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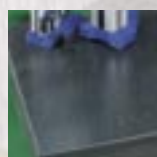
Gauge Block



Height Master

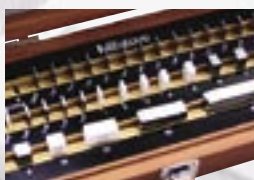


Reference Gages



**Granite Surface
Plates & Bench
Comparator**

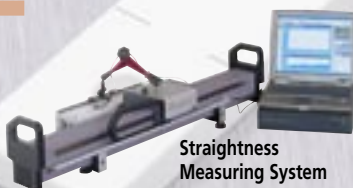
New Products



**CERA/Steel
Combination
Gauge Block Set**



Step Master



**Straightness
Measuring System**



**Ceramic
Straight Master**

Gauge Block

SERIES 516

FEATURES

Precision gauge blocks are the primary standards vital to dimensional quality control in the manufacture of parts. Mitutoyo offers a complete selection of gauge blocks

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

Accuracy

Gauge 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 gauge 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 gauge 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 gauge 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

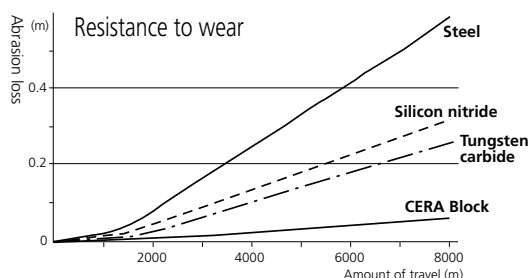
CERA Blocks have 10 times the abrasion resistance of steel gauge blocks.

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 Gauge Blocks

- Select gauge blocks in accordance with the combination range required. If a large length is required, add a long block set.
- Select gauge blocks in accordance with the minimum length step required. Add wear block sets if necessary.
- If a set containing a large number of gauge blocks is selected, the number of combination gauge 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 gauge block set for micrometer inspection and caliper inspection is available.
- If using only one length repeatedly, it is a good idea to purchase discrete gauge blocks.
- The 2mm-based gauge 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 gauge blocks.

Grade and Application

Refer to the following table to select the gauge block grade according to usage (specified by DIN861, BS4311, and JIS B 7506).

	Applications	Grade
Workshop use	• Mounting tools and cutters	2
	• Manufacturing gages • Calibrating instruments	1 or 2
Inspection use	• Inspecting mechanical parts, tools, etc.	1 or 2
	• Checking the accuracy of gages • Calibrating instruments	0 or 1
Calibration use	• Checking the accuracy of gauge blocks for workshop • Checking the accuracy of gauge blocks for inspection • Checking the accuracy of instruments	K or 0
Reference use	• Checking the accuracy of gauge blocks for calibration • For academic research	K

Grade 2:

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

Grade 1:

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 0:

These higher accuracy gauges 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 gauge blocks.

Grade K:

Gauge 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 gauge blocks which are calibrated by comparison.

Combination of a Required Length

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

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

Example combination

Required length = 45.6785mm

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

1.0005
1.008
1.17
17.5
+ 25
45.6785mm

For the 2mm-based gauge 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

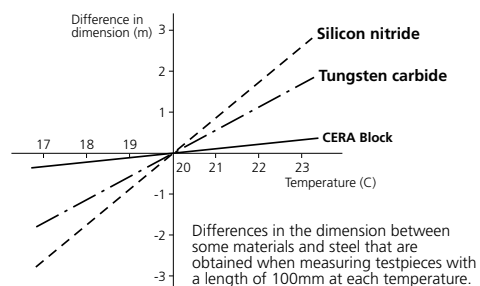
Property	Material	CERA Block (ZrO ₂)	Steel (Fe)	Carbide (WC-Co)	Silicon nitride (Si ₃ N ₄)
Hardness (HV)		1350	800	1650	1500
Coefficient of thermal expansion (10 ⁻⁶ /K)		9.3±0.5	10.8±0.5	5.5±1.0	2
Flexural strength by 3-point bending (MPa)		1270	1960	1960	580
Fracture toughness K _{1c} (MPa•m ^{1/2})		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 gauge 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 Gauge Blocks

1. Perfect wringing is possible using the center hole.

After wringing the square gauge 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] is available.

A square gauge 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 Gauge Blocks

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

Gauge Block

SERIES 516

Accuracies of Mitutoyo Gauge Blocks

All Mitutoyo gauge 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.

ACCURACY SPECIFICATIONS: JIS B 7506-2004 (JAPAN)

(at 20°C)

Nominal length (mm)		Grade K		Grade 0	
		Limit deviation of length at any point	Tolerance for the variation in length	Limit deviation of length at any point	Tolerance for the variation in length
from 0.5	up to 10	±0.20µm	0.05µm	±0.12µm	0.10µm
over 10	up to 25	±0.30µm	0.05µm	±0.14µm	0.10µm
over 25	up to 50	±0.40µm	0.06µm	±0.20µm	0.10µm
over 50	up to 75	±0.50µm	0.06µm	±0.25µm	0.12µm
over 75	up to 100	±0.60µm	0.07µm	±0.30µm	0.12µm
over 100	up to 150	±0.80µm	0.08µm	±0.40µm	0.14µm
over 150	up to 200	±1.00µm	0.09µm	±0.50µm	0.16µm
over 200	up to 250	±1.20µm	0.10µm	±0.60µm	0.16µm
over 250	up to 300	±1.40µm	0.10µm	±0.70µm	0.18µm
over 300	up to 400	±1.80µm	0.12µm	±0.90µm	0.20µm
over 400	up to 500	±2.20µm	0.14µm	±1.10µm	0.25µm
over 500	up to 600	±2.60µm	0.16µm	±1.30µm	0.25µm
over 600	up to 700	±3.00µm	0.18µm	±1.50µm	0.30µm
over 700	up to 800	±3.40µm	0.20µm	±1.70µm	0.30µm
over 800	up to 900	±3.80µm	0.20µm	±1.90µm	0.35µm
over 900	up to 1000	±4.20µm	0.25µm	±2.00µm	0.40µm

Nominal length (mm)		Grade 1		Grade 2	
		Limit deviation of length at any point	Tolerance for the variation in length	Limit deviation of length at any point	Tolerance for the variation in length
from 0.5	up to 10	±0.20µm	0.16µm	±0.45µm	0.30µm
over 10	up to 25	±0.30µm	0.16µm	±0.60µm	0.30µm
over 25	up to 50	±0.40µm	0.18µm	±0.80µm	0.30µm
over 50	up to 75	±0.50µm	0.18µm	±1.00µm	0.35µm
over 75	up to 100	±0.60µm	0.20µm	±1.20µm	0.35µm
over 100	up to 150	±0.80µm	0.20µm	±1.60µm	0.40µm
over 150	up to 200	±1.00µm	0.25µm	±2.00µm	0.40µm
over 200	up to 250	±1.20µm	0.25µm	±2.40µm	0.45µm
over 250	up to 300	±1.40µm	0.25µm	±2.80µm	0.50µm
over 300	up to 400	±1.80µm	0.30µm	±3.60µm	0.50µm
over 400	up to 500	±2.20µm	0.35µm	±4.40µm	0.60µm
over 500	up to 600	±2.60µm	0.40µm	±5.00µm	0.70µm
over 600	up to 700	±3.00µm	0.45µm	±6.00µm	0.70µm
over 700	up to 800	±3.40µm	0.50µm	±6.50µm	0.80µm
over 800	up to 900	±3.80µm	0.50µm	±7.50µm	0.90µm
over 900	up to 1000	±4.20µm	0.60µm	±8.00µm	1.00µm

ACCURACY SPECIFICATIONS: BS 4311: Part 1: 1993 (UK)

(at 20°C)

Nominal length (inch)		Grade K			Grade 0		
		Tolerance on deviation of measured central length	Parallelism	Flatness	Tolerance on deviation of measured central length	Parallelism	Flatness
over 0	up to 0.4	±5µin	2µin	2µin	±5µin	4µin	4µin
over 0.4	up to 1	±6µin	2µin	2µin	±6µin	4µin	4µin
over 1	up to 2	±8µin	3µin	2µin	±8µin	4µin	4µin
over 2	up to 3	±10µin	3µin	2µin	±10µin	5µin	4µin
over 3	up to 4	±12µin	3µin	2µin	±12µin	5µin	4µin

Nominal length (inch)		Grade 1			Grade 2		
		Tolerance on deviation of measured central length	Parallelism	Flatness	Tolerance on deviation of measured central length	Parallelism	Flatness
over 0	up to 0.4	±10µin	6µin	6µin	±20µin	12µin	10µin
over 0.4	up to 1	±12µin	6µin	6µin	±25µin	12µin	10µin
over 1	up to 2	±15µin	7µin	6µin	±30µin	12µin	10µin
over 2	up to 3	±20µin	7µin	6µin	±40µin	14µin	10µin
over 3	up to 4	±25µin	8µin	6µin	±50µin	14µin	10µin

Mitutoyo Gauge Blocks and Inspection Certificates

A Certificate of Inspection is furnished with all Mitutoyo gauge 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 gauge block is measured relative to the upper level master using a gauge block comparator. Grade K gauge blocks are manufactured by absolute measurement using an interferometer. The gauge block set and discrete gauge 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 gauge blocks.)



ISO/DIN/JIS Metric Rectangular Gauge Block Sets with RvA Certificate

ISO/DIN/JIS gauge block sets that come with an RvA Certificate in addition to a regular one are also available. The certificate would be of use for your ISO9000 registration.

- The configuration of each set is identical with that of the standard set introduced on the previous pages, having the identical 6-digit order number, regardless of the suffix.
- The charge for issue of RvA certificate is not included in the prior set price (Grade K gauge block sets).
- The charge for calibration and the charge for issue of RvA certificate are not included in the prior set price (Grade 0 and grade 1 gauge block sets).
- Grade K BS gauge block sets come with RvA Certificate as standard.



ACCURACY SPECIFICATIONS: BS 4311: Part 1: 1993 (UK)

(at 20°C)

Nominal length (mm)		Grade K			Grade 0		
		Tolerance on deviation of measured central length	Parallelism	Flatness	Tolerance on deviation of measured central length	Parallelism	Flatness
over 0	up to 10	±0.12µm	0.05µm	0.05µm	±0.12µm	0.10µm	0.10µm
over 10	up to 25	±0.15µm	0.05µm	0.05µm	±0.15µm	0.10µm	0.10µm
over 25	up to 50	±0.20µm	0.06µm	0.05µm	±0.20µm	0.10µm	0.10µm
over 50	up to 75	±0.25µm	0.06µm	0.05µm	±0.25µm	0.12µm	0.10µm
over 75	up to 100	±0.30µm	0.07µm	0.05µm	±0.30µm	0.12µm	0.10µm

Nominal length (mm)		Grade 1			Grade 2		
		Tolerance on deviation of measured central length	Parallelism	Flatness	Tolerance on deviation of measured central length	Parallelism	Flatness
over 0	up to 10	±0.25µm	0.16µm	0.15µm	±0.50µm	0.30µm	0.25µm
over 10	up to 25	±0.30µm	0.16µm	0.15µm	±0.60µm	0.30µm	0.25µm
over 25	up to 50	±0.40µm	0.18µm	0.15µm	±0.80µm	0.30µm	0.25µm
over 50	up to 75	±0.50µm	0.18µm	0.15µm	±1.00µm	0.35µm	0.25µm
over 75	up to 100	±0.60µm	0.20µm	0.15µm	±1.20µm	0.35µm	0.25µm

ACCURACY SPECIFICATIONS: ASME B89.1.9-2002 (USA)

(at 20°C)

Nominal length (inch)		Grade K		Grade 00		Grade 0		Grade 1		Grade 2	
		Limit deviations of length at any point	Tolerance for the variation in length	Limit deviations of length at any point	Tolerance for the variation in length	Limit deviations of length at any point	Tolerance for the variation in length	Limit deviations of length at any point	Tolerance for the variation in length	Limit deviations of length at any point	Tolerance for the variation in length
	up to .05	±12µin	2µin	±4µin	2µin	±6µin	4µin	±12µin	6µin	±24µin	12µin
over .05	up to .4	±10µin	2µin	±3µin	2µin	±5µin	4µin	±8µin	6µin	±18µin	12µin
over .45	up to 1	±12µin	2µin	±3µin	2µin	±6µin	4µin	±12µin	6µin	±24µin	12µin
over 1	up to 2	±16µin	2µin	±4µin	2µin	±8µin	4µin	±16µin	6µin	±32µin	12µin
over 2	up to 3	±20µin	2µin	±5µin	3µin	±10µin	4µin	±20µin	6µin	±40µin	14µin
over 3	up to 4	±24µin	3µin	±6µin	3µin	±12µin	5µin	±24µin	8µin	±48µin	14µin
over 4	up to 5	±32µin	3µin	±8µin	3µin	±16µin	5µin	±32µin	8µin	±64µin	16µin
over 5	up to 6	±32µin	3µin	±8µin	3µin	±16µin	5µin	±32µin	8µin	±64µin	16µin
over 6	up to 7	±40µin	4µin	±10µin	4µin	±20µin	6µin	±40µin	10µin	±80µin	16µin
over 7	up to 8	±40µin	4µin	±10µin	4µin	±20µin	6µin	±40µin	10µin	±80µin	16µin
over 8	up to 10	±48µin	4µin	±12µin	4µin	±24µin	6µin	±48µin	10µin	±104µin	18µin
over 10	up to 12	±56µin	4µin	±14µin	4µin	±28µin	7µin	±56µin	10µin	±112µin	20µin
over 12	up to 16	±72µin	5µin	±18µin	5µin	±36µin	8µin	±72µin	12µin	±144µin	20µin
over 16	up to 20	±88µin	6µin	±20µin	6µin	±44µin	10µin	±88µin	14µin	±176µin	24µin
over 20	up to 24	±104µin	6µin	±25µin	6µin	±52µin	10µin	±104µin	16µin	±200µin	28µin
over 24	up to 28	±120µin	7µin	±30µin	7µin	±60µin	12µin	±120µin	18µin	±240µin	28µin
over 28	up to 32	±136µin	8µin	±34µin	8µin	±68µin	12µin	±136µin	20µin	±260µin	32µin
over 32	up to 36	±152µin	8µin	±38µin	8µin	±76µin	14µin	±152µin	20µin	±300µin	36µin
over 36	up to 40	±160µin	10µin	±40µin	10µin	±80µin	16µin	±168µin	24µin	±320µin	40µin

ACCURACY SPECIFICATIONS: ASME B89.1.9-2002 (USA)

Nominal length (mm)		Grade K		Grade 00		Grade 0		Grade 1		Grade 2	
		Limit deviations of length at any point	Tolerance for the variation in length	Limit deviations of length at any point	Tolerance for the variation in length	Limit deviations of length at any point	Tolerance for the variation in length	Limit deviations of length at any point	Tolerance for the variation in length	Limit deviations of length at any point	Tolerance for the variation in length
	up to 0.5	±0.30µm	0.05µm	±0.10µm	0.05µm	±0.14µm	0.10µm	±0.30µm	0.16µm	±0.60µm	0.30µm
over 0.5	up to 10	±0.20µm	0.05µm	±0.07µm	0.05µm	±0.12µm	0.10µm	±0.20µm	0.16µm	±0.45µm	0.30µm
over 10	up to 25	±0.30µm	0.05µm	±0.07µm	0.05µm	±0.14µm	0.10µm	±0.30µm	0.16µm	±0.60µm	0.30µm
over 25	up to 50	±0.40µm	0.06µm	±0.10µm	0.06µm	±0.20µm	0.10µm	±0.40µm	0.18µm	±0.80µm	0.30µm
over 50	up to 75	±0.50µm	0.06µm	±0.12µm	0.06µm	±0.25µm	0.12µm	±0.50µm	0.18µm	±1.00µm	0.35µm
over 75	up to 100	±0.60µm	0.07µm	±0.15µm	0.07µm	±0.30µm	0.12µm	±0.60µm	0.20µm	±1.20µm	0.35µm
over 100	up to 150	±0.80µm	0.08µm	±0.20µm	0.08µm	±0.40µm	0.14µm	±0.80µm	0.20µm	±1.60µm	0.40µm
over 150	up to 200	±1.00µm	0.09µm	±0.25µm	0.09µm	±0.50µm	0.16µm	±1.00µm	0.25µm	±2.00µm	0.40µm
over 200	up to 250	±1.20µm	0.10µm	±0.30µm	0.10µm	±0.60µm	0.16µm	±1.20µm	0.25µm	±2.40µm	0.45µm
over 250	up to 300	±1.40µm	0.10µm	±0.35µm	0.10µm	±0.70µm	0.18µm	±1.40µm	0.25µm	±2.80µm	0.50µm
over 300	up to 400	±1.80µm	0.12µm	±0.45µm	0.12µm	±0.90µm	0.20µm	±1.80µm	0.30µm	±3.60µm	0.50µm
over 400	up to 500	±2.20µm	0.14µm	±0.50µm	0.14µm	±1.10µm	0.25µm	±2.20µm	0.35µm	±4.40µm	0.60µm
over 500	up to 600	±2.60µm	0.16µm	±0.65µm	0.16µm	±1.30µm	0.25µm	±2.60µm	0.40µm	±5.00µm	0.70µm
over 600	up to 700	±3.00µm	0.18µm	±0.75µm	0.18µm	±1.50µm	0.30µm	±3.00µm	0.45µm	±6.00µm	0.70µm
over 700	up to 800	±3.40µm	0.20µm	±0.85µm	0.20µm	±1.70µm	0.30µm	±3.40µm	0.50µm	±6.50µm	0.80µm
over 800	up to 900	±3.80µm	0.20µm	±0.95µm	0.20µm	±1.90µm	0.35µm	±3.80µm	0.50µm	±7.50µm	0.90µm
over 900	up to 1000	±4.20µm	0.25µm	±1.00µm	0.25µm	±2.00µm	0.40µm	±4.20µm	0.60µm	±8.00µm	1.00µm

