | Replacement Point | Remarks |
|-----------|------------------------------|-------------------|---|
| 985-112 | 5.25" | No. 050565 | .68" (DIA), Plastic housing |
| 985-113 | 6.0" | No. 050566 | 1.0" (DIA), Plastic housing |
| 985-114 | 3.0" | — | .31" (DIA) |
| 985-115 | 4.0" | — | .39" (DIA) |
| 985-116 | 4.3" | — | .59" (DIA) |
| 985-117 | 5.0" | — | .67" (DIA) |
| 885-138 | 4.0", 1/16" dia. punch is 3" | — | 5 pcs set 1/16", 5/64", 3/32", 9/64", 5/32" |

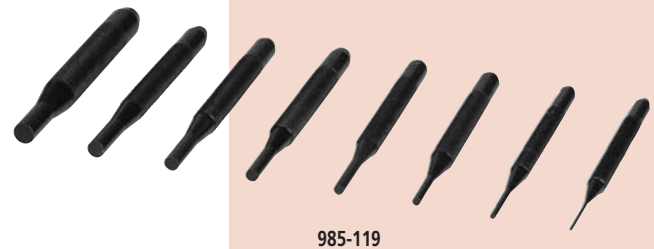


Drive Pin Punches

SERIES 985

SPECIFICATIONS

| Order No. | Length | Remarks |
|-----------|--------|---|
| 985-118 | 8" | 5pcs. Extra long Drive Pin Punch Set 1/8, 3/16, 1/4, 5/16, 3/8" |
| 985-119 | 4" | 8pcs. Drive Pin Punch Set 1/16, 3/32, 1/8, 5/32, 3/16, 7/32, 1/4, 5/16" |
| 985-120 | 4" | 8pcs. Brass Drive Pin Punch Set 1/16, 3/32, 1/8, 5/32, 3/16, 7/32, 1/4, 5/16" |



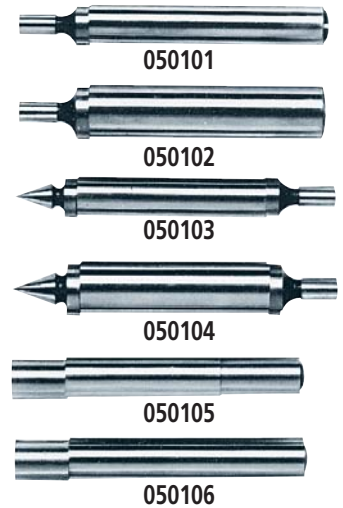
Edge & Center Finders

FEATURES

The Edge and Center Finders are hardened and ground on all surfaces.

SPECIFICATIONS

| Order No. | Shank (DIA) | Tip (DIA) | Remarks |
|-----------|--------------|------------|--------------------|
| 050101 | 3/8" (.375") | .20" | Edge Type |
| 050102 | 1/2" (.50") | .20" | Edge Type |
| 050103 | 3/8" (.375") | .20" | Center Type |
| 050104 | 1/2" (.50") | .20" | Center Type |
| 050105 | .375"/10mm | 10mm | Edge Type |
| 050106 | 10mm | 10mm | Edge Type |
| 050109 | 1/2" (.50") | .50" | Edge Type |
| 050110 | 1/2" (.50") | .20", .50" | Double Edge Finder |



Surface Gage

SERIES 156

FEATURES

This Surface Gage has a coarse-adjusting clamp for upright post, fine-adjusting knob and baked-enamel-finished, hardened-steel base. The two gage pins provided are held tightly against the base.

The rocker runs the entire length of the base and pivots against a heavy spring, allowing a wide range of fine adjustment, yet holding the tip of the scriber firmly.

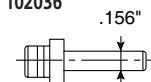
Use of a test indicator along with this Surface Gage is recommended.

In addition to the above stems for test indicators, the **156-502** Surface Gage accepts $\varnothing 3/8"$, $5/32"$ (9.5mm, 4mm) stems.

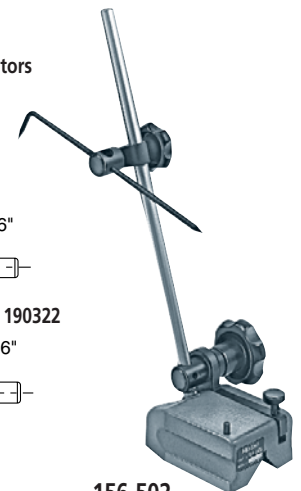
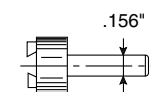
- Bottom surface, Vee and parallel side edges are ground.
- A pair of gage pins for linear work.
- Fine adjusting knob.
- Suitable as a small transfer stand with MITUTOYO test indicator.

