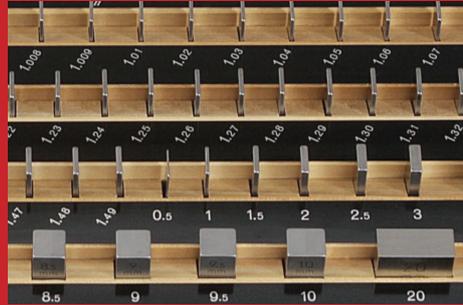


# GAUGE BLOCKS REFERENCE GAUGES

E



### Gauge Blocks



### Reference Gauges



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#### Gauge Blocks

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# Gauge Blocks

## Features and Accuracies

### Features of Mitutoyo Gauge Blocks

Mitutoyo offers rectangular steel and ceramic (CERA Blocks) gauge blocks for use as length standards in variously sized sets and as individual blocks. Accessories include wear blocks in tungsten carbide and ceramic in the standard thicknesses. Mitutoyo gauge blocks are recognized to be of the highest quality and are available in various grades to meet every need in respect of working conditions, environment and application.

### Accuracy

As a world-leading precision measuring equipment manufacturer, Mitutoyo is certified by the Japanese government as an accredited calibration laboratory, which means that the accuracy of its gauge blocks is guaranteed through traceability to the Metrology Management Centre of the National Institute of Advanced Industrial Science and Technology (AIST).

### Wringing

Lapping measuring surfaces is one of Mitutoyo's specialties. Our advanced technique, developed over more than half a century, enables us to achieve the optimum flatness and surface finish 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 temperature cycling, simultaneously achieves excellent abrasion resistance and minimizes any change in length over time.

### 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 with significant advantages:

#### 1. Corrosion Resistant

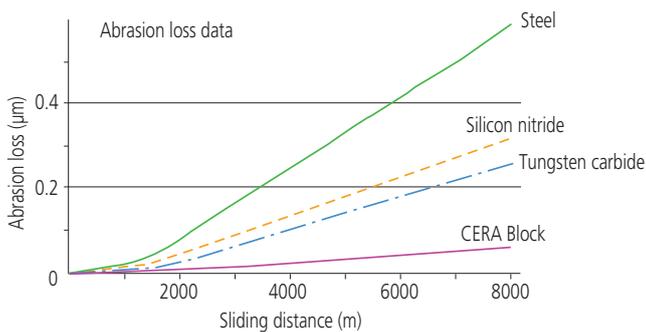
Anti-corrosion treatment is not required when handled normally (i.e. with fingers), resulting in simple maintenance and storage.

#### 2. No Burrs Caused by Accidental Mishandling

Since the CERA Block is very hard, it will not scratch easily 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.

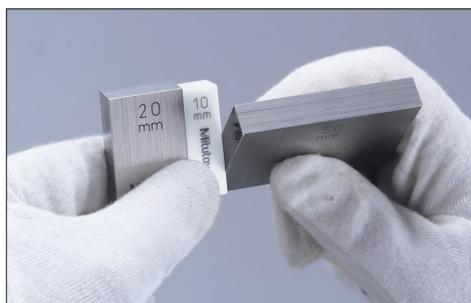
#### 5. Clearly Marked Sizes

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

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

#### 7. High Wringing Force

Superior flatness and surface finish provides maximum wringing force.



## Grade and Application

### 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 gauges 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.

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

| Usage           | Applications   | Grade  |
|-----------------|--|--------|
| Workshop use    | • Mounting tools and cutters   | 2      |
|                 | • Manufacturing gauges<br>• Calibrating instruments  | 1 or 2 |
| Inspection use  | • Inspecting mechanical parts, tools, etc.   | 1 or 2 |
|                 | • Checking the accuracy of gauges<br>• Calibrating instruments   | 0 or 1 |
| Calibration use | • Checking the accuracy of gauge blocks for workshop<br>• Checking the accuracy of gauge blocks for inspection<br>• Checking the accuracy of instruments | 0      |

## Constructing a Gauge Block Stack

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

1. Use as few gauge blocks as possible to obtain the required length by selecting thick blocks wherever possible.
2. Select the block for the least significant digit first, then work back through the more significant digits until the required length is attained.
3. There are multiple combinations for the integer part of a length. To reduce wear as much as possible, do not always use the same gauge blocks.

Example: Required length = 30.6785 mm

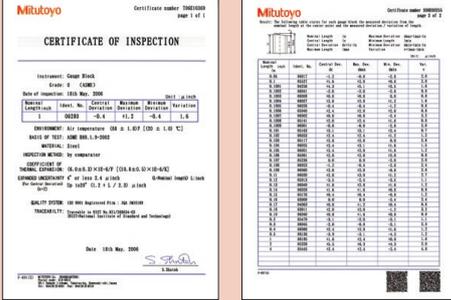
- Using an 88-block metric set
- |            |
|------------|
| 1.0005     |
| 1.008      |
| 1.17       |
| 7.5        |
| 20         |
| 30.6785 mm |

Example: Required length = 1.8761 "

- Using an 81-block inch set
- |          |
|----------|
| 0.1001   |
| 0.126    |
| 0.65     |
| 1        |
| 1.8761 " |

## 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.



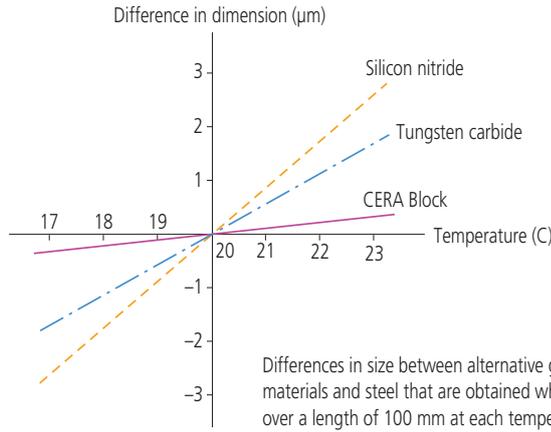
## 8. Characteristics of CERA Blocks Compared with other Gauge Block Materials

| Property   | Material                       |            |                          |   |
|--|--------------------------------|------------|--------------------------|---|
|  | CERA Block (ZrO <sub>2</sub> ) | Steel (Fe) | Tungsten 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  |

Note: Ceramics have the advantage of a slow response to temperature changes due to the low thermal conductivity. However, caution is required when using CERA blocks in an environment subject to rapid temperature change.

## 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 Impact Damage

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

## Accuracy Specifications: BS 4311: Part 1: 1993 (UK)

| Inch   |   |                       |                  |                |                |                |
|--------|---|-----------------------|------------------|----------------|----------------|----------------|
| Grade* |   | Nominal length (inch) |                  |                |                |                |
|        |   | over 0 up to 0.4      | over 0.4 up to 1 | over 1 up to 2 | over 2 up to 3 | over 3 up to 4 |
| 0      | Tolerance on deviation of measured central length | ±5 μm                 | ±6 μm            | ±8 μm          | ±10 μm         | ±12 μm         |
|        | Parallelism                                       | 4 μm                  |                  |                | 5 μm           |                |
|        | Flatness  | 4 μm                  |                  |                |                |                |
| 1      | Tolerance on deviation of measured central length | ±10 μm                | ±12 μm           | ±15 μm         | ±20 μm         | ±25 μm         |
|        | Parallelism                                       | 6 μm                  |                  | 7 μm           |                | 8 μm           |
|        | Flatness  | 6 μm                  |                  |                |                |                |
| 2      | Tolerance on deviation of measured central length | ±20 μm                | ±25 μm           | ±30 μm         | ±40 μm         | ±50 μm         |
|        | Parallelism                                       | 12 μm                 |                  |                | 14 μm          |                |
|        | Flatness  | 10 μm                 |                  |                |                |                |

| Metric |   |                     |                  |                  |                  |                   |
|--------|---|---------------------|------------------|------------------|------------------|-------------------|
| Grade* |   | Nominal length (mm) |                  |                  |                  |                   |
|        |   | over 0 up to 10     | over 10 up to 25 | over 25 up to 50 | over 50 up to 75 | over 75 up to 100 |
| 0      | Tolerance on deviation of measured central length | ±0.12 μm            | ±0.15 μm         | ±0.2 μm          | ±0.25 μm         | ±0.3 μm           |
|        | Parallelism                                       | 0.1 μm              |                  |                  | 0.12 μm          |                   |
|        | Flatness  | 0.1 μm              |                  |                  |                  |                   |
| 1      | Tolerance on deviation of measured central length | ±0.25 μm            | ±0.3 μm          | ±0.4 μm          | ±0.5 μm          | ±0.6 μm           |
|        | Parallelism                                       | 0.16 μm             |                  | 0.18 μm          |                  | 0.2 μm            |
|        | Flatness  | 0.15 μm             |                  |                  |                  |                   |
| 2      | Tolerance on deviation of measured central length | ±0.5 μm             | ±0.6 μm          | ±0.8 μm          | ±1.0 μm          | ±1.2 μm           |
|        | Parallelism                                       | 0.3 μm              |                  |                  | 0.35 μm          |                   |
|        | Flatness  | 0.25 μm             |                  |                  |                  |                   |

\* At 20°C

# Gauge Blocks

## SERIES 516 – Metric Gauge Block Sets

- Mitutoyo provides a wide selection of boxed sets of gauge blocks to meet the various needs of industry. Selecting the best set, or sets, to acquire usually depends on the accuracy required by the target applications, the level of convenience desired (larger sets offer more combination possibilities) and the environmental conditions in which they will be used.



Steel 32-block set



Steel 103-block set



Steel 47-block set



Steel 88-block set



CERA 88-block set



CERA 47-block set



Steel 9-block set

### Specifications

#### Steel

| Blocks per set                  | Code No.   | Grade | Set configuration  | Price    |
|---------------------------------|------------|-------|--|----------|
| <b>1 mm base block sets</b>     |            |       |  |          |
| 103                             | 516-942-11 | 0     | 1.005 mm, 1.01-1.49 mm by 0.01 step,<br>0.5-24.5 mm by 0.5 step,<br>25-100 mm by 25 step                               | £2420.00 |
|                                 | 516-943-11 | 1     |  | £2190.00 |
|                                 | 516-944-11 | 2     |  | £1840.00 |
| 88                              | 516-970-11 | 0     | 1.0005 mm, 1.001-1.009 mm by 0.001 step,<br>1.01-1.49 mm by 0.01 step, 0.5-9.5 mm by 0.5 step,<br>10-100 mm by 10 step | £2190.00 |
|                                 | 516-971-11 | 1     |  | £1730.00 |
|                                 | 516-972-11 | 2     |  | £1300.00 |
| 47                              | 516-962-11 | 0     | 1.005 mm, 1.01-1.19 mm by 0.01 step,<br>1.2-1.9 mm by 0.1 step, 1-9 mm by 1 step,<br>10-100 mm by 10 step              | £1270.00 |
|                                 | 516-963-11 | 1     |  | £1040.00 |
|                                 | 516-964-11 | 2     |  | £920.00  |
| 32                              | 516-966-11 | 0     | 1.005 mm, 1.01-1.09 mm by 0.01 step,<br>1.1-1.9 mm by 0.1 step, 1-9 mm by 1 step,<br>10-30 mm by 10 step, 60 mm        | £920.00  |
|                                 | 516-967-11 | 1     |  | £633.00  |
|                                 | 516-968-11 | 2     |  | £564.00  |
| <b>0.001 mm step block sets</b> |            |       |  |          |
| 9                               | 516-982-11 | 0     | 1.001-1.009 mm by 0.001 step   | £264.00  |
|                                 | 516-983-11 | 1     |  | £204.00  |
|                                 | 516-984-11 | 2     |  | £180.00  |

#### CERA

| Blocks per set              | Code No.   | Grade | Set configuration  | Price    |
|-----------------------------|------------|-------|--|----------|
| <b>1 mm base block sets</b> |            |       |  |          |
| 88                          | 516-370-11 | 0     | 1.0005 mm, 1.001-1.009 mm by 0.001 step,<br>1.01-1.49 mm by 0.01 step, 0.5-9.5 mm by 0.5 step,<br>10-100 mm by 10 step | £3930.00 |
|                             | 516-371-11 | 1     |  | £3270.00 |
|                             | 516-372-11 | 2     |  | £2750.00 |
| 47                          | 516-362-11 | 0     | 1.005 mm, 1.01-1.19 mm by 0.01 step,<br>1.2-1.9 mm by 0.1 step, 1-9 mm by 1 step,<br>10-100 mm by 10 step              | £2140.00 |
|                             | 516-363-11 | 1     |  | £1830.00 |
|                             | 516-364-11 | 2     |  | £1570.00 |

## SERIES 516 – Inch Gauge Block Sets

- Mitutoyo provides a wide selection of boxed sets of gauge blocks to meet the various needs of industry. Selecting the best set, or sets, to acquire usually depends on the accuracy required by the target applications, the level of convenience desired (larger sets offer more combination possibilities) and the environmental conditions in which they will be used.