Metric Rectangular Gauge 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 32-block set

SPECIFICATIONS

1mm Base Block Set

Blocks per set	Order No.*			Standard / grade available			Blocks included in set		
	Steel	CERA	Steel/CERA	ISO/DIN/JIS	ASME	BS	Size	Step	Qty.
122	516-596	—	—	—	—	—	1.0005	—	1
	516-597	—	—	Grade K	—	—	1.001 - 1.009	0.001	9
	516-598	—	—	Grade 0	—	—	1.01 - 1.49	0.01	49
	516-599	—	—	Grade 1	—	—	1.6 - 1.9	0.1	4
	—	—	—	Grade 2	—	—	0.5 - 24.5	0.5	49
112	516-531	516-541	—	—	Grade K	—	1.0005	—	1
	516-937	516-337	—	Grade K	Grade 00	Grade K	1.001 - 1.009	0.001	9
	516-938	516-338	—	Grade 0	Grade 0	Grade 0	1.01 - 1.49	0.01	49
	516-939	516-339	—	Grade 1	Grade 1	Grade 1	0.5 - 24.5	0.5	49
	516-940	516-340	—	Grade 2	Grade 2	Grade 2	25 - 100	25	4
103	516-533	516-542	—	—	Grade K	—	1.0005	—	1
	516-941	516-341	—	Grade K	Grade 00	Grade K	1.01 - 1.49	0.01	49
	516-942	516-342	—	Grade 0	Grade 0	Grade 0	0.5 - 24.5	0.5	49
	516-943	516-343	—	Grade 1	Grade 1	Grade 1	25 - 100	25	4
	516-944	516-344	—	Grade 2	Grade 2	Grade 2	—	—	—
88	516-969	516-369	—	—	—	—	1.0005	—	1
	516-970	516-370	—	Grade 0	—	Grade K	1.001 - 1.009	0.001	9
	516-971	516-371	—	Grade 1	—	Grade 0	1.01 - 1.49	0.01	49
	516-972	516-372	—	Grade 2	—	Grade 1	0.5 - 9.5	0.5	19
	—	—	—	—	—	Grade 2	20 - 100	10	9
87	516-535	515-543	—	—	Grade K	—	1.001 - 1.009	0.001	9
	516-945	516-345	—	Grade K	Grade 00	Grade K	1.01 - 1.49	0.01	49
	516-946	516-346	—	Grade 0	Grade 0	Grade 0	0.5 - 9.5	0.5	19
	516-947	516-347	—	Grade 1	Grade 1	Grade 1	10 - 100	10	10
	516-948	516-348	—	Grade 2	Grade 2	Grade 2	—	—	—
76	516-949	516-349	—	—	—	—	1.005	—	1
	516-950	516-350	—	Grade K	—	—	1.01 - 1.49	0.01	49
	516-951	516-351	—	Grade 0	—	—	0.5 - 9.5	0.5	19
	516-952	516-352	—	Grade 1	—	—	10 - 40	10	4
	516-953	516-353	—	Grade 2	—	—	50 - 100	25	3
56	516-536	516-544	—	—	Grade K	—	0.5	—	1
	516-953	516-353	—	Grade K	Grade 00	—	1.001 - 1.009	0.001	9
	516-954	516-354	—	Grade 0	Grade 0	—	1.01 - 1.09	0.01	9
	516-955	516-355	—	Grade 1	Grade 1	—	1.1 - 1.9	0.1	9
	516-956	516-356	—	Grade 2	Grade 2	—	1 - 24	1	24
47	516-537	516-545	—	—	Grade K	—	1.005	—	1
	516-957	516-357	—	Grade K	Grade 00	—	1.01 - 1.09	0.01	9
	516-958	516-358	516-958N**	Grade 0	Grade 0	—	1.1 - 1.9	0.1	9
	516-959	516-359	516-959N**	Grade 1	Grade 1	—	1 - 24	1	24
	516-960	516-360	516-960N**	Grade 2	Grade 2	—	25 - 100	25	4
47	516-961	516-361	—	—	—	—	1.005	—	1
	516-962	516-362	516-962N**	Grade K	—	Grade K	1.01 - 1.19	0.01	19
	516-963	516-363	516-963N**	Grade 0	—	Grade 0	1.2 - 1.9	0.1	8
	516-964	516-364	516-964N**	Grade 1	—	Grade 1	1 - 9	1	9
	—	—	—	Grade 2	—	Grade 2	10 - 100	10	10

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

*Suffix Number for Selecting Standard and Certificate Provided

ISO/DIN/JIS	Steel, CERA	Steel/CERA
Grade K	-60 or -70	—
Grade 0	-10, -60 or -70	-13, -63 or -73
Grade 1	-10, -60 or -70	-13, -63 or -73
Grade 2	-10, -60 or -70	-13, -63 or -73

-10, -13: provided with Inspection Certificate
 -60, -63: provided with JCSS Calibration Certificate and Inspection Certificate
 -70, -73: provided with RvA Calibration Certificate and Inspection Certificate

ASME	Steel, CERA	Steel/CERA
Grade K	-66	—
Grade 00	-16	—
Grade 0	-16	-17
Grade 1	-16	-17
Grade 2	-16	—

-16, -17: provided with Inspection Certificate
 -66: provided with JCSS Calibration Certificate and Inspection Certificate

BS	Steel, CERA	Steel/CERA
Grade K	-71	—
Grade 0	-11 or -71	-15
Grade 1	-11 or -71	-15
Grade 2	-11 or -71	-15

-11, -15: provided with Inspection Certificate
 -71: provided with RvA Calibration Certificate and Inspection Certificate



Inspection Certificate

RvA Certificate

ISO/DIN/JIS gauge block sets that come with an RvA Certificate in addition to a regular one are also available. The certificate would be of use for your ISO9000 registration.

*The charge for calibration and the charge for issue of RvA certificate are not included in the prior set price (Grade 0 and grade 1 gauge block sets).



***Suffix Number for Selecting Standard and Certificate Provided**

ISO/DIN/JIS

	Steel, CERA	Steel/CERA
Grade K	-60 or -70	—
Grade 0	-10, -60 or -70	-13, -63 or -73
Grade 1	-10, -60 or -70	-13, -63 or -73
Grade 2	-10, -60 or -70	-13, -63 or -73

-10, -13: provided with Inspection Certificate
 -60, -63: provided with JCSS Calibration Certificate and Inspection Certificate
 -70, -73: provided with RvA Calibration Certificate and Inspection Certificate

ASME

	Steel, CERA	Steel/CERA
Grade K	-66	—
Grade 00	-16	—
Grade 0	-16	-17
Grade 1	-16	-17
Grade 2	-16	—

-16, -17: provided with Inspection Certificate
 -66: provided with JCSS Calibration Certificate and Inspection Certificate

BS

	Steel, CERA	Steel/CERA
Grade K	-71	—
Grade 0	-11 or -71	-15
Grade 1	-11 or -71	-15
Grade 2	-11 or -71	-15

-11, -15: provided with Inspection Certificate
 -71: provided with RvA Calibration Certificate and Inspection Certificate

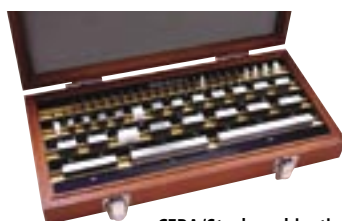


Inspection Certificate

RvA Certificate

ISO/DIN/JIS gauge block sets that come with an RvA Certificate in addition to a regular one are also available. The certificate would be of use for your ISO9000 registration.

*The charge for calibration and the charge for issue of RvA certificate are not included in the prior set price (Grade 0 and grade 1 gauge block sets).



CERA/Steel combination
47-block set



CERA/Steel combination
32-block set



CERA/Steel combination
32-block set



CERA/Steel combination
24-block set



CERA/Steel combination
19-block set



CERA/Steel combination
10-block set

SPECIFICATIONS

1mm Base Block Set

Blocks per set	Order No.*			Standard / grade available			Blocks included in set		
	Steel	CERA	Steel/CERA	ISO/DIN/JIS	ASME	BS	Size	Step	Qty.
46	—	—	—	—	—	—	1.001 - 1.009	0.001	9
	516-994	516-394	—	Grade K	—	—	1.01 - 1.09	0.01	9
	516-995	516-395	—	Grade 0	—	—	1.1 - 1.9	0.1	9
	516-996	516-396	—	Grade 1	—	—	1 - 9	1	9
	516-997	516-397	—	Grade 2	—	—	10 - 100	10	10
34	—	—	—	—	—	—	1.0005	—	1
	516-128	516-178	—	Grade K	—	Grade K	1.001 - 1.009	0.001	9
	516-129	516-179	—	Grade 0	—	Grade 0	1.01 - 1.09	0.01	9
	516-130	516-180	—	Grade 1	—	Grade 1	1.1 - 1.9	0.1	9
	516-131	516-181	—	Grade 2	—	Grade 2	1 - 5	1	5
32	—	—	—	—	—	—	1.005	—	1
	516-956	516-365	—	Grade K	—	Grade K	1.01 - 1.09	0.01	9
	516-966	516-366	516-966N**	Grade 0	—	Grade 0	1.1 - 1.9	0.1	9
	516-967	516-367	516-967N**	Grade 1	—	Grade 1	1 - 9	1	9
	516-968	516-368	516-968N**	Grade 2	—	Grade 2	10 - 30	10	3
24	—	—	—	—	—	—	1.01 - 1.09	0.01	9
	—	—	—	—	—	—	1.1 - 1.9	0.1	9
	—	—	516-488**	Grade 0	Grade 0	Grade 0	1 - 5	1	5
	—	—	516-489**	Grade 1	Grade 1	Grade 1	10	—	1
	—	—	516-490**	Grade 2	—	Grade 2	—	—	—
19	—	—	—	—	—	—	1.1 - 1.9	0.1	9
	—	—	—	—	—	—	1 - 5	1	5
	—	—	516-484**	Grade 0	Grade 0	Grade 0	10 - 20	10	2
	—	—	516-485**	Grade 1	Grade 1	Grade 1	25, 50, 100	—	3
	—	—	516-486**	Grade 2	—	Grade 2	—	—	—
10	—	—	—	—	—	—	1 - 5	1	5
	—	—	—	—	—	—	10 - 20	10	2
	—	—	516-480**	Grade 0	Grade 0	Grade 0	25, 50, 100	—	3
	—	—	516-481**	Grade 1	Grade 1	Grade 1	—	—	—
	—	—	516-482**	Grade 2	—	Grade 2	—	—	—

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

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 Gauge Block Set

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



Steel 112-block set



Steel 88-block set



Steel 33-block set

SPECIFICATIONS

2mm Base Block Set								
Blocks per set	Order No.*		Standard / grade available			Blocks included in set		
	Steel	CERA	ISO/DIN/JIS	ASME	BS	Size	Step	Qty.
112	516-532	—	—	Grade K	—	2.0005	—	1
	516-513	—	Grade K	Grade 00	Grade K	2.001 - 2.009	0.001	9
	516-514	—	Grade 0	Grade 0	Grade 0	2.01 - 2.49	0.01	49
	516-515	—	Grade 1	Grade 1	Grade 1	0.5 - 24.5	0.5	49
	516-516	—	Grade 2	Grade 2	Grade 2	25 - 100	25	4
88	—	—	—	—	—	1.0005	—	1
	516-501	—	Grade K	—	Grade K	2.001 - 2.009	0.001	9
	516-502	—	Grade 0	—	Grade 0	2.01 - 2.49	0.01	49
	516-503	—	Grade 1	—	Grade 1	0.5 - 9.5	0.5	19
	516-504	—	Grade 2	—	Grade 2	10 - 100	10	10
88	516-534	—	—	Grade K	—	2.0005	—	1
	516-517	—	Grade K	Grade 00	—	2.001 - 2.009	0.001	9
	516-518	—	Grade 0	Grade 0	—	2.01 - 2.49	0.01	49
	516-519	—	Grade 1	Grade 1	—	0.5 - 9.5	0.5	19
	516-520	—	Grade 2	Grade 2	—	10 - 100	10	10
47	516-538	—	—	Grade K	—	2.0005	—	1
	516-521	—	Grade K	Grade 00	—	2.001 - 2.009	0.001	9
	516-522	—	Grade 0	Grade 0	—	2.01 - 2.09	0.01	9
	516-523	—	Grade 1	Grade 1	—	2.1 - 2.9	0.1	9
	516-524	—	Grade 2	Grade 2	—	1 - 9	1	9
46	—	—	—	—	—	10 - 100	10	10
	516-505	—	Grade K	—	Grade K	2.001 - 2.009	0.001	9
	516-506	—	Grade 0	—	Grade 0	2.01 - 2.09	0.01	9
	516-507	—	Grade 1	—	Grade 1	2.1 - 2.9	0.1	9
	516-508	—	Grade 2	—	Grade 2	1 - 9	1	9
33	516-539	—	—	Grade K	—	2.005	—	1
	516-509	—	Grade K	Grade 00	Grade K	2.01 - 2.09	0.01	9
	516-510	—	Grade 0	Grade 0	Grade 0	2.1 - 2.9	0.1	9
	516-511	—	Grade 1	Grade 1	Grade 1	1 - 9	1	9
	516-512	—	Grade 2	Grade 2	Grade 2	10 - 30	10	3
						60, 100		2

***Suffix Number for Selecting Standard and Certificate Provided**

ISO/DIN/JIS	
	Steel, CERA
Grade K	-60 or -70
Grade 0	-10, -60 or -70
Grade 1	-10, -60 or -70
Grade 2	-10, -60 or -70

-10: provided with Inspection Certificate
 -60: provided with JCSS Calibration Certificate and Inspection Certificate
 -70: provided with RvA Calibration Certificate and Inspection Certificate

ASME	
	Steel, CERA
Grade K	-66
Grade 00	-16
Grade 0	-16
Grade 1	-16
Grade 2	-16

-16: provided with Inspection Certificate
 -66: provided with JCSS Calibration Certificate and Inspection Certificate

BS	
	Steel, CERA
Grade K	-71
Grade 0	-11 or -71
Grade 1	-11 or -71
Grade 2	-11 or -71

-11: provided with Inspection Certificate
 -71: provided with RvA Calibration Certificate and Inspection Certificate

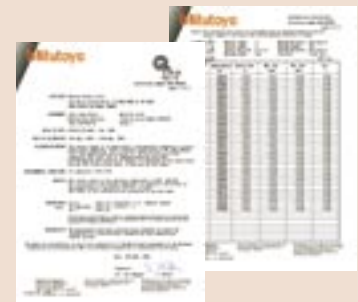


Inspection Certificate

RvA Certificate

ISO/DIN/JIS gauge block sets that come with an RvA Certificate in addition to a regular one are also available. The certificate would be of use for your ISO9000 registration.

*The charge for calibration and the charge for issue of RvA certificate are not included in the prior set price (Grade 0 and grade 1 gauge block sets).



Metric Rectangular Gauge Block Set

SERIES 516 — Thin Block Set, 0.001mm Step Block Set

*Suffix Number for Selecting Standard and Certificate Provided

ISO/DIN/JIS

	Steel, CERA
Grade K	-60 or -70
Grade 0	-10, -60 or -70
Grade 1	-10, -60 or -70
Grade 2	-10, -60 or -70

-10: provided with Inspection Certificate
 -60: provided with JCSS Calibration Certificate and Inspection Certificate
 -70: provided with RvA Calibration Certificate and Inspection Certificate

BS

	Steel, CERA
Grade K	-71
Grade 0	-11 or -71
Grade 1	-11 or -71
Grade 2	-11 or -71

-11: provided with Inspection Certificate
 -71: provided with RvA Calibration Certificate and Inspection Certificate



Inspection Certificate

RvA Certificate

ISO/DIN/JIS gauge block sets that come with an RvA Certificate in addition to a regular one are also available. The certificate would be of use for your ISO9000 registration.

*The charge for calibration and the charge for issue of RvA certificate are not included in the prior set price (Grade 0 and grade 1 gauge block sets).