Stems for test indicators (optional)

Stem 102036



Stem 190318 and Nut 190322



156-502

SPECIFICATIONS

| Order No. | Dimension of Scriber | Remarks |
|-----------|----------------------|---|
| 156-502 | Length: 6.9" | Base Dimension: 3.4"(W) x 2.4"(D) x 1.3"(H) |
| | (DIA): .157" (4mm) | Post Dimension: Length: 10.2", .44" (DIA) |

Center Finder

SERIES 985

FEATURES

- Accurately and quickly locates center on round workpieces.
- Satin chrome finish
- Place tool in drill chuck or collet and line up pointer with line scribed on shaft.

SPECIFICATIONS

| Order No. | Remarks |
|-----------|---------------|
| 985-144 | Center finder |



985-144

Pin Vises

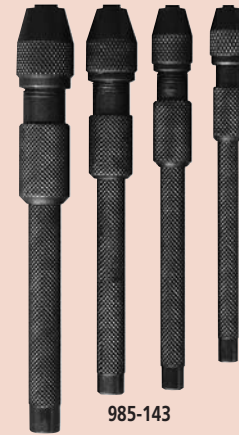
SERIES 985

FEATURES

- Made of alloy steel, black oxide finish
- Collets grip firmly when chuck is tightened
- Knurled finger grip
- Range of Set 0 - .188"
- Supplied in plastic punch
- Ideal for holding small tools, rods, wires, taps, etc.

SPECIFICATIONS

| Order No. | Remarks |
|-----------|---------------------|
| 985-143 | 4 pcs. pin vise set |



985-143

Wiggler

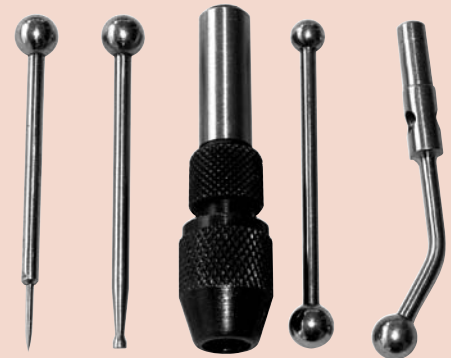
SERIES 985

FEATURES

- Made from precision ground tool steel
- Includes offset indicator holder and improved chuck design for holding attachments
- Attachments readily interchangeable
- Tool adapts to countless applications
- Attachments snap into chuck and clamp to ball swivel joint which permits adjustments to angular positions or true concentricity

SPECIFICATIONS

| Order No. | Remarks |
|-----------|------------|
| 985-142 | 5 pcs. set |



985-142

Optical Center Punch

SERIES 985

FEATURES

- Efficient, precision punching of hole centers
- Center dot & circle for targeting the punch
- Magnifies without distortion or parallax

SPECIFICATIONS

| Order No. | Remarks |
|-----------|-----------------|
| 985-139 | 9X Acrylic Lens |



985-139

Digital Hand Tachometers

SERIES 982

FEATURES

- New Digital Hand Tachometers are compact and easy to handle.
- NIST Certification is supplied with each Digital Hand Tachometer.
- Model PH-200LC (982-552) has laser Diode Detection and a combination of Contact and Non-Contacts measurement.
- Supplied with plastic carrying case.

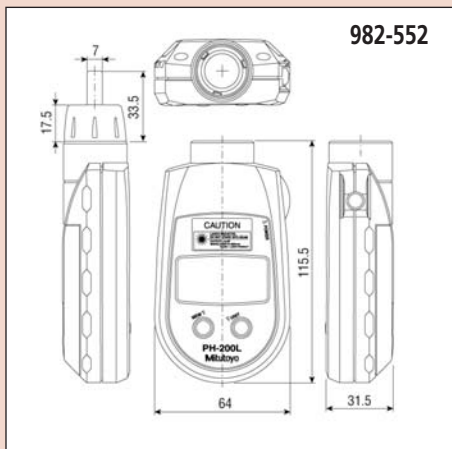
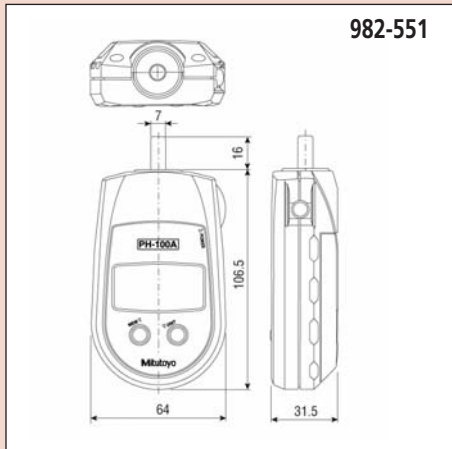