CERA 81-block set

### Specifications

| Steel          |            |       |  |          |
|----------------|------------|-------|--|----------|
| Blocks per set | Code No.   | Grade | Set configuration  | Price    |
| 81             | 516-903-11 | 1     | 0.1001-0.1009" by 0.0001 step, 0.101-0.149" by 0.001 step, 0.05-0.95" by 0.05 step, 1-4" by 1 step                       | £1960.00 |
|                | 516-904-11 | 2     |  | £1210.00 |
| 49             | 516-911-11 | 1     | 0.1001-0.1009" by 0.0001 step, 0.101-0.109" by 0.001 step, 0.01-0.19" by 0.01 step, 0.2-0.9" by 0.1 step, 1-4" by 1 step | £1030.00 |
|                | 516-912-11 | 2     |  | £925.00  |

| CERA           |            |       |  |          |
|----------------|------------|-------|--|----------|
| Blocks per set | Code No.   | Grade | Set configuration  | Price    |
| 81             | 516-302-11 | 0     | 0.1001-0.1009" by 0.0001 step, 0.101-0.149" by 0.001 step, 0.05-0.95" by 0.05 step, 1-4" by 1 step | £6640.00 |
|                | 516-303-11 | 1     |  | £3040.00 |
|                | 516-304-11 | 2     |  | £2320.00 |

# Gauge Blocks

## SERIES 516 – Micrometer Inspection Gauge Block Set

- Set comprises ten gauge blocks and an optical parallel.
- For adjusting and calibrating outside micrometers.



516-106-10

### Specifications

#### Metric

| Blocks per set | Code No.   | Grade | Set configuration  | Price   |
|----------------|------------|-------|--|---------|
| 10             | 516-106-10 | 0     | 2.5, 5.1, 7.7, 10.3, 12.9, 15, 17.6, 20.2, 22.8, 25 mm, optical parallel (t = 12 mm) | £529.00 |



Sample application.

### Optional Accessory

| Code No. | Description        | Price   |
|----------|--------------------|---------|
| 516-607  | Gauge block holder | £406.00 |



516-607  
(The gauge blocks are optional.)

## SERIES 516 – Caliper Inspection Gauge Block Set

- Set includes two gauge blocks and a setting ring.
- For adjusting and calibrating calipers.



516-122-10

### Specifications

| Metric         |            |       |  |         |
|----------------|------------|-------|--|---------|
| Blocks per set | Code No.   | Grade | Set configuration                            | Price   |
| Steel          |            |       |  |         |
| 2              | 516-122-10 | 1     | 41.3, 131.4 mm, setting ring (ø20 mm), glove | £618.00 |

# Gauge Blocks

## Individual Metric Steel Gauge Blocks Grade 1



611675-131

### Specifications

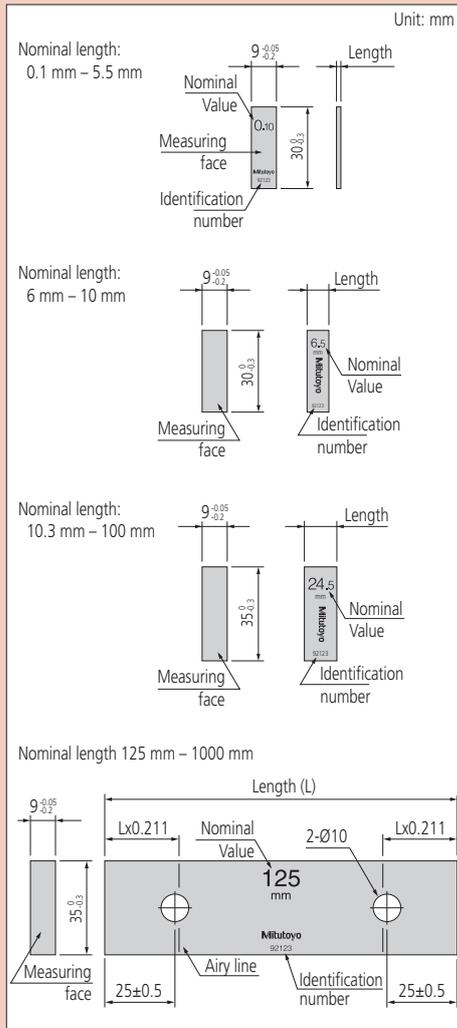
#### Metric

| Length (mm) | Code No.   | Price   |
|-------------|------------|---------|
| 0.1         | 611821-131 | £113.00 |
| 0.11        | 611860-131 | £72.80  |
| 0.12        | 611861-131 | £113.00 |
| 0.13        | 611862-131 | £72.80  |
| 0.14        | 611863-131 | £113.00 |
| 0.15        | 611822-131 | £72.80  |
| 0.16        | 611864-131 | £113.00 |
| 0.17        | 611865-131 | £72.80  |
| 0.18        | 611866-131 | £113.00 |
| 0.19        | 611867-131 | £72.80  |
| 0.2         | 611823-131 | £97.80  |
| 0.21        | 611868-131 | £110.00 |
| 0.22        | 611869-131 | £110.00 |
| 0.23        | 611870-131 | £110.00 |
| 0.24        | 611871-131 | £110.00 |
| 0.25        | 611824-131 | £110.00 |
| 0.26        | 611872-131 | £110.00 |
| 0.27        | 611873-131 | £110.00 |
| 0.28        | 611874-131 | £110.00 |
| 0.29        | 611875-131 | £110.00 |
| 0.3         | 611825-131 | £81.60  |
| 0.31        | 611876-131 | £92.00  |
| 0.32        | 611877-131 | £92.00  |
| 0.33        | 611878-131 | £92.00  |
| 0.34        | 611879-131 | £92.00  |
| 0.35        | 611826-131 | £92.00  |
| 0.36        | 611880-131 | £92.00  |
| 0.37        | 611881-131 | £92.00  |
| 0.38        | 611882-131 | £92.00  |
| 0.39        | 611883-131 | £92.00  |
| 0.4         | 611827-131 | £74.80  |
| 0.41        | 611884-131 | £74.80  |
| 0.42        | 611885-131 | £74.80  |
| 0.43        | 611886-131 | £74.80  |
| 0.44        | 611887-131 | £74.80  |
| 0.45        | 611828-131 | £74.80  |
| 0.46        | 611888-131 | £74.80  |
| 0.47        | 611889-131 | £74.80  |

| Length (mm) | Code No.   | Price  |
|-------------|------------|--------|
| 0.48        | 611890-131 | £74.80 |
| 0.49        | 611891-131 | £74.80 |
| 0.5         | 611506-131 | £46.00 |
| 0.51        | 611892-131 | £46.00 |
| 0.52        | 611893-131 | £46.00 |
| 0.53        | 611894-131 | £46.00 |
| 0.54        | 611895-131 | £46.00 |
| 0.55        | 611896-131 | £46.00 |
| 0.56        | 611897-131 | £46.00 |
| 0.57        | 611898-131 | £46.00 |
| 0.58        | 611899-131 | £46.00 |
| 0.59        | 611900-131 | £46.00 |
| 0.6         | 611901-131 | £46.00 |
| 0.61        | 611902-131 | £46.00 |
| 0.62        | 611903-131 | £46.00 |
| 0.63        | 611904-131 | £46.00 |
| 0.64        | 611905-131 | £46.00 |
| 0.65        | 611906-131 | £46.00 |
| 0.66        | 611907-131 | £46.00 |
| 0.67        | 611908-131 | £46.00 |
| 0.68        | 611909-131 | £46.00 |
| 0.69        | 611910-131 | £46.00 |
| 0.7         | 611911-131 | £40.30 |
| 0.71        | 611912-131 | £40.30 |
| 0.72        | 611913-131 | £40.30 |
| 0.73        | 611914-131 | £40.30 |
| 0.74        | 611915-131 | £40.30 |
| 0.75        | 611916-131 | £40.30 |
| 0.76        | 611917-131 | £40.30 |
| 0.77        | 611918-131 | £40.30 |
| 0.78        | 611919-131 | £40.30 |
| 0.79        | 611920-131 | £40.30 |
| 0.8         | 611921-131 | £40.30 |
| 0.81        | 611922-131 | £40.30 |
| 0.82        | 611923-131 | £40.30 |
| 0.83        | 611924-131 | £40.30 |
| 0.84        | 611925-131 | £40.30 |
| 0.85        | 611926-131 | £40.30 |

| Length (mm) | Code No.   | Price  |
|-------------|------------|--------|
| 0.86        | 611927-131 | £40.30 |
| 0.87        | 611928-131 | £40.30 |
| 0.88        | 611929-131 | £40.30 |
| 0.89        | 611930-131 | £40.30 |
| 0.9         | 611931-131 | £40.30 |
| 0.91        | 611932-131 | £40.30 |
| 0.92        | 611933-131 | £40.30 |
| 0.93        | 611934-131 | £40.30 |
| 0.94        | 611935-131 | £40.30 |
| 0.95        | 611936-131 | £40.30 |
| 0.96        | 611937-131 | £40.30 |
| 0.97        | 611938-131 | £40.30 |
| 0.98        | 611939-131 | £40.30 |
| 0.99        | 611940-131 | £40.30 |
| 0.991       | 611551-131 | £26.50 |
| 0.992       | 611552-131 | £26.50 |
| 0.993       | 611553-131 | £26.50 |
| 0.994       | 611554-131 | £26.50 |
| 0.995       | 611555-131 | £26.50 |
| 0.996       | 611556-131 | £26.50 |
| 0.997       | 611557-131 | £26.50 |
| 0.998       | 611558-131 | £26.50 |
| 0.999       | 611559-131 | £26.50 |
| 1           | 611611-131 | £25.30 |
| 1.0005      | 611520-131 | £25.30 |
| 1.001       | 611521-131 | £25.30 |
| 1.002       | 611522-131 | £25.30 |
| 1.003       | 611523-131 | £25.30 |
| 1.004       | 611524-131 | £25.30 |
| 1.005       | 611525-131 | £25.30 |
| 1.006       | 611526-131 | £25.30 |
| 1.007       | 611527-131 | £25.30 |
| 1.008       | 611528-131 | £25.30 |
| 1.009       | 611529-131 | £25.30 |
| 1.01        | 611561-131 | £23.40 |
| 1.02        | 611562-131 | £23.40 |
| 1.03        | 611563-131 | £23.40 |
| 1.04        | 611564-131 | £23.40 |