Steel 9-block set

SPECIFICATIONS

Thin Block Set

Blocks per set	Order No.*		Standard / grade available			Blocks included in set		
	Steel	CERA	ISO/DIN/JIS	ASME	BS	Size	Step	Qty.
9	516-990	—	Grade 0	—	—	0.10 - 0.50	0.05	9
	516-991	—	Grade 1	—	—			
	516-992	—	Grade 2	—	—			



Steel 18-block set



CERA 18-block set



Steel 9-block set



CERA 9-block

SPECIFICATIONS

0.001mm Step Block Set

Blocks per set	Order No.*		Standard / grade available			Blocks included in set		
	Steel	CERA	ISO/DIN/JIS	ASME	BS	Size	Step	Qty.
18	516-973	516-373	Grade K	—	—	0.991 - 0.999	0.001	9
	516-974	516-374	Grade 0	—	—	1.001 - 1.009	0.001	9
	516-975	516-375	Grade 1	—	—			
	516-976	516-376	Grade 2	—	—			
9	516-981	516-381	Grade K	—	Grade K	1.001 - 1.009	0.001	9
	516-982	516-382	Grade 0	—	Grade 0			
	516-983	516-383	Grade 1	—	Grade 1			
	516-984	516-384	Grade 2	—	Grade 2			
9	516-985	516-385	Grade K	—	—	0.991 - 0.999	0.001	9
	516-986	516-386	Grade 0	—	—			
	516-987	516-387	Grade 1	—	—			
	516-988	516-388	Grade 2	—	—			

Metric Rectangular Gauge Block Set

SERIES 516 — Long Block Set, Wear Block Set



CERA 8-block set



Steel 8-block set

SPECIFICATIONS

Long Block Set

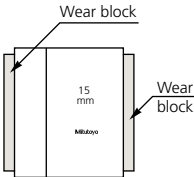
Blocks per set	Order No.*		Standard / grade available			Blocks included in set		
	Steel	CERA	ISO/DIN/JIS	ASME	BS	Size	Step	Qty.
8	516-540	516-546	—	Grade K	—	125 - 175	25	3
	516-701	516-731	Grade K	Grade 00	—	200 - 250	50	2
	516-702	516-732	Grade 0	Grade 0	—	300 - 500	100	3
	516-703	516-733	Grade 1	Grade 1	—			
	516-704	516-734	Grade 2	Grade 2	—			



CERA 2-block set



Steel 2-block



SPECIFICATIONS

Wear Block Set

Blocks per set	Order No.*		Standard / grade available			Blocks included in set		
	Carbide	CERA	ISO/DIN/JIS	ASME	BS	Size	Step	Qty.
2	516-807	516-832	Grade 0	Grade 0	—	1		2
	516-806	516-833	Grade 1	Grade 1	—			
2	516-803	516-830	Grade 0	Grade 0	—	2		2
	516-802	516-831	Grade 1	Grade 1	—			

*Suffix Number for Selecting Standard and Certificate Provided

ISO/DIN/JIS	Steel, CERA
Grade K	-60 or -70
Grade 0	-10, -60 or -70
Grade 1	-10, -60 or -70
Grade 2	-10, -60 or -70

-10: provided with Inspection Certificate
-60: provided with JCSS Calibration Certificate and Inspection Certificate
-70: provided with RvA Calibration Certificate and Inspection Certificate

ASME	Steel, CERA
Grade K	-66
Grade 00	-16
Grade 0	-16
Grade 1	-16
Grade 2	-16

-16: provided with Inspection Certificate
-66: provided with JCSS Calibration Certificate and Inspection Certificate



Inspection Certificate

RvA Certificate

ISO/DIN/JIS gauge block sets that come with an RvA Certificate in addition to a regular one are also available. The certificate would be of use for your ISO9000 registration.

*The charge for calibration and the charge for issue of RvA certificate are not included in the prior set price (Grade 0 and grade 1 gauge block sets).



Inch Rectangular Gauge Block Set

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

*Suffix Number for Selecting Standard and Certificate Provided

ASME

	Steel, CERA	Steel/CERA
Grade K	-66	—
Grade 00	-16	—
Grade 0	-16	-17
Grade 1	-16	-17
Grade 2	-16	—

-16, -17: provided with Inspection Certificate
-66: provided with JCSS Calibration Certificate and Inspection Certificate

BS

	Steel, CERA	Steel/CERA
Grade K	—	—
Grade 0	-11	-15
Grade 1	-11	-15
Grade 2	-11	-15

-11, -15: provided with Inspection Certificate



SPECIFICATIONS

Inch Block Set

Blocks per set	Order No.*			Standard / grade available		Blocks included in set		
	Steel	CERA	Steel/CERA	ASME	BS	Size	Step	Qty.
82	516-548	516-556	—	Grade K	—	.10005		1
	516-905	516-305	—	Grade 00	—	.1001 – .1009	.0001	9
	516-906	516-306	—	Grade 0	Grade 0	.101 – .149	.001	49
	516-907	516-307	—	Grade 1	Grade 1	.05 – .95	.05	19
	516-908	516-308	—	Grade 2	Grade 2	1 - 4	1	4
81	516-549	516-557	—	Grade K	—	.1001 – .1009	.0001	9
	516-901	516-301	—	Grade 00	—	.101 – .149	.001	49
	516-902	516-302	—	Grade 0	Grade 0	.05 – .95	.05	19
	516-903	516-303	—	Grade 1	Grade 1	1 - 4	1	4
	516-904	516-304	—	Grade 2	Grade 2			
49	—	—	—	—	—	.1001 – .1009	.0001	9
	—	—	—	—	—	.101 – .109	.001	9
	516-910	—	516-910N**	—	Grade 0	.01 – .19	.01	19
	516-911	—	516-911N**	—	Grade 1	.2 - .9	.1	8
35	516-550	516-558	—	Grade K	—	.10005		1
	516-913	516-313	—	Grade 00	—	.1001 – .1009	.0001	9
	516-914	516-314	516-914N**	Grade 0	Grade 0	.101 – .109	.001	9
	516-915	516-315	516-915N**	Grade 1	Grade 1	.11 – .19	.01	9
	516-916	516-316	516-916N**	Grade 2	Grade 2	.1 - .3	.1	3
						.5, 1, 2, 4		4

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

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

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

SPECIFICATIONS

Thin Block Set

Blocks per set	Order No.*		Standard / grade available		Blocks included in set		
	Steel	CERA	ASME	BS	Size	Step	Qty.
28	516-551	—	Grade K	—	.02005		1
	516-917	—	Grade 00	—	.0201 – .0209	.0001	9
	516-918	—	Grade 0	—	.021 – .029	.001	9
	516-919	—	Grade 1	—	.01 – .09	.01	9
	516-920	—	Grade 2	—			
10	516-926	—	Grade 0	Grade 0	.005 - .050	.005	10
	516-927	—	Grade 1	Grade 1			
	516-928	—	—	Grade 2			

SPECIFICATIONS

Long Block Set

Blocks per set	Order No.*		Standard / grade available		Blocks included in set		
	Steel	CERA	ASME	BS	Size	Step	Qty.
8	—	516-564	Grade K	—	5 - 7	1	3
	—	516-741	Grade 00	—	8, 10, 12	2	3
	516-712	516-742	Grade 0	—	16, 20	4	2
	516-713	516-743	Grade 1	—			

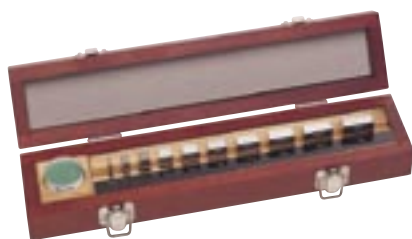
SPECIFICATIONS

Wear Block Set

Blocks per set	Order No.*		Standard / grade available		Blocks included in set		
	Carbide	CERA	ASME	BS	Size	Step	Qty.
2	516-809	516-836	Grade 0	—	.05		2
	516-808	516-837	Grade 1	—			
2	516-805	516-834	Grade 0	—	.1		2
	516-804	516-835	Grade 1	—			

Micrometer Inspection Gauge Block Sets

SERIES 516



Steel 10-block set



Steel 16-block set



Steel 8-block set



CERA 10-block set



CERA 16-block set



CERA 8-block set

SPECIFICATIONS

Metric Micro Checker (holder only)

Order No.	516-607
Applicable gauge block set	516-106, 516-107, 516-108, 516-156, 516-157, 516-158
Applicable gauge 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 gauge block set	516-921, 516-922, 516-923, 516-321, 516-322, 516-323
Applicable gauge block size (inch)	.105, .210, .315, .420, .5, .605, .815, .920

Micro Checker



- Can be fixed a series of gauge 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.

***Suffix Number for Selecting Standard and Certificate Provided**

ISO/DIN/JIS	Steel, CERA
Grade K	-60 or -70
Grade 0	-10, -60 or -70
Grade 1	-10, -60 or -70
Grade 2	-10, -60 or -70

-10: provided with Inspection Certificate
-60: provided with JCSS Calibration Certificate and Inspection Certificate
-70: provided with RvA Calibration Certificate and Inspection Certificate

ASME	Steel, CERA
Grade K	-66
Grade 00	-16
Grade 0	-16
Grade 1	-16
Grade 2	-16

-16: provided with Inspection Certificate
-66: provided with JCSS Calibration Certificate and Inspection Certificate

BS	Steel, CERA
Grade K	—
Grade 0	-11
Grade 1	-11
Grade 2	-11

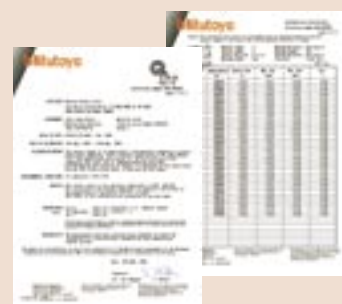
-11, -15: provided with Inspection Certificate



Inspection Certificate

RvA Certificate

ISO/DIN/JIS gauge block sets that come with an RvA Certificate in addition to a regular one are also available. The certificate would be of use for your ISO9000 registration. *The charge for calibration and the charge for issue of RvA certificate are not included in the prior set price (Grade 0 and grade 1 gauge block sets).



***Suffix Number for Selecting Standard and Certificate Provided**

ISO/DIN/JIS	
	Steel, CERA
Grade K	-60 or -70
Grade 0	-10, -60 or -70
Grade 1	-10, -60 or -70
Grade 2	-10, -60 or -70

-10: provided with Inspection Certificate
-60: provided with JCSS Calibration Certificate and Inspection Certificate
-70: provided with RvA Calibration Certificate and Inspection Certificate

ASME	
	Steel, CERA
Grade K	-66
Grade 00	-16
Grade 0	-16
Grade 1	-16
Grade 2	-16

-16: provided with Inspection Certificate
-66: provided with JCSS Calibration Certificate and Inspection Certificate

BS	
	Steel, CERA
Grade K	—
Grade 0	-11
Grade 1	-11
Grade 2	-11

-11, -15: provided with Inspection Certificate



Inspection Certificate

RvA Certificate

ISO/DIN/JIS gauge block sets that come with an RvA Certificate in addition to a regular one are also available. The certificate would be of use for your ISO9000 registration.

*The charge for calibration and the charge for issue of RvA certificate are not included in the prior set price (Grade 0 and grade 1 gauge block sets).



SPECIFICATIONS

Metric Block Set

Blocks per set	Order No.*		Standard / grade available		Blocks included in set
	Steel	CERA	ISO/DIN/JIS	ASME	
16	516-111	516-161	Grade 0	—	1.00, 1.25, 1.5, 2, 3, 5, 10, 15, 20, 25, 25.25, 30, 35, 40, 45, 50mm • Cerastone • Optical parallels (t = 12mm, 25mm)
	516-112	516-162	Grade 1	—	
	516-113	516-163	Grade 2	—	
10	516-977	—	Grade K	—	1.00, 1.25, 1.50, 2, 3, 5, 10, 15, 20, 25mm • Optical parallel (t = 12mm)
	516-978	516-378	Grade 0	—	
	516-979	516-379	Grade 1	—	
	516-980	516-380	Grade 2	—	
10	516-103	516-152	Grade 0	Grade 0	1.00, 1.25, 1.50, 2, 3, 5, 10, 15, 20, 25mm
	516-101	516-153	Grade 1	Grade 1	
	—	516-154	Grade 2	—	
10	516-106	516-156	Grade 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	516-157	Grade 1	—	
	516-108	516-158	Grade 2	—	
10	516-132	516-182	Grade 0	—	1.25, 1.50, 1, 2, 3, 5, 10, 15, 20, 25mm • Micro Checker • Optical parallel (t = 12mm)
	516-133	516-183	Grade 1	—	
	516-134	516-184	Grade 2	—	
10	516-135	516-185	Grade 0	—	2.5, 5.1, 7.7, 10.3, 12.9, 15, 17.6, 20.2, 22.8, 25mm • Micro Checker • Optical parallel (t = 12mm)
	516-136	516-186	Grade 1	—	
	516-137	516-187	Grade 2	—	
8	—	516-547	—	Grade K	25, 50, 75, 100, 125, 150, 175, 200
	—	516-164	Grade K	Grade 00	
	516-115	516-165	Grade 0	Grade 0	
	516-116	516-166	Grade 1	Grade 1	
	516-117	516-167	Grade 2	Grade 2	

Inch Block Set

Blocks per set	Order No.*		Standard / grade available		Blocks included in set
	Steel	CERA	ASME	BS	
10	516-552	516-559	Grade K	—	.105, .210, .315, .420, .500, .605, .710, .815, .920, 1" • Optical parallel (t = .5")
	516-921	516-321	Grade 00	Grade 0	
	516-922	516-322	Grade 0	Grade 1	
	516-923	516-323	Grade 1	Grade 2	
10	516-553	516-560	Grade K	—	.105, .210, .315, .420, .500, .605, .710, .815, .920, 1" • Micro checker • Optical parallel (t = .5")
	516-138	516-188	Grade 00	Grade 0	
	516-139	516-189	Grade 0	Grade 1	
	516-140	516-190	Grade 1	Grade 2	
	—	—	—	—	
9	516-554	516-561	Grade K	—	.0625, .100, .125, .200, .250, .300, .500, 1, 2" • Optical parallel (t = .5")
	516-929	516-333	Grade 00	—	
	516-930	516-334	Grade 0	—	
	516-931	516-335	Grade 1	—	
	516-932	516-336	Grade 2	—	
9	516-555	516-562	Grade K	—	.0625, .100, .125, .200, .250, .300, .500, 1, 2" • Micro Checker • Optical parallel (t = .5")
	516-141	516-191	Grade 00	—	
	516-142	516-192	Grade 0	—	
	516-143	516-193	Grade 1	—	
	516-144	516-194	Grade 2	—	
9	—	516-563	Grade K	—	.0625, .100, .125, .200, .250, .300, .500, 1, 2"
	—	516-329	Grade 00	—	
	516-934	516-330	Grade 0	—	
	516-935	516-331	Grade 1	—	
8	516-126	516-176	Grade 0	—	1, 2, 3, 4, 5, 6, 7, 8"
	516-127	516-177	Grade 1	—	

Caliper Inspection Gauge Block Sets

SERIES 516

SPECIFICATIONS

Metric Block Set

Blocks per set	Order No.*		Standard / grade available			Blocks included in set
	Steel	CERA	ISO/DIN/JIS	ASME	BS	
5	—	516-174	Grade 2	—	—	5 pcs.: 10.3, 24.5, 50, 75, 100mm • Ceramic plain jaws • Holder 250mm • Glove
3	516-124	516-150	Grade 1	—	—	3 pcs.: 30, 41.3, 131.4mm • Setting ring (ø4mm, ø25mm) • Glove
	516-125	516-151	Grade 2	—	—	
2	516-122	516-172	Grade 1	—	—	2 pcs.: 41.3, 131.4mm • Setting ring (ø20mm) • Glove
	516-123	516-173	Grade 2	—	—	

Individual Metric Rectangular Gauge Block

FEATURES

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



SPECIFICATIONS

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	613611
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

*Suffix Number for Selecting Standard and Certificate Provided

ISO/DIN/JIS	
	Steel, CERA
Grade K	-016** or -017***
Grade 0	-021*, -026** or -027***
Grade 1	-031*, -036** or -037***
Grade 2	-041*, -046** or -047***

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

BS	
	Steel, CERA
Grade K	-117***
Grade 0	-121* or -127***
Grade 1	-131* or -137***
Grade 2	-141* or -147***

- * provided with Inspection Certificate
 ** provided with Calibration Certificate and Inspection Certificate
 *** provided with RvA Calibration Certificate

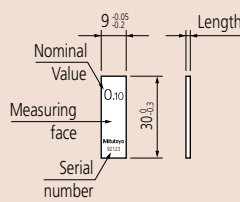


Inspection Certificate

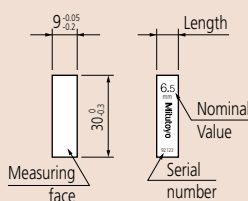
Dimension

Unit: mm

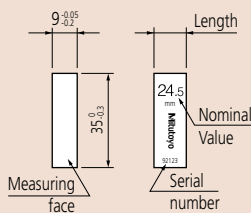
Nominal length:
0.1mm - 5.5mm
(.004" - .25")



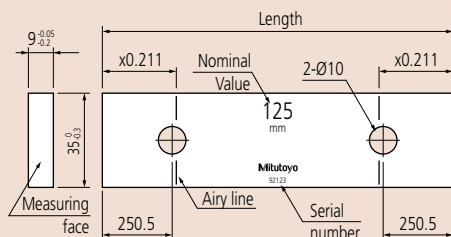
Nominal length:
6mm - 10mm
(.3" - .4")



Nominal length:
10.3mm - 100mm
(.45" - 4")



Nominal length 125mm - 1000mm (5" - 20")