982-551



982-552

DIMENSIONS



SPECIFICATIONS

| Order No. | 982-551 | 982-552 |
|------------------------|--|---|
| Model No. | PH-100A | PH-200LC |
| Revolution per minute | 1.0 – 25,000 rpm | — |
| Rotation speed | — | Non-contact: 6.0 – 99,999 rpm; Contact: 6.0 – 25,000 rpm |
| Measuring accuracy | 1.0 – 599.9rpm: ±1rpm, 600.0 – 25,000 rpm: ±0.006% and ±0.5 digit | 6.0 – 599.9 rpm: ±1rpm, 600.0 – 99,999 rpm ±0.006% and ±0.5 digit |
| Surface, Speed, Length | ±0.4% and 1 digit | ±0.4% and ±1 digit |
| Detection | Optical coupler, 20 pulses per revolution | Laser diode |
| Outside dimensions | 4.83" L x 2.52" W x 1.24" H (122.5mm x 64mm x 31.5mm) | 4.55" L x 2.52" W x 1.24" H Overall length with contact adapter: 149mm |
| Mass | 170 g | 160 g |
| Power | Battery: AA 3 pcs. | Battery: AA 3 pcs. |

Optional Accessories For Digital Hand Tachometers

| Order No. | Description | Dimension | Drawing |
|-----------|--------------------------------------|------------------------|---------|
| 010049 | Cone Adapter, Standard | D = 1/2" | |
| 010050 | Cone Adapter, 5/8" | D = 5/8" | |
| 010051 | Cone Adapter, 3/4" | D = 3/4" | |
| 010052 | Cone Adapter, 1-1/4" | D = 1-1/4" d = 1/2" | |
| 010053 | Funnel Adapter, Standard | D = 1/2" | |
| 010054 | Funnel Adapter, 3/4" | D = 3/4" | |
| 010055 | Measuring Wheel FPM (6" cir) | D = 1.91" | |
| 010056 | Measuring Wheel FPM (12" cir) | D = 3.82" | |
| 010057 | Measuring Wheel YPM (0.1 yard cir) | D = 1.15" | |
| 010058 | Measuring Wheel MPM (0.1 meter cir) | D = 1.25" | |
| 010059 | Reflective Tabs 1/2" square (35 pcs) | | |
| 010060 | Extension Shaft (3" length) | | |

Datatorq

SERIES 983

Digital Torque Wrenches with SPC output

FEATURES

- Programmable torque tolerance (high/low limits)
- Peak Hold mode
- Track mode
- Red and Green Go/No Go lights
- Analog auto scaling bar-graph display
- Audible buzzer
- Memory for up to 4000 torque data
- Batteries:
A 9V alkaline battery
Battery life 60 hours of operation
A "Lo Bat" indication on display signals for replacement.
- All calibration data is stored in the microprocessor.



983-213

983-210

Accuracy

±1% from 20-100% of range
±1%, Plus 5 increments, from 10-20% of range

A Certificate of Accuracy, traceable to the NIST, is furnished with each Datatorq.

Optional Accessories:

50AAA620

SPC cable

SPECIFICATIONS

| Order No. | Range | Increments | Drive | Length | Mass |
|-----------|------------------|-------------|-------|--------|----------|
| 983-210 | 5-50 in.lb | .01 in. lb. | 1/4" | 13.5" | 1.5 lb |
| | 5.6-56 dNm | .01 dNm | | | |
| | 5.7-57 cmkg | .01cmkg | | | |
| | 80-800 in.oz. | .1 in. oz. | | | |
| 983-211 | 25-250 in. lb | .1 in. lb. | 3/8" | 14.9" | 2.0 lb. |
| | 28-282 dNm | .1 dNm | | | |
| | 29-288 cmkg | .1 cmkg | | | |
| 983-212 | 5-50 ft. lb. | .01 ft. lb. | 3/8" | 14.9" | 2.0 lb. |
| | 68-677 dNm | .1 dNm | | | |
| | 69-691 cmkg | .1 cmkg | | | |
| | 60-600 in. lb. | .1 in. lb. | | | |
| 983-213 | 25-250 ft. lb. | .1 ft. lb. | 1/2" | 21.5" | 3.2 lb. |
| | 34-338 Nm | .1 Nm | | | |
| | 3.4-34 mkg | .01 mkg | | | |
| 983-214 | 60-600 ft. lb. | .1ft. lb. | 3/4" | 46.5" | 9.5 lb. |
| | 81-813 Nm | .1 Nm | | | |
| | 8.3-83 mkg | .01 mkg | | | |
| 983-215 | 100-1000 ft. lb. | 1 ft. lb. | 1" | 74.0" | 19.0 lb. |
| | 135-1355 Nm | 1 Nm | | | |
| | 14-138 mkg | 1 mkg | | | |

