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**Gauge Blocks**



**Height Master**



**Reference Gages**



**Granite Surface  
Plates & Bench  
Micrometer**



**ZERO CERA  
BLOCK**



**Rectangular  
Gauge Blocks  
with CTE**



**Digital Height  
Master**



**High Precision  
Square**

# Gauge Blocks

## SERIES 516

### FEATURES

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

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

### Accuracy

Gauge blocks offered by Mitutoyo, an all-round precision measuring machine manufacturer, 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 technique, developed over more than a half century, enables us to achieve the best flatness and surface roughness needed for gauge blocks and thus maximize the wringing force.

### Abrasion Resistance and Dimensional Stability of Steel blocks

High-carbon high-chrome steel is employed to satisfy a variety of the material characteristics required for gauge blocks. Our advanced heat treatment technology for steel blocks, which involves repeated high and low temperature cycles, simultaneously achieves excellent abrasion resistance and reduces change in length over time to the minimum.

### CERA Blocks

CERA blocks are made of a ceramic material with a superior surface finish, created by Mitutoyo's ultra-precision machining techniques, that provides a premium quality block.

#### 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. Dimensionally Stable

CERA Blocks are free from dimensional change over time.

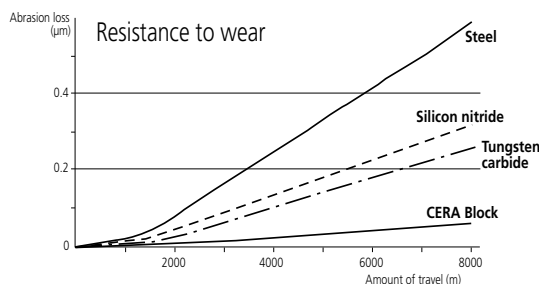
#### 5. Sizes Clearly Marked

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



### Selecting Gauge Blocks

- Gauge blocks are designed to offer the construction of practically any size, within the range of a set, using the minimum number of blocks. Long block sets are available if a longer length is required than is provided by the standard sets.
- Gauge block sets should be selected in accordance with the minimum length step required. Wear block sets should be used if the application is likely to involve rapid wear of the end blocks in a stack (and the minimum sizes required allow this). This will preserve the life of the set by confining wear to the wear blocks, whose cost of replacement is far less than that of a complete set.
- If a set containing a large number of gauge blocks is selected, the number of gauge blocks required for any particular length may be reduced and the number of combinations is increased. Accuracy will be retained and wear will be reduced.
- Dedicated gauge block sets for micrometer inspection and caliper inspection are 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 minimum length step as 2mm, are easier to handle than 1mm-based gauge blocks.



## Grade and Application

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

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

## Constructing a Gauge Block Stack

The following points should be noted when constructing a gauge block stack:

- Use as few gauge blocks as possible to obtain the required length by selecting thick blocks wherever possible.
- Select the block for the least significant digit first, then work back through the more significant digits until the required length is attained.
- 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:

Required length = 45.6785mm

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

$$\begin{array}{r}
 1.0005 \\
 1.008 \\
 1.17 \\
 17.5 \\
 + 25 \\
 \hline
 45.6785\text{mm}
 \end{array}$$

#### For a 2mm-based gauge block set (112 pcs.)

$$\begin{array}{r}
 2.0005 \\
 2.008 \\
 2.17 \\
 14.5 \\
 + 25 \\
 \hline
 45.6785\text{mm}
 \end{array}$$

## 6. Non-magnetic Nature Prevents Steel Swarf Contamination

## 7. High Wringing Force

Superior flatness and surface finish provides maximum wringing force.

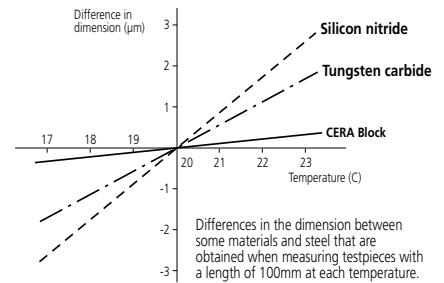


## 8. Superior Material Characteristics of CERA block

Property	Material	CERA Block (ZrO <sub>2</sub> )	Steel (Fe)	Carbide (WC-Co)	Silicon nitride (Si <sub>3</sub> N <sub>4</sub> )
Hardness (HV)		1350	800	1650	1500
Coefficient of thermal expansion (10 <sup>-6</sup> /K)		9.3±0.5	10.8±0.5	5.5±1.0	2
Flexural strength by 3-point bending (MPa)		1270	1960	1960	580
Fracture toughness K1c (MPa•m <sup>1/2</sup> )		7	120	12	6.5
Young's modulus x10 <sup>-4</sup> (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 to Dropping and Impact

The CERA Block material is one of the toughest ceramics. It is extremely difficult to crack a CERA block in normal use.

## Features of Square Gauge Blocks

### 1. Stack can be positively clamped by using the center hole

After wringing square gauge blocks, an optional tie rod can be inserted through the center hole to clamp the blocks together 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 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-sectional dimensions of 24.1 x 24.1mm is available.

A square gauge block retains stable orientation both longitudinally and laterally. A wide range of application are covered, 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 Blocks

## SERIES 516

### Accuracies of Mitutoyo Gauge Blocks

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, published specifications.

### 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)

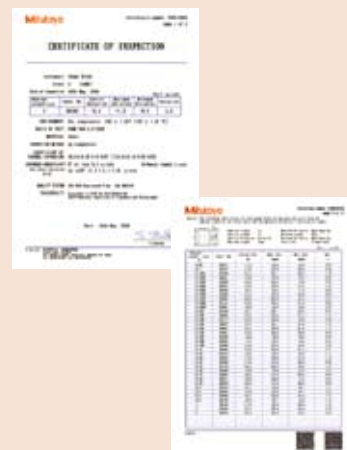
(at 20°C)

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 box (in the case of sets) and an identification number on each block. The deviation of each block from nominal length, at the time of inspection, is stated. For this inspection, each gauge block is measured relative to the upper level master using a gauge block comparator. Grade K gauge blocks are measured by a primary measurement method using an interferometer.



## 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 Sets

## SERIES 516 — 1mm Base Block Sets



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 Sets

Blocks per set	Order No.		Standard / grade available and Suffix No.*			Blocks included in set		
	Steel	CERA	ISO/DIN/JIS	ASME	BS	Size	Step	Qty.
122	—	—	—	—	—	1.0005	—	1
	516-596	—	K: -#0	—	—	1.001 - 1.009	0.001	9
	516-597	—	O: -#0	—	—	1.01 - 1.49	0.01	49
	516-598	—	1: -#0	—	—	1.6 - 1.9	0.1	4
	516-599	—	2: -#0	—	—	0.5 - 24.5	0.5	49
112	516-531	516-541	—	K: -#6	—	1.0005	—	1
	516-937	516-337	K: -#0	00: -#6	K: -#1	1.001 - 1.009	0.001	9
	516-938	516-338	O: -#0	0: -#6	0: -#1	1.01 - 1.49	0.01	49
	516-939	516-339	1: -#0	1: -#6	1: -#1	0.5 - 24.5	0.5	49
	516-940	516-340	2: -#0	2: -#6	2: -#1	25 - 100	25	4
103	516-533	516-542	—	K: -#6	—	1.005	—	1
	516-941	516-341	K: -#0	00: -#6	K: -#1	1.01 - 1.49	0.01	49
	516-942	516-342	O: -#0	0: -#6	0: -#1	0.5 - 24.5	0.5	49
	516-943	516-343	1: -#0	1: -#6	1: -#1	25 - 100	25	4
	516-944	516-344	2: -#0	2: -#6	2: -#1	—	—	—
88	—	—	—	—	—	1.0005	—	1
	516-969	516-369	—	—	K: -#1	1.001 - 1.009	0.001	9
	516-970	516-370	O: -#0	—	0: -#1	1.01 - 1.49	0.01	49
	516-971	516-371	1: -#0	—	1: -#1	0.5 - 9.5	0.5	19
	516-972	516-372	2: -#0	—	2: -#1	10 - 100	10	10
87	516-535	515-543	—	K: -#6	—	1.001 - 1.009	0.001	9
	516-945	516-345	K: -#0	00: -#6	K: -#1	1.01 - 1.49	0.01	49
	516-946	516-346	O: -#0	0: -#6	0: -#1	0.5 - 9.5	0.5	19
	516-947	516-347	1: -#0	1: -#6	1: -#1	10 - 100	10	10
	516-948	516-348	2: -#0	2: -#6	2: -#1	—	—	—
76	—	—	—	—	—	1.005	—	1
	516-949	516-349	K: -#0	—	—	1.01 - 1.49	0.01	49
	516-950	516-350	O: -#0	—	—	0.5 - 9.5	0.5	19
	516-951	516-351	1: -#0	—	—	10 - 40	10	4
	516-952	516-352	2: -#0	—	—	50 - 100	25	3
56	516-536	516-544	—	K: -#6	—	0.5	—	1
	516-953	516-353	K: -#0	00: -#6	—	1.001 - 1.009	0.001	9
	516-954	516-354	O: -#0	0: -#6	—	1.01 - 1.09	0.01	9
	516-955	516-355	1: -#0	1: -#6	—	1.1 - 1.9	0.1	9
	516-956	516-356	2: -#0	2: -#6	—	1 - 24	1	24
			—	—	—	25 - 100	25	4
47	516-537	516-545	—	K: -#6	—	1.005	—	1
	516-957	516-357	K: -#0	00: -#6	—	1.01 - 1.09	0.01	9
	516-958	516-358	O: -#0	0: -#6	—	1.1 - 1.9	0.1	9
	516-959	516-359	1: -#0	1: -#6	—	1 - 24	1	24
	516-960	516-360	2: -#0	2: -#6	—	25 - 100	25	4
47	—	—	—	—	—	1.005	—	1
	516-961	516-361	K: -#0	—	K: -#1	1.01 - 1.19	0.01	19
	516-962	516-362	O: -#0	—	0: -#1	1.2 - 1.9	0.1	8
	516-963	516-363	1: -#0	—	1: -#1	1 - 9	1	9
	516-964	516-364	2: -#0	—	2: -#1	10 - 100	10	10