Length (mm)	Order No.*	
	Steel	CERA
1.2	611580	613580
1.21	611581	613581
1.22	611582	613582
1.23	611583	613583
1.24	611584	613584
1.25	611585	613585
1.26	611586	613586
1.27	611587	613587
1.28	611588	613588
1.29	611589	613589
1.3	611590	613590
1.31	611591	613591
1.32	611592	613592
1.33	611593	613593
1.34	611594	613594
1.35	611595	613595
1.36	611596	613596
1.37	611597	613597
1.38	611598	613598
1.39	611599	613599
1.4	611600	613600
1.41	611601	613601
1.42	611602	613602
1.43	611603	613603
1.44	611604	613604
1.45	611605	613605
1.46	611606	613606
1.47	611607	613607
1.48	611608	613608
1.49	611609	613609
1.5	611641	613641
1.6	611516	613516
1.7	611517	613517
1.8	611518	613518
1.9	611519	613519
2	611612	613612
2.0005	611690	—
2.001	611691	—
2.002	611692	—
2.003	611693	—
2.004	611694	—
2.005	611695	—
2.006	611696	—
2.007	611697	—
2.008	611698	—
2.009	611699	—
2.01	611701	—
2.02	611702	—
2.03	611703	—
2.04	611704	—
2.05	611705	—
2.06	611706	—
2.07	611707	—
2.08	611708	—
2.09	611709	—
2.1	611710	—
2.11	611711	—
2.12	611712	—
2.13	611713	—
2.14	611714	—
2.15	611715	—
2.16	611716	—

Length (mm)	Order No.*	
	Steel	CERA
2.17	611717	—
2.18	611718	—
2.19	611719	—
2.2	611720	—
2.21	611721	—
2.22	611722	—
2.23	611723	—
2.24	611724	—
2.25	611725	—
2.26	611726	—
2.27	611727	—
2.28	611728	—
2.29	611729	—
2.3	611730	—
2.31	611731	—
2.32	611732	—
2.33	611733	—
2.34	611734	—
2.35	611735	—
2.36	611736	—
2.37	611737	—
2.38	611738	—
2.39	611739	—
2.4	611740	—
2.41	611741	—
2.42	611742	—
2.43	611743	—
2.44	611744	—
2.45	611745	—
2.46	611746	—
2.47	611747	—
2.48	611748	—
2.49	611749	—
2.5	611642	613642
2.6	611750	—
2.7	611751	—
2.8	611752	—
2.9	611753	—
3	611613	613613
3.5	611643	613643
4	611614	613614
4.5	611644	613644
5	611615	613615
5.1	611850	613850
5.5	611645	613645
6	611616	613616
6.5	611646	613646
7	611617	613617
7.5	611647	613647
7.7	611851	613851
8	611618	613618
8.5	611648	613648
9	611619	613619
9.5	611649	613649
10	611671	613671
10.3	611852	613852
10.5	611650	613650
11	611621	613621
11.5	611651	613651
12	611622	613622
12.5	611652	613652
12.9	611853	613853

Length (mm)	Order No.*	
	Steel	CERA
13	611623	613623
13.5	611653	613653
14	611624	613624
14.5	611654	613654
15	611625	613625
15.5	611655	613655
16	611626	613626
16.5	611656	613656
17	611627	613627
17.5	611657	613657
17.6	611854	613854
18	611628	613628
18.5	611658	613658
19	611629	613629
19.5	611659	613659
20	611672	613672
20.2	611855	613855
20.5	611660	613660
21	611631	613631
21.5	611661	613661
22	611632	613632
22.5	611662	613662
22.8	611856	613856
23	611633	613633
23.5	611663	613663
24	611634	613634
24.5	611664	613664
25	611635	613635
25.25	611754	613754
30	611673	613673
35	611755	613755
40	611674	613674
41.3	611857	613857
45	611756	613756
50	611675	613675
60	611676	613676
70	611677	613677
75	611801	613801
80	611678	613678
90	611679	613679
100	611681	613681
125	611802	613802
131.4	611858	613858
150	611803	613803
175	611804	613804
200	611682	613682
250	611805	613805
300	611683	613683
400	611684	613684
500	611685	613685
600	611840	—
700	611841	—
750	611842	—
800	611843	—
900	611844	—
1000	611845	—

Metric Wear Block

Length (mm)	Order No.* Tungsten carbide
1	612611
2	612612

Individual Inch Rectangular Gauge Block

SPECIFICATIONS

Inch Block

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	

*Suffix Number for Selecting Standard and Certificate Provided

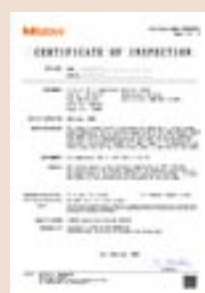
ASME

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

BS

	Steel, CERA
Grade K	—
Grade 0	-121*
Grade 1	-131*
Grade 2	-141*

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

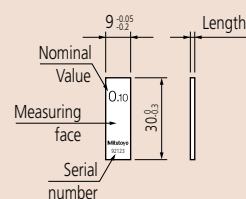


Inspection Certificate

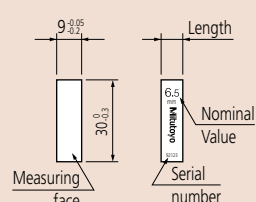
Dimension

Unit: mm

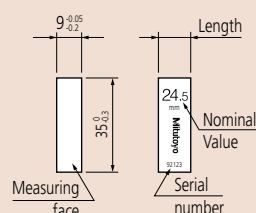
Nominal length:
0.1mm - 5.5mm
(.004" - .25")



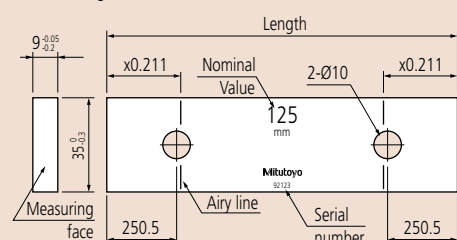
Nominal length:
6mm - 10mm
(.3" - .4")



Nominal length:
10.3mm - 100mm
(.45" - 4")



Nominal length 125mm - 1000mm (5" - 20")



Rectangular Gauge Block with CTE

Gauge Blocks with Thermal Expansion Coefficient Data

*Suffix Number for Selecting Standard and Certificate Provided

ISO/DIN/JIS

	Steel, CERA
Grade K	-01B or -01C

-01B: provided with JCSS Calibration Certificate and Inspection Certificate

-01C: provided with RvA Calibration Certificate and Inspection Certificate (only for 100mm)

ASME

	Steel, CERA
Grade K	-51B

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

BS

	Steel, CERA
Grade K	-11C

-01C: provided with RvA Calibration Certificate and Inspection Certificate (only for 100mm)

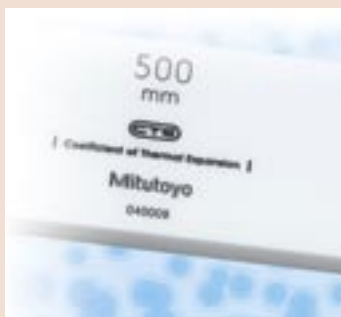


Inspection Certificate

RvA Certificate

ISO/DIN/JIS gauge block sets that come with an RvA Certificate in addition to a regular one are also available. The certificate would be of use for your ISO9000 registration.

*The charge for calibration and the charge for issue of RvA certificate are not included in the prior set price (Grade 0 and grade 1 gauge block sets).



FEATURES

- Mitutoyo offers top-level gauge blocks (steel and ceramic) which are superior to the K class blocks, with their quality supported by Mitutoyo's best technologies.



double-faced interferometer (DFI)

- Comes with a highly accurate thermal expansion coefficient measured with a high accuracy double-faced interferometer (DFI).
- The high accuracy gauge block interferometer (GBI) guarantees a high dimensional accuracy.
- Mitutoyo offers rectangular gauge blocks, having nominal values from 100 to 500mm
Grade: K class in JIS/ASME/ISO
Uncertainty of thermal expansion coefficient: $0.035 \times 10^{-6}/K$ ($k = 2$)
Uncertainty of dimension measurement: 30nm ($k = 2$), for 100mm block

SPECIFICATIONS

Metric Block with CTE

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

Inch Block with CTE

Length (inch)	Order No.* Steel	Order No.*CERA
4	611204	613204
5	611205	613205
6	611206	613206
7	611207	613207
8	611208	613208
10	611222	613222
12	611223	613223
16	611224	613224
500	611225	613225



Rectangular Gauge Block Accessory

SERIES 516

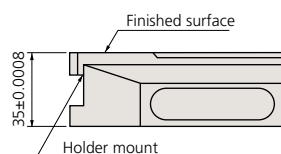
To expand the variety of rectangular gauge block (steel and CERA) applications, Mitutoyo offers the gauge block accessories set. By assembling the items in the set, you can easily and quickly build up a precision measuring instrument.

SPECIFICATIONS

Order No. 516-601	Order No. 516-602	Included in set
—	1 pc.	Holder 15 - 60mm (619002)
1 pc.	1 pc.	Holder 5 - 100mm (619003)
1 pc.	1 pc.	Holder 15 - 160mm (619004)
1 pc.	1 pc.	Holder 20 - 250mm (619005)
1 pc.	1 pc.	Holder base 35mm (619009)
2 pcs.	2 pcs.	Half round jaw 2mm (619010)
2 pcs.	2 pcs.	Half round jaw 5mm (619011)
2 pcs.	2 pcs.	Half round jaw 8mm (619012)
2 pcs.	—	Half round jaw 12mm (619013)
2 pcs.	—	Half round jaw 20mm (619014)
2 pcs.	—	Plain jaw (619018)
1 pc.	1 pc.	Scriber point (619019)
1 pc.	1 pc.	Center point (619020)
2 pcs.	—	Tram point (619021)
1 pc.	1 pc.	Triangular straight edge 100mm (619022)
1 pc.	—	Triangular straight edge 160mm (619023)

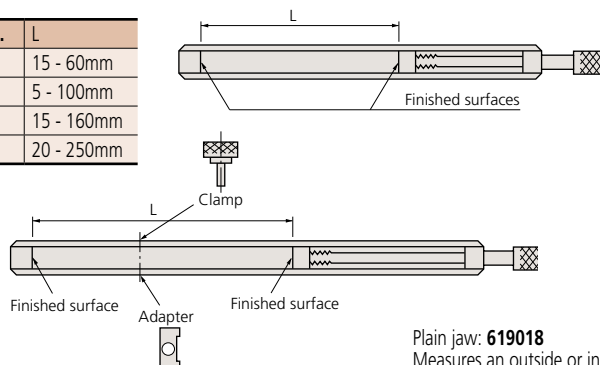
Holder base 35mm: 619009

Measures a height on the surface plate and scribes a workpiece if used with the holder.

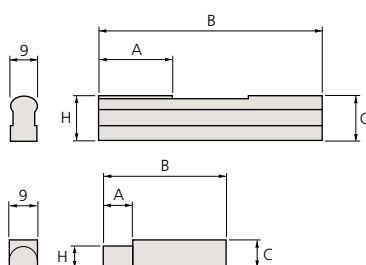


Holder:
Used as a clamp if using plain jaws, scriber point, etc.

Order No.	L
619002	15 - 60mm
619003	5 - 100mm
619004	15 - 160mm
619005	20 - 250mm



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

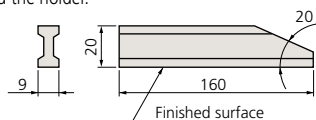


Unit: mm

Size	Order No.	H	A	B	C
2	619010	2±0.0005	5.5	40	7.5
5	619011	5±0.0005	14	45	7.5
8	619012	8±0.0005	20	50	8.5
12	619013	12±0.0005	25	75	13
20	619014	20±0.0005	25	125	20

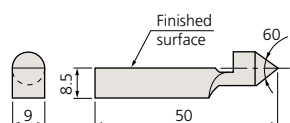
Plain jaw: 619018

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

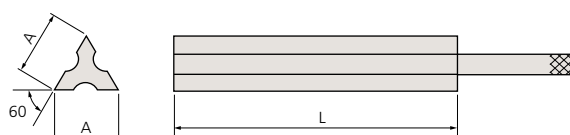


Center point: 619020

Scribes a workpiece if used with the holder and holder base.

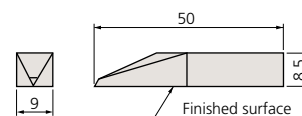


Triangular straight edge: Measures parallelism.



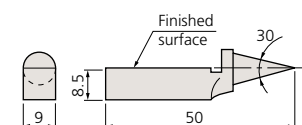
Scriber point: 619019

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.



Order No.	L	A
619022	100mm	16mm
619023	160mm	19.5mm

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



516-605

SPECIFICATIONS

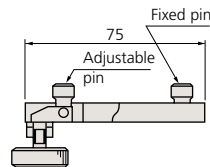
Accessories for gauge blocks over 100mm

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 gauge blocks.

Holder A: 619031

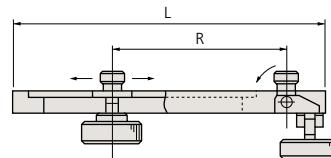
Used for coupling two long gauge blocks.



Holder B and C:

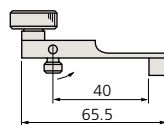
Used for coupling two long gauge blocks together with other gauge blocks up to 35mm (Holder B) or 140mm (Holder C). Also used for attaching jaws with two adapters.

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



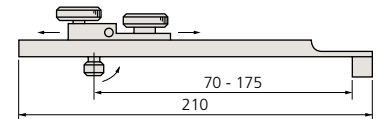
Holder D: 619034

Used for attaching to the holder base.



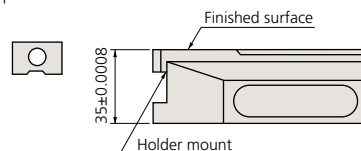
Holder E: 619035

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

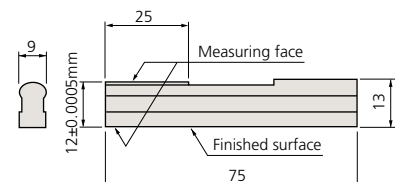


Holder base: 619009

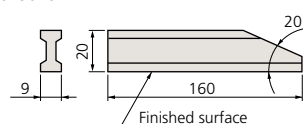
Adaptor: 619036



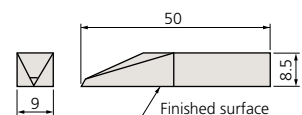
Half round jaw: 619013



Plain jaw: 619018



Scriber point: 619019



Metric Square Gauge Block Set

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

A Square Gauge 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 112-block set



Steel 103-block set



Steel 76-block set

SPECIFICATIONS

Metric Block Set

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

Metric Long Block Set

Blocks per set	Order No.		Standard / grade available		Blocks included in set		
	Steel	CERA	ISO/DIN/JIS	ASME	Size	Step	Qty.
8	—	—	—	—	125, 150, 175	25	3
	516-752	—	Grade 0	Grade 0	200, 250	50	2
	516-753	—	Grade 1	Grade 1	300, 400, 500	100	3
	516-754	—	Grade 2	Grade 2	—	—	—

Metric Wear Block Set

Blocks per set	Order No.		Standard / grade available		Blocks included in set		
	Steel	CERA	ISO/DIN/JIS	ASME	Size	Step	Qty.
2	516-820	—	Grade 0	—	1	—	2
	516-821	—	Grade 1	—	—	—	—
2	516-822	—	Grade 0	—	2	—	2
	516-823	—	Grade 1	—	—	—	—

*Suffix Number for Selecting Standard and Certificate Provided

ISO/DIN/JIS	
	Steel, CERA
Grade K	—
Grade 0	-10 or -60
Grade 1	-10 or -60
Grade 2	-10 or -60

-10: provided with Inspection Certificate
-60: provided with JCSS Calibration Certificate and Inspection Certificate

ASME	
	Steel, CERA
Grade K	—
Grade 00	-16
Grade 0	-16
Grade 1	-16
Grade 2	-16

-16: provided with Inspection Certificate

BS	
	Steel, CERA
Grade K	—
Grade 0	-11
Grade 1	-11
Grade 2	-11

-11: provided with Inspection Certificate
-71: provided with RvA Calibration Certificate and Inspection Certificate



Inspection Certificate

Inch Square Gauge Block Set

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

*Suffix Number for Selecting Standard and Certificate Provided

ASME

	Steel, CERA	Steel/CERA
Grade K	-66	—
Grade 00	-16	—
Grade 0	-16	-17
Grade 1	-16	-17
Grade 2	-16	—

-16, -17: provided with Inspection Certificate
-66: provided with JCSS Calibration Certificate and Inspection Certificate

BS

	Steel, CERA	Steel/CERA
Grade K	—	—
Grade 0	-11	-15
Grade 1	-11	-15
Grade 2	-11	-15

-11, -15: provided with Inspection Certificate



Inspection Certificate

SPECIFICATIONS

Inch Block Set

Blocks per set	Order No.		Standard / grade available		Blocks included in set		
	Steel	CERA	ISO/DIN/JIS	ASME	Size	Step	Qty.
81	516-401	516-201	—	Grade 00	.1001 - .1009	.0001	9
	516-402	516-202	—	Grade 0	.101 - .149	.001	49
	516-403	516-203	—	Grade 1	.05 - .95	.05	19
	516-404	516-204	—	Grade 2	1 - 4	1	4
	—	—	—	—	—	—	—
36	516-421	516-221	—	Grade 00	.05"	.0001	1
	516-422	516-222	—	Grade 0	.1001 - .1009	.001	10
	516-423	516-223	—	Grade 1	.101 - .109	.001	9
	516-424	516-224	—	Grade 2	.11 - .19	.01	9
	—	—	—	—	.1 - .5	.1	5
28	516-417	—	—	Grade 00	1.005	.0001	1
	516-418	—	—	Grade 0	1.01 - 1.49	.001	9
	516-419	—	—	Grade 1	0.5 - 9.5	.001	9
	516-420	—	—	Grade 2	10 - 40	.01	9
	—	—	—	—	50 - 100	—	—