## Dimensions



| Length (mm) | Code No.   | Price  |
|-------------|------------|--------|
| 1.05        | 611565-131 | £23.40 |
| 1.06        | 611566-131 | £23.40 |
| 1.07        | 611567-131 | £23.40 |
| 1.08        | 611568-131 | £23.40 |
| 1.09        | 611569-131 | £23.40 |
| 1.1         | 611570-131 | £23.40 |
| 1.11        | 611571-131 | £23.40 |
| 1.12        | 611572-131 | £23.40 |
| 1.13        | 611573-131 | £23.40 |
| 1.14        | 611574-131 | £23.40 |
| 1.15        | 611575-131 | £23.40 |
| 1.16        | 611576-131 | £23.40 |
| 1.17        | 611577-131 | £23.40 |
| 1.18        | 611578-131 | £23.40 |
| 1.19        | 611579-131 | £23.40 |
| 1.2         | 611580-131 | £23.40 |
| 1.21        | 611581-131 | £23.40 |
| 1.22        | 611582-131 | £23.40 |
| 1.23        | 611583-131 | £23.40 |
| 1.24        | 611584-131 | £23.40 |
| 1.25        | 611585-131 | £23.40 |
| 1.26        | 611586-131 | £23.40 |
| 1.27        | 611587-131 | £23.40 |
| 1.28        | 611588-131 | £23.40 |
| 1.29        | 611589-131 | £23.40 |
| 1.3         | 611590-131 | £23.40 |
| 1.31        | 611591-131 | £23.40 |
| 1.32        | 611592-131 | £23.40 |
| 1.33        | 611593-131 | £23.40 |
| 1.34        | 611594-131 | £23.40 |
| 1.35        | 611595-131 | £23.40 |
| 1.36        | 611596-131 | £23.40 |
| 1.37        | 611597-131 | £23.40 |
| 1.38        | 611598-131 | £23.40 |
| 1.39        | 611599-131 | £23.40 |
| 1.4         | 611600-131 | £23.40 |
| 1.41        | 611601-131 | £23.40 |
| 1.42        | 611602-131 | £23.40 |
| 1.43        | 611603-131 | £23.40 |
| 1.44        | 611604-131 | £23.40 |
| 1.45        | 611605-131 | £23.40 |
| 1.46        | 611606-131 | £23.40 |
| 1.47        | 611607-131 | £23.40 |
| 1.48        | 611608-131 | £23.40 |
| 1.49        | 611609-131 | £23.40 |
| 1.5         | 611641-131 | £21.40 |
| 1.6         | 611516-131 | £21.40 |
| 1.7         | 611517-131 | £21.40 |
| 1.8         | 611518-131 | £21.40 |
| 1.9         | 611519-131 | £21.40 |
| 2           | 611612-131 | £21.40 |
| 2.0005      | 611690-131 | £21.40 |
| 2.001       | 611691-131 | £21.40 |
| 2.002       | 611692-131 | £21.40 |
| 2.003       | 611693-131 | £21.40 |
| 2.004       | 611694-131 | £21.40 |
| 2.005       | 611695-131 | £21.40 |
| 2.006       | 611696-131 | £21.40 |
| 2.007       | 611697-131 | £21.40 |
| 2.008       | 611698-131 | £21.40 |

| Length (mm) | Code No.   | Price  |
|-------------|------------|--------|
| 2.009       | 611699-131 | £21.40 |
| 2.01        | 611701-131 | £21.40 |
| 2.02        | 611702-131 | £21.40 |
| 2.03        | 611703-131 | £21.40 |
| 2.04        | 611704-131 | £21.40 |
| 2.05        | 611705-131 | £21.40 |
| 2.06        | 611706-131 | £21.40 |
| 2.07        | 611707-131 | £21.40 |
| 2.08        | 611708-131 | £21.40 |
| 2.09        | 611709-131 | £21.40 |
| 2.1         | 611710-131 | £21.40 |
| 2.11        | 611711-131 | £21.40 |
| 2.12        | 611712-131 | £21.40 |
| 2.13        | 611713-131 | £21.40 |
| 2.14        | 611714-131 | £21.40 |
| 2.15        | 611715-131 | £21.40 |
| 2.16        | 611716-131 | £21.40 |
| 2.17        | 611717-131 | £21.40 |
| 2.18        | 611718-131 | £21.40 |
| 2.19        | 611719-131 | £21.40 |
| 2.2         | 611720-131 | £21.40 |
| 2.21        | 611721-131 | £21.40 |
| 2.22        | 611722-131 | £21.40 |
| 2.23        | 611723-131 | £21.40 |
| 2.24        | 611724-131 | £21.40 |
| 2.25        | 611725-131 | £24.50 |
| 2.26        | 611726-131 | £24.50 |
| 2.27        | 611727-131 | £24.50 |
| 2.28        | 611728-131 | £24.50 |
| 2.29        | 611729-131 | £24.50 |
| 2.3         | 611730-131 | £24.50 |
| 2.31        | 611731-131 | £24.50 |
| 2.32        | 611732-131 | £24.50 |
| 2.33        | 611733-131 | £24.50 |
| 2.34        | 611734-131 | £24.50 |
| 2.35        | 611735-131 | £24.50 |
| 2.36        | 611736-131 | £24.50 |
| 2.37        | 611737-131 | £24.50 |
| 2.38        | 611738-131 | £24.50 |
| 2.39        | 611739-131 | £24.50 |
| 2.4         | 611740-131 | £24.50 |
| 2.41        | 611741-131 | £24.50 |
| 2.42        | 611742-131 | £24.50 |
| 2.43        | 611743-131 | £24.50 |
| 2.44        | 611744-131 | £24.50 |
| 2.45        | 611745-131 | £24.50 |
| 2.46        | 611746-131 | £24.50 |
| 2.47        | 611747-131 | £24.50 |
| 2.48        | 611748-131 | £24.50 |
| 2.49        | 611749-131 | £24.50 |
| 2.5         | 611642-131 | £24.50 |
| 2.6         | 611750-131 | £20.50 |
| 2.7         | 611751-131 | £20.50 |
| 2.8         | 611752-131 | £20.50 |
| 2.9         | 611753-131 | £20.50 |
| 3           | 611613-131 | £24.50 |
| 3.5         | 611643-131 | £20.70 |
| 4           | 611614-131 | £20.70 |
| 4.5         | 611644-131 | £20.70 |
| 5           | 611615-131 | £20.90 |

| Length (mm) | Code No.   | Price  |
|-------------|------------|--------|
| 5.1         | 611850-131 | £75.50 |
| 5.5         | 611645-131 | £25.30 |
| 6           | 611616-131 | £26.30 |
| 6.5         | 611646-131 | £26.30 |
| 7           | 611617-131 | £26.30 |
| 7.5         | 611647-131 | £26.50 |
| 7.7         | 611851-131 | £26.50 |
| 8           | 611618-131 | £26.50 |
| 8.5         | 611648-131 | £26.50 |
| 9           | 611619-131 | £26.50 |
| 9.5         | 611649-131 | £26.50 |
| 10          | 611671-131 | £26.50 |
| 10.3        | 611852-131 | £26.80 |
| 10.5        | 611650-131 | £26.80 |
| 11          | 611621-131 | £31.90 |
| 11.5        | 611651-131 | £32.70 |
| 12          | 611622-131 | £32.70 |
| 12.5        | 611652-131 | £32.70 |
| 12.9        | 611853-131 | £69.00 |
| 13          | 611623-131 | £32.70 |
| 13.5        | 611653-131 | £32.70 |
| 14          | 611624-131 | £32.90 |
| 14.5        | 611654-131 | £32.90 |
| 15          | 611625-131 | £32.90 |
| 15.5        | 611655-131 | £33.20 |
| 16          | 611626-131 | £34.70 |
| 16.5        | 611656-131 | £34.70 |
| 17          | 611627-131 | £34.70 |
| 17.5        | 611657-131 | £35.00 |
| 17.6        | 611854-131 | £74.80 |
| 18          | 611628-131 | £35.00 |
| 18.5        | 611658-131 | £35.00 |
| 19          | 611629-131 | £35.80 |
| 19.5        | 611659-131 | £35.80 |
| 20          | 611672-131 | £35.80 |
| 20.2        | 611855-131 | £74.80 |
| 20.5        | 611660-131 | £36.00 |
| 21          | 611631-131 | £37.30 |
| 21.5        | 611661-131 | £37.30 |
| 22          | 611632-131 | £37.30 |
| 22.5        | 611662-131 | £37.30 |
| 22.8        | 611856-131 | £74.80 |
| 23          | 611633-131 | £37.90 |
| 23.5        | 611663-131 | £37.90 |
| 24          | 611634-131 | £37.90 |
| 24.5        | 611664-131 | £37.90 |
| 25          | 611635-131 | £37.90 |
| 25.25       | 611754-131 | £37.90 |
| 30          | 611673-131 | £41.10 |
| 35          | 611755-131 | £41.10 |
| 40          | 611674-131 | £44.70 |
| 41.3        | 611857-131 | £44.70 |
| 45          | 611756-131 | £44.70 |
| 50          | 611675-131 | £50.80 |
| 60          | 611676-131 | £59.00 |
| 70          | 611677-131 | £63.30 |
| 75          | 611801-131 | £69.90 |
| 80          | 611678-131 | £71.00 |
| 90          | 611679-131 | £73.10 |
| 100         | 611681-131 | £78.80 |

Note: larger sizes available on request.