\*Suffix No. (■) for Selecting Certificate Provided

ISO/DIN/JIS		
Suffix No.	Inspection Certificate	Calibration Certificate JCSS
1	○	—
6	○	○

Suffix No. 1: Not available for Grade K sets.

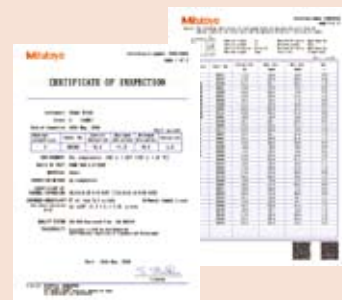
ASME		
Suffix No.	Inspection Certificate	Calibration Certificate JCSS
1	○	—
6	○	○

Suffix No. 1: Not available for Grade K sets.  
Suffix No. 6: Only for Grade K sets.

BS		
Suffix No.	Inspection Certificate	Calibration Certificate JCSS
1	○	—
6	○	○

Suffix No. 1: Not available for Grade K sets.  
Suffix No. 7: Only for Grade K sets.

### Inspection Certificate



# Metric Rectangular Gauge Block Sets

## SERIES 516 — 1mm Base Block Sets

\*Suffix No. (■) for Selecting Certificate Provided

ISO/DIN/JIS		
Suffix No.	Inspection Certificate	Calibration Certificate
1	○	—
6	○	○

Suffix No. 1: Not available for Grade K sets.

ASME		
Suffix No.	Inspection Certificate	Calibration Certificate
1	○	—
6	○	○

Suffix No. 1: Not available for Grade K sets.  
Suffix No. 6: Only for Grade K sets.

BS		
Suffix No.	Inspection Certificate	Calibration Certificate
1	○	—
6	○	○

Suffix No. 1: Not available for Grade K sets.  
Suffix No. 7: Only for Grade K sets.

### Inspection Certificate



### SPECIFICATIONS

1mm Base Block Sets									
Blocks per set	Order No.		Standard / grade available and Suffix No.*			Blocks included in set			
	Steel	CERA	ISO/DIN/JIS	ASME	BS	Size	Step	Qty.	
46	—	—	—	—	—	1.001 - 1.009	0.001	9	
	516-994	516-394	K: -■0	—	—	1.01 - 1.09	0.01	9	
	516-995	516-395	0: -■0	—	—	1.1 - 1.9	0.1	9	
	516-996	516-396	1: -■0	—	—	1 - 9	1	9	
	516-997	516-397	2: -■0	—	—	10 - 100	10	10	
34	—	—	—	—	—	1.0005	—	1	
	516-128	516-178	K: -■0	—	K: -■1	1.001 - 1.009	0.001	9	
	516-129	516-179	0: -■0	—	0: -■1	1.01 - 1.09	0.01	9	
	516-130	516-180	1: -■0	—	1: -■1	1.1 - 1.9	0.1	9	
	516-131	516-181	2: -■0	—	2: -■1	1 - 5	1	5	
32	—	—	—	—	—	1.005	—	1	
	516-965	516-365	K: -■0	—	K: -■1	1.01 - 1.09	0.01	9	
	516-966	516-366	0: -■0	—	0: -■1	1.1 - 1.9	0.1	9	
	516-967	516-367	1: -■0	—	1: -■1	1 - 9	1	9	
	516-968	516-368	2: -■0	—	2: -■1	10 - 30	10	3	
						60		1	

# Metric Rectangular Gauge Block Sets

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



Steel 9-block set

### SPECIFICATIONS

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



Steel 18-block set



CERA 18-block set



Steel 9-block set



CERA 9-block

### SPECIFICATIONS

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

# Metric Rectangular Gauge Block Sets

## SERIES 516 — Long Block Sets, Wear Block Sets



CERA 8-block set



Steel 8-block set

### SPECIFICATIONS

#### Long Block Sets

Blocks per set	Order No.		Standard / grade available and Suffix No.*			Blocks included in set		
	Steel	CERA	ISO/DIN/JIS	ASME	BS	Size	Step	Qty.
8	516-540	516-546	—	K: -#6	—	125 - 175	25	3
	516-701	516-731	K: -#0	00: -#6	—	200 - 250	50	2
	516-702	516-732	0: -#0	0: -#6	—	300 - 500	100	3
	516-703	516-733	1: -#0	1: -#6	—			
	516-704	516-734	2: -#0	2: -#6	—			

\*Suffix No. (■) for Selecting Certificate Provided

ISO/DIN/JIS		
Suffix No.	Inspection Certificate	Calibration Certificate JCSS
1	○	—
6	○	○

Suffix No. 1: Not available for Grade K sets.

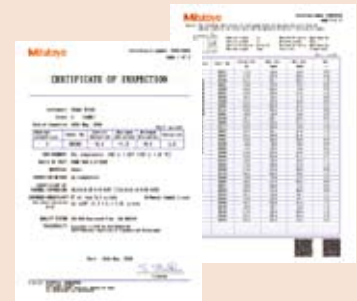
#### ASME

ASME		
Suffix No.	Inspection Certificate	Calibration Certificate JCSS
1	○	—
6	○	○

Suffix No. 1: Not available for Grade K sets.

Suffix No. 6: Only for Grade K sets.

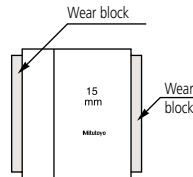
### Inspection Certificate



CERA 2-block set



Steel 2-block



### SPECIFICATIONS

#### Wear Block Sets

Blocks per set	Order No.		Standard / grade available and Suffix No.*			Blocks included in set		
	Carbide	CERA	ISO/DIN/JIS	ASME	BS	Size	Step	Qty.
2	516-807	516-832	0: -#0	0: -#6	—	1		2
	516-806	516-833	1: -#0	1: -#6	—			
2	516-803	516-830	0: -#0	0: -#6	—	2		2
	516-802	516-831	1: -#0	1: -#6	—			



# Inch Rectangular Gauge Block Sets

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

\*Suffix No. (■) for Selecting Certificate Provided

## ASME

Suffix No.	Inspection Certificate	Calibration Certificate
		JCSS
1	○	—
6	○	○

Suffix No. 1: Not available for Grade K sets.  
Suffix No. 6: Only for Grade K sets.