Metric Long Block Set

Blocks per set	Order No.		Standard / grade available		Blocks included in set		
	Steel	CERA	ISO/DIN/JIS	ASME	Size	Step	Qty.
8	516-762	—	—	Grade 0	5 - 7	1	3
	516-763	—	—	Grade 1	8, 10, 12	2	3
	—	—	—	—	16, 20	4	2

Inch Wear Block Set

Blocks per set	Order No.		Standard / grade available		Blocks included in set		
	Carbide	CERA	ISO/DIN/JIS	ASME	Size	Step	Qty.
2	516-824	516-846	Grade 0	—	.05	—	2
	516-825	516-847	Grade 1	—	—	—	—
2	516-826	516-844	Grade 0	—	.1	—	2
	516-827	516-845	Grade 1	—	—	—	—



Steel 47-block set



Steel 32-block set



Steel 8-block set



Steel 2-block set

Individual Metric Square Gauge 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

ISO/DIN/JIS

	Steel, CERA
Grade K	—
Grade 0	-021* or -026**
Grade 1	-031* or -036**
Grade 2	-041* or -046**

ASME

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

BS

	Steel, CERA
Grade K	—
Grade 0	-121*
Grade 1	-131*
Grade 2	-141*

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



Inspection Certificate

Individual Inch Square Gauge Block

*Suffix Number for Selecting Standard and Certificate Provided

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

BS	
Steel, CERA	
Grade K	—
Grade 0	-121*
Grade 1	-131*
Grade 2	-141*

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

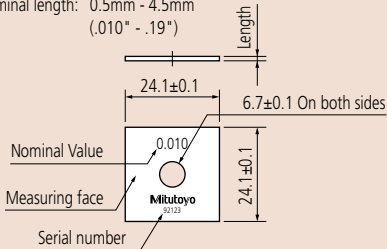


Inspection Certificate

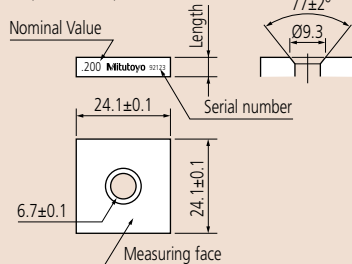
Dimension

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

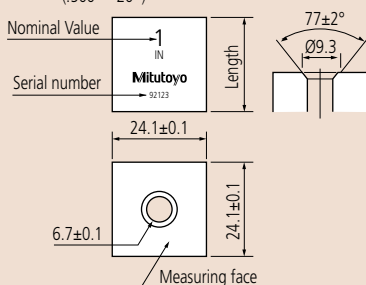
Unit: mm



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



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



SPECIFICATIONS

Inch Block

Length (inch)	Order No.*	
	Steel	CERA
.01	614310	—
.02005	614240	—
.0201	614231	—
.0202	614232	—
.0203	614233	—
.0204	614234	—
.0205	614235	—
.0206	614236	—
.0207	614237	—
.0208	614238	—
.0209	614239	—
.02	614320	—
.021	614321	—
.022	614322	—
.023	614323	—
.024	614324	—
.025	614325	—
.026	614326	—
.027	614327	—
.028	614328	—
.029	614329	—
.03	614330	—
.03125 (1/32)	614301	—
.04	614340	—
.046875 (3/64)	614302	—
.05	614105	616105
.06	614106	—
.0625	614303	616303
.07	614107	—
.078125 (5/64)	614304	—
.08	614108	—
.09	614109	—
.09375 (3/32)	614305	—
.1	614191	616191
.100025	614307	—
.10005	614135	616135
.100075	614308	—
.1001	614121	616121
.1002	614122	616122
.1003	614123	616123
.1004	614124	616124
.1005	614125	616125
.1006	614126	616126
.1007	614127	616127
.1008	614128	616128
.1009	614129	616129
.101	614141	616141
.102	614142	616142
.103	614143	616143
.104	614144	616144
.105	614145	616145

Length (inch)	Order No.*	
	Steel	CERA
.106	614146	616146
.107	614147	616147
.108	614148	616148
.109	614149	616149
.109375 (7/64)	614306	—
.11	614150	616150
.111	614151	616151
.112	614152	616152
.113	614153	616153
.114	614154	616154
.115	614155	616155
.116	614156	616156
.117	614157	616157
.118	614158	616158
.119	614159	616159
.12	614160	616160
.121	614161	616161
.122	614162	616162
.123	614163	616163
.124	614164	616164
.125	614165	616165
.126	614166	616166
.127	614167	616167
.128	614168	616168
.129	614169	616169
.13	614170	616170
.131	614171	616171
.132	614172	616172
.133	614173	616173
.134	614174	616174
.135	614175	616175
.136	614176	616176
.137	614177	616177
.138	614178	616178
.139	614179	616179
.14	614180	616180
.141	614181	616181
.142	614182	616182
.143	614183	616183
.144	614184	616184
.145	614185	616185
.146	614186	616186
.147	614187	616187
.148	614188	616188
.149	614189	616189
.15	614115	616115
.16	614116	616116
.17	614117	616117
.18	614118	616118
.19	614119	616119
.2	614192	616192

Length (inch)	Order No.*	
	Steel	CERA
.25	614212	616212
.3	614193	616193
.35	614213	616213
.375 (3/8)	614309	—
.4	614194	616194
.45	614214	616214
.5	614195	616195
.55	614215	616215
.6	614196	616196
.65	614216	616216
.7	614197	616197
.75	614217	616217
.8	614198	616198
.85	614218	616218
.9	614199	616199
.95	614219	616219
1	614201	616201
2	614202	616202
3	614203	616203
4	614204	616204
5	614205	—
6	614206	—
7	614207	—
8	614208	—
10	614222	—
12	614223	—
16	614224	—
20	614225	—

Inch Wear Block

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

Square Gauge Block Accessory

SERIES 516

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

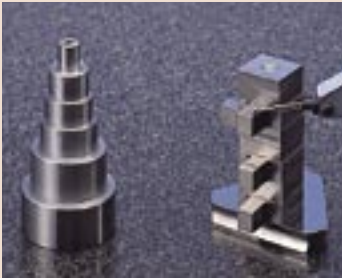


516-611

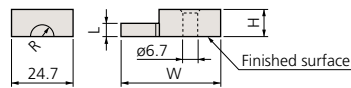
SPECIFICATIONS

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)

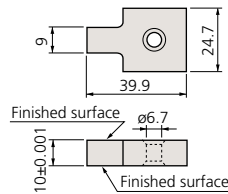


Half round jaw:
Used to measure an inside or outside diameter.

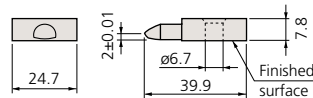


Order No.	R	L	W	H
619070	1.95mm	2mm	33.6mm	5.3mm
619071	4.95mm	5mm	39.9mm	10.3mm
619050	.123"	.125"	33.6mm	5.3mm
619051	.248"	.25"	39.9mm	10.3mm

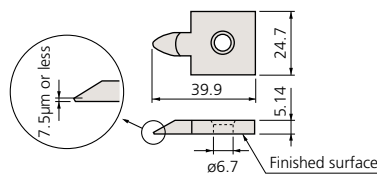
Plain jaw: **619072** (10mm), **619052** (.5")
Used to measure an inside or outside diameter.



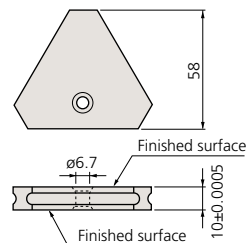
Center point: **619073** (2mm), **619053** (.1")
Used to scribe a workpiece.



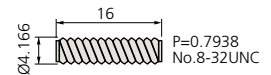
Scriber point: **619054**
Used to scribe a workpiece.



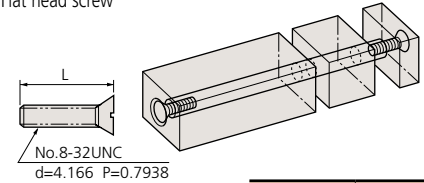
Base: **619074** (10mm), **619054** (.5")
Used as clamps by inserting them into the center hole of a square gauge block.



Stud: **619056**

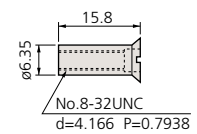


Flat head screw

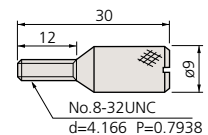


Order No.	L
619057	31.6mm
619058	15.8mm

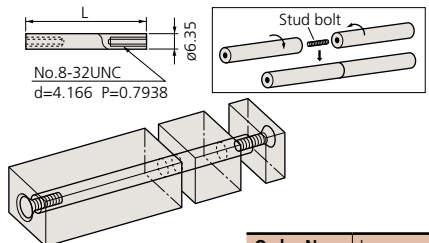
Slotted head nut: **619059**



Knurled head screw: **619066**

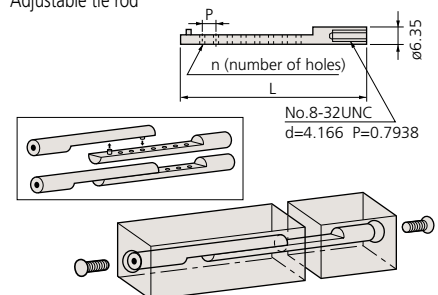


Tie rod



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 Gauge 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 gauge 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 Gauge Block

SERIES 516

FEATURES

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



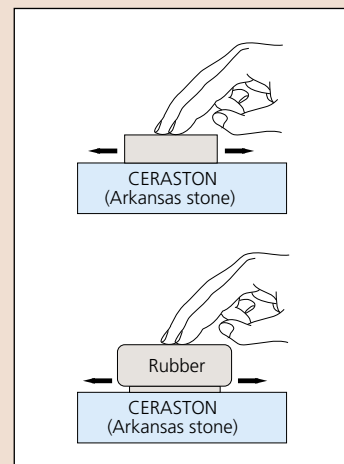
SPECIFICATIONS

Order No.	Assortment of tools and accessories
516-650	Anti-corrosive oil (600001): Used for both steel and tungsten-carbide gauge blocks. 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 gauge 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 gauge block mat. Reagent bottle (600008): Bottle of wiping solution (100mL) Gloves



Removing burrs

- (1) Wipe any dust and oil films from the gauge block and the Ceraston (or Arkansas stone) using a solvent.
- (2) Place the gauge 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 gauge block to and fro about ten times (Fig. 1). Use a block rubber for thin gauge 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 gauge 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 gauge block from being scratched. Mitutoyo does not handle the Arkansas stone.



Step Master

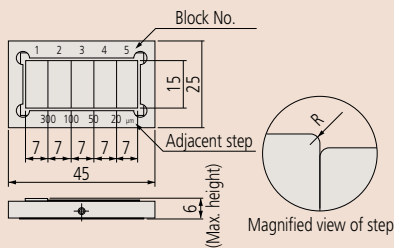
SERIES 516

FEATURES

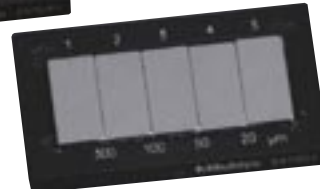
Step master is a master gage used for the z-axis (vertical direction) calibration of optical instruments.

- Each adjacent step is measured down to $0.01\mu\text{m}$ by using an interferometer within $\pm 0.20\mu\text{m}$ 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 μm	5 μm	2 μm	1 μm	Steel type
516-199	300 μm	100 μm	50 μm	20 μm	Steel type
516-498	10 μm	5 μm	2 μm	1 μm	Ceramic type
516-499	300 μm	100 μm	50 μm	20 μm	Ceramic type

Available Dimension

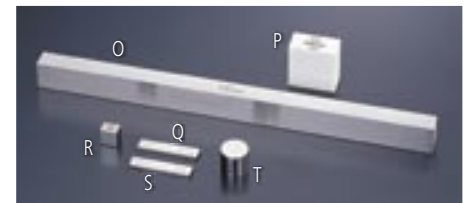
Nominal size: 0.1mm to 1000mm (steel)
0.5mm to 500mm (ceramic)
Nominal pitch: 0.0005mm (up to 100mm)
0.001mm (over 100mm)
Minimum section dimension:
Approx. 5 x 5mm
Maximum section dimension:
Approx. 140 x 140mm (steel)
Approx. $\phi 160\text{mm}$ (steel, cylindrical)
Approx. 100 x 50mm (ceramic)
Approx. $\phi 60\text{mm}$ (ceramic, cylindrical)
Accuracy: Gauge Block level

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

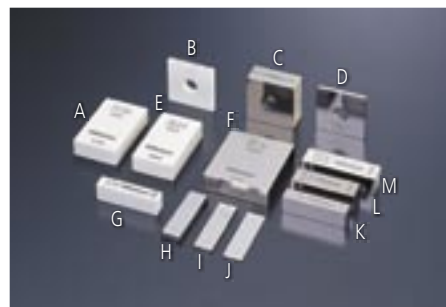
Made-to-order Block & Reference

FEATURES

- Mitutoyo can provide Gauge Blocks and reference gages to your size and design.



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 ($\phi 13.08$ x 12mm)



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



U: Cylindrical reference block for depth micrometer ($\phi 60$ x 150mm)
V: Ceramic reference plate (50 x 50 x 50mm, flatness 0.3 μm)
W: Ceramic stepped block (30 x 18 x 5mm, step: 0.15mm)

Gauge Block Interferometer GBI

Automatic Gauge Block Calibration

FEATURES

- Automatic measuring instrument for gauge block lengths between 0.1mm and 250mm using optical interference.
- The intensity and wavelength of the He-Ne laser light source is highly stable. This allows high-accuracy measurement.
- To reduce the effects of operator body heat, automatic remote measurement can be performed.
- The GBI automatically detects the light quantity distribution of interference fringes and processes data, thus eliminating human errors.
- Both the refractive index and the thermal expansion of gauge blocks are automatically compensated for by the computer which is linked to the thermometer, hygrometer, and digital barometer.



SPECIFICATIONS

Model No.	GBI
Light source	632.8μm wavelength system He-Ne laser 543.5μm wavelength system He-Ne laser
Measuring range	0.5mm - 250mm
Accuracy (Uncertainty 95%)	±0.02μm (when measuring a gauge block of 100mm length), ±0.04μm (when measuring a gauge block of 200mm length)
Number of gauge blocks to be mounted on the measuring table	12

Gauge Block Comparator GBCD-100A

SERIES 516 — Automatic Type Comparator with Dual Gage Heads

SPECIFICATIONS

Model No.	GBCD-100A
Order No.	100V AC 565-111K 110V AC 565-111C 120V AC 565-111A 240V AC 565-111E
Resolution	0.00001mm (0.01μm)
Range	0.5mm - 100mm
Measuring unit	Differential (dual-head) type Mu-Checker
Accuracy in narrow range (20°C)	±(0.03+0.3L/1000)μm* L = Gauge block length (mm) *Uncertainty of measurement is 95% (not including the calibration error of the standard gauge block).
Measuring force	Upper gage head: 1N (100gf) Lower gage head: 0.6N (60gf)
Air requirement	400kPa (4kgf/cm²)
Operating condition	Temperature: 20°C ±1°C Humidity: 58%RH ±15%RH
Power supply	100 - 120V/200 - 240V AC, 50/60Hz
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



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

Optional Accessory

- 962723:** Gauge block set for probe calibration
962764: Gauge block holder for probe calibration
611615-02: 5mm gauge block (grade 0) for origin setting
243989: Auxiliary stage (size: 360 x 253mm)
218-007: Work bench

Gauge Block Comparator GBCD-250

SERIES 516 — Manual Type Comparator with Dual Gage Heads

FEATURES

- Gauge blocks between 0.1mm and 250mm can be easily compared with the standard gauge block on the GBCD-250.
- The upper and lower gaging heads assure the operator of a high-accuracy measurement with ease of use.

Optional Accessory

- 962723:** Gage head calibration kit
02ASD130: Square gauge block measuring kit
02ASF040: Heat insulation shield
02ASD100: Gauge block set for accuracy inspection



SPECIFICATIONS

Metric	
Model No.	GBCD-250
Order No.	100V AC 565-130
	110V AC 565-130A
	220V AC 565-130D
	240V AC 565-130E
Range	0.1mm - 250mm
Resolution	0.00001mm (0.01μm)
Accuracy in narrow range (20°C)	±(0.03+0.3L/1000)μm* L = Gauge block length (mm)
Measuring units	Laser Hologage (upper), Mu-checker (lower)
Operating condition	Temperature: 20°C ±1°C Humidity: 58%RH ±15%RH
Data output	Via SPC output port
Power supply	100 - 120V/200 - 240V AC, 50/60Hz
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 gauge block).

Gauge Block Comparator GBCS-250

SERIES 516 — Manual Type Comparator with Single Gage Head

FEATURES

- By using the gauge block positioning unit, the operator can perform accuracy checking of many pieces of gauge blocks efficiently.
- A gauge block handling arm is provided for the GBCS which does not include a gauge block positioning unit.