# Gauge Blocks

## Individual Inch Steel Gauge Blocks Grade 1



611201-131

### Specifications

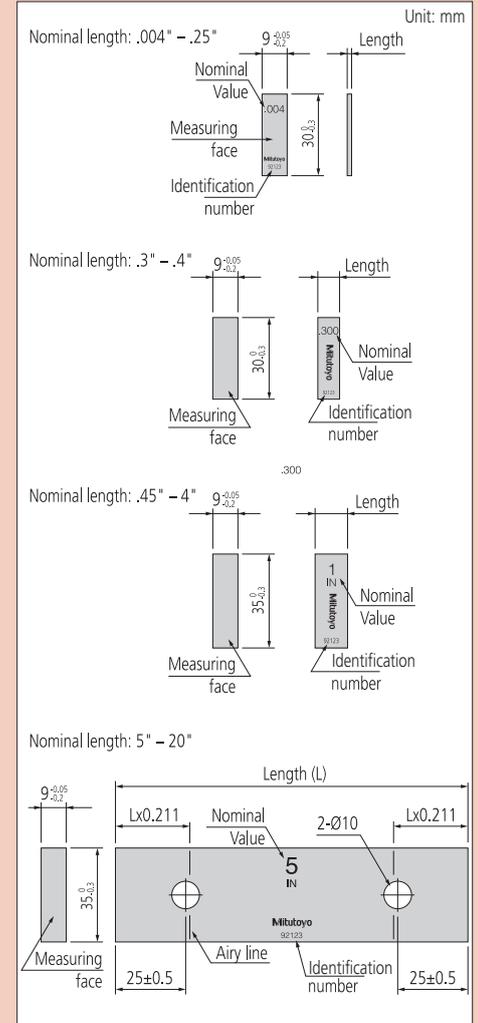
#### Inch

| Length (inch) | Code No.   | Price  |
|---------------|------------|--------|
| .05           | 611105-131 | £25.20 |
| .0625 (1/16)  | 611303-131 | £24.80 |
| .1            | 611191-131 | £26.30 |
| .10005        | 611135-131 | £26.30 |
| .1001         | 611121-131 | £26.30 |
| .1002         | 611122-131 | £26.30 |
| .1003         | 611123-131 | £26.30 |
| .1004         | 611124-131 | £26.30 |
| .1005         | 611125-131 | £26.30 |
| .1006         | 611126-131 | £26.30 |
| .1007         | 611127-131 | £26.30 |
| .1008         | 611128-131 | £26.30 |
| .1009         | 611129-131 | £26.30 |
| .101          | 611141-131 | £26.30 |
| .102          | 611142-131 | £26.30 |
| .103          | 611143-131 | £26.30 |
| .104          | 611144-131 | £26.30 |
| .105          | 611145-131 | £26.30 |
| .106          | 611146-131 | £26.30 |
| .107          | 611147-131 | £26.30 |
| .108          | 611148-131 | £26.30 |
| .109          | 611149-131 | £26.30 |
| .11           | 611150-131 | £26.30 |
| .111          | 611151-131 | £26.30 |
| .112          | 611152-131 | £26.30 |
| .113          | 611153-131 | £26.30 |
| .114          | 611154-131 | £26.30 |
| .115          | 611155-131 | £26.30 |
| .116          | 611156-131 | £26.30 |
| .117          | 611157-131 | £26.30 |
| .118          | 611158-131 | £26.30 |
| .119          | 611159-131 | £26.30 |
| .12           | 611160-131 | £26.30 |
| .121          | 611161-131 | £26.30 |
| .122          | 611162-131 | £26.30 |
| .123          | 611163-131 | £26.30 |
| .124          | 611164-131 | £26.30 |
| .125          | 611165-131 | £26.30 |
| .126          | 611166-131 | £26.30 |
| .127          | 611167-131 | £26.30 |
| .128          | 611168-131 | £26.50 |
| .129          | 611169-131 | £26.50 |
| .13           | 611170-131 | £26.50 |
| .131          | 611171-131 | £26.50 |
| .132          | 611172-131 | £26.50 |
| .133          | 611173-131 | £26.50 |
| .134          | 611174-131 | £26.50 |
| .135          | 611175-131 | £26.50 |

| Length (inch) | Code No.   | Price   |
|---------------|------------|---------|
| .136          | 611176-131 | £26.50  |
| .137          | 611177-131 | £26.50  |
| .138          | 611178-131 | £26.50  |
| .139          | 611179-131 | £26.50  |
| .14           | 611180-131 | £26.50  |
| .141          | 611181-131 | £26.50  |
| .142          | 611182-131 | £26.50  |
| .143          | 611183-131 | £26.50  |
| .144          | 611184-131 | £26.50  |
| .145          | 611185-131 | £26.50  |
| .146          | 611186-131 | £26.50  |
| .147          | 611187-131 | £26.50  |
| .148          | 611188-131 | £26.50  |
| .149          | 611189-131 | £26.50  |
| .15           | 611115-131 | £26.50  |
| .16           | 611116-131 | £26.50  |
| .17           | 611117-131 | £26.50  |
| .18           | 611118-131 | £26.50  |
| .19           | 611119-131 | £26.80  |
| .2            | 611192-131 | £26.80  |
| .21           | 611221-131 | £28.60  |
| .25           | 611212-131 | £32.90  |
| .3            | 611193-131 | £33.40  |
| .315          | 611209-131 | £34.10  |
| .35           | 611213-131 | £34.10  |
| .375 (3/8)    | 611113-131 | £34.10  |
| .4            | 611194-131 | £34.10  |
| .420          | 611210-131 | £34.10  |
| .45           | 611214-131 | £41.30  |
| .5            | 611195-131 | £41.70  |
| .55           | 611215-131 | £42.10  |
| .6            | 611196-131 | £42.70  |
| .605          | 611211-131 | £42.70  |
| .65           | 611216-131 | £44.10  |
| .7            | 611197-131 | £44.70  |
| .710          | 611220-131 | £44.70  |
| .75           | 611217-131 | £45.00  |
| .8            | 611198-131 | £45.40  |
| .815          | 611226-131 | £45.40  |
| .85           | 611218-131 | £46.60  |
| .9            | 611199-131 | £48.60  |
| .920          | 611227-131 | £48.60  |
| .95           | 611219-131 | £48.60  |
| 1             | 611201-131 | £48.80  |
| 2             | 611202-131 | £68.20  |
| 3             | 611203-131 | £88.40  |
| 4             | 611204-131 | £106.00 |

Note: larger sizes available on request.

### Dimensions



## SERIES 516 – Wear Block Sets

- For protecting the measuring surfaces of the working gauge blocks in a set from excessive wear. Incorporated into a stack at one or both ends, these inexpensive and easily replaced blocks absorb the wear due to contact with abrasive workpieces and so help maintain the condition and accuracy of all the gauge blocks in a set.



516-806-10



516-834-16

### Specifications

| Metric         |            |       |          |              |         |
|----------------|------------|-------|----------|--------------|---------|
| Blocks per set | Code No.   | Grade | Contents | Nominal size | Price   |
| Carbide        |            |       |          |              |         |
| 2              | 516-807-10 | 0     | 2 pcs.   | 1 mm         | £178.00 |
|                | 516-806-10 | 1     |          |              | £165.00 |
|                | 516-803-10 | 0     |          | 2 mm         | £178.00 |
|                | 516-802-10 | 1     |          |              | £165.00 |
| CERA           |            |       |          |              |         |
| 2              | 516-832-10 | 0     | 2 pcs.   | 1 mm         | £104.00 |
|                | 516-833-10 | 1     |          |              | £104.00 |
|                | 516-830-10 | 0     |          | 2 mm         | £104.00 |
|                | 516-831-10 | 1     |          |              | £104.00 |
| Inch           |            |       |          |              |         |
| Blocks per set | Code No.   | Grade | Contents | Nominal size | Price   |
| Carbide        |            |       |          |              |         |
| 2              | 516-809-16 | 0     | 2 pcs.   | .05"         | £178.00 |
|                | 516-808-16 | 1     |          |              | £165.00 |
|                | 516-805-16 | 0     |          | .1"          | £178.00 |
|                | 516-804-16 | 1     |          |              | £165.00 |
| CERA           |            |       |          |              |         |
| 2              | 516-836-16 | 0     | 2 pcs.   | .05"         | £104.00 |
|                | 516-837-16 | 1     |          |              | £104.00 |
|                | 516-834-16 | 0     |          | .1"          | £104.00 |
|                | 516-835-16 | 1     |          |              | £104.00 |

# Gauge Blocks

## SERIES 516 – Gauge Block Accessory Sets

- To expand the range of gauge block applications, Mitutoyo offers gauge block accessory sets. By assembling the items in a set, together with gauge blocks, you can easily and quickly build up a custom precision gauge to suit your application.



516-601J  
(22 pcs)

### Specifications

| Item description         | Code No. | Set of 22 pcs<br>516-601J | Quantity         | Price   |
|--------------------------|----------|---------------------------|------------------|---------|
| Holder                   | 619002   | —                         | 1 pc.            | £202.00 |
|                          | 619003   | ✓                         |                  | £211.00 |
|                          | 619004   | ✓                         |                  | £234.00 |
|                          | 619005   | ✓                         |                  | £245.00 |
| Base                     | 619009   | ✓                         | One pair (2 pcs) | £312.00 |
|                          | 619010   | ✓                         |                  | £221.00 |
| Half round jaw           | 619011   | ✓                         | One pair (2 pcs) | £220.00 |
|                          | 619012   | ✓                         |                  | £259.00 |
|                          | 619013   | ✓                         |                  | £312.00 |
|                          | 619014   | ✓                         |                  | £398.00 |
| Plain jaw                | 619018   | ✓                         | 1 pc.            | £238.00 |
| Scriber point            | 619019   | ✓                         | 1 pc.            | £82.40  |
| Centre point             | 619020   | ✓                         |                  | £103.00 |
| Tram point               | 619021   | ✓                         | One pair (2 pcs) | £360.00 |
| Triangular straight edge | 619022   | ✓                         |                  | 1 pc.   |
|                          | 619023   | ✓                         | £332.00          |         |

| Code No. | Description | Price    |
|----------|-------------|----------|
| 516-601J | 22 pc set   | £3450.00 |

### Application Examples



Gauging a bore using a pair of half round jaws and a holder.



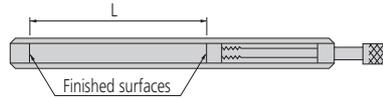
Marking a workpiece using the base, a holder and the scriber point.



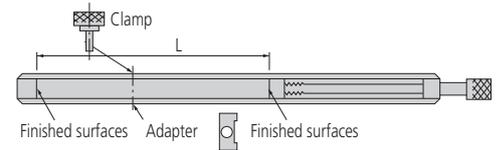
Setting a bore gauge using a holder with the pair of Type I half-round jaws arranged as flat contact surfaces.

### Holder Dimensions

Thickness = 15 mm, width = 29.5 mm



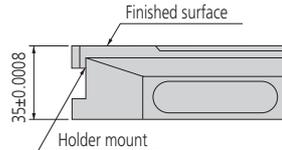
**619002** L = 15 - 60 mm  
**619003** L = 5 - 100 mm



**619004** L = 15 - 160 mm  
**619005** L = 20 - 250 mm

Used to clamp a stack of gauge blocks and jaws (or scriber point, etc.) together to form a gauge

### Base Dimensions

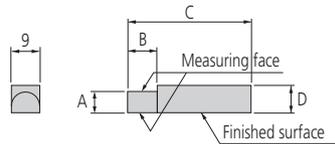


**619009**

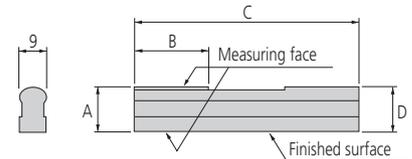
Flatness tolerance of the finished surface: 0.5 μm  
 Flatness tolerance of the bottom surface: 1 μm

### Half Round Jaw Dimensions

Type I



Type II



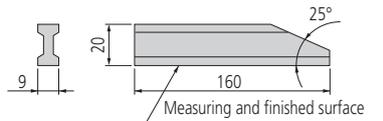
Flatness tolerance of the finished surface: 0.5 μm

Unit: mm

| Code No.      | Type | Size | A         | B   | C   | D   |
|---------------|------|------|-----------|-----|-----|-----|
| <b>619010</b> | I    | 2    | 2±0.0005  | 5.5 | 40  | 7.5 |
| <b>619011</b> |      | 5    | 5±0.0005  | 14  | 45  | 7.5 |
| <b>619012</b> |      | 8    | 8±0.0005  | 20  | 50  | 8.5 |
| <b>619013</b> | II   | 12   | 12±0.0005 | 25  | 75  | 13  |
| <b>619014</b> |      | 20   | 20±0.0005 | 25  | 125 | 20  |

### Plain Jaw (B type) Dimensions

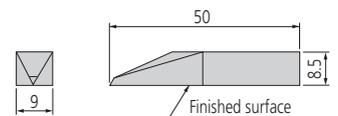
**619018**



Flatness tolerance of the finished surface: 1 μm

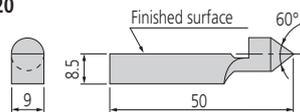
### Scriber Point Dimensions

**619019**



### Centre Point Dimensions

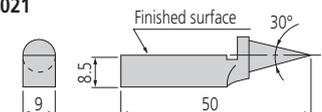
**619020**



Eccentricity tolerance of the point: ±10 μm  
 Flatness tolerance of the finished surface: 0.5 μm

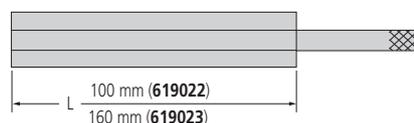
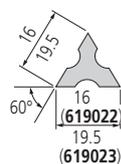
### Tram Point Dimensions

**619021**



Eccentricity tolerance of the point: ±10 μm  
 Flatness tolerance of the finished surface: 0.5 μm

### Triangular Straight Edge Dimensions



Straightness tolerance of the edges: 1.2 μm

# Gauge Blocks

## SERIES 516 – Maintenance Kit for Gauge Blocks

- Maintenance kit for gauge blocks includes all the necessary maintenance tools for removing burrs and contamination before use, and applying anti-corrosion treatment after use, etc.