## BS

Suffix No.	Inspection Certificate	Calibration Certificate
		JCSS
1	○	—
6	○	○

Suffix No. 1: Not available for Grade K sets.  
Suffix No. 6: Only for Grade K sets.

## Inspection Certificate



## SPECIFICATIONS

### Inch Block Sets

Blocks per set	Order No.		Standard / grade available and Suffix No.*			Blocks included in set		
	Steel	CERA	ISO/DIN/JIS	ASME	BS	Size	Step	Qty.
82	516-548	516-556	—	K: ■6	—	.10005	—	1
	516-905	516-305	—	00: ■6	—	.1001 - .1009	.0001	9
	516-906	516-306	—	0: ■6	0: ■1	.101 - .149	.001	49
	516-907	516-307	—	1: ■6	1: ■1	.05 - .95	.05	19
	516-908	516-308	—	2: ■6	2: ■1	1 - 4	1	4
81	516-549	516-557	—	K: ■6	—	.1001 - .1009	.0001	9
	516-901	516-301	—	00: ■6	—	.101 - .149	.001	49
	516-902	516-302	—	0: ■6	0: ■1	.05 - .95	.05	19
	516-903	516-303	—	1: ■6	1: ■1	1 - 4	1	4
	516-904	516-304	—	2: ■6	2: ■1	—	—	—
49	—	—	—	—	—	.1001 - .1009	.0001	9
	—	—	—	—	—	.101 - .109	.001	9
	516-910	—	—	—	0: ■1	.01 - .19	.01	19
	516-911	—	—	—	1: ■1	.2 - .9	.1	8
	516-912	—	—	—	2: ■1	1 - 4	1	4
35	516-550	516-558	—	K: ■6	—	.10005	—	1
	516-913	516-313	—	00: ■6	—	.1001 - .1009	.0001	9
	516-914	516-314	—	0: ■6	0: ■1	.101 - .109	.001	9
	516-915	516-315	—	1: ■6	1: ■1	.11 - .19	.01	9
	516-916	516-316	—	2: ■6	2: ■1	.1 - .3	.1	3
	—	—	—	—	—	.5, 1, 2, 4	—	4

## SPECIFICATIONS

### Thin Block Sets

Blocks per set	Order No.		Standard / grade available and Suffix No.*			Blocks included in set		
	Steel	CERA	ISO/DIN/JIS	ASME	BS	Size	Step	Qty.
28	516-551	—	—	K: ■6	—	.02005	—	1
	516-917	—	—	00: ■6	—	.0201 - .0209	.0001	9
	516-918	—	—	0: ■6	—	.021 - .029	.001	9
	516-919	—	—	1: ■6	—	.01 - .09	.01	9
	516-920	—	—	2: ■6	—	—	—	—
10	516-926	—	—	0: ■6	0: ■1	.005 - .050	.005	10
	516-927	—	—	1: ■6	1: ■1	—	—	—
	516-928	—	—	—	2: ■1	—	—	—

## SPECIFICATIONS

### Long Block Sets

Blocks per set	Order No.		Standard / grade available and Suffix No.*			Blocks included in set		
	Steel	CERA	ISO/DIN/JIS	ASME	BS	Size	Step	Qty.
8	—	516-564	—	K: ■6	—	5 - 7	1	3
	—	516-741	—	00: ■6	—	8, 10, 12	2	3
	516-712	516-742	—	0: ■6	—	16, 20	4	2
	516-713	516-743	—	1: ■6	—	—	—	—

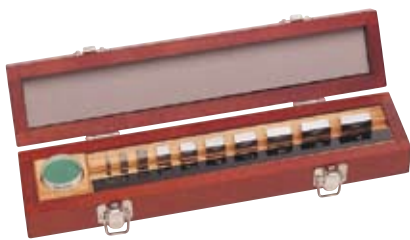
## SPECIFICATIONS

### Wear Block Sets

Blocks per set	Order No.		Standard / grade available and Suffix No.*			Blocks included in set		
	Carbide	CERA	ISO/DIN/JIS	ASME	BS	Size	Step	Qty.
2	516-809	516-836	—	0: ■6	—	.05	—	2
	516-808	516-837	—	1: ■6	—	—	—	—
2	516-805	516-834	—	0: ■6	—	.1	—	2
	516-804	516-835	—	1: ■6	—	—	—	—

# Micrometer Inspection Gauge Block Sets

**SERIES 516**



Steel 10-block set



Steel 10-block set



Steel 10-block set



Steel 8-block set



CERA 10-block set



CERA 10-block set



CERA 10-block set



CERA 8-block set

## Micro Checker

- Can clamp a series of gauge blocks to be used for micrometer inspection.
- Can be used vertically and horizontally.
- Parallelism of micrometer measuring faces is checked by optical parallel which can be attached to the stand for convenience in handling.



## SPECIFICATIONS

Metric <input type="checkbox"/> Micro Checker (holder only)	
<b>Order No.</b>	<b>516-607</b>
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 <input type="checkbox"/> Micro Checker (holder only)	
<b>Order No.</b>	<b>516-608</b>
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, .710, .815, .920, 1

**\*Suffix No. ( ■ ) for Selecting Certificate Provided**

ISO/DIN/JIS		
Suffix No.	Inspection Certificate	Calibration Certificate
1	○	—
6	○	○

Suffix No. 1: Not available for Grade K sets.

ASME		
Suffix No.	Inspection Certificate	Calibration Certificate
1	○	—
6	○	○

Suffix No. 1: Not available for Grade K sets.  
Suffix No. 6: Only for Grade K sets.

BS		
Suffix No.	Inspection Certificate	Calibration Certificate
1	○	—

**Inspection Certificate**



**\*Suffix No. ( ■ ) for Selecting Certificate Provided**

ISO/DIN/JIS		
Suffix No.	Inspection Certificate	Calibration Certificate
1	○	—

**SPECIFICATIONS**

**Metric Block Sets**

Blocks per set	Order No.		Standard / grade available and Suffix No.*			Blocks included in set
	Steel	CERA	ISO/DIN/JIS	ASME	BS	
16	516-111	516-161	0: -■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	1: -■0	—	—	
	516-113	516-163	2: -■0	—	—	
10	516-977	—	K: -■0	—	—	1.00, 1.25, 1.50, 2, 3, 5, 10, 15, 20, 25mm, • Optical parallel (t = 12mm)
	516-978	516-378	0: -■0	—	—	
	516-979	516-379	1: -■0	—	—	
	516-980	516-380	2: -■0	—	—	
10	516-103	516-152	0: -■0	0: -■6	—	1.00, 1.25, 1.50, 2, 3, 5, 10, 15, 20, 25mm
	516-101	516-153	1: -■0	1: -■6	—	
	—	516-154	2: -■0	—	—	
10	516-106	516-156	0: -■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	1: -■0	—	—	
	516-108	516-158	2: -■0	—	—	
10	516-132	516-182	0: -■0	—	—	1.25, 1.50, 1, 2, 3, 5, 10, 15, 20, 25mm, Micro Checker, Optical parallel (t = 12mm)
	516-133	516-183	1: -■0	—	—	
	516-134	516-184	2: -■0	—	—	
10	516-135	516-185	0: -■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	1: -■0	—	—	
	516-137	516-187	2: -■0	—	—	
	—	516-547	—	K: -■6	—	
8	—	516-164	K: -■0	00: -■6	—	25, 50, 75, 100, 125, 150, 175, 200mm
	516-115	516-165	0: -■0	0: -■6	—	
	516-116	516-166	1: -■0	1: -■6	—	
	516-117	516-167	2: -■0	2: -■6	—	
	—	—	—	—	—	