Optional Accessory

- 02ASB530:** Heat insulation shield
02ASD130: Square gauge block measuring kit*
02ASD150: Square gauge block measuring kit**
 * For the GBCS-250 with gauge block positioning unit only
 ** For the GBCS-250 with gauge block handling arm only



GBCS-250
(with Gauge Block Positioning Unit)

SPECIFICATIONS

Model No.	GBCS-250	GBCS-250
Order No.	100V AC 565-120	565-122
	110V AC 565-120A	565-122A
	220V AC 565-120D	565-122D
	240V AC 565-120E	565-122E
Standard accessory	Gauge block positioning unit	Gauge block handling arm
Range	0.1mm - 250mm	
Resolution	0.00001mm (0.01μm)	
Accuracy in narrow range (20°C)	±(0.03+0.3L/1000)μm* L = Gauge block length (mm)	
Measuring unit	Laser Hologage	
Measuring force	Approx. 0.4N (40gf)	
Operating condition	Temperature: 20°C ±1°C Humidity: 58%RH ±15%RH	
Data output	Via RS-232C interface unit	
Power supply	100 - 120V/200 - 240V AC, 50/60Hz	
Dimensions (W x D x H)	Main unit: 300 x 300 x 687mm Display unit: 235 x 115 x 118mm	
Mass	Main unit: Approx. 60kg Display unit: Approx. 2kg	

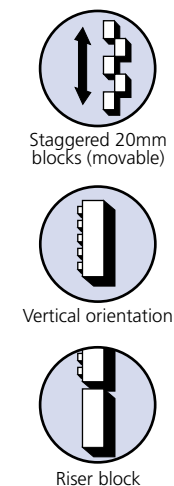
* Uncertainty of measurement is 95% (not including the calibration error of the standard gauge block).

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 **515-311**).



515-322

- Each Height Master is supplied with a gauge block for zero-setting.
- Fitted wooden case supplied.



SPECIFICATIONS

Metric		
Range (H)	Order No.	Block step
$5 < H \leq 310\text{mm}$	515-322	20mm (staggered)

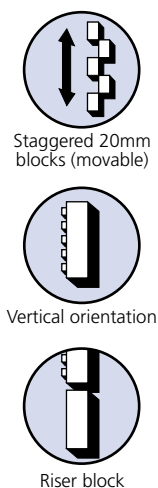
Inch		
Range (H)	Order No.	Block step
$.2" < H \leq 12.2"$	515-311	.5" (straight)
$.2" < H \leq 12.2"$	515-310	1" (staggered)

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 gauge block for zero setting.



515-354

SPECIFICATIONS

Metric		
Range (H)	Order No.	Block step
$10 < H \leq 310\text{mm}$	515-354	20mm (staggered)
$10 < H \leq 460\text{mm}$	515-356	20mm (staggered)
$10 < H \leq 610\text{mm}$	515-358	20mm (staggered)

Inch		
Range (H)	Order No.	Block step
$.5" < H \leq 12"$	515-355	1" (staggered)
$.5" < H \leq 18"$	515-357	1" (staggered)
$.5" < H \leq 24"$	515-359	1" (staggered)



(Refer to the page 9 for details.)

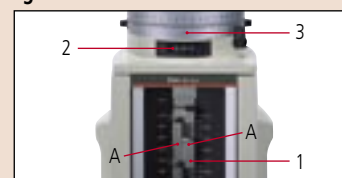
Technical Data

Measuring range (H): Refer to the list of specifications.
 Graduation: 0.001mm or .00001"
 Block arrangement: Staggered arrangement
 (515-311: straight arrangement)
 Block travel stroke: 20mm or 1"
 Block feeding pitch: 0.5mm/rev or .025"/rev
 Block pitch accuracy: $\pm 1.5\mu\text{m}$
 Parallelism of blocks: $1\mu\text{m}$
 Block feeding error: $\pm 1\mu\text{m}$
 Block retracing error: $1\mu\text{m}$
 Mass: 23kg

Optional Accessory

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 (see page 213.)

Reading



Height A

1. Scale	280. mm
2. Counter	5.67 mm
3. Thimble	0.000 mm
	<u>285.670 mm</u>



(Refer to the page 9 for details.)

Technical Data

Measuring range (H): Refer to the list of specifications.
 Graduation: 0.001mm or .00001"
 Block arrangement: Staggered arrangement
 Block travel stroke: 20mm or 1"
 Block feeding pitch: 0.5mm/rev or .025"/rev
 Block pitch accuracy: $\pm 1.5\mu\text{m}$ ($0 < H \leq 310\text{mm}$)
 $\pm 2.5\mu\text{m}$ ($310 < H \leq 450\text{mm}$)
 $\pm 3.5\mu\text{m}$ ($450 < H \leq 610\text{mm}$)
 Parallelism of blocks: $2.0\mu\text{m}$ ($0 < H \leq 310\text{mm}$)
 $2.5\mu\text{m}$ ($310 < H \leq 610\text{mm}$)
 Block feeding error: $\pm 2.0\mu\text{m}$ (**515-358, 515-359**: $\pm 2.5\mu\text{m}$)
 Block retracing error: $2.0\mu\text{m}$ (**515-358, 515-359**: $2.5\mu\text{m}$)
 Display: LCD
 Battery: SR44 (2 pcs.), **938882**
 Battery life: Approx. 1.8 years under normal use
 Mass: 9.5kg (**515-354, 515-355**)
 13.6kg (**515-356, 515-357**)
 16kg (**515-358, 515-359**)

Function

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

Optional Accessory

515-112: Auxiliary block kit for bore gage (mm)
515-119: Auxiliary block kit for bore gage (inch)
 —: Riser block (see page 213.)
937387: SPC cable (1m)
965013: SPC cable (2m)



SPC

(Refer to the page 9 for details.)

Technical Data

Measuring range (H): Refer to the list of specifications.
 Graduation: 0.0001mm or .000005"
 Block arrangement: Staggered arrangement
 Block travel stroke: 20mm or 1"
 Indication accuracy: $\pm 1\mu\text{m}$
 Block pitch accuracy: $\pm 0.5\mu\text{m}$
 Parallelism of blocks: 0.5 μm
 Block feeding error: $\pm 0.5\mu\text{m}$
 Display: LED
 Power supply: Via AC adaptor
 Mass: 18kg

Function

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

Optional Accessory

—: Riser block (see page 213.)
936937: SPC cable (1m)
965014: SPC cable (2m)
940269: RS-232C interface unit



LED display



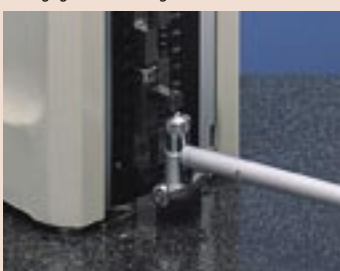
LED block indication



Fine feeding

Coarse feeding

Bore gage zero-setting



CERA Height Master

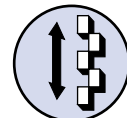
SERIES 515

FEATURES

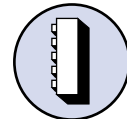
- The measuring blocks are made from a zirconia-based ceramic material which is highly resistant to corrosion and wear, and free from deterioration over time.



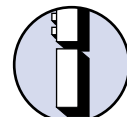
515-341



Staggered 20mm blocks (movable)



Vertical orientation



Riser block

- 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.
- Fitted wooden case supplied.

SPECIFICATIONS

Metric		
Range (H)	Order No.*	Block step
$5 < H \leq 310\text{mm}$	515-341	20mm (staggered)

Inch		
Range (H)	Order No.*	Block step
$.2" < H \leq 12"$	515-352	1" (staggered)

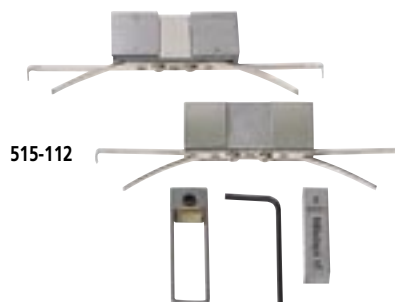
*To denote your AC line voltage add the following suffixes to the order No. (e.g.: **515-341A**):
A for 120V, **D** for 220V, **DC** for 220V (CCC), **K** for 220V (EK),
No suffix is required for 100V

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
150mm	515-113	$\pm 0.6\mu\text{m}$	5.7kg
300mm	515-114	$\pm 1.0\mu\text{m}$	11.3kg
600mm	515-115	$\pm 2.0\mu\text{m}$	31kg

Inch			
Height	Order No.	Accuracy of height	Mass
6"	515-116	$\pm 20\mu\text{in}$	12.5 lbs.
12"	515-117	$\pm 40\mu\text{in}$	24.9 lbs.
24"	515-118	$\pm 80\mu\text{in}$	68.2 lbs.

Universal Height Master

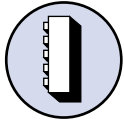
SERIES 515 — Usable in Vertical and Horizontal Orientations

FEATURES

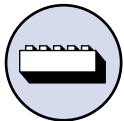
- The Universal Height Master is designed for both vertical and horizontal orientations, providing a wide range of applications such as accuracy checking of machine tool table movements.
- Fitted wooden case supplied.



Single-row 10mm blocks (movable)



Vertical orientation



Horizontal orientation



Riser block

515-520

SPECIFICATIONS

Metric		
Range (R)	Order No.	Block step
5 < R ≤ 610mm	515-520	10mm (straight)
5 < R ≤ 1010mm	515-523	10mm (straight)

Inch		
Range (R)	Order No.	Block step
.2" < R ≤ 18.2"	515-512	.5" (straight)
.2" < R ≤ 24.2"	515-510	.5" (straight)
.2" < R ≤ 40.2"	515-513	.5" (straight)



(Refer to the page 9 for details.)

Technical Data

Measuring range (R): Refer to the list of specifications.
 Graduation: 0.001mm or .00001"
 Block arrangement: Straight arrangement
 Block travel stroke: 20mm or 1"
 Block feeding pitch: 0.5mm/rev or .025"/rev
 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)
 Block feeding error: ±1.2µm (515-523, 515-513: ±1.5µm)
 Block retracing error: 1.2µm (515-523, 515-513: 1.5µm)
 Mass: 42kg (515-520, 515-512)
 50kg (515-510)
 63.5kg (515-523, 515-513)

Optional Accessory

- 900574: Supporting base for vertical operation
 (*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



(Refer to the page 9 for details.)

Technical Data

Measuring range (R): Refer to the list of specifications.
 Block pitch accuracy:
 $\pm 2.5\mu\text{m}$ ($0 < R \leq 310\text{mm}$)
 $\pm 3.5\mu\text{m}$ ($310 < R \leq 610\text{mm}$)
 $\pm 5.0\mu\text{m}$ ($610 < R \leq 1010\text{mm}$)
 $\pm 8.0\mu\text{m}$ ($1010 < R \leq 1510\text{mm}$)
 Parallelism of blocks:
 $1.2\mu\text{m}$ ($0 < R \leq 310\text{mm}$)
 $1.5\mu\text{m}$ ($310 < R \leq 610\text{mm}$)
 $2.0\mu\text{m}$ ($610 < R \leq 1010\text{mm}$)
 $2.5\mu\text{m}$ ($1010 < R \leq 1510\text{mm}$)
 Mass:
 7kg (515-720, 515-710)
 10kg (515-721, 515-711)
 13kg (515-722, 515-712)
 22kg (515-723, 515-713)
 30kg (515-724)

Check Master

SERIES 515

FEATURES

- Designed to check the accuracy of table movements of machine tools and calibrate CMMs. Permanently wrung stack of gauge blocks is housed in a rigid frame.

- Can be used in either a vertical or horizontal orientation for models up to 1500mm range.
- Fitted wooden case supplied.



SPECIFICATIONS

Metric		
Range (R)	Order No.	Block step
300mm	515-720	10mm
450mm	515-721	10mm
600mm	515-722	10mm
1000mm	515-723	10mm
1500mm	515-724	10mm

Inch		
Range (H)	Order No.	Block step
12"	515-710	.5"
18"	515-711	.5"
24"	515-712	.5"
40"	515-713	.5"

High Accuracy Check Master

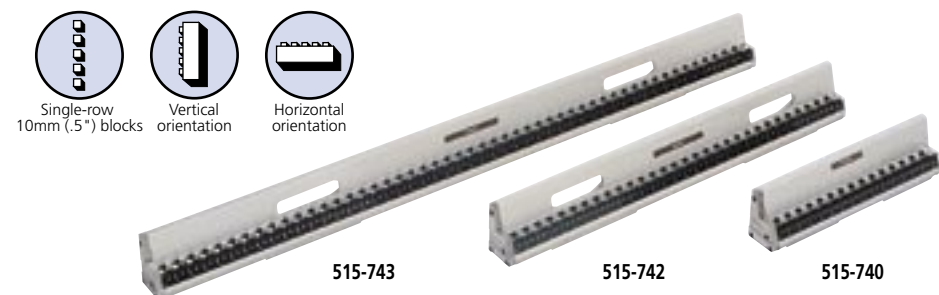
SERIES 515

FEATURES

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

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.



SPECIFICATIONS

Metric		
Range (R)	Order No.	Block step
300mm	515-740 / 515-760*	10mm
450mm	515-741 / 515-761*	10mm
600mm	515-742 / 515-762*	10mm
1000mm	515-743 / 515-763*	10mm
1500mm	515-744 / 515-764*	10mm

*Ceramic Check Master

Inch		
Range (R)	Order No.	Block step
12"	515-730 / 515-750*	.5"
18"	515-731 / 515-751*	.5"
24"	515-732 / 515-752*	.5"
40"	515-733 / 515-753*	.5"
60"	515-734 / 515-754*	.5"

*Ceramic Check Master

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:
 $1.0\mu\text{m}$ ($0 < R \leq 450\text{mm}$)
 $1.5\mu\text{m}$ ($450 < R \leq 1010\text{mm}$)
 $2.0\mu\text{m}$ ($1010 < R \leq 1510\text{mm}$)
 Mass:
 3.6kg (515-740, 515-730)
 5.4kg (515-741, 515-731)
 7.2kg (515-742, 515-732)
 12kg (515-743, 515-733)
 18kg (515-744, 515-734)

Optional Accessory

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



Supporting base

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.



(Refer to the page 9 for details.)

Technical Data

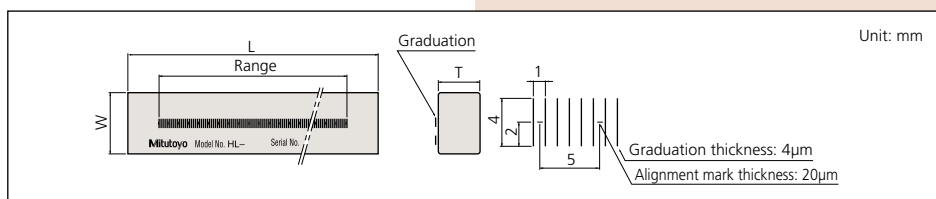
Accuracy (at 20°C): $(0.5+L/1000)\mu\text{m}$,
 $L = \text{Measured length (mm)}$
 Glass material: Low expansion glass
 Thermal expansion coefficient: $8 \times 10^{-6}/\text{K}$
 Graduation: 1mm
 Graduation thickness: 4μm
 Mass: 0.75kg (250mm), 1.8kg (500mm)

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.

DIMENSION

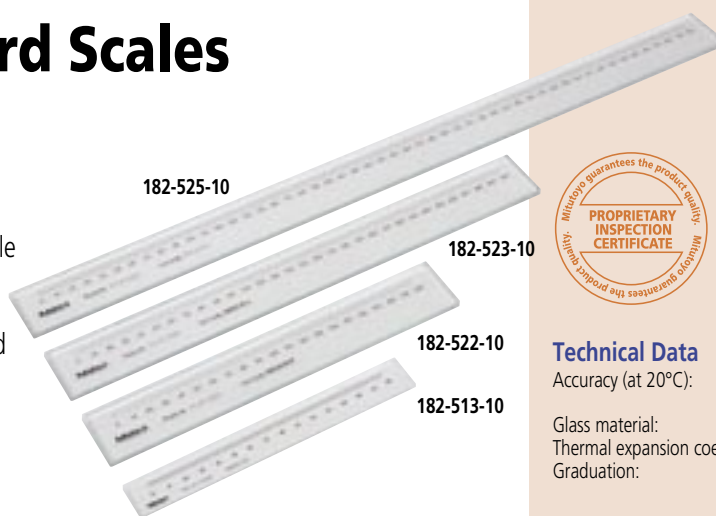


Working Standard Scales

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.



(Refer to the page 9 for details.)

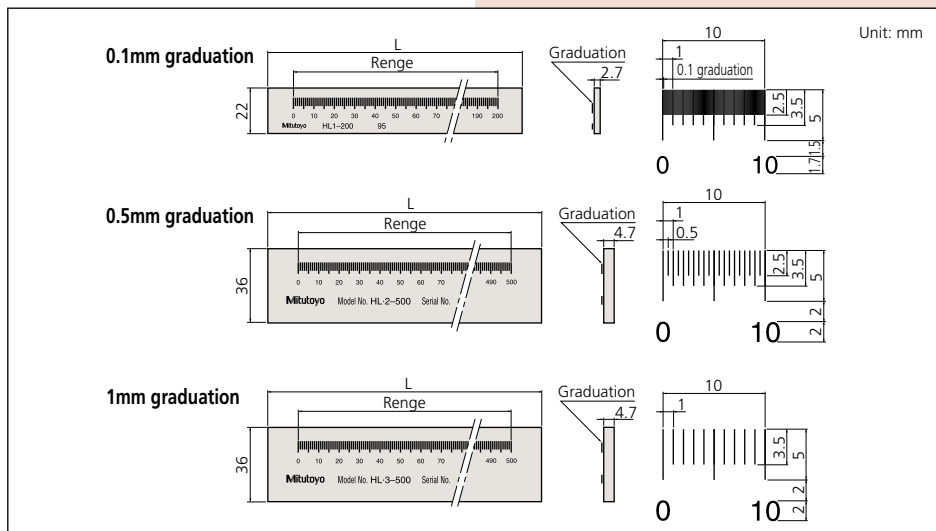
Technical Data

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

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	

DIMENSION





(Refer to the page 9 for details.)