Bench Comparator

SERIES 162

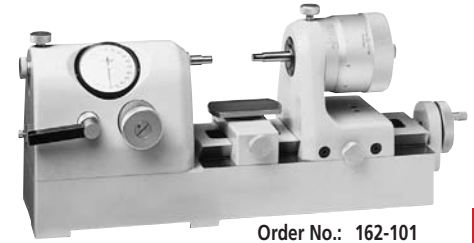
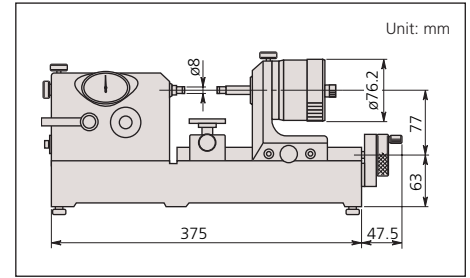
Technical Data

| | |
|---------------------------|-------------------|
| Micrometer head stroke: | 25mm or 1" |
| Graduation: | 0.001mm or .0001" |
| Dial indicator range: | ±0.1mm or ±.005" |
| Maximum workpiece length: | 100mm or 4" |
| Mass: | 15kg |

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



Order No.: 162-101

SPECIFICATIONS

| Order No. | Overall Range | Micrometer Head Range | Micrometer Head Grad. | Dial Indicator Grad. | Accuracy | | Variable Pressure | Attachment Diameter |
|-----------|---------------|-----------------------|-----------------------|----------------------|------------|------------------------|----------------------------|---------------------|
| | | | | | Micro-Head | Indicator | | |
| 162-101 | 0-100mm | 0-25mm | 0.001mm | 0.001mm (0-50-0) | ±2µm | within 1/3 graduations | 200, 400, 1000 gf | ø8mm |
| 162-102 | 0-4" | 0-1" | .0001" | .0001" (0-5-0) | ±.0001" | | 0.5, 1, 1.5, 2, 2.5, 3lbs. | ø3/8" |

Bench Center

SERIES 967

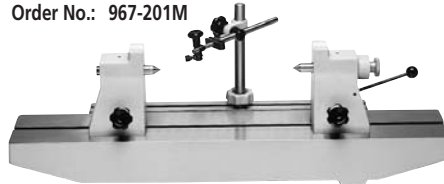
Technical Data

| | |
|---------------------------|-------|
| Maximum workpiece dia.: | 300mm |
| Maximum workpiece height: | 150mm |
| Mass: | 13kg |

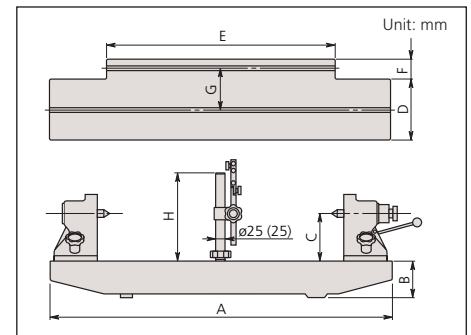
FEATURES

- 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: 9.53mm / .375")

Order No.: 967-201M



DIMENSIONS



| Order No. | A | B | C | D | E | F | G | H |
|-----------|-----|-----|-----|-----|-----|----|-----|-------|
| 967-203M | 310 | 40 | 50 | 70 | 178 | 41 | 60 | 134.5 |
| 967-201M | 500 | 45 | 75 | 80 | 370 | 36 | 60 | 194.5 |
| 967-204M | 700 | 80 | 100 | 140 | 500 | 65 | 110 | 194.5 |
| 967-202M | 900 | 100 | 125 | 160 | 600 | 50 | 104 | 230 |

SPECIFICATIONS

| Order No. | Center-to-Center | Workpiece Capacity Diameter | Max. Weight Hold | Parallelism of Centers | Flatness of Surface | Attachment Diameter | Mass (kg) |
|-----------|------------------|-----------------------------|------------------|------------------------|---------------------|---------------------|-----------|
| 967-203M | 5.9" / 150mm | 3.8" | 17.5 lbs. (8kg) | .0002" | .0004" | ø3/8" | 7 |
| 967-201M | 11.8" / 300mm | 5.8" | 35 lbs. (16kg) | .0002" | .0006" | ø3/8" | 13 |
| 967-204M | 17.7" / 450mm | 7.8" | 44 lbs. (20kg) | .0002" | .0007" | ø3/8" | 60 |
| 967-202M | 23.6" / 600mm | 9.8" | 66 lbs. (30kg) | .00024" | .0008" | ø3/8" | 70 |

Digital Protractor

SERIES 950

FEATURES

These Digital Protractors present inclination values on an easy-to-read liquid crystal display. The measurements are generated by an electronic gravity sensor and processed by the latest low-power electronic circuit technology.