**516-650E**  
Shown with anti-corrosion oil (optional accessory).

### Specifications

| Code No.   | Tools and accessories included   | Price          |
|--|--|----------------|
| <b>516-650E</b>  | Ceraston ( <b>601645</b> ): For removing burrs on the measuring surfaces (100x25x12 mm).                         | <b>£532.00</b> |
|  | Optical flat ( <b>158-117</b> ): For checking whether burrs exist on the measuring surfaces (ø45x12 mm).         |                |
|  | Tweezers ( <b>600004</b> ): For handling thin blocks.  |                |
|  | Blower brush ( <b>600005</b> ): For blowing dust off the measuring surfaces.                                     |                |
|  | Cleaning paper ( <b>600006</b> ): For wiping off anti-corrosion oil and contamination (500 pcs.).                |                |
|  | Artificial leather mat ( <b>600007</b> ): For handling blocks on a benchtop to prevent contamination and damage. |                |
|  | Reagent bottle ( <b>600008</b> ): Bottle of cleansing solution (100 ml).   |                |
| Gloves ( <b>600009</b> ): For handling large blocks to prevent expansion due to heat transfer from operator. |  |                |



### Recommendation for regular calibration

Gauge blocks are often used to define a company's standard of length for manufacturing and as such must be reliable. This means that they need regular calibration to verify accuracy. (The problem of damage or corrosion should be addressed during use and blocks seriously affected must be discarded immediately.) The frequency of calibration depends on the tolerance requirements of the work, the amount of use and conditions under which the gauge blocks are used. The most economical cycle for any particular set of gauge blocks is best determined by studying the calibration history. The list below indicates timings for a typical initial calibration cycle for the various grades of block.

| Application | Cycle        | Grade  |
|-------------|--------------|--------|
| Reference   | 1 - 2 years  | K      |
| Calibration | 2 years      | K or 0 |
| Inspection  | 2 years      | 0 or 1 |
| Shop floor  | 0.5 - 1 year | 1 or 2 |

As an accredited calibration laboratory, Mitutoyo offers a traceable calibration service for customers' gauge blocks. Our regular calibration service features:

- Gauge blocks manufactured by any maker can be calibrated.
- Cleansing and removal of burrs.
- Central dimension and maximum deviation of each block are measured.
- Calibration results are provided for immediate use and for building a calibration history of each block

### Optional Accessory

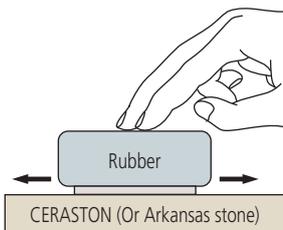
| Code No.       | Description                 | Price         |
|----------------|-----------------------------|---------------|
| <b>600001D</b> | Anti-corrosion oil (100 ml) | <b>£37.20</b> |

## Removing burrs

Figure 1



Figure 2



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.

## Ceraston – Accessory for Gauge Block Maintenance

- 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.
- Excellent in the ease with which burrs can be removed and for durability compared with Arkansas stones.
- Both sides can be used.



### Specifications

| Code No. | Dimensions (WxDxH) | Price   |
|----------|--------------------|---------|
| 601644   | 150x50x20 mm       | £328.00 |
| 601645   | 100x25x12 mm       | £140.00 |



Application example.

# Reference Gauges

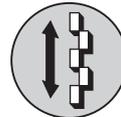
## SERIES 515 – Height Master

- For calibrating and setting height gauges.
- A double gauge block height micrometer with integrated counter that makes reading faster, easier and error-free.
- The gauge blocks in the Height Master are arranged in two parallel rows, with a block step of 20 mm or 1" depending on model.
- The digital models are equipped with a data output port that enables incorporation into measurement networking and statistical process control systems.



515-322

515-374



Staggered 20 mm or 1" blocks (movable)



Vertical orientation



Riser block

### Technical Data

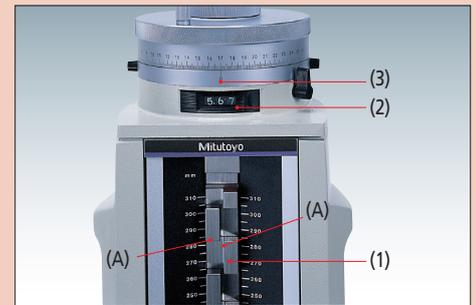
|                            |                                    |
|----------------------------|------------------------------------|
| Graduation:                | 0.001 mm (.00001")                 |
| Micrometer adjustment:     | 20 mm (1")                         |
| Micrometer feed:           | 0.5 mm/rev (.025"/rev)             |
| <b>Digital models only</b> |                                    |
| Display:                   | LCD                                |
| Battery:                   | SR44 (2 pcs.), <b>938882</b>       |
| Battery life:              | Approx. 1.8 years under normal use |

### Functions (Digital models only)

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

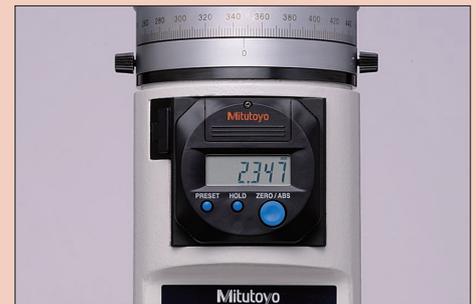
### Optional Accessories (Digital models only)

| Code No. | Description          | Price  |
|----------|----------------------|--------|
| 959149   | SPC data cable (1 m) | £34.60 |
| 959150   | SPC data cable (2 m) | £39.40 |



(A) Height A

|             |            |
|-------------|------------|
| (1) Scale   | 280.       |
| (2) Counter | 5.67       |
| (3) Thimble | 0.000      |
|             | 285.670 mm |

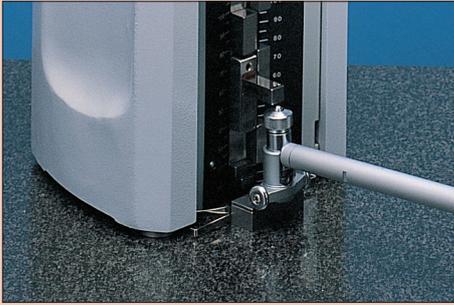


### Specifications

| Metric                       |                 |                      |                       |            |               |        |          |
|------------------------------|-----------------|----------------------|-----------------------|------------|---------------|--------|----------|
| Code No.                     | Measuring range | Block pitch accuracy | Parallelism of blocks | Feed error | Retrace error | Mass   | Price    |
| <b>Height Master</b>         |                 |                      |                       |            |               |        |          |
| 515-322                      | 5-310 mm        | ±1.5 µm              | 1 µm                  | ±1 µm      | 1 µm          | 23 kg  | £2510.00 |
| <b>Digital Height Master</b> |                 |                      |                       |            |               |        |          |
| 515-374                      | 10-310 mm       | ±1.5 µm              | 2 µm                  | ±2 µm      | 2 µm          | 9.5 kg | £2180.00 |
| Inch                         |                 |                      |                       |            |               |        |          |
| Code No.                     | Range (H)       | Block pitch accuracy | Parallelism of blocks | Feed error | Retrace error | Mass   | Price    |
| <b>Height Master</b>         |                 |                      |                       |            |               |        |          |
| 515-311                      | .2-12.2"        | ±50 µin              | 40 µin                | ±40 µin    | 40 µin        | 23 kg  | £2510.00 |
| <b>Digital Height Master</b> |                 |                      |                       |            |               |        |          |
| 515-375                      | .5-12"          | ±100 µin             | 50 µin                | ±100 µin   | 100 µin       | 9.5 kg | £2180.00 |

Note: The block accuracy and the parallelism of blocks are relative to the main unit reference surfaces.





## SERIES 515 – Height Master Auxiliary Block Kit for Bore Gauge Setting

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

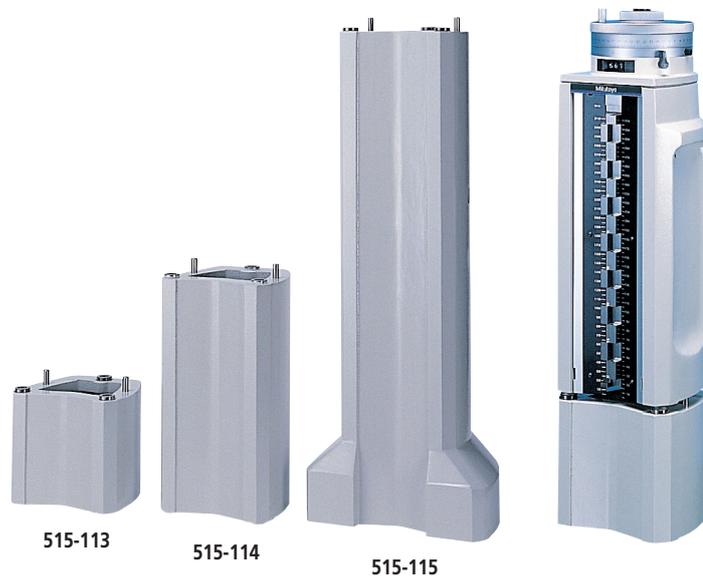


### Specifications

| Metric   |                                 |         | Inch     |                                 |         |
|----------|---------------------------------|---------|----------|---------------------------------|---------|
| Code No. | Suitable type                   | Price   | Code No. | Suitable type                   | Price   |
| 515-111  | Digital Height Master (515-374) | £225.00 | 515-120  | Digital Height Master (515-375) | £225.00 |
| 515-112  | Height Master (515-322)         | £225.00 | 515-121  | Height Master (515-311)         | £225.00 |

## SERIES 515 – Height Master Riser Blocks

- The measuring range of a Height Master can be extended up to 900 mm by using 150, 300 or 600 mm riser blocks.