**Inch Block Sets**

Blocks per set	Order No.		Standard / grade available and Suffix No.*			Blocks included in set
	Steel	CERA	ISO/DIN/JIS	ASME	BS	
10	516-552	516-559	—	K: -■6	—	.105, .210, .315, .420, .500, .605, .710, .815, .920, 1", Optical parallel (t = .5")
	516-921	516-321	—	00: -■6	0: -■1	
	516-922	516-322	—	0: -■6	1: -■1	
	516-923	516-323	—	1: -■6	2: -■1	
10	516-553	516-560	—	K: -■6	—	.105, .210, .315, .420, .500, .605, .710, .815, .920, 1", Micro checker, Optical parallel (t = .5")
	516-138	516-188	—	00: -■6	0: -■1	
	516-139	516-189	—	0: -■6	1: -■1	
	516-140	516-190	—	1: -■6	2: -■1	
9	516-554	516-561	—	K: -■6	—	.0625, .100, .125, .200, .250, .300, .500, 1, 2", Optical parallel (t = .5")
	516-929	516-333	—	00: -■6	—	
	516-930	516-334	—	0: -■6	—	
	516-931	516-335	—	1: -■6	—	
	516-932	516-336	—	2: -■6	—	
9	516-555	516-562	—	K: -■6	—	.0625, .100, .125, .200, .250, .300, .500, 1, 2", Micro Checker, Optical parallel (t = .5")
	516-141	516-191	—	00: -■6	—	
	516-142	516-192	—	0: -■6	—	
	516-143	516-193	—	1: -■6	—	
	516-144	516-194	—	2: -■6	—	
9	—	516-563	—	K: -■6	—	.0625, .100, .125, .200, .250, .300, .500, 1, 2"
	—	516-329	—	00: -■6	—	
	516-934	516-330	—	0: -■6	—	
	516-935	516-331	—	1: -■6	—	
	516-936	516-332	—	2: -■6	—	
8	516-126	516-176	—	0: -■6	—	1, 2, 3, 4, 5, 6, 7, 8"
	516-127	516-177	—	1: -■6	—	

**Caliper Inspection Gauge Block Sets**

**SERIES 516**

**SPECIFICATIONS**

**Metric Block Sets**

Blocks per set	Order No.		Standard / grade available and Suffix No.*			Blocks included in set
	Steel	CERA	ISO/DIN/JIS	ASME	BS	
5	—	516-174	—	—	—	5 pcs.: 10.3, 24.5, 50, 75, 100mm, Ceramic plain jaws, Holder (250mm), Glove
4	516-526	516-566	1: -■0	—	—	4 pcs.: 10, 30, 50, 125mm, Setting ring (ø4mm, ø10mm), Pin gage (ø10mm), Glove
	516-527	516-567	2: -■0	—	—	
3	516-124	516-150	1: -■0	—	—	3 pcs.: 30, 41.3, 131.4mm, Setting ring (ø4mm, ø25mm), Glove
	516-125	516-151	2: -■0	—	—	
2	516-122	516-172	1: -■0	—	—	2 pcs.: 41.3, 131.4mm, Setting ring (ø20mm), Glove
	516-123	516-173	2: -■0	—	—	

# Individual Metric Rectangular Gauge Blocks

## 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 to ISO/DIN/JIS, BS or ASME standard is supplied with a Certificate of Calibration which certifies that the gauge block was calibrated by interferometry.



## SPECIFICATIONS

### Metric Blocks

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				
Suffix No.	Grade	Inspection Certificate	Calibration Certificate	
			JCSS	RvA
-016	K	○	○	—
-021	0	○	—	—
-026	0	○	○	—
-031	1	○	—	—
-036	1	○	○	—
-041	2	○	—	—
-046	2	○	○	—

ASME			
Suffix No.	Grade	Inspection Certificate	Calibration Certificate
			JCSS
-516	K	○	○
-521	00	○	—
-531	0	○	—
-541	1	○	—
-551	2	○	—

BS			
Suffix No.	Grade	Inspection Certificate	Calibration Certificate
			JCSS
-116	K	○	○
-121	0	○	—
-126	0	○	○
-131	1	○	—
-136	1	○	○
-141	2	○	—
-146	2	○	○

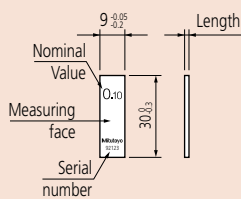


Inspection Certificate

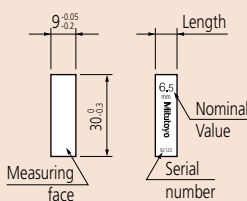
## Dimensions

Unit: mm

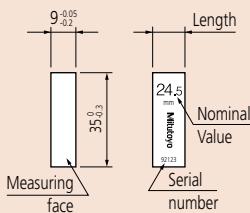
Nominal length:  
0.1mm - 5.5mm  
(.004" - .25")



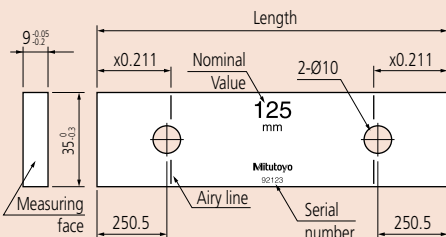
Nominal length:  
6mm - 10mm  
(.3" - .4")



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 Blocks

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

# Individual Inch Rectangular Gauge Blocks

## SPECIFICATIONS

Inch Block			Inch Block			Inch Block		
Length (inch)	Order No.*		Length (inch)	Order No.*		Length (inch)	Order No.*	
	Steel	CERA		Steel	CERA		Steel	CERA
.004	611304	—	.06	611106	—	.139	611179	613179
.005	611305	—	.0625	611303	613303	.14	611180	613180
.006	611306	—	.07	611107	—	.141	611181	613181
.007	611307	—	.078125 (5/64)	611103	613100	.142	611182	613182
.008	611308	—	.08	611108	—	.143	611183	613183
.009	611309	—	.09	611109	—	.144	611184	613184
.01	611310	—	.09375 (3/32)	611104	613101	.145	611185	613185
.011	611311	—	.1	611191	613191	.146	611186	613186
.012	611312	—	.100025	611111	613110	.147	611187	613187
.013	611313	—	.10005	611135	613135	.148	611188	613188
.014	611314	—	.100075	611112	613111	.149	611189	613189
.015	611315	—	.1001	611121	613121	.15	611115	613115
.016	611316	—	.1002	611122	613122	.16	611116	613116
.017	611317	—	.1003	611123	613123	.17	611117	613117
.018	611318	—	.1004	611124	613124	.18	611118	613118
.019	611319	—	.1005	611125	613125	.19	611119	613119
.02	611320	—	.1006	611126	613126	.2	611192	613192
.02005	611240	—	.1007	611127	613127	.21	611221	613221
.0201	611231	—	.1008	611128	613128	.25	611212	613212
.0202	611232	—	.1009	611129	613129	.3	611193	613193
.0203	611233	—	.101	611141	613141	.315	611209	613209
.0204	611234	—	.102	611142	613142	.35	611213	613213
.0205	611235	—	.103	611143	613143	.375 (3/8)	611113	613112
.0206	611236	—	.104	611144	613144	.4	611194	613194
.0207	611237	—	.105	611145	613145	.420	611210	613210
.0208	611238	—	.106	611146	613146	.45	611214	613214
.0209	611239	—	.107	611147	613147	.5	611195	613195
.021	611321	—	.108	611148	613148	.55	611215	613215
.022	611322	—	.109	611149	613149	.6	611196	613196
.023	611323	—	.109375 (7/64)	611110	613102	.605	611211	613211
.024	611324	—	.11	611150	613150	.65	611216	613216
.025	611325	—	.111	611151	613151	.7	611197	613197
.026	611326	—	.112	611152	613152	.710	611220	613220
.027	611327	—	.113	611153	613153	.75	611217	613217
.028	611328	—	.114	611154	613154	.8	611198	613198
.029	611329	—	.115	611155	613155	.815	611226	613226
.03	611330	—	.116	611156	613156	.85	611218	613218
.031	611331	—	.117	611157	613157	.9	611199	613199
.03125 (1/32)	611101	613103	.118	611158	613158	.920	611227	613227
.032	611332	—	.119	611159	613159	.95	611219	613219
.033	611333	—	.12	611160	613160	1	611201	613201
.034	611334	—	.121	611161	613161	2	611202	613202
.035	611335	—	.122	611162	613162	3	611203	613203
.036	611336	—	.123	611163	613163	4	611204	613204
.037	611337	—	.124	611164	613164	5	611205	613205
.038	611338	—	.125	611165	613165	6	611206	613206
.039	611339	—	.126	611166	613166	7	611207	613207
.04	611340	—	.127	611167	613167	8	611208	613208
.041	611341	—	.128	611168	613168	10	611222	613222
.042	611342	—	.129	611169	613169	12	611223	613223
.043	611343	—	.13	611170	613170	16	611224	613224
.044	611344	—	.131	611171	613171	20	611225	613225
.045	611345	—	.132	611172	613172			
.046	611346	—	.133	611173	613173			
.046875 (3/64)	611102	613104	.134	611174	613174			
.047	611347	—	.135	611175	613175			
.048	611348	—	.136	611176	613176			
.049	611349	—	.137	611177	613177			
.05	611105	613105	.138	611178	613178			