- Full 360° range (90° x 4).
- Machined aluminum frame.
- Alternate reference (zero).
- Reading hold.
- Simple calibration requiring no special fixtures.
- Display remains upright to view at all angles. (950-315, Pro 360 Model).
- RS232C output. (950-316 Pro 3600 Model).
- Supplied in fitted carrying case.



Front View



950-315 Back View



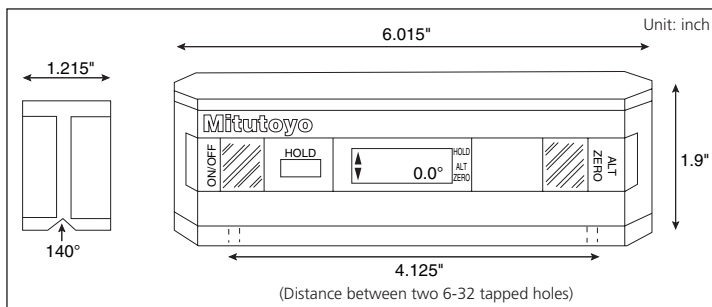
950-316 Back View

SPECIFICATIONS

| Order No. | 950-315 | 950-316 |
|-----------------------|--|--|
| Model | Pro 360 | Pro 3600 |
| Range | 360° (90°x4) | 360° (90°x4) |
| Resolution | 0.1° | 0.01° (0° to 9.99°) 0.1° (10° to 90°) |
| Accuracy | ±0.1° Level ±10°, Plumb ±10° ±0.2° Maximum error | ±0.05° (0° to 10°) ±0.1° (80° to 90°) ±0.2° (10° to 80°) |
| Repeatability | ±0.1° | ±0.05° |
| Cross Axis Error | Minimal | Minimal |
| Battery Life | 500 Hrs. Standard 9-Volt Battery | 500 Hrs. Standard 9-Volt Battery |
| Temperature Operation | -5°C to 50°C (23° to 122°F) -20°C to 65°C (-4°F to 149°F) | -5°C to 50°C (23° to 122°F) -20°C to 65°C (-4°F to 149°F) |
| Storage | | |
| Weight | 289g (10.2oz.) | 295g (10.4oz.) |
| Output | N/A | RS-232C Compatible |
| Standard Accessories | Plastic Case | Plastic Case |

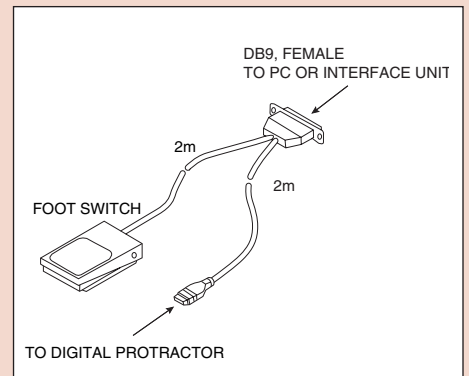
±Represents clockwise or counter-clockwise slope.

DIMENSIONS



Optional Accessories

- 64PPP794 Magnetic base
- 50AAA983A RS-232C Output cable w/foot switch

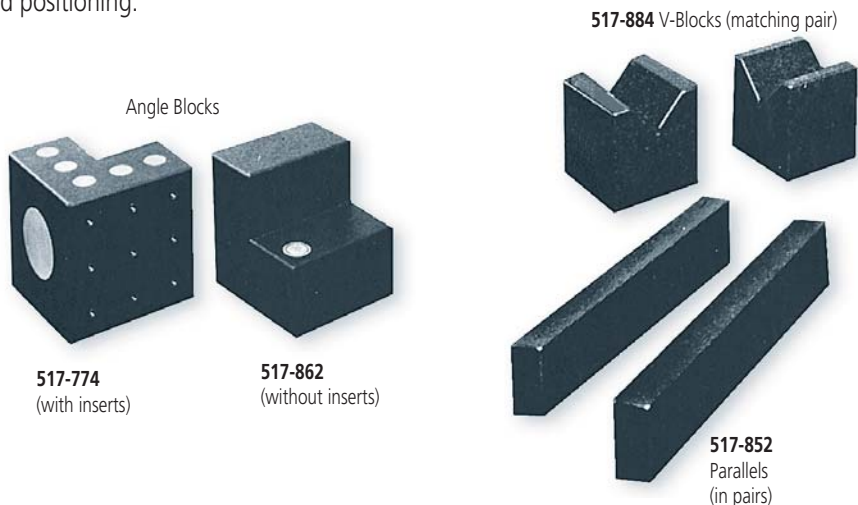


50AAA983A RS-232C Output cable w/foot switch 10P-25P

Granite Surface Plate Accessories

SERIES 517

These accessories made from the same high quality black granite as Mitutoyo surface plates, allow extra flexibility in work holding and positioning.