### Specifications

| Metric   |        |          |                     |         |         |
|----------|--------|----------|---------------------|---------|---------|
| Code No. | Height | Accuracy | Variation in length | Mass    | Price   |
| 515-113  | 150 mm | ±0.6 μm  | 0.6 μm              | 5.7 kg  | £370.00 |
| 515-114  | 300 mm | ±1 μm    | 0.8 μm              | 11.8 kg | £541.00 |
| 515-115  | 600 mm | ±2 μm    | 1 μm                | 26.8 kg | £816.00 |

| Inch     |        |          |                     |         |         |
|----------|--------|----------|---------------------|---------|---------|
| Code No. | Height | Accuracy | Variation in length | Mass    | Price   |
| 515-116  | 6"     | ±20 μin  | 20 μin              | 5.7 kg  | £370.00 |
| 515-117  | 12"    | ±40 μin  | 30 μin              | 11.8 kg | £541.00 |
| 515-118  | 24"    | ±80 μin  | 40 μin              | 27.9 kg | £816.00 |

# Reference Gauges

## SERIES 515 – Check Master

- This calibration fixture is designed for calibrating the X-, Y- and Z-coordinate axes of precision machine tools and coordinate measuring machines.
- Rigidly clamped 10 mm gauge blocks provide a step of 20 mm.



515-723

515-722



Single-row  
10 mm (.5") blocks



Vertical  
orientation



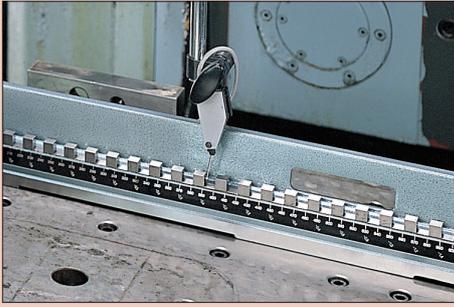
Horizontal  
orientation

### Specifications

| Metric                |                   |                 |                 |                 |
|-----------------------|-------------------|-----------------|-----------------|-----------------|
| Code No.              | 515-720           | 515-721         | 515-722         | 515-723         |
| Range (H)             | 300 mm            | 450 mm          | 600 mm          | 1000 mm         |
| Block pitch accuracy  | H ≤ 310 mm        | ±2.5 μm         |                 |                 |
|                       | 310 < H ≤ 610 mm  | —               | ±3.5 μm         |                 |
|                       | 610 < H ≤ 1010 mm | —               | —               | ±5 μm           |
| Parallelism of blocks | H ≤ 310 mm        | 12 μm           |                 |                 |
|                       | 310 < H ≤ 610 mm  | —               | 15 μm           |                 |
|                       | 610 < H ≤ 1010 mm | —               | —               | 2 μm            |
| Mass                  | 7 kg              | 10 kg           | 13 kg           | 22 kg           |
| Price                 | <b>£2830.00</b>   | <b>£3270.00</b> | <b>£3700.00</b> | <b>£6080.00</b> |

Notes: 1) The block accuracy and the parallelism of blocks are relative to the main unit reference surface.

2) Supplied with a wooden storage case as standard.



Using in horizontal orientation.

## SERIES 515 – High Accuracy Check Master

- This calibration fixture is designed for calibrating the X-, Y- and Z-coordinate axes of precision machine tools and coordinate measuring machines.
- Rigidly clamped 10 mm (.5") gauge blocks provide a step of 20 mm (or 1").



### Optional Accessory

| Code No. | Description                            | Price   |
|----------|--|---------|
| 601167   | Supporting base for vertical operation | £489.00 |



515-743

515-742



Single-row  
10 mm (.5") blocks



Vertical  
orientation



Horizontal  
orientation

### Specifications

| Metric                |                        | 515-741               | 515-742           | 515-743               |
|-----------------------|------------------------|-----------------------|-------------------|-----------------------|
| Code No.              |                        | 515-741               | 515-742           | 515-743               |
| Range (R)             |                        | 450 mm                | 600 mm            | 1000 mm               |
| Block pitch accuracy  | $H \leq 310$ mm        | $\pm 1.2 \mu\text{m}$ |                   |                       |
|                       | $310 < H \leq 610$ mm  | $\pm 1.8 \mu\text{m}$ |                   |                       |
|                       | $610 < H \leq 1010$ mm | —                     |                   | $\pm 2.5 \mu\text{m}$ |
| Parallelism of blocks | $H \leq 450$ mm        | 1 $\mu\text{m}$       |                   |                       |
|                       | $450 < H \leq 1010$ mm | —                     | 1.5 $\mu\text{m}$ |                       |
| Mass                  |                        | 5.4 kg                | 7.2 kg            | 12 kg                 |
| Price                 |                        | £3390.00              | £3850.00          | £6280.00              |

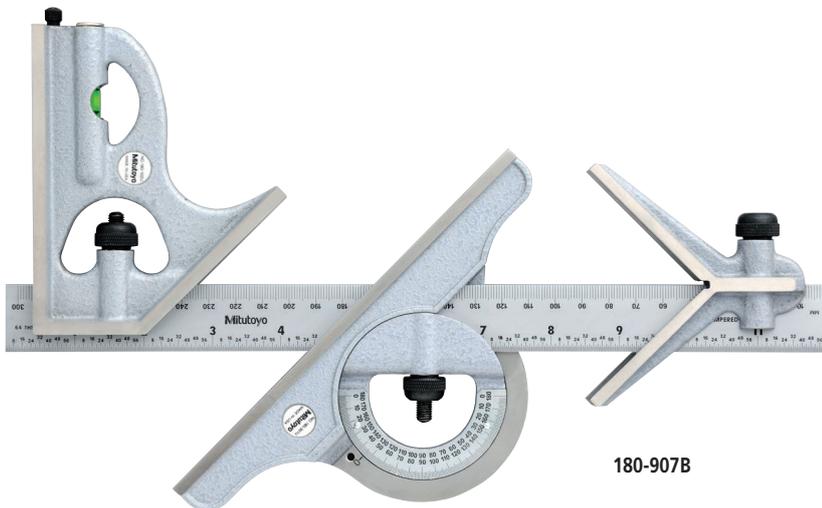
| Inch                  |                     | 515-731               | 515-732                | 515-733  |
|-----------------------|---------------------|-----------------------|------------------------|----------|
| Code No.              |                     | 515-731               | 515-732                | 515-733  |
| Range (R)             |                     | 18"                   | 24"                    | 40"      |
| Block pitch accuracy  | $H \leq 12$ "       | $\pm 50 \mu\text{in}$ |                        |          |
|                       | $12" < H \leq 24$ " | $\pm 70 \mu\text{in}$ |                        |          |
|                       | $24" < H \leq 40$ " | —                     | $\pm 100 \mu\text{in}$ |          |
| Parallelism of blocks | $H \leq 18$ "       | 40 $\mu\text{in}$     |                        |          |
|                       | $18" < H \leq 40$ " | —                     | 60 $\mu\text{in}$      |          |
| Mass                  |                     | 5.4 kg                | 7.2 kg                 | 12 kg    |
| Price                 |                     | £3390.00              | £3850.00               | £6280.00 |

Notes: 1) The block accuracy and the parallelism of blocks are relative to the main unit reference surface.  
2) Supplied with a wooden storage case as standard.

# Reference Gauges

## SERIES 180 – Combination Square Set

- Three heads are attachable to the satin-chrome plated rule (blade), allowing versatile measurements on various types of workpieces.



### Technical Data

|                  |  |
|------------------|--|
| Square head:     | Used to set the rule at 90° or 45° to an edge of a workpiece.                                      |
| Centre head:     | Used to locate centres of round workpieces.  |
| Protractor head: | Used to set the rule at a desired angle to an edge of a workpiece. Also used for measuring angles. |

### Optional Accessory

| Code No.        | Description  | Price         |
|-----------------|--|---------------|
| <b>180-603B</b> | 600 mm / 24" blade with 4 scales graduated 1 mm, 0.5 mm, 1/32" and 1/64" | <b>£75.90</b> |

### Specifications

| Inch/Metric          |                      |                            |                |
|----------------------|----------------------|----------------------------|----------------|
| Code No.             | Size                 | Graduation                 | Price          |
| Full set             |                      |                            |                |
| <b>180-907B</b>      | 12" / 300 mm         | 1/32", 1/64", 1 mm, 0.5 mm | <b>£220.00</b> |
| Individual set items |                      |                            |                |
| Code No.             | Description          | Price                      |                |
| <b>180-503B</b>      | Blade (12" / 300 mm) | <b>£39.90</b>              |                |
| <b>180-102B</b>      | Square head          | <b>£55.00</b>              |                |
| <b>180-202B</b>      | Centre head          | <b>£53.00</b>              |                |
| <b>180-301B</b>      | Protractor           | <b>£90.00</b>              |                |

## SERIES 182 – Steel Rules

- Clear graduations on satin-chrome finish.
- Made of stainless steel, hardened and tempered.



182-131



182-121



182-125



182-225

### Specifications

| Metric                      |                                      |               |       |        |
|-----------------------------|--------------------------------------|---------------|-------|--------|
| Code No.                    | Graduations                          | Range         | Width | Price  |
| <b>Wide rigid rules</b>     |                                      |               |       |        |
| 182-111                     | 1 mm, 0.5 mm<br>(on both faces)      | 150 mm        | 19 mm | £7.90  |
| 182-131                     |                                      | 300 mm        | 25 mm | £15.00 |
| <b>Fully flexible rules</b> |                                      |               |       |        |
| 182-211                     | 1 mm, 0.5 mm<br>(on both faces)      | 150 mm        | 12 mm | £13.30 |
| 182-231                     |                                      | 300 mm        | 12 mm | £13.60 |
| Inch                        |                                      |               |       |        |
| Code No.                    | Graduations                          | Range         | Width | Price  |
| <b>Wide rigid rules</b>     |                                      |               |       |        |
| 182-101                     | 1/8", 1/16", 1/32", 1/64"            | 6"            | .75"  | £7.90  |
| 182-121                     |                                      | 12"           | .98"  | £15.00 |
| <b>Fully flexible rules</b> |                                      |               |       |        |
| 182-201                     | 1/8", 1/16", 1/32", 1/64"            | 6"            | .47"  | £9.90  |
| 182-221                     |                                      | 12"           | .47"  | £13.60 |
| Inch/Metric                 |                                      |               |       |        |
| Code No.                    | Graduations                          | Range         | Width | Price  |
| <b>Wide rigid rules</b>     |                                      |               |       |        |
| 182-105                     | 1/32", 1/64", 1 mm, 0.5 mm           | 6" / 150 mm   | .75"  | £10.40 |
| 182-125                     |                                      | 12" / 300 mm  | .98"  | £21.90 |
| 182-145                     |                                      | 18" / 450 mm  | 1.18" | £37.00 |
| 182-165                     |                                      | 24" / 600 mm  | 1.18" | £52.60 |
| <b>Semi-flexible rules</b>  |                                      |               |       |        |
| 182-309*                    | 1/16", 1/32", 1/64",<br>1 mm, 0.5 mm | 40" / 1000 mm | .59"  | £51.80 |
| <b>Fully flexible rules</b> |                                      |               |       |        |
| 182-205                     | 1/32", 1/64", 1 mm, 0.5 mm           | 6" / 150 mm   | .47"  | £9.90  |
| 182-225                     |                                      | 12" / 300 mm  | .47"  | £13.60 |
| 182-245                     |                                      | 18" / 450 mm  | .75"  | £34.80 |
| 182-265                     |                                      | 24" / 600 mm  | .75"  | £44.20 |

\* Graduations engraved on the front side only.

