Gauge Blocks

CATALOG No. E4092-516

Standard of Accuracy

Mitutoyo

Precision gauge blocks are the primary standards vital to dimensional quality control in the manufacture of parts. Mitutoyo offers a complete selection of gauge blocks available in a choice of rectangular or square, metric or inch and steel or CERA (ceramic) types. Mitutoyo CERA Blocks are some of the finest gauge blocks available anywhere in the world. Steel gauge

Mitutoyo

blocks are made of a special steel alloy, while CERA Blocks are made of zirconia ceramic. Both types are prepared by highly advanced techniques in the most modern facilities to produce the fine characteristics required of gauge blocks. Tungsten carbide gauge blocks have the advantage of being harder and more wear resistant than steel.

CONTENTS

Mitutoyo Miyazaki Plant

The Miyazaki Plant is located in Tano-cho in the Miyazaki Sun Technopolis and began operation as Miyazaki Mitutoyo Precision Co., Ltd. in 1985. The plant is dedicated itself to the production of gauge blocks, the reference of precision measurement, and their applied gages. It prides itself on a reputation for quality and accuracy both in Japan and overseas. Far resting on its laurel, however, the plant is driven by a sense of a mission to continue to "contribute to society through precision measurement. "In October 1985, the Miyazaki Plant began operating, integrating the production of gauge blocks (the length standard and the basis to the traceability of all Mitutoyo products) and the production of Height Master (the gauge block applied instrument). The Miyazaki Plant is now working to further improve the ultra precision machining /engineering expertise which has been accumulated over the years. The development of "CERA Blocks" or ceramic gauge blocks, and digital Height Master, etc. is one of the results of our challenge toward the production of high-tech products.

Company outline

Foundation: October 1985
Number of employees: 85
Total site area: 44,000m^2
Floor area of buildings: 7,400m^2
Underground measurement laboratories: Total area/161m^2
Maintained temperature: 20°C to ±0.5°C
Light wave interferometer: Mitutoyo model, 1000mm (±0.1μm) Zeiss model, 100mm (±0.02μm) Major products
Gauge blocks: Rectangular and square types of gauge blocks. Recently developed are rust free ceramic gauge blocks "CERA Block" which are gaining a strong reputation both in Japan and overseas.

- Output: 100,000 pcs/month

Height master: This is a stack of gauge blocks combined with a micrometer for accurate and efficient setting of any desired height, height masters are also digitalize for further easiness of use.

- Output: 300pcs/month

Mitutoyo Miyazaki Plant — NKO (Netherlands) Accredited Body

Mitutoyo's Miyazaki Plant obtained accreditation for the gauge block calibration service from NKO. With this accreditation, Mitutoyo can perform calibration services for clients with gauge blocks, as an independent body in place of the national body and issue legally recognized calibration certificates bearing the NKO logo.


ACCREDITATION CERTIFICATE

Mitutoyo Corporation Ltd.
Miyazaki Plant Calibration Service
TanoCho Miyazaki-Pref.