SPECIFICATIONS

Angle Blocks with or without inserts

| Grade | Laboratory* | | | Master** | | | Case |
|------------|-------------|------------|------------|----------|------------|------------|--------|
| | 2 Face | 4 Face | | 2 Face | 4 Face | | |
| | | no inserts | w/ inserts | | no inserts | w/ inserts | |
| 4 x 4 x 4" | 517-767 | 517-761 | 517-773 | 517-867 | 517-861 | 517-873 | 050021 |
| 6 x 6 x 6" | 517-768 | 517-762 | 517-774 | 517-868 | 517-862 | 517-874 | 050022 |

*Laboratory overall accuracy: .000025" per 6".

**Master overall accuracy: .000050" per 6".

Parallels Pair

| Grade | Accuracy | Laboratory | | Master | | Case | |
|----------------|----------|------------|---------|---------|---------|---------|--------|
| | | 2 Face | 4 Face | 2 Face | 4 Face | | |
| .75 x 1 x 6" | .00003" | 517-755 | 517-750 | .00006" | 517-855 | 517-850 | 050027 |
| .75 x 1.5 x 9" | .00004" | 517-756 | 517-751 | .00008" | 517-856 | 517-851 | 050028 |
| 1 x 2 x 12" | .00006" | 517-757 | 517-752 | .0001" | 517-857 | 517-852 | 050029 |

V-Blocks Matching Pair

V-1 type have matching accuracy on "V" from the bottom face only.

V-5 type have four face matching accuracy plus "V".

| Grade | Laboratory* | | Master** | | Case |
|--------------|-------------|---------|----------|---------|----------|
| | V-1 | V-5 | V-1 | V-5 | |
| 2 x 2 x 2.5" | 517-787 | 517-783 | 517-887 | 517-883 | 050039 |
| 3 x 3 x 3" | 517-788 | 517-784 | 517-888 | 517-884 | 050040 |
| 6 x 6 x 6" | 517-789 | 517-785 | 517-889 | 517-885 | 050022X2 |

*Laboratory overall accuracy: .00005" per 6".

**Master overall accuracy: .0001" per 6".

Black Granite Surface Plate

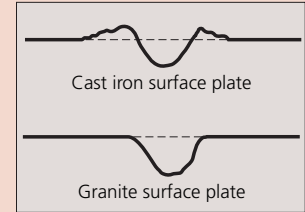
SERIES 517

FEATURES

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

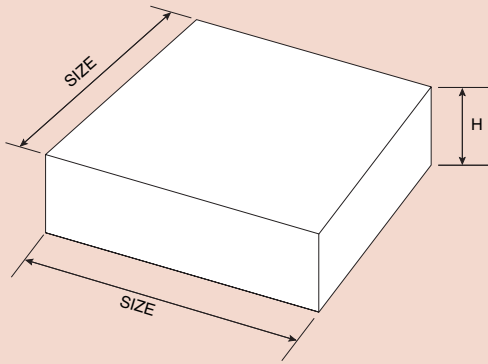
- All plates from 48"x108" and larger are Machine Base Gray Granite. Smaller plates are Black Granite.
- Surface Plates, to size of specifications other than standard, available on special order.
- Surface Plates, with the bolt screws, available on special order.
- All MITUTOYO Surface Plates shipped F.O.B. Escondido, California.