Inch Wear Blocks	
Length (inch)	Order No.* Tungsten carbide
.05	612105
.1	612191

\*Suffix Number ( - ■■■ ) for Selecting Standard and Certificate Provided

ASME			
Suffix No.	Grade	Inspection Certificate	Calibration Certificate JCSS
-516	K	○	○
-521	00	○	—
-531	0	○	—
-541	1	○	—
-551	2	○	—

BS			
Suffix No.	Grade	Inspection Certificate	Calibration Certificate JCSS
-121	0	○	—
-131	1	○	—
-141	2	○	—

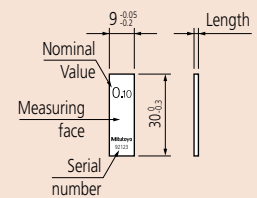


Inspection Certificate

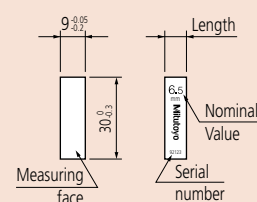
## Dimensions

Unit: mm

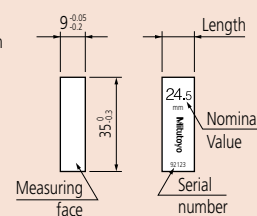
Nominal length:  
0.1mm - 5.5mm  
(.004" - .25")



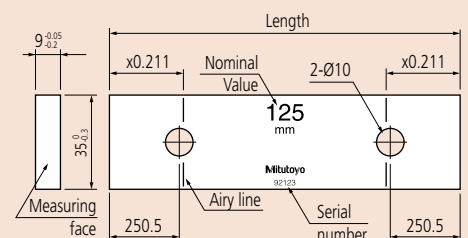
Nominal length:  
6mm - 10mm  
(.3" - .4")



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



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



# Rectangular Gauge Blocks with CTE

Gauge Blocks with a Calibrated Coefficient of Thermal Expansion

\*Suffix Number (-■■■) for Selecting Standard and Certificate Provided

ISO/DIN/JIS			
Suffix No.	Grade	Inspection Certificate	Calibration Certificate
-01B	K	○	○

ASME			
Suffix No.	Grade	Inspection Certificate	Calibration Certificate
-51B	K	○	○

BS			
Suffix No.	Grade	Inspection Certificate	Calibration Certificate
-11B	K	○	○

\*Only for 100mm type



Inspection Certificate

## FEATURES

- Mitutoyo offers top-level gauge blocks (steel and ceramic) which are superior to K class blocks, with their quality supported by Mitutoyo's best technologies.
- Features an accurately calibrated thermal expansion coefficient measured with a proprietary double-faced interferometer (DFI).
- Each gauge block is calibrated for length on a highly accurate gauge block interferometer (GBI) system.
- 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 length measurement: 30nm ( $k = 2$ ), for 100mm block



## SPECIFICATIONS

Metric Blocks 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 Blocks 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
20	611225	613225

## Technical Data

- Appearance: Rectangular black  
 Material: Ultra-low thermal expansion fine ceramic  
 Standards: JIS/ISO/DIN, BS, and ASME  
 Grade<sup>1</sup>: K  
 Coefficient of thermal expansion<sup>2</sup>:  $0 \pm 0.02 \times 10^{-6}/K$  (at 20°C)  
 Density<sup>2</sup>: 2.5 g/cm<sup>3</sup>  
 Vickers hardness<sup>2</sup>: 826HV10 (by JIS R 1610 "Testing Method for Vickers Hardness of High Performance Ceramics")  
 Standard accessories: Inspection certificate, Calibration certificate, and custom-made aluminum case  
 \*1: If you require a grade other than K, please contact Mitutoyo.  
 \*2: Value claimed by the material supplier



# ZERO CERA Blocks

Ultra-low Expansion Ceramic Gauge Blocks

## FEATURES

- Thermal expansion at 20±1°C less than 1/500 that of steel
- Almost no secular change both in dimension and coefficient of thermal expansion
- Complementary ultra-low thermal expansion and high specific rigidity (Young's modulus/specific gravity)



## SPECIFICATIONS

Metric Blocks with CTE			
Length (mm)	Order No.		
	JIS/ISO/DIN	BS	ASME
30	617673-016	617673-116	617673-516
50	617675-016	617675-116	617675-516
100	617681-016	617681-116	617681-516
200	617682-016	617682-116	617682-516
300	617683-016	617683-116	617683-516
400	617684-016	617684-116	617684-516
500	617685-016	617685-116	617685-516
600	617840-016	617840-116	617840-516
700	617841-016	617841-116	617841-516
800	617843-016	617843-116	617843-516
900	617844-016	617844-116	617844-516
1000	617845-016	617845-116	617845-516
Above set	516-771-60	516-771-61	516-771-66

# Rectangular Gauge Block Accessories

**SERIES 516**

To expand the range 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)



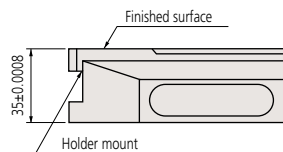
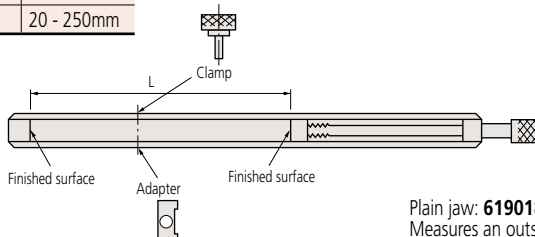
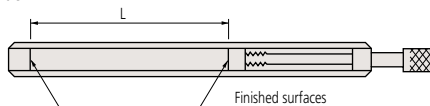
516-601



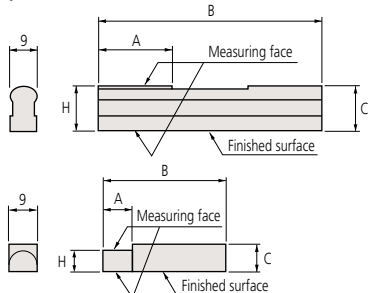
516-602

Holder:  
Used as a clamp if using plain jaws, scriber point, etc.  
Holder = 15mm thick x 29.5mm wide

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 as a pair of jaws in the holder.

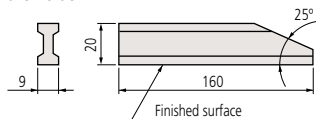


Unit: mm

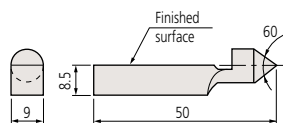
Size	Order No.	H	A	B	C
2	619010	2±0.0005	5.5	40	7.5
5	619011	5±0.0005	14	45	7.5
8	619012	8±0.0005	18.5	50	8.5
12	619013	12±0.0005	25	75	13
20	619014	20±0.0005	25	125	20.5

Holder base 35mm: 619009  
Establishes a height from the surface plate and scribes a workpiece if used with a holder.

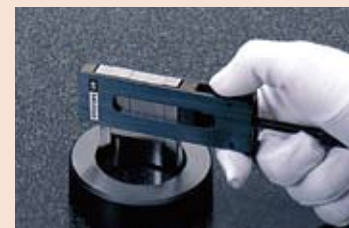
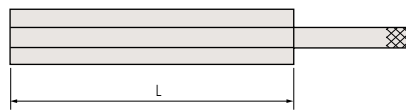
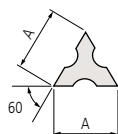
Plain jaw: 619018  
Measures an outside or inside diameter if used as a pair of jaws in the holder.