# Reference Gauges

## SERIES 528 – Straight Edge

- Designed for testing the straightness of workpiece features.
- Hardened, ground and micro-lapped measuring edge.
- Made of tool steel with heat shield.

### Technical Data

Section: 60° vee



528-101



528-102



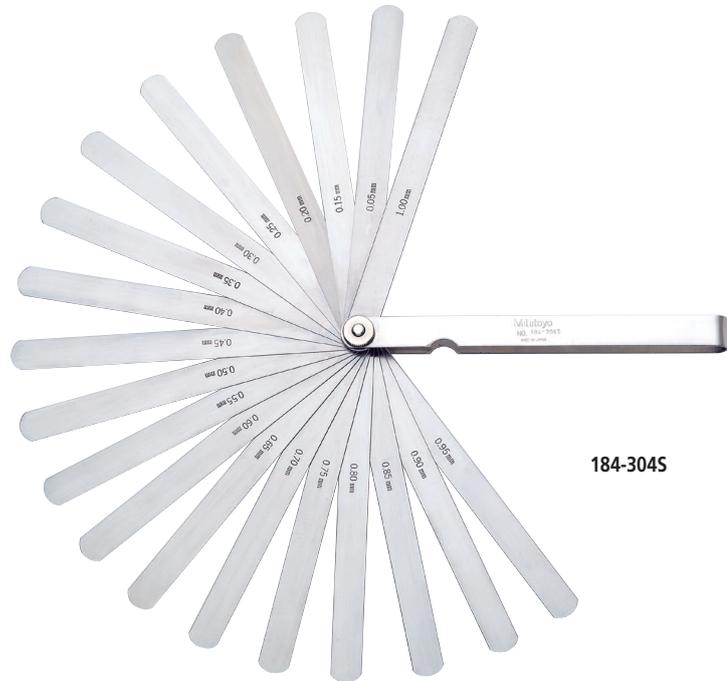
528-103

### Specifications

| Metric   |        |                           |         |
|----------|--------|---------------------------|---------|
| Code No. | Length | Note                      | Price   |
| 528-100  | 50 mm  | —                         | £22.90  |
| 528-101  | 75 mm  | —                         | £26.80  |
| 528-102  | 100 mm | —                         | £30.10  |
| 528-103  | 150 mm | —                         | £32.70  |
| 528-104  | 200 mm | —                         | £42.40  |
| 528-105  | 300 mm | Supplied in a wooden case | £95.00  |
| 528-106  | 400 mm | Supplied in a wooden case | £145.00 |
| 528-107  | 500 mm | Supplied in a wooden case | £210.00 |

## SERIES 184 – Thickness Gauges

- Designed for gauging the width of narrow gaps.
- Each leaf is marked with its thickness.
- Each leaf is detachable if necessary.



184-304S

### Specifications

| Metric   |               |   |           |        |
|----------|---------------|---|-----------|--------|
| Code No. | Range         | Composition of leaves                                       | Remarks   | Price  |
| 184-304S | 0.05 - 1 mm   | 20 leaves: 0.05 - 1 mm by 0.05 mm                           | Long leaf | £33.90 |
| 184-308S | 0.05 - 0.8 mm | 10 leaves: 0.05 - 0.2 mm by 0.05 mm, 0.3 - 0.8 mm by 0.1 mm | Long leaf | £16.00 |

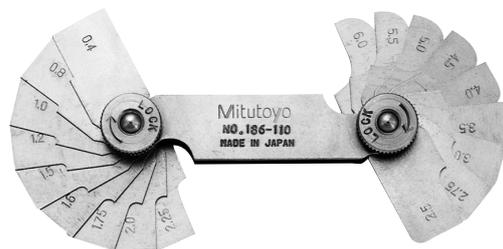
# Reference Gauges

## SERIES 186 – Radius Gauges

- Designed for gauging small internal and external radii.
- Each leaf comprises an internal and an external radius gauge of the same size.
- Radius size is stamped on each leaf.
- With locking clamp to enable convenient handling.



186-105



186-110

### Specifications

#### Metric

| Code No. | Range        | Composition of leaves  | Remarks  | Price   |
|----------|--------------|--|----------|---------|
| 186-110  | 0.4 - 6 mm   | 18 leaves: 0.4, 0.8, 1, 1.2, 1.5, 1.6 mm, 1.75 - 3 mm by 0.25 mm, 3.5 - 6 mm by 0.5 mm | 90° arc  | £36.40  |
| 186-902  | 0.5 - 13 mm  | 26 leaves: 0.5 - 13 mm by 0.5 mm   | 90° arc  | £161.00 |
| 186-105  | 1 - 7 mm     | 34 leaves: 1 - 3 mm by 0.25 mm 3.5 - 7 mm by 0.5 mm                                    | 180° arc | £32.20  |
| 186-106  | 7.5 - 15 mm  | 32 leaves: 7.5 - 15 mm by 0.5 mm   | 180° arc | £28.80  |
| 186-107  | 15.5 - 25 mm | 30 leaves: 15.5 - 20 mm by 0.5 mm, 21 - 25 mm by 1 mm                                  | 180° arc | £61.80  |

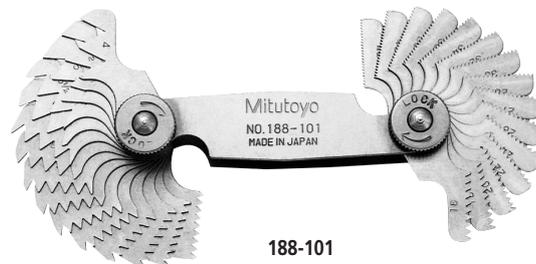
#### Inch

| Code No. | Range          | Composition of leaves                                     | Remarks  | Price   |
|----------|----------------|---|----------|---------|
| 186-103  | 1/32" - 17/64" | 16 leaves: 1/32" - 17/64" by 64ths                        | 90° arc  | £32.80  |
| 186-101  | 1/32" - 1/4"   | 15 leaves: 1/32" - 1/4" by 64ths                          | 180° arc | £32.70  |
| 186-102  | 17/64" - 1/2"  | 16 leaves: 17/64" - 1/2" by 64ths                         | 180° arc | £37.50  |
| 186-104  | 9/32" - 33/64" | 16 leaves: 9/32" - 33/64" by 64ths                        | 90° arc  | £36.30  |
| 186-901* | 1/64" - 1/2"   | 25 leaves: 1/64" - 17/64" by 64ths, 9/32" - 1/2" by 32nds | —        | £156.00 |

\* Each gauge has five measuring locations.

## SERIES 188 – Thread Pitch Gauges

- Thread pitch is stamped on each gauge.
- Metric, Unified, and Whitworth screw pitch gauges.



### Specifications

| Code No.  | Range                     | Composition of leaves  | Price         |
|---|---------------------------|--|---------------|
| <b>Metric screw pitch gauges</b>                |                           |  |               |
| <b>188-130</b>                                  | 0.35 - 6 mm               | 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, 6 mm and 60° angle gauge | <b>£34.10</b> |
| <b>188-122</b>                                  | 0.4 - 7 mm                | 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, 7 mm                         | <b>£34.10</b> |
| <b>188-121</b>                                  | 0.4 - 7 mm                | 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, 7 mm  | <b>£34.10</b> |
| <b>Unified screw pitch gauges</b>               |                           |  |               |
| <b>188-111</b>                                  | 4 - 42 TPI                | 30 leaves: 4, 4½, 5, 5½, 6, 7, 8, 9, 10, 11, 11½, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38, 40, 42 TPI   | <b>£37.70</b> |
| <b>Metric and Unified screw pitch gauge set</b> |                           |  |               |
| <b>188-151</b>                                  | 0.4 - 7 mm/<br>4 - 42 TPI | 51 leaves: consisting of sets <b>188-122</b> and <b>188-111</b>  | <b>£64.00</b> |
| <b>Whitworth screw pitch gauges</b>             |                           |  |               |
| <b>188-101</b>                                  | 4 - 42 TPI                | 30 leaves: 4, 4½, 5, 5½, 6, 7, 8, 9, 10, 11, 11½, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38, 40, 42 TPI   | <b>£35.40</b> |
| <b>188-102</b>                                  | 4 - 60 TPI                | 28 leaves: 4, 4½, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 22, 24, 25, 26, 28, 30, 32, 34, 36, 40, 48, 60 TPI            | <b>£34.10</b> |

# Reference Gauges

## SERIES 950 – Spring Dividers and Calipers

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



### Specifications

| Inch/Metric            |             |        |
|------------------------|-------------|--------|
| Code No.               | Range       | Price  |
| Spring Divider         |             |        |
| 950-212                | 150 mm / 6" | £25.00 |
| 950-213                | 200 mm / 8" | £29.00 |
| Outside Spring Caliper |             |        |
| 950-222                | 150 mm / 6" | £25.00 |
| 950-223                | 200 mm / 8" | £29.00 |

| Code No.              | Range       | Price  |
|-----------------------|-------------|--------|
| Inside Spring Caliper |             |        |
| 950-232               | 150 mm / 6" | £25.00 |
| 950-233               | 200 mm / 8" | £29.00 |

### Technical Data

Battery: Lithium Battery  
 Battery life: 2,000 hours

### Functions

Presetting

### Accessory Included

950749: Holder for mounting on height gauges

### Optional Accessories

| Code No. | Description          | Price  |
|----------|----------------------|--------|
| 187-103  | 300 mm / 12" blade   | £27.40 |
| 187-104  | 150 mm / 6" blade    | £18.10 |
| 905338   | SPC data cable (1 m) | £32.90 |
| 905409   | SPC data cable (2 m) | £36.80 |

## SERIES 187 – Digimatic Universal Protractor

- Universal Bevel Protractor with easy-to-read digital display.
- Automatic turn-off after 10 minutes; fixed reference points for easy adjustment.
- Fine adjustment for precise setting of angles.
- The protractor head slides and clamps at any point along the blade.
- Will mount on Series 192 height gauges via holder.
- Data output port that enables incorporation into measurement networking and statistical process control systems.



187-552

### Specifications

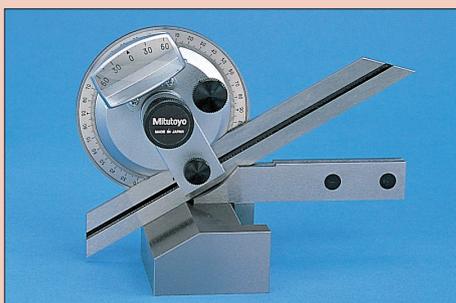
| Inch/Metric |              |                 |              |            |               |         |
|-------------|--------------|-----------------|--------------|------------|---------------|---------|
| Code No.    | Blade length | Measuring range | Accuracy     | Resolution | Repeatability | Price   |
| 187-551     | 150 mm / 6"  | -360° to +360°  | ±2" (±0.03°) | 1' (0.01°) | 1' (0.01°)    | £681.00 |
| 187-552     | 300 mm / 12" |                 |              |            |               | £717.00 |

### Accessory Included

950750: Holder for mounting on height gauges

## SERIES 187 – Universal Bevel Protractor

- High-precision instrument for accurate angle measurement on machines, moulds, and jigs.
- Can be attached to height gauges.