SPECIFICATIONS

Inch 100 lbs.-Load / sq. ft. no ledge

| Size | AA Laboratory Grade | | | | A Inspection Grade | | | | B Shop Grade | | | |
|-----------|---------------------|------|-----------|-------|--------------------|------|-----------|-------|--------------|------|-----------|-------|
| | H | Acc. | Order No. | Wt. | H | Acc. | Order No. | Wt. | H | Acc. | Order No. | Wt. |
| 8 x 12" | 3" | 50 | 517-700 | 30 | 2" | 100 | 517-800 | 25 | 2" | 200 | 517-900 | 25 |
| 9 x 12" | 3" | 50 | 517-701 | 40 | 3" | 100 | 517-801 | 40 | 2" | 200 | 517-901 | 30 |
| 12 x 12" | 3" | 50 | 517-702 | 50 | 3" | 100 | 517-802 | 50 | 3" | 200 | 517-902 | 50 |
| 12 x 18" | 4" | 50 | 517-703 | 100 | 4" | 100 | 517-803 | 100 | 4" | 200 | 517-903 | 100 |
| 18 x 18" | 4" | 50 | 517-704 | 150 | 4" | 100 | 517-804 | 150 | 3" | 200 | 517-904 | 100 |
| 18 x 24" | 4" | 65 | 517-705 | 200 | 4" | 130 | 517-805 | 200 | 4" | 260 | 517-905 | 200 |
| 24 x 24" | 5" | 70 | 517-706 | 310 | 4" | 140 | 517-806 | 259 | 3" | 280 | 517-906 | 200 |
| 24 x 30" | 5" | 75 | 517-707 | 400 | 5" | 150 | 517-807 | 400 | 4" | 300 | 517-907 | 300 |
| 24 x 36" | 6" | 85 | 517-708 | 600 | 5" | 170 | 517-808 | 500 | 4" | 340 | 517-908 | 400 |
| 24 x 48" | 8" | 150 | 517-709 | 1000 | 6" | 300 | 517-809 | 800 | 5" | 600 | 517-909 | 650 |
| 30 x 36" | 6" | 100 | 517-710 | 800 | 5" | 200 | 517-810 | 600 | 5" | 400 | 517-910 | 600 |
| 30 x 48" | 8" | 150 | 517-711 | 1300 | 6" | 300 | 517-811 | 1000 | 6" | 600 | 517-911 | 1000 |
| 30 x 60" | 12" | 200 | 517-712 | 1900 | 10" | 500 | 517-812 | 1535 | 8" | 1000 | 517-912 | 1150 |
| 36 x 36" | 6" | 100 | 517-713 | 900 | 5" | 200 | 517-813 | 780 | 5" | 400 | 517-913 | 700 |
| 36 x 48" | 8" | 150 | 517-714 | 1500 | 6" | 300 | 517-814 | 1200 | 6" | 600 | 517-914 | 1200 |
| 36 x 60" | 12" | 200 | 517-715 | 2850 | 10" | 400 | 517-815 | 2350 | 8" | 800 | 517-915 | 1900 |
| 36 x 72" | 12" | 250 | 517-716 | 3400 | 10" | 500 | 517-816 | 2850 | 8" | 1000 | 517-916 | 2300 |
| 48 x 48" | 8" | 200 | 517-717 | 2025 | 6" | 400 | 517-817 | 1525 | 6" | 800 | 517-917 | 1500 |
| 48 x 60" | 12" | 250 | 517-718 | 3800 | 10" | 500 | 517-818 | 3150 | 8" | 1000 | 517-918 | 2525 |
| 48 x 72" | 12" | 300 | 517-719 | 4500 | 10" | 600 | 517-819 | 3800 | 8" | 1200 | 517-919 | 3050 |
| 48 x 84" | 14" | 350 | 517-720 | 6150 | 12" | 700 | 517-820 | 5325 | 10" | 1400 | 517-920 | 4450 |
| 48 x 96" | 14" | 400 | 517-721 | 7000 | 12" | 800 | 517-821 | 6050 | 10" | 1600 | 517-921 | 5150 |
| 48 x 108" | 14" | 500 | 517-722 | 7900 | 12" | 1000 | 517-822 | 6830 | 10" | 2000 | 517-922 | 5700 |
| 48 x 120" | 18" | 700 | 517-723 | 11300 | 16" | 1400 | 517-823 | 10160 | 14" | 2800 | 517-923 | 8800 |
| 48 x 144" | 18" | 800 | 517-724 | 13500 | 16" | 1600 | 517-824 | 12200 | 14" | 3200 | 517-924 | 10500 |
| 60 x 60" | 14" | 250 | 517-725 | 5500 | 12" | 500 | 517-825 | 4800 | 10" | 1000 | 517-925 | 4000 |
| 60 x 72" | 14" | 350 | 517-726 | 6600 | 12" | 700 | 517-826 | 5750 | 10" | 1400 | 517-926 | 4900 |
| 60 x 96" | 14" | 500 | 517-727 | 8800 | 12" | 1000 | 517-827 | 7600 | 10" | 2000 | 517-927 | 6500 |
| 60 x 120" | 16" | 700 | 517-728 | 11050 | 14" | 1400 | 517-828 | 11100 | 12" | 2800 | 517-928 | 9800 |
| 60 x 144" | 18" | 900 | 517-729 | 16950 | 16" | 1800 | 517-829 | 15100 | 14" | 3600 | 517-929 | 14200 |
| 72 x 72" | 14" | 400 | 517-730 | 8000 | 12" | 800 | 517-830 | 7000 | 10" | 1600 | 517-930 | 5700 |
| 72 x 96" | 16" | 500 | 517-731 | 12025 | 14" | 1000 | 517-831 | 10800 | 12" | 2000 | 517-931 | 9200 |
| 72 x 120" | 16" | 700 | 517-732 | 15070 | 14" | 1400 | 517-832 | 13400 | 12" | 2800 | 517-932 | 11400 |
| 72 x 144" | 18" | 1000 | 517-733 | 20300 | 16" | 2000 | 517-833 | 18100 | 14" | 4000 | 517-933 | 15900 |