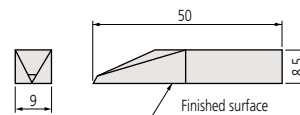
Center point: 619020  
Scribes a workpiece if used in a holder and holder base.



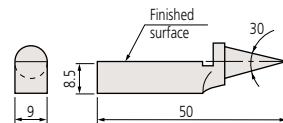
Triangular straight edge: Measures parallelism.



Scriber point: 619019  
Scribes a workpiece if used in a holder and holder base.



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



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



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



516-605

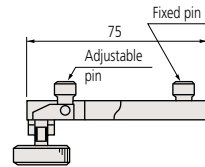
## SPECIFICATIONS

### 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)

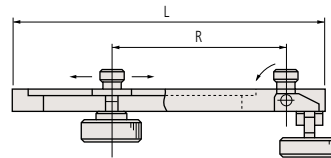
Note: These accessories can also be used for inch rectangular gauge blocks.

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 adaptors.

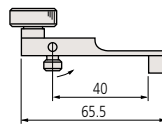
	Order No.	R (max.)	L
Holder B	619032	90mm	126mm
Holder C	619033	200mm	236mm



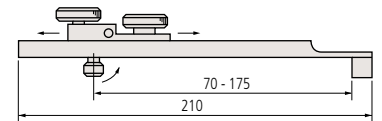
Adaptor: **619036**



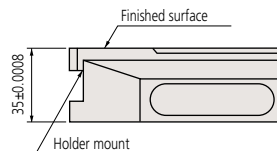
Holder D: **619034**  
Used for attaching to the holder base.



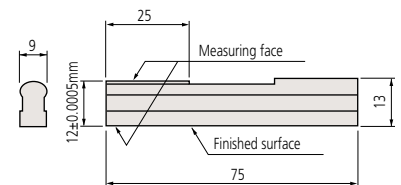
Holder E: **619035**  
Used for attaching to the holder base together with other gauge blocks up to 125mm. Used for attaching jaws with one adaptor.



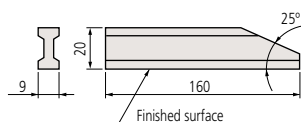
Holder base: **619009**



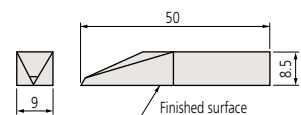
Half round jaw: **619013**



Plain jaw: **619018**



Scriber point: **619019**



# Metric Square Gauge Block Sets

## SERIES 516 — Metric Block Sets, Long Block Sets, Wear Block Sets

The Square Gauge Block style provides the best stability, especially for surface plate work. 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 Sets

Blocks per set	Order No.		Standard / grade available		Blocks included in set		
	Steel	CERA	ISO/DIN/JIS	ASME	Size	Step	Qty.
112	516-437	—	—	00: -H6	1.005	—	1
	516-438	—	0: -H0	0: -H6	1.001 - 1.009	0.001	9
	516-439	—	1: -H0	1: -H6	1.01 - 1.49	0.01	49
	516-440	—	2: -H0	2: -H6	0.5 - 24.5	0.5	49
	—	—	—	—	25 - 100	25	4
103	516-441	—	—	00: -H6	1.005	—	1
	516-442	—	0: -H0	0: -H6	1.01 - 1.49	0.01	49
	516-443	—	1: -H0	1: -H6	0.5 - 24.5	0.5	49
	516-444	—	2: -H0	2: -H6	0.5 - 24.5	0.5	49
	—	—	—	—	25 - 100	25	4
76	516-449	—	—	00: -H6	1.005	—	1
	516-450	—	0: -H0	0: -H6	1.01 - 1.49	0.01	49
	516-451	—	1: -H0	1: -H6	0.5 - 9.5	0.5	19
	516-452	—	2: -H0	2: -H6	10 - 40	10	4
	—	—	—	—	50 - 100	25	3
47	516-457	—	—	00: -H6	1.005	—	1
	516-458	—	0: -H0	0: -H6	1.01 - 1.09	0.01	9
	516-459	—	1: -H0	1: -H6	1.1 - 1.9	0.1	9
	516-460	—	2: -H0	2: -H6	1 - 24	1	24
	—	—	—	—	25 - 100	25	4
32	516-465	—	—	00: -H6	1.005	—	1
	516-466	—	0: -H0	0: -H6	1.01 - 1.09	0.01	9
	516-467	—	1: -H0	1: -H6	1.1 - 1.9	0.1	9
	516-468	—	2: -H0	2: -H6	1 - 9	1	9
	—	—	—	—	10 - 30	10	3
—	—	—	—	60	—	1	

#### Metric Long Block Sets

Blocks per set	Order No.		Standard / grade available		Blocks included in set		
	Steel	CERA	ISO/DIN/JIS	ASME	Size	Step	Qty.
8	516-751	—	—	00: -H6	125, 150, 175	25	3
	516-752	—	0: -H0	0: -H6	200, 250	50	2
	516-753	—	1: -H0	1: -H6	300, 400, 500	100	3
	516-754	—	2: -H0	2: -H6	—	—	—
	—	—	—	—	—	—	—

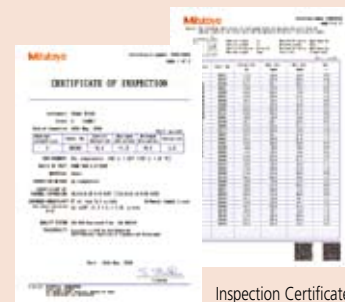
#### Metric Wear Block Sets

Blocks per set	Order No.		Standard / grade available		Blocks included in set		
	Steel	CERA	ISO/DIN/JIS	ASME	Size	Step	Qty.
2	516-820	—	0: -H0	—	1	—	2
	516-821	—	1: -H0	—	—	—	—
2	516-822	—	0: -H0	—	2	—	2
	516-823	—	1: -H0	—	—	—	—

\*Suffix No. (■) for Selecting Certificate Provided

ISO/DIN/JIS		
Suffix No.	Inspection Certificate	Calibration Certificate
1	○	—
6	○	○

ASME		
Suffix No.	Inspection Certificate	Calibration Certificate
1	○	—



Inspection Certificate

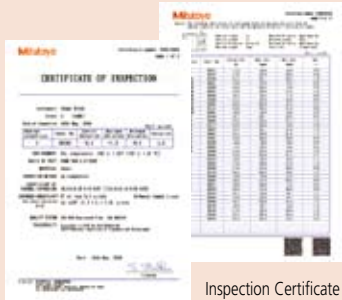
# Inch Square Gauge Block Sets

**SERIES 516 — Inch Block Sets, Long Block Sets, Wear Block Sets**

\*Suffix No. (■) for Selecting Certificate Provided

ISO/DIN/JIS		
Suffix No.	Inspection Certificate	Calibration Certificate
1	○	—
6	○	○

ASME		
Suffix No.	Inspection Certificate	Calibration Certificate
1	○	—



Inspection Certificate

## SPECIFICATIONS

### Inch Block Sets

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	—	00: ■6	.1001 - .1009	.0001	9
	516-402	516-202	—	0: ■6	.101 - .149	.001	49
	516-403	516-203	—	1: ■6	.05 - .95	.05	19
	516-404	516-204	—	2: ■6	1 - 4	1	4
36	516-421	516-221	—	00: ■6	.05"	—	1
	516-422	516-222	—	0: ■6	.1001 - .1009	.0001	9
	516-423	516-223	—	1: ■6	.101 - .109	.001	9
	516-424	516-224	—	2: ■6	.11 - .19	.01	9
	—	—	—	—	.1 - .5	.1	5
	—	—	—	—	1, 2, 4	1	3
28	516-417	—	—	00: ■6	.02005	—	1
	516-418	—	—	0: ■6	.0201-.0209	.0001	9
	516-419	—	—	1: ■6	.021-.029	.001	9
	516-420	—	—	2: ■6	.010-.090	.01	9
	—	—	—	—	—	—	—

### Inch Long Block Sets

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 Sets

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	0: ■0	—	.05	—	2
	516-825	516-847	1: ■0	—	—	—	—
2	516-826	516-844	0: ■0	—	.1	—	2
	516-827	516-845	1: ■0	—	—	—	—