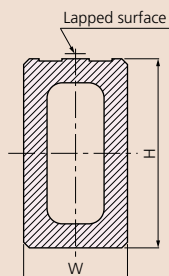
*Suffix Number for Inspection Certificate and Calibration Certificate

Suffix No.	Certificate provided
-20	Provided with Inspection Certificate
-22	Provided with Calibration Certificate

Technical Data

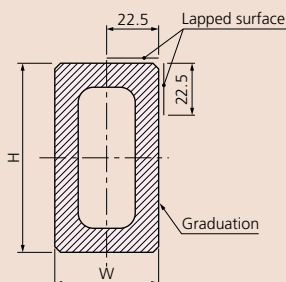
Cross section

(High accuracy and ultra high accuracy types)



Double faced type

(High accuracy and ultra high accuracy types)



CERA Straight Master

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.

- Alminac ceramic made
- 50mm/100" 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.
- Little secular change
- Lightweight



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	16"	311-322	0.3μm	440 x 35 x 50mm	1.8kg
700mm	311-305	28"	311-325	0.5μm	740 x 35 x 50mm	3kg
1000mm	311-307	40"	311-327	1.0μm	1040 x 45 x 80mm	8kg
1300mm	311-309	52"	311-329	1.5μm	1340 x 45 x 80mm	10kg

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	16"	311-342	0.2μm	440 x 35 x 50mm	1.8kg
700mm	311-335	28"	311-345	0.4μm	740 x 35 x 50mm	3kg
1000mm	311-337	40"	311-347	0.5μm	1040 x 45 x 80mm	8kg
1300mm	311-339	52"	311-349	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	16"	311-362	0.3μm	440 x 45 x 80mm	3.2kg
700mm	311-355	28"	311-365	0.5μm	740 x 45 x 80mm	5.5kg
1000mm	311-357	40"	311-367	1.0μm	1040 x 45 x 80mm	8kg
1300mm	311-359	52"	311-369	1.5μm	1340 x 45 x 80mm	10kg

Straightness Measuring System

SERIES 311 — Portable and High Accuracy Straightness Measurement

FEATURES

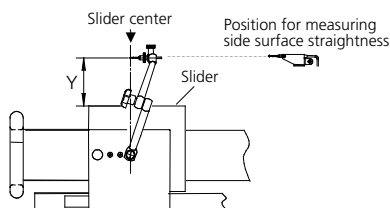
- Straightness can be easily measured by direct placement on a surface plate or a machine tool.
- An air bearing slider helps attain smooth movement and high precision.
- Workpieces can be measured for straightness on vertical and horizontal surfaces.
- Workpieces of 3.5m can be measured for straightness by a connecting measurement function that expands the length that can be measured. (The measurement accuracy is lowered due to the uncertainty of the scanned data.)
- Superior auxiliary functions allow easier parallelism alignments and accurate measurements.



SPECIFICATIONS

Order No.*		311-404 (w/ A4 size User's Manual), 311-405 (w/ letter size User's Manual)
Measuring range		800mm
Resolution		0.1μm
Straightness (20°C)	Upper surface	$\pm(0.5+0.5L/1000)\mu\text{m}$, L = Measured length (mm)
	Side surface	$\pm(0.5+0.5L/1000)\mu\text{m}$, L = Measured length (mm)
Travel		Manual operation
Length standard		ABSOLUTE linear encoder
Air source		0.4MPa, 60L/min
Power supply		100 - 240VAC \pm 10%, 50/60Hz
Operation temperature		20°C \pm 10°C
Dimension and mass (W x D x H)	Main unit	1072 x 207 x 245mm, 25kg
	Electronic unit	330 x 305 x 76mm, 3.6kg
	Air unit	270 x 150 x 372mm, 5.8kg

*To denote your AC line voltage add the following suffixes to the order No. (e.g.: **311-404A**):
A for 120V, **D** for 220V, **DC** for 220V (CCC), **K** for 220V (EK), **No suffix** is required for 100V



Y=35mm, when measuring upper surface straightness
Y=100mm, when measuring side surface straightness

Optional Accessory

Attachment

- 02ASM150:** Two-head attachment
Used to attach two probes (lever head).
- 02ASM170:** Large arm
A large arm that expands the range where the probe can access, used by replacing with the standard arm.
- 02ASM140:** Extension rod for large arm
For large arms, used for surface measurements on a mounting table, or the like.
- 519-322:** Probe (lever head)
For electric micrometers (Mu-Checker)

Precision verification tools*

- 311-337:** 1000mm CERA straightness master (ultra-high precision type, straightness: 0.5μm)
For high precision correction of upper surface by users and for verification of precision
- 311-357:** 1000mm CERA straightness master (double-face finishing type, straightness: 1μm)
For correction of upper and side surfaces by users and for verification of precision

* A high precision straightedge rule having an effective length of at least 800mm is required as a precision verification tool.

Software

Measurement mode

- Normal measurement
General straightness measurement
- Reverse method
Measurement and calculation by reverse method
- Connecting measurement
Measurement range is expanded by connecting multiple measurements (up to 5)
- Parallelism measurement
Difference between straightness measurement results of two locations is evaluated for inclination (parallelism).
- Shape comparison measurement
Difference between straightness measurement results of two locations is evaluated for linear shape

Auxiliary functions

- Indication of slider moving speed
Indication of slider moving speed by a graph allows stable measurement
- Parallelism adjustment
A function that measures the part of a measured surface beforehand to aid parallelism adjustment
- User correction measurement
Correction values are created by using the master obtained by user.
- Measurement assistance function
Whether auxiliary messages for measurement operation are displayed is switched.

Calculation conditions

- Straightness calculation methods
Least squares, minimum zone method
- Filtering
Moving-average method (Vibration components and surface irregularity are smoothed for calculation and display.)

Print

Simplified printing function of measurement results

Storing measurement data

Measurement data is stored in a text format.
The data can be read by using spreadsheet application software and processed to create an inspection certificate in a customized format.

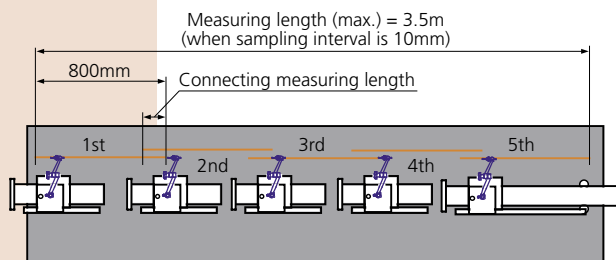
Normal measurement



Display of normal measurement results

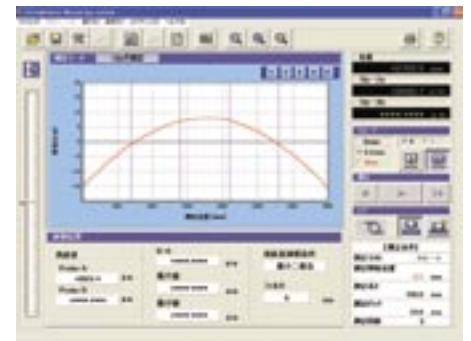


Connecting measurement



Measurement data of up to five times is combined to create one set of straightness measurement data. An optimized fitting processing of connecting processing range allows an connection errors to be minimized.
(Connecting measuring length) = (Length equal to 10 points of measurement data)

Display of connecting measurement results



Parallelism measurement / shape comparison measurement



Display of parallelism measurement results



Feeding of two rails can be evaluated for parallelism displacement.

Display of shape comparison measurement results



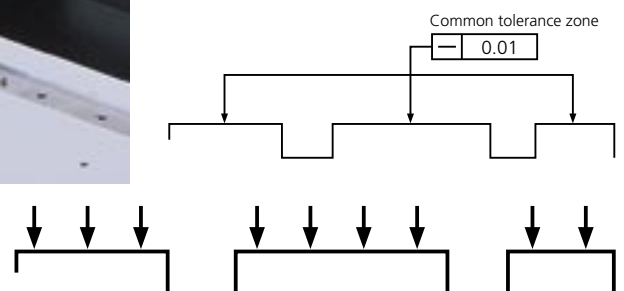
Bending of two rails can be evaluated for difference.

Point measurement



Example of instructions in drawing

Point measurement function
Workpieces such as those shown above can be evaluated for straightness, by performing point measurement at the points indicated by the downward arrows, above.



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.



515-611

SPECIFICATIONS

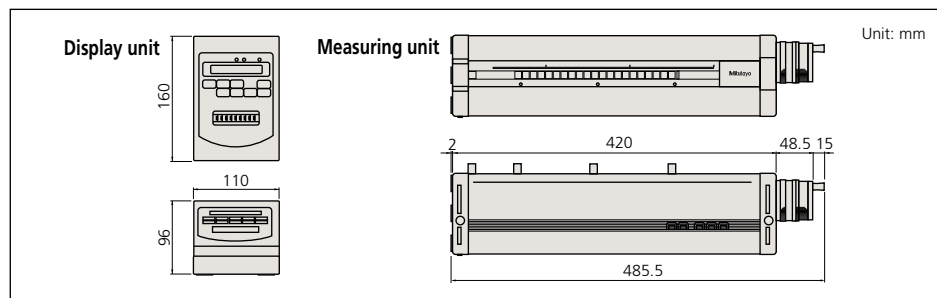
Metric		
Range	Order No.*	Block step
20 - 320mm	515-611	20mm (staggered)

*To denote your AC line voltage add the following suffixes to the order No.: A for 120V, D for 220V, E for 240/220V, K for 100V

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

*To denote your AC line voltage add the following suffixes to the order No.: A for 120V, D for 220V, E for 240/220V

DIMENSION



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



SPC



(Refer to the page 9 for details.)

Technical Data

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

Function

Data output

Optional Accessory

936937:	SPC cable (1m)
965014:	SPC cable (2m)
990554:	Workpiece rest

Square Master

SERIES 311 — Squareness / Straightness Measuring Instrument

Technical Data

Squareness:	3 μ m (311-215, 311-216)
	6 μ m (311-225, 311-226)
	9 μ m (311-245, 311-246)
Straightness:	2 μ m (311-215, 311-216)
	2.5 μ m (311-225, 311-226)
	3.5 μ m (311-245, 311-246)
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)
Mass:	13.7kg, 30.14 lbs (311-215, 311-216)
	16.2kg, 35.64 lbs (311-225, 311-226)
	24kg 52.8 lbs (311-245, 311-246)

Optional Accessory

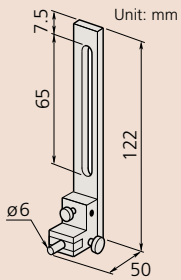
—:	Riser blocks (see page 213.)*
517-665:	Granite square, 45 (W) x 140 (D) x 280 (H) mm
900571:	Adjustable holder
900551:	Extension holder
900565:	Feeler**

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

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

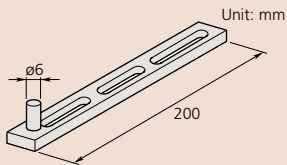
Adjustable holder

No.900571



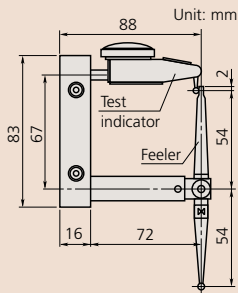
Extension holder

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

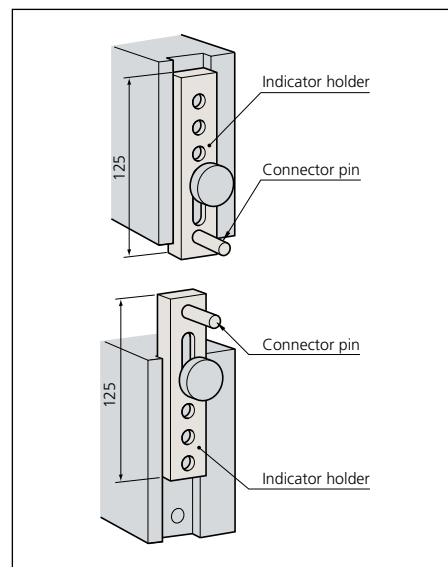


311-245

SPECIFICATIONS

Metric			
Vertical travel	Order No.	Squareness	Straightness
150mm	311-215	3 μ m	2 μ m
250mm	311-225	6 μ m	2.5 μ m
450mm	311-245	9 μ m	3.5 μ m

Inch			
Vertical travel	Order No.	Squareness	Straightness
6"	311-216	.00012"	.00008"
10"	311-226	.00024"	.0001"
18"	311-246	.00036"	.00014"

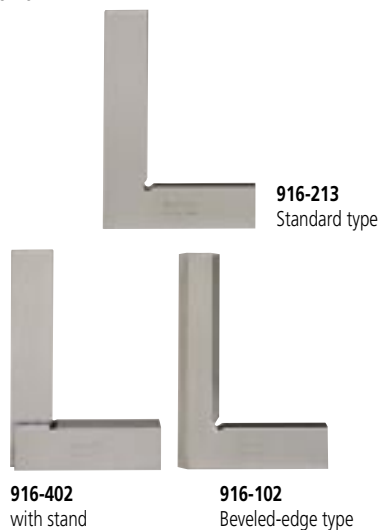


Precision Square

SERIES 916

FEATURES

- Three types of square are available.
- All edges are hardened and precision ground.



SPECIFICATIONS

Size (H x W)	Order No.	Remarks
50 x 40mm	916-211	Standard type
75 x 50mm	916-212	Standard type
100 x 70mm	916-213	Standard type
150 x 100mm	916-214	Standard type
200 x 130mm	916-215	Standard type
250 x 165mm	916-216	Standard type
300 x 200mm	916-217	Standard type
400 x 250mm	916-218	Standard type
75 x 50mm	916-401	with stand
100 x 70mm	916-402	with stand
150 x 100mm	916-403	with stand
200 x 130mm	916-404	with stand
250 x 165mm	916-405	with stand
300 x 200mm	916-406	with stand
400 x 250mm	916-407	with stand
50 x 40mm	916-100	Standard type
75 x 50mm	916-101	Standard type
100 x 70mm	916-102	Standard type
150 x 100mm	916-103	Standard type
200 x 130mm	916-104	Standard type

Technical Data

Squareness

	Outside	Inside
916-211	6μm	12.5μm
916-212	6.5μm	14μm
916-213	7μm	15μm
916-214	8μm	17.5μm
916-215	9μm	20μm
916-216	10μm	22.5μm
916-217	11μm	25μm
916-218	13μm	30μm
916-401	6.5μm	14μm
916-402	7μm	15μm
916-403	8μm	17.5μm
916-404	9μm	20μm
916-405	10μm	22.5μm
916-406	11μm	25μm
916-407	13μm	30μm
916-100	2.5μm	6μm
916-101	3μm	6.5μm
916-102	3μm	7μm
916-103	3.5μm	8μm
916-104	4μm	9μm

Precision Dial Square

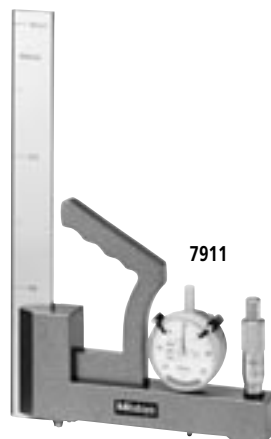
SERIES 7

FEATURES

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

SPECIFICATIONS

Size	Order No.	Range	Squareness
300mm	7911	±0.17mm	±2.5μm/300mm
600mm	7912	±0.24mm	±5μm/600mm



Technical Data

Range:	±0.17mm (7911) ±0.24mm (7912)
Squareness:	±2.5μm/300mm (7911) ±5μm/600mm (7912)

Spring Dividers and Calipers

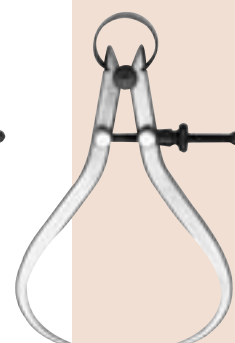
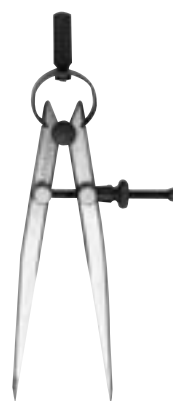
SERIES 950

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
4" (100mm)	950-211	950-221	950-231
6" (150mm)	950-212	950-222	950-232
8" (200mm)	950-213	950-223	950-233



Combination Square Set

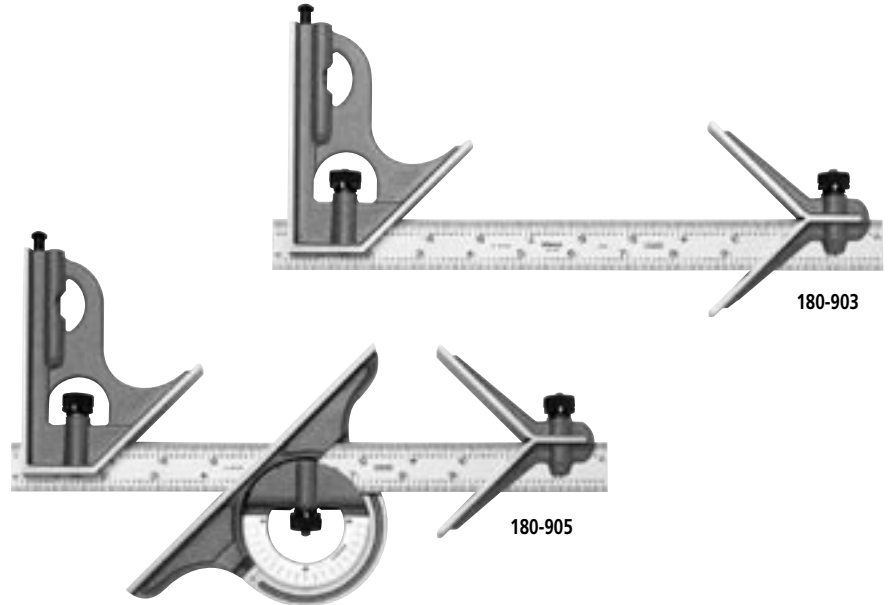
SERIES 180

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.