187-908

### Specifications

| Inch/Metric |              |                    |                 |                  |         |
|-------------|--------------|--------------------|-----------------|------------------|---------|
| Code No.    | Blade length | Graduation         | Circle division | Remarks          | Price   |
| 187-907     | 150 mm / 6"  | 5' (0° - 90° - 0°) | 90° x 4 (360°)  | w/60°, 45° edges | £198.00 |
| 187-908     | 300 mm / 12" |                    |                 |                  | £209.00 |

# Reference Gauges

## SERIES 950 – Digital Protractor

- Newly developed instrument for measurement of flatness, squareness and angularity.
- Precision support surface in aluminium frame for high rigidity and low weight.

### Technical Data

|                        |                        |
|------------------------|------------------------|
| Accuracy:              | See table              |
| Measuring range:       | 360° (4 x 90°)         |
| Power supply:          | Standard battery (9 V) |
| Operating temperature: | -5 to 50 °C            |

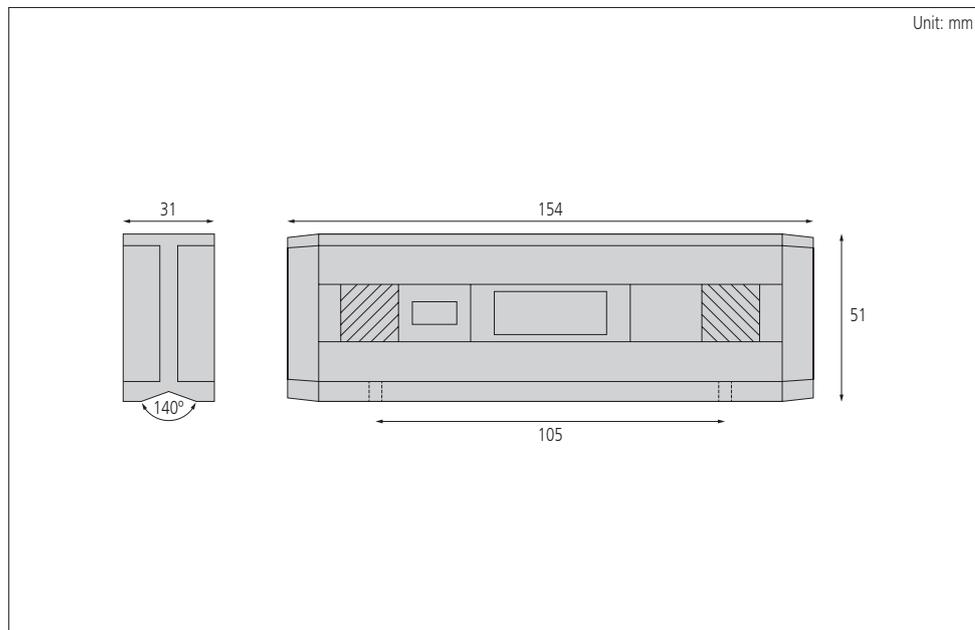


950-317

### Specifications

| Code No.       | Resolution/sensitivity                   | Accuracy   | Repeatability    | Mass  | Price   |
|----------------|--|--|------------------|-------|---------|
| Model Pro 360  |  |  |                  |       |         |
| 950-317        | 0.1°                                     | 0.05 m horizontal $\pm 0.1^\circ$<br>vertical $\pm 0.2^\circ$ m/m                            | $\pm 0.1^\circ$  | 325 g | £298.00 |
| Model Pro 3600 |  |  |                  |       |         |
| 950-318        | 0.01° (0° to 9.99°)<br>0.1° (10° to 90°) | $\pm 0.05^\circ$ (0° to 10°)<br>$\pm 0.1^\circ$ (80° to 90°)<br>$\pm 0.2^\circ$ (10° to 80°) | $\pm 0.05^\circ$ | 332 g | £489.00 |

### Dimensions



### SERIES 960 – Precision Level

- Intended for setting elements of machine tools and instruments precisely level.
- Longitudinal and transverse vials.
- Flat base, precision ground with vee for accurate location on cylindrical features.
- Adjustable for zero level.



#### Specifications

| Code No. | Sensitivity | Accuracy of graduations | Dimensions (W x D x H) | Price   |
|----------|-------------|-------------------------|------------------------|---------|
| 960-601  | 0.1 mm/m    | 0.05 mm/m               | 200 x 44 x 38.2 mm     | £283.00 |
| 960-602  | 0.05 mm/m   | 0.025 mm/m              |                        | £320.00 |
| 960-603  | 0.02 mm/m   | 0.01 mm/m               |                        | £345.00 |

### SERIES 960 – Precision Frame Level

- Intended for setting elements of machine tools and instruments precisely level or perpendicular.
- Longitudinal and transverse vials.
- Flat measuring faces, precision ground with two faces vee-ground for accurate location on cylindrical features.
- Adjustable for zero level.



#### Specifications

| Code No. | Sensitivity | Accuracy of graduations | Dimensions (W x D x H) | Price   |
|----------|-------------|-------------------------|------------------------|---------|
| 960-703  | 0.02 mm/m   | ±0.3 DIV                | 200 x 44 x 200 mm      | £567.00 |

# Reference Gauges

## SERIES 967 – Bench Centres

- Used with a dial test indicator (optional), these Bench Centres provide support for precision measurement of concentricity on cylindrical workpieces.
- With an indicator clamp (holding stem diameter: 8 mm).

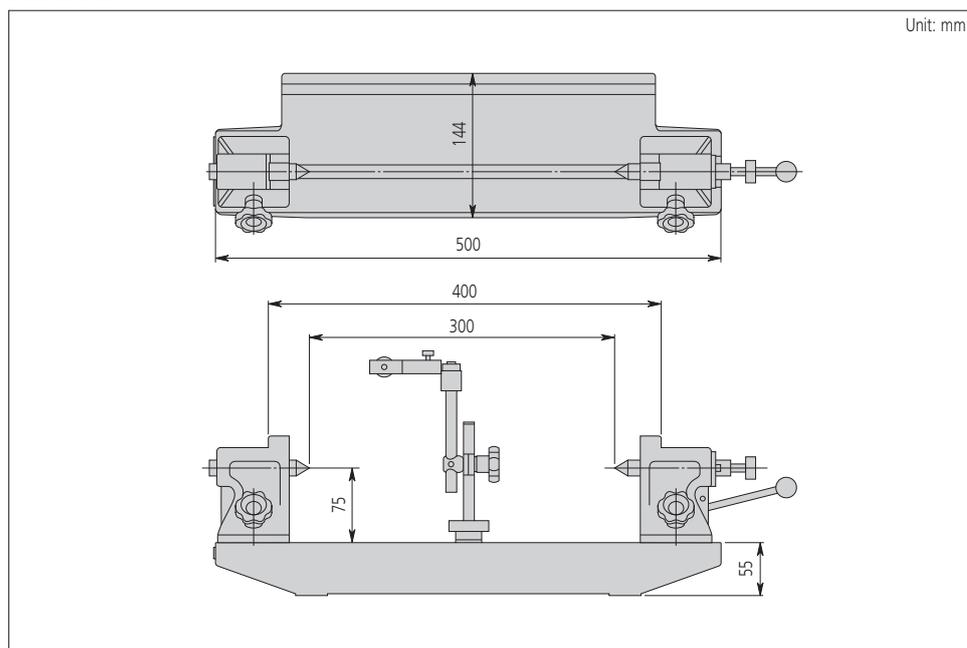


967-201-10

### Specifications

| Code No.   | Maximum workpiece length | Maximum workpiece diameter | Mass  | Price    |
|------------|--------------------------|----------------------------|-------|----------|
| 967-201-10 | 300 mm                   | 150 mm                     | 13 kg | £1120.00 |

### Dimensions



## Technical Data

Grade: Conforms to BS 817 1988

## Optional Accessory

| Code No. | Description           | Price  |
|----------|-----------------------|--------|
| CM0700   | Granite cleaner (1 l) | £21.30 |

## SERIES 517 – Black Granite Surface Plates

- Natural granite is free from deterioration or dimensional change over time.
- Granite surface plates have significant advantages over cast iron surface plates: twice as hard as cast iron; non-magnetic; low thermal expansion.
- 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 workpieces or instruments.
- Free from wringing, so there is no interruption of work.
- Use these plates in a stable temperature environment. Since flatness error occurs when there is a temperature difference between the working surface and the underside, avoid working in direct sunlight. Also, do not place a plate in the vicinity of an air conditioner, etc. (Recommended environment: temperature 20±1°C, humidity 58±2%.)



Granite surface plate and stand

## Specifications

| Grade 1       |                      |          |
|---------------|----------------------|----------|
| Code No.      | Dimensions (LxWxH)   | Price    |
| Without stand |                      |          |
| 517-901-1     | 300 x 200 x 65 mm    | £125.00  |
| 517-902-1     | 300 x 300 x 65 mm    | £165.00  |
| 517-903-1     | 450 x 300 x 75 mm    | £195.00  |
| 517-904-1     | 450 x 450 x 75 mm    | £260.00  |
| 517-905-1     | 600 x 450 x 75 mm    | £380.00  |
| 517-906-1     | 600 x 600 x 75 mm    | £480.00  |
| 517-907-1     | 750 x 600 x 100 mm   | £590.00  |
| 517-908-1     | 900 x 600 x 100 mm   | £720.00  |
| With stand    |                      |          |
| 517-909-1     | 900 x 600 x 100 mm   | £1210.00 |
| 517-910-1     | 900 x 900 x 125 mm   | £1630.00 |
| 517-911-1     | 1200 x 600 x 100 mm  | £1600.00 |
| 517-912-1     | 1200 x 900 x 125 mm  | £1820.00 |
| 517-913-1     | 1200 x 1200 x 150 mm | £2480.00 |
| 517-914-1     | 1500 x 1000 x 150 mm | £2750.00 |
| 517-915-1     | 1500 x 1200 x 150 mm | £3090.00 |
| 517-916-1     | 2000 x 1000 x 150 mm | £3340.00 |
| 517-917-1     | 2000 x 1200 x 150 mm | £3750.00 |
| 517-918-1     | 2400 x 1200 x 200 mm | £5450.00 |

| Grade 0       |                      |          |
|---------------|----------------------|----------|
| Code No.      | Dimensions (LxWxH)   | Price    |
| Without stand |                      |          |
| 517-901-0     | 300 x 200 x 65 mm    | £145.00  |
| 517-902-0     | 300 x 300 x 65 mm    | £185.00  |
| 517-903-0     | 450 x 300 x 75 mm    | £215.00  |
| 517-904-0     | 450 x 450 x 75 mm    | £290.00  |
| 517-905-0     | 600 x 450 x 75 mm    | £430.00  |
| 517-906-0     | 600 x 600 x 75 mm    | £550.00  |
| 517-907-0     | 750 x 600 x 100 mm   | £670.00  |
| 517-908-0     | 900 x 600 x 100 mm   | £790.00  |
| With stand    |                      |          |
| 517-909-0     | 900 x 600 x 100 mm   | £1350.00 |
| 517-910-0     | 900 x 900 x 125 mm   | £1720.00 |
| 517-911-0     | 1200 x 600 x 100 mm  | £1690.00 |
| 517-912-0     | 1200 x 900 x 125 mm  | £1890.00 |
| 517-913-0     | 1200 x 1200 x 150 mm | £2690.00 |
| 517-914-0     | 1500 x 1000 x 150 mm | £2990.00 |
| 517-915-0     | 1500 x 1200 x 150 mm | £3170.00 |
| 517-916-0     | 2000 x 1000 x 150 mm | £3650.00 |
| 517-917-0     | 2000 x 1200 x 150 mm | £3950.00 |
| 517-918-0     | 2400 x 1200 x 200 mm | £5950.00 |