Steel 47-block set



Steel 32-block set



Steel 8-block set



Steel 2-block set

# Individual Metric Square Gauge Block



## SPECIFICATIONS

### Metric Blocks

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 Blocks

Length (mm)	Order No.
1	615611
2	615612

\*Suffix Number ( - ■■■ ) for Selecting Standard and Certificate Provided

### ISO/DIN/JIS

Suffix No.	Grade	Inspection Certificate	Calibration Certificate JCSS
-021	0	○	—
-026	0	○	○
-031	1	○	—
-036	1	○	○
-041	2	○	—
-046	2	○	○

### ASME

Suffix No.	Grade	Inspection Certificate	Calibration Certificate JCSS
-521	00	○	—
-531	0	○	—
-541	1	○	—
-551	2	○	—

### BS

Suffix No.	Grade	Inspection Certificate	Calibration Certificate JCSS
-121	0	○	—
-131	1	○	—
-141	2	○	—



Inspection Certificate

# Individual Inch Square Gauge Blocks

\*Suffix Number (-■■■) for Selecting Standard and Certificate Provided

ASME			
Suffix No.	Grade	Inspection Certificate	Calibration Certificate
-521	00	○	—
-531	0	○	—
-541	1	○	—
-551	2	○	—

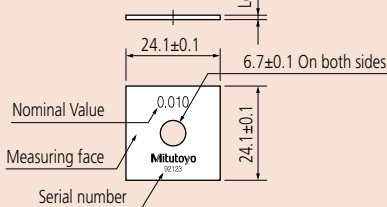
BS			
Suffix No.	Grade	Inspection Certificate	Calibration Certificate
-121	0	○	—
-131	1	○	—
-141	2	○	—



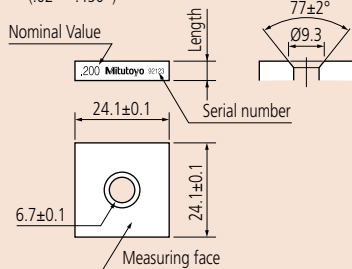
Inspection Certificate

## Dimensions

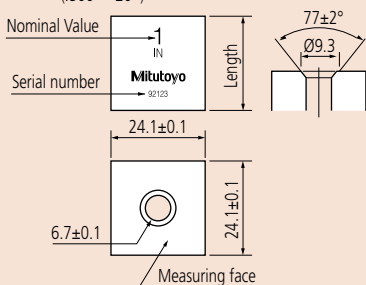
Nominal length: 0.5mm - 4.5mm  
(.010" - .19")



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



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



## SPECIFICATIONS

### Inch Blocks

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 Blocks

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

# Square Gauge Block Accessories

## 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

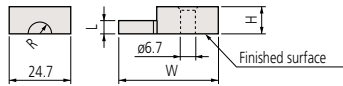
Metric	
Order No. 516-611	Included in set
2 pcs.	Half round jaw 2mm (619070)
2 pcs.	Half round jaw 5mm (619071)
2 pcs.	Plain jaw (619072)
1 pc.	Center point (619073)
1 pc.	Scriber point (619054)
1 pc.	Block base (619074)
2 pcs.	Flat head screw 1-1/4" (619057)
2 pcs.	Flat head screw 5/8" (619058)
2 pcs.	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)



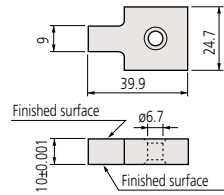
E

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

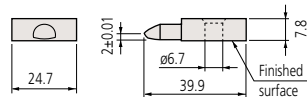


Order No.	R	L	W	H
<b>619070</b>	1.95mm	2mm	33.6mm	5.3mm
<b>619071</b>	4.95mm	5mm	39.9mm	10.3mm
<b>619050</b>	.123"	.125"	33.6mm	5.3mm
<b>619051</b>	.248"	.25"	39.9mm	10.3mm

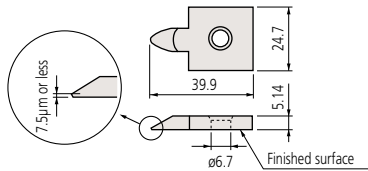
Plain jaw: **619072** (10mm), **619052** (.5")  
Used to measure an inside or outside diameter.



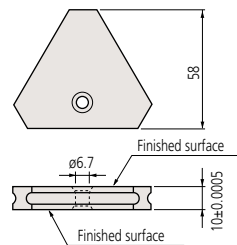
Center point: **619073** (2mm), **619053** (.1")  
Used to scribe a workpiece.



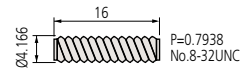
Scriber point: **619054**  
Used to scribe a workpiece.



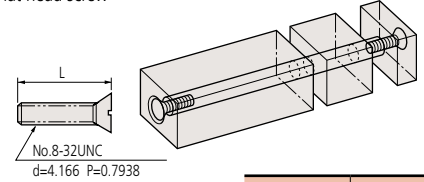
Base: **619074** (10mm), **619054** (.5")  
Used as clamps by inserting them into the center hole of a square gauge block.



Stud: **619056**

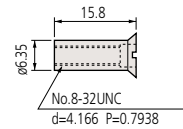


Flat head screw

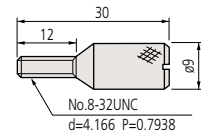


Order No.	L
<b>619057</b>	31.6mm
<b>619058</b>	15.8mm

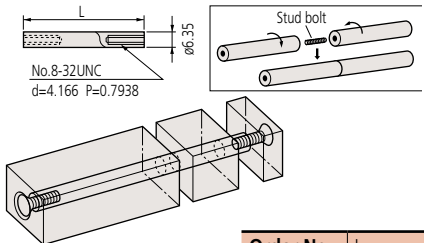
Slotted head nut: **619059**



Knurled head screw: **619066**

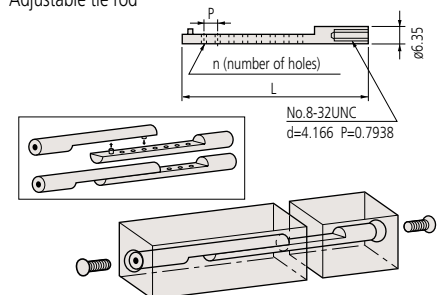


Tie rod



Order No.	L
<b>619065</b>	19mm
<b>619064</b>	38mm
<b>619063</b>	57mm
<b>619062</b>	76mm

Adjustable tie rod



Order No.	L	P	n
<b>619060</b>	124.5mm	6.35mm	14
<b>619061</b>	86.5mm	6.35mm	8

# Ceraston

## Accessory for Gauge Block Maintenance

### FEATURES

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



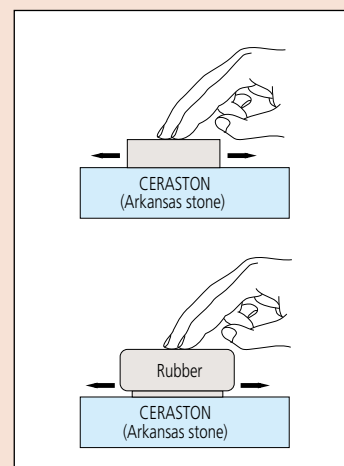
### SPECIFICATIONS

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



### 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 an abrasive 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 offer Arkansas stones.

# Maintenance Kit for Gauge Blocks

## 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.	Tools and accessories included
516-650	Anti-corrosive oil (600001): Used for both steel and tungsten-carbide gauge blocks.
516-650E	Ceraston (601645): Used for removing burrs on the measuring surface
	Optical flat (600003): Used for checking whether burrs exist.
	Tweezers (600004): Used for handling thin 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

516-650E: Excluding anti-corrosive oil (600001)  
516-650: including anti-corrosive oil (600001) is for domestic sales only.  
In the case of order from overseas, place an order for 516-650E: excluding anti-corrosive oil and anti-corrosive oil (600001) separately.