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.



SPECIFICATIONS

Metric Combination Square Sets

Size	Order No.		Blade provided
	Complete	Semi-complete	
150mm	—	180-919	180-405
300mm	180-910	180-920	180-505

Inch/Metric Combination Square Sets

Size	Order No.		Blade provided
	Complete	Semi-complete	
6"/150mm	—	180-915	180-403
12"/300mm	180-907	180-909	180-503

Inch Combination Square Sets

Size	Order No.		Blade provided
	Complete	Semi-complete	
6"	—	180-901	180-401
6"	—	180-902	180-402
12"	180-905	180-903	180-501
12"	180-906	180-904	180-502

Blades (Individual)

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

Measuring Heads (Individual)

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

Steel Rules

SERIES 182

FEATURES

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



182-101



182-102



182-103



182-105



182-201



182-202



182-205



182-302

SPECIFICATIONS

Metric Wide Rigid Rules

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

Inch/Metric Wide Rigid Rules

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

Inch Wide Rigid Rules

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

Metric Full-Flexible Rules

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

Inch/Metric Full-Flexible Rules

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

Inch Full-Flexible Rules

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

Inch/Metric Semi-Flexible Rules

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

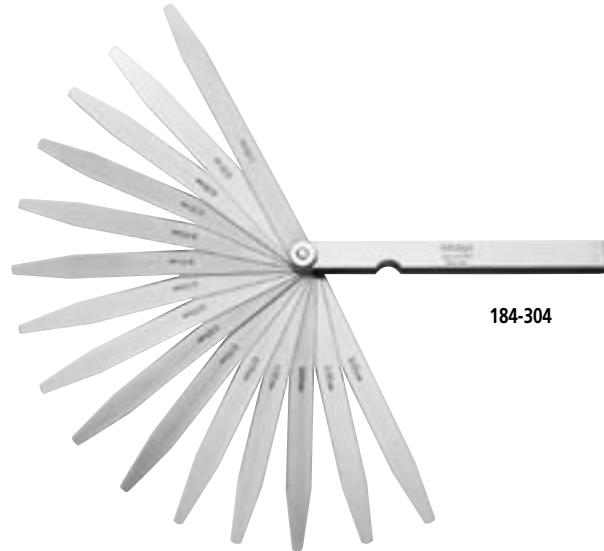
*Engraved on the front side only.

Thickness Gages

SERIES 184

FEATURES

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



SPECIFICATIONS

Metric

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

Precision Levels

SERIES 960

Technical Data

Accuracy of graduations: ± 0.7 (960-606), ± 0.3 (960-706)

FEATURES

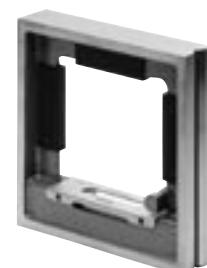
- High precision longitudinal and transverse vials make it possible to check or level surfaces.

SPECIFICATIONS

Order No.	Sensitivity	Dimensions (W x D x H)
960-606	0.02mm/m	200 x 44 x 38.2mm
960-706	0.02mm/m	200 x 44 x 200mm



960-606



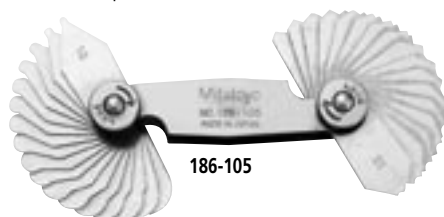
960-706

Radius Gages

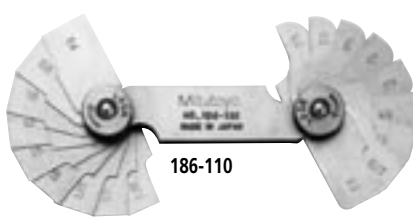
SERIES 186

FEATURES

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



186-105



186-110

SPECIFICATIONS

Metric			
Range	Order No.	Composition of leaves	Remarks
0.4 - 6mm	186-110	18 pairs: 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 pairs: 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 pairs: 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 pairs: 9/32" - 33/64" by 64ths	90° arc
1/64" - 1/2"	186-901*	25 pairs: 1/64" - 17/64" by 64ths, 9/32" - 1/2" by 32nds	—

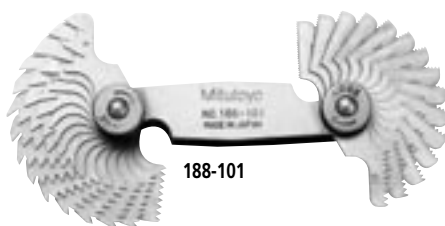
*Each gage has five measuring locations.

Pitch Gages

SERIES 188

FEATURES

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



188-101

SPECIFICATIONS

Metric Screw Pitch Gages

Range	Order No.	Composition of leaves
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

Range	Order No.	Composition of leaves
4 - 42 TPI	188-111	30 leaves: 4, 4 1/2, 5, 5 1/2, 6, 7, 8, 9, 10, 11, 11 1/2, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38, 40, 42 TPI

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

Whitworth Screw Pitch Gages

Range	Order No.	Composition of leaves
4 - 42 TPI	188-101	30 leaves: 4, 4 1/2, 5, 5 1/2, 6, 7, 8, 9, 10, 11, 11 1/2, 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, 4 1/2, 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

Digital Universal Protractor

SERIES 187

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

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.

SPECIFICATIONS

Blade length	Order No.	Remarks (standard accessory)
150mm	187-501	Height gage holder (950750)
300mm	187-502	Height gage holder (950750)
6"	187-551	Height gage holder (950749)
12"	187-552	Height gage holder (950749)



187-501

Technical Data

Graduation: 5 min. (0° - 90° - 0°)
Blade edge angle: 30°* 45° and 60°
*187-901, 187-902 only

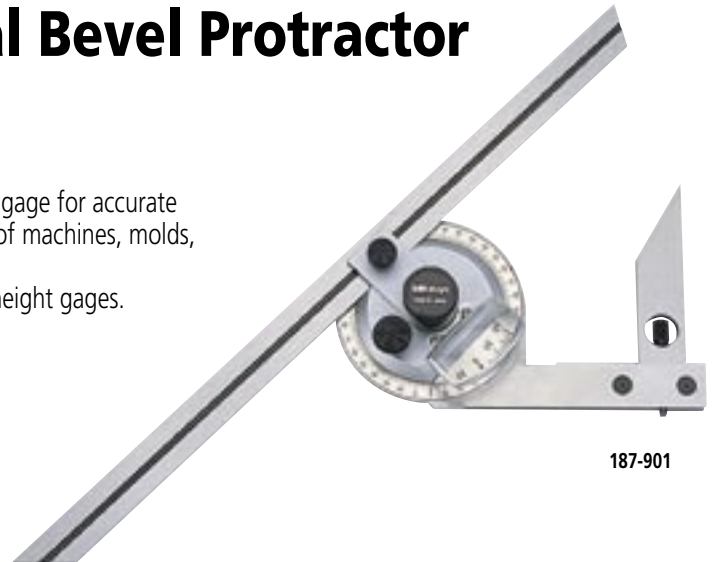


Universal Bevel Protractor

SERIES 187

FEATURES

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



187-901

SPECIFICATIONS

Metric		
Blade length	Order No.	Remarks
150, 300mm	187-901	w/60°, 45°, 30° edges
150mm	187-907	w/60°, 45° edges
300mm	187-908	w/60°, 45° edges

Inch		
Blade length	Order No.	Remarks
6", 12"	187-902	w/60°, 45°, 30° edges
6"	187-904	w/60°, 45° edges
12"	187-906	w/60°, 45° edges

Bevel Protractor

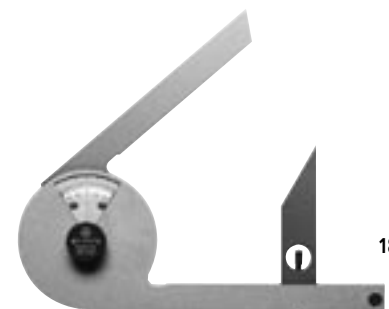
SERIES 187

FEATURES

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

SPECIFICATIONS

Blade length	Order No.	Remarks
135mm	187-201	w/60°, 30° edges



187-201

Technical Data

Graduation: 5 min. (0° - 90° - 0°)
Blade edge angle: 30° and 60°

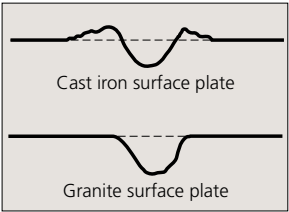
Black Granite Surface Plate

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.
- Steel stands are optional.



(Refer to the page 9 for details.)

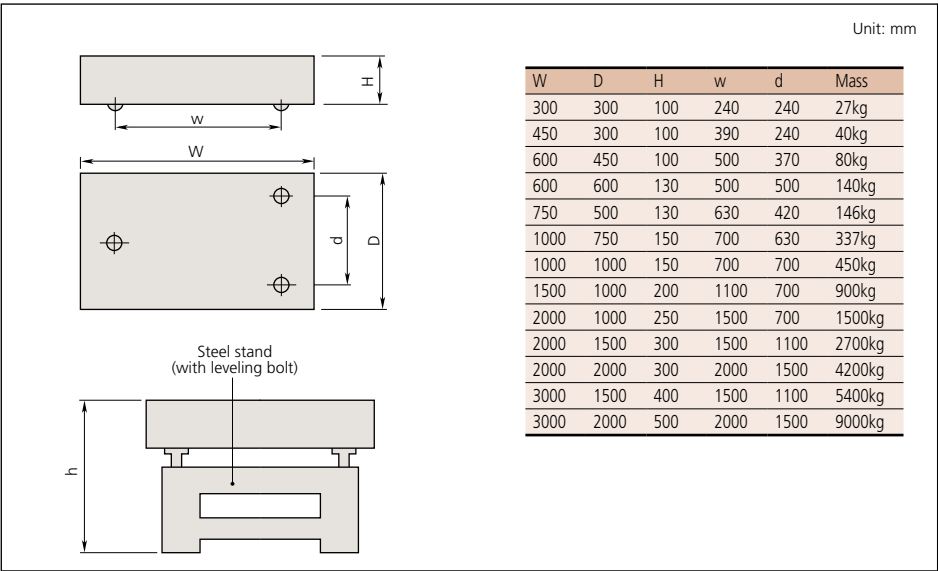
1000 x 750mm



600 x 600mm



DIMENSION



*Suffix Number for Calibration Certificate

Suffix No.	Calibration certificate
-4	Not provided
K	Provided



Order to Made Granite Products

Mitutoyo can produce order to made granite products with your design.

SPECIFICATIONS

Grade 00

Dimensions (W x D x H)	Order No.*	Flatness
300 x 300 x 100mm	517-401	0.002mm
450 x 300 x 100mm	517-411	0.002mm
600 x 450 x 100mm	517-414	0.0025mm
600 x 600 x 130mm	517-403	0.0025mm
750 x 500 x 130mm	517-405	0.003mm
1000 x 750 x 150mm	517-407	0.003mm
1000 x 1000 x 150mm	517-409	0.0035mm
1500 x 1000 x 200mm	517-413	0.004mm
2000 x 1000 x 250mm	517-410	0.0045mm
2000 x 1500 x 300mm	517-416	0.005mm
2000 x 2000 x 300mm	517-417	0.0055mm
3000 x 1500 x 400mm	517-418	0.0065mm
3000 x 2000 x 500mm	517-419	0.007mm

Grade 1

Dimensions (W x D x H)	Order No.*	Flatness
300 x 300 x 100mm	517-101	0.005mm
450 x 300 x 100mm	517-111	0.006mm
600 x 450 x 100mm	517-114	0.008mm
600 x 600 x 130mm	517-103	0.008mm
750 x 500 x 130mm	517-105	0.009mm
1000 x 750 x 150mm	517-107	0.012mm
1000 x 1000 x 150mm	517-109	0.013mm
1500 x 1000 x 200mm	517-113	0.016mm
2000 x 1000 x 250mm	517-110	0.019mm
2000 x 1500 x 300mm	517-116	0.020mm
2000 x 2000 x 300mm	517-117	0.022mm
3000 x 1500 x 400mm	517-118	0.025mm
3000 x 2000 x 500mm	517-119	0.027mm

Grade 0

Dimensions (W x D x H)	Order No.*	Flatness
300 x 300 x 100mm	517-301	0.003mm
450 x 300 x 100mm	517-311	0.003mm
600 x 450 x 100mm	517-314	0.004mm
600 x 600 x 130mm	517-303	0.005mm
750 x 500 x 130mm	517-305	0.005mm
1000 x 750 x 150mm	517-307	0.006mm
1000 x 1000 x 150mm	517-309	0.007mm
1500 x 1000 x 200mm	517-313	0.008mm
2000 x 1000 x 250mm	517-310	0.010mm
2000 x 1500 x 300mm	517-316	0.010mm
2000 x 2000 x 300mm	517-317	0.011mm
3000 x 1500 x 400mm	517-318	0.013mm
3000 x 2000 x 500mm	517-319	0.014mm



Stand

SPECIFICATIONS: Stand

Applicable surface plate size (W x D x H)	Order No.*	Adjustable height (h) range	Remarks
300 x 300 x 100mm	—	—	—
450 x 300 x 100mm	—	—	—
600 x 450 x 100mm	517-203-4 / 203R / 203CR	755 - 780mm	With levelling bolt
600 x 600 x 130mm	517-204-4 / 204R / 204CR	785 - 810mm	With levelling bolt
750 x 500 x 130mm	517-205-4 / 205R / 205CR	785 - 810mm	With levelling bolt
1000 x 750 x 150mm	517-206-4 / 206R / 206CR	755 - 780mm	With levelling bolt
1000 x 1000 x 150mm	517-207-4 / 207R / 207CR	735 - 775mm	With levelling bolt
1500 x 1000 x 200mm	517-208-4 / 208R / 208CR	735 - 775mm	With levelling bolt
2000 x 1000 x 250mm	517-209-4 / 209R / 209CR	735 - 775mm	With levelling bolt
2000 x 1500 x 300mm	517-210-4 / 210R / 210CR	735 - 775mm	With levelling bolt
2000 x 2000 x 300mm	O6AAY174	700 - 706mm	—
3000 x 1500 x 400mm	O6AAY175	700 - 706mm	—
3000 x 2000 x 500mm	O6AAY176	700 - 706mm	—

*Suffix "-4": Normal type, Suffix "R": with safety frame, Suffix "CR": with casters

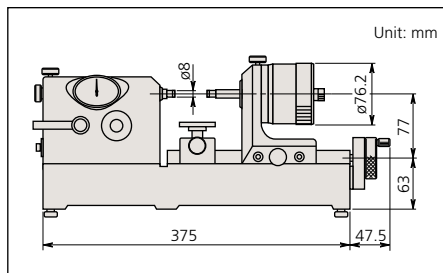
Bench Comparator

SERIES 162

FEATURES

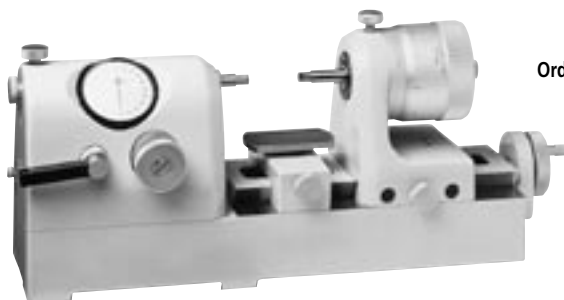
- 25mm/1" stroke micrometer head (Graduation: 0.001mm/.0001") is provided.
- Retractable anvil with dial indicator for high accuracy inspection of mass-produced parts.
- Anvil pressure is variable.
- Adjustable workpiece stage height.
- Dial Indicator is shockproof.
- $\varnothing 8\text{mm}$ (or 3/8")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

DIMENSION



Technical Data

Micrometer head stroke:	25mm or 1"
Graduation:	0.001mm or .0001"
Dial indicator range:	$\pm 0.1\text{mm}$ or $\pm .005"$
Maximum workpiece length:	100mm or 4"
Mass:	15kg



Order No.: 162-101 (metric)
162-102 (inch)

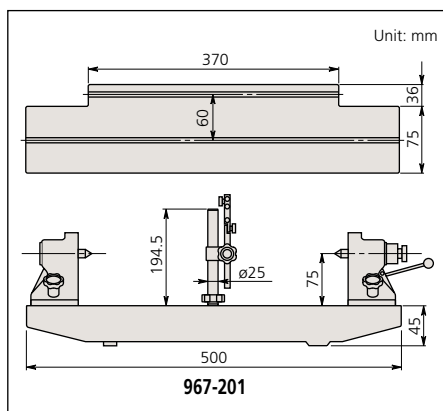
Bench Center

SERIES 967

FEATURES

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

DIMENSION



Technical Data

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



Order No.: 967-201