Inch 50 lbs.-Load / sq. ft. no ledge

| Size | AA Laboratory Grade | | | | A Inspection Grade | | | | B Shop Grade | | | |
|----------|---------------------|------|----------------|------|--------------------|------|----------------|------|--------------|------|----------------|-----|
| | H | Acc. | Order No. | Wt. | H | Acc. | Order No. | Wt. | H | Acc. | Order No. | Wt. |
| 8 x 12" | 2" | 50 | 517-740 | 25 | 2" | 100 | 517-840 | 25 | 2" | 200 | 517-940 | 25 |
| 12 x 18" | 3" | 50 | 517-741 | 80 | 3" | 100 | 517-841 | 80 | 2" | 200 | 517-941 | 60 |
| 18 x 24" | 4" | 65 | 517-742 | 200 | 3" | 130 | 517-842 | 165 | 2" | 260 | 517-942 | 100 |
| 24 x 36" | 5" | 85 | 517-743 | 500 | 4" | 170 | 517-843 | 400 | 3" | 340 | 517-943 | 300 |
| 36 x 48" | 6" | 150 | 517-746 | 1200 | 5" | 300 | 517-846 | 1000 | 4" | 600 | 517-946 | 800 |

Steel Stands

Steel Stands for supporting Black Granite Surface Plates, at working levels, are available either stationary or with casters. Sizes and weights are given below.



SPECIFICATIONS

| Size | Stationary | | With Casters | |
|-----------|----------------|--------|------------------|--------|
| | Order No. | Wt. | Order No. | Wt. |
| 12 x 18" | 517-950 | 42lbs | 517-950-1 | 46lbs |
| 18 x 18" | 517-951 | 46lbs | 517-951-1 | 50lbs |
| 18 x 24" | 517-952 | 50lbs | 517-952-1 | 56lbs |
| 24 x 24" | 517-954 | 65lbs | 517-954-1 | 69lbs |
| 24 x 30" | 517-955 | 70lbs | 517-955-1 | 74lbs |
| 24 x 36" | 517-956 | 73lbs | 517-956-1 | 77lbs |
| 24 x 48" | 517-957 | 90lbs | 517-957-1 | 94lbs |
| 30 x 36" | 517-960 | 85lbs | 517-960-1 | 89lbs |
| 30 x 48" | 517-961 | 95lbs | 517-961-1 | 99lbs |
| 30 x 60" | 517-962 | 105lbs | 517-962-1 | 109lbs |
| 36 x 36" | 517-963 | 95lbs | 517-963-1 | 99lbs |
| 36 x 48" | 517-964 | 105lbs | 517-964-1 | 109lbs |
| 36 x 60" | 517-965 | 160lbs | 517-965-1 | 164lbs |
| 36 x 72" | 517-966 | 180lbs | 517-966-1 | 184lbs |
| 48 x 48" | 517-967 | 190lbs | 517-967-1 | 194lbs |
| 48 x 60" | 517-968 | 200lbs | 517-968-1 | 204lbs |
| 48 x 72" | 517-969 | 205lbs | 517-969-1 | 209lbs |
| 48 x 84" | 517-970 | 320lbs | 517-970-1 | 324lbs |
| 48 x 96" | 517-971 | 335lbs | 517-971-1 | 339lbs |
| 48 x 108" | 517-972 | 350lbs | 517-972-1 | 354lbs |
| 48 x 120" | 517-973 | 365lbs | 517-973-1 | 369lbs |
| 48 x 144" | 517-974 | 430lbs | 517-974-1 | 434lbs |
| 60 x 60" | 517-975 | 245lbs | | |
| 60 x 72" | 517-976 | 340lbs | | |
| 60 x 96" | 517-977 | 375lbs | | |
| 60 x 120" | 517-978 | 455lbs | | |
| 60 x 144" | 517-979 | 480lbs | | |
| 72 x 72" | 517-980 | 380lbs | | |
| 72 x 96" | 517-981 | 465lbs | | |
| 72 x 120" | 517-982 | 510lbs | | |
| 72 x 144" | 517-983 | 530lbs | | |

Note: The total height of stand and granite plate is 36". If ordering only stand, stand height will be made according to a Grade A granite plate thickness.