# Step Master

## SERIES 516

### FEATURES

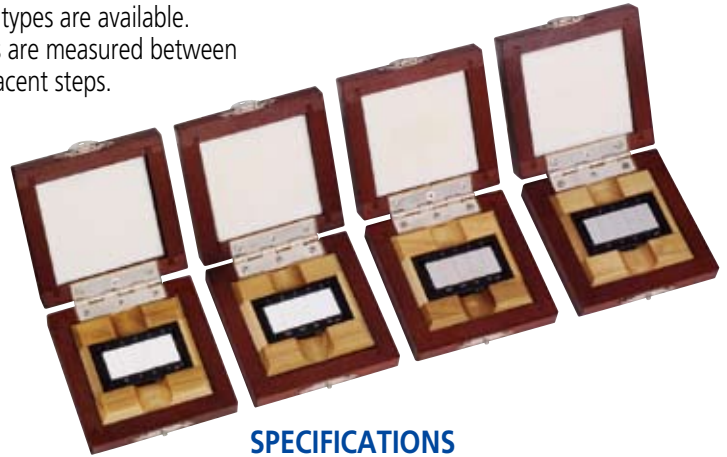
- The heights of the steps decrease from No. 1 to No. 5.
- Each adjacent step is calibrated to a resolution of  $0.01\mu\text{m}$  by using an interferometer with an accuracy tolerance of  $\pm 0.20\mu\text{m}$ .
- Steel and ceramic types are available.
- Height differences are measured between the centers of adjacent steps.



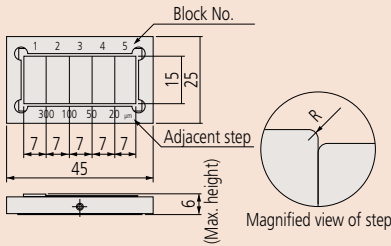
516-499 Ceramic type



516-498 Ceramic type



### Dimensions



Step value between adjacent blocks



	No. 1 - 2	No. 2 - 3	No. 3 - 4	No. 4 - 5
516-198, 516-498	10 $\mu\text{m}$	5 $\mu\text{m}$	2 $\mu\text{m}$	1 $\mu\text{m}$
516-199, 516-499	300 $\mu\text{m}$	100 $\mu\text{m}$	50 $\mu\text{m}$	20 $\mu\text{m}$

### Available Dimensions

Nominal size: 0.1mm to 1000mm (steel)  
 0.5mm to 500mm (ceramic)  
 Nominal pitch: 0.0005mm (up to 100mm)  
 0.001mm (over 100mm)

Special low-expansion glass and ceramic materials are available.

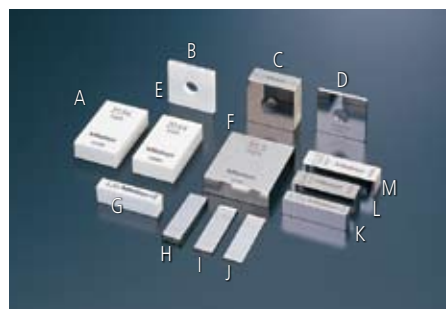
# Custom-made Blocks & Gages

### 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)



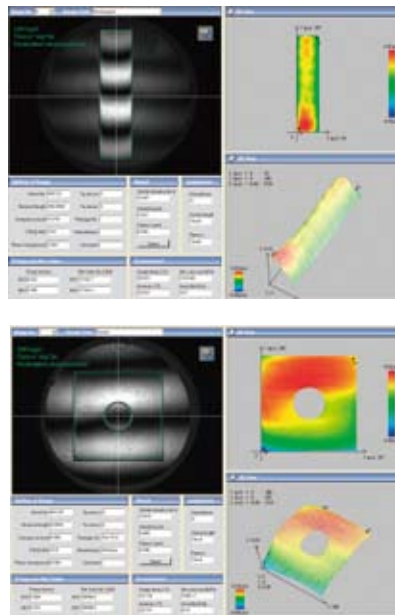
- U: Cylindrical reference block for depth micrometer ( $\phi 60$  x 150mm)
- V: Ceramic reference plate (50 x 50 x 50mm, flatness 0.3 $\mu\text{m}$ )
- W: Ceramic stepped block (30 x 18 x 5mm, step: 0.15mm)

# GBI (Interference fringe analyzing processing)

## Automatic Gauge Block Calibration

### FEATURES

- GBI is an instrument for calibrating the length of rectangular gauge blocks and square gauge blocks having a length up to 250 mm by using optical interference. GBI is a Twyman-Green Interferometer, and by referring to the value having been measured by the gauge block comparator in advance, GBI calibrates the length more accurately according to the coincidence method using two wavelengths.
- GBI uses a CCD camera to automatically record the distribution and intensity of the interference fringes formed on the block surface under test. This data is then processed using the phase shifting method and the interference fringe analyzing software to determine not only the length of the block but also its parallelism and flatness.
- Since the measurement is performed within an enclosed measurement booth, calibration with extremely high stability can be achieved.
- GBI uses two stabilized He-Ne lasers, which have highly stable light intensity and wavelength and are traceable to the national length standard.
- The refractive index of air and the thermal expansion of the gauge block to be measured are automatically compensated by the PC, to which temperature sensors, a hygrometer and a barometer are connected.



### SPECIFICATIONS

Model No.	GBI
Light sources	632.8nm wavelength system He-Ne laser 543.5nm wavelength system He-Ne laser
Measuring range	0.1mm - 250mm
Accuracy (20±0.5°C)	0.025μm+0.2×10 <sup>-6</sup> L* L=Gauge block length (mm)
Number of gauge blocks that can be mounted on the measuring table	12

\* Uncertainty of measurement at the 95% confidence level (not including the calibration error of the reference gauge block).

### Optional Accessories

- 516-145-E2:** Calibration master for gauge block comparator  
**02ASQ324:** Square gauge block holder set  
**611615-03:** 5mm gauge block (grade 0) for origin setting  
**218-007:** Work bench



# Gauge Block Comparator GBCD-100A

## SERIES 565 — Automatic Type Comparator with Dual Gage Heads

The GBCD-100A Automatic Gauge Block Comparator is an easy-to-operate dual-head type gauge block inspection system. It automatically compares a test block with an appropriate reference gauge block and determines central length, maximum length, minimum length, and parallelism of the test block through the operation of the connected personal computer.

### SPECIFICATIONS

Model No.	GBCD-100A
Order No.	565-160*
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)
Measuring force	Upper gage head: 1N (100gf) Lower gage head: 0.6N (60gf)
Air requirement	400kPa (4kgf/cm <sup>2</sup> )
Operating conditions	Temperature: 20°C ±1°C Humidity: 58%RH ±15%RH
Power supply	100-120 / 200-240 VAC, 50/60Hz
Dimensions (W x D x H)	Main unit: 710 x 370 x 805mm Electronic unit: 221 x 490 x 344mm
Mass	Main unit: 120kg Electronic unit: 15kg

\* Uncertainty of measurement at the 95% confidence level (not including the calibration error of the reference gauge block).  
 \*\* To denote your AC power cable add the following suffixes to the order No.:  
**A** for UL/CSA, **D** for CEE, **DC** for CCC, **E** for BS, **K** for EK, **No suffix** is required for JIS/100V

# Gauge Block Comparator GBCD-250

## SERIES 565 — Manual Comparator with Dual Gage Heads

### Optional Accessory

- 02ASG570:** GBPAK-ME (Software)  
**02ASP422:** RS-232C cable  
**937179T:** Foot switch  
**516-145-E2:** Calibration master for gauge block comparator  
**02ASD130:** Square gauge block measuring kit  
**02ASF040:** Heat insulation shield  
**02ASD100:** Gauge block set for accuracy inspection



### FEATURES

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

### SPECIFICATIONS

Metric	
Model No.	GBCD-250
Order No.	565-150*
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 (upper, lower)
Measuring force	0.7N (upper), 0.2N (lower)
Operating conditions	Temperature: 20°C ±1°C Humidity: 58%RH ±15%RH
Data output	Via SPC output port
Power supply	100-120 / 200-240 VAC, 50/60Hz
Dimensions (W x D x H)	Main unit: 455 x 318 x 726mm Display unit: 210 x 162 x 118mm
Mass	Main unit: Approx. 52kg Display unit: Approx. 2.4kg

\* Uncertainty of measurement at the 95% confidence level (not including the calibration error of the reference gauge block).  
 \*\* To denote your AC power cable add the following suffixes to the order No.: **A** for UL/CSA, **D** for CEE, **DC** for CCC, **E** for BS, **K** for EK, **No suffix** is required for JIS/100V