K 107

20 February 1997


Mitutoyo

NKO-CERTIFICATE

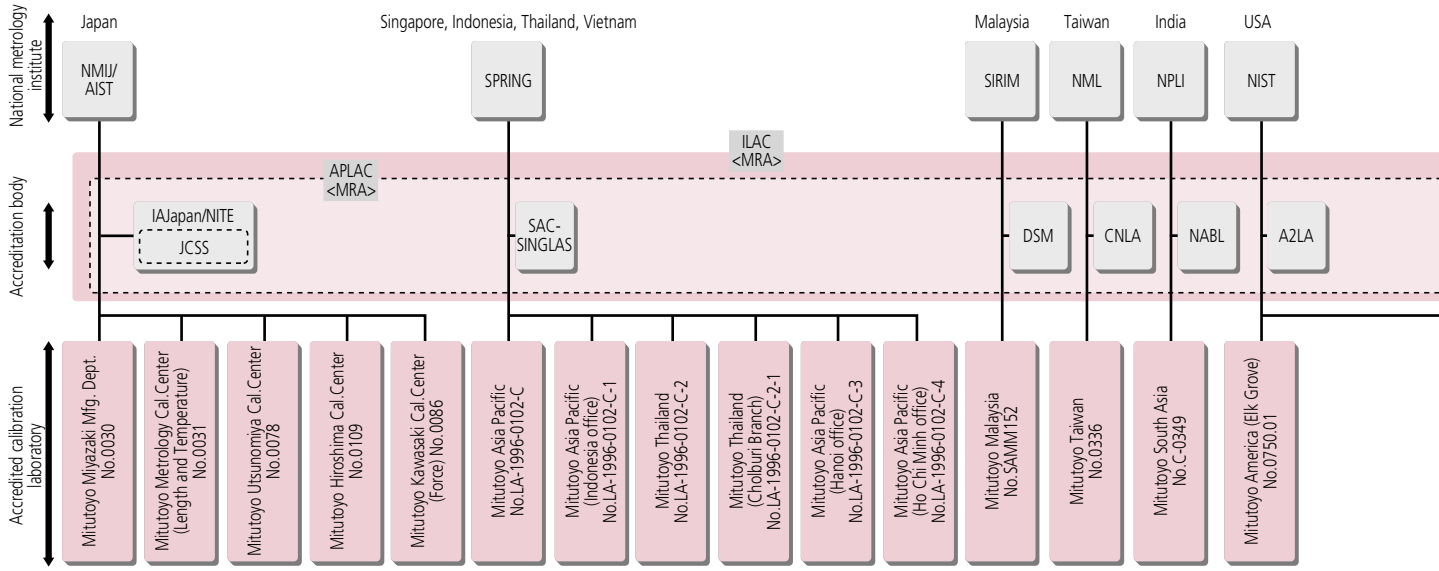

Mitutoyo

NKO-CERTIFICATE

Calibration laboratories worldwide

Mitutoyo has a system allowing comprehensive support for the calibration of precision measuring machines in the global market. In order to provide calibration services on a global basis, Mitutoyo has calibration laboratories that have received the ISO/IEC 17025 certification, which is an international standard, from the accreditation organizations in each of the countries in which Mitutoyo's operations and subsidiaries are located, both in Japan and overseas.

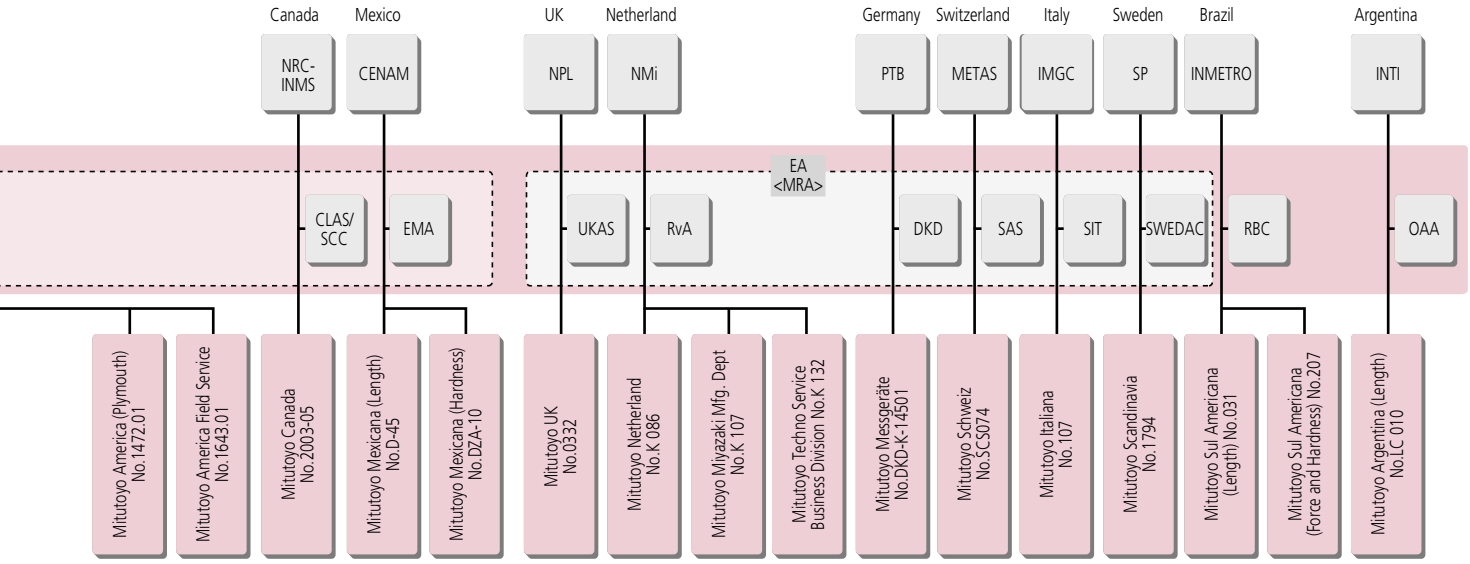


AIST: National Institute of Advanced Industrial Science and Technology
NMIJ: National Metrology Institute of Japan
JCSS: Japan Calibration Service System
NITE: National Institute of Technology and Evaluation
IAJapan: International Accreditation Japan
SPRING: Standards, Productivity and Innovation Board
SAC: Singapore Accreditation Council
NML: National Measurement Laboratory
CNLA: Chinese National Laboratory Accreditation

SIRIM: Standards and Industrial Research Institute of Malaysia
DSM: Department of Standards Malaysia
NIST: National Institute of Standards and Technology
A2LA: American Association for Laboratory Accreditation
NRC-INMS: National Research Council of Canada-Institute for National Measurement Standards
CLAS: Calibration Laboratory Assessment Service
SCC: Standards Council of Canada
CENAM: Centro Nacional de Metrología

EMA: Entidad Mexicana de Acreditación, a.c.
NPL: National Physical Laboratory
UKAS: United Kingdom Accreditation Service
NMi: Nederlands Meetinstituut
RvA: Raad voor Accreditatie
PTB: Physikalisch-Technische Bundesanstalt
DKD: Deutscher Kalibrierdienst
METAS: The Swiss Federal Office of Metrology and Accreditation
SAS: Swiss Accreditation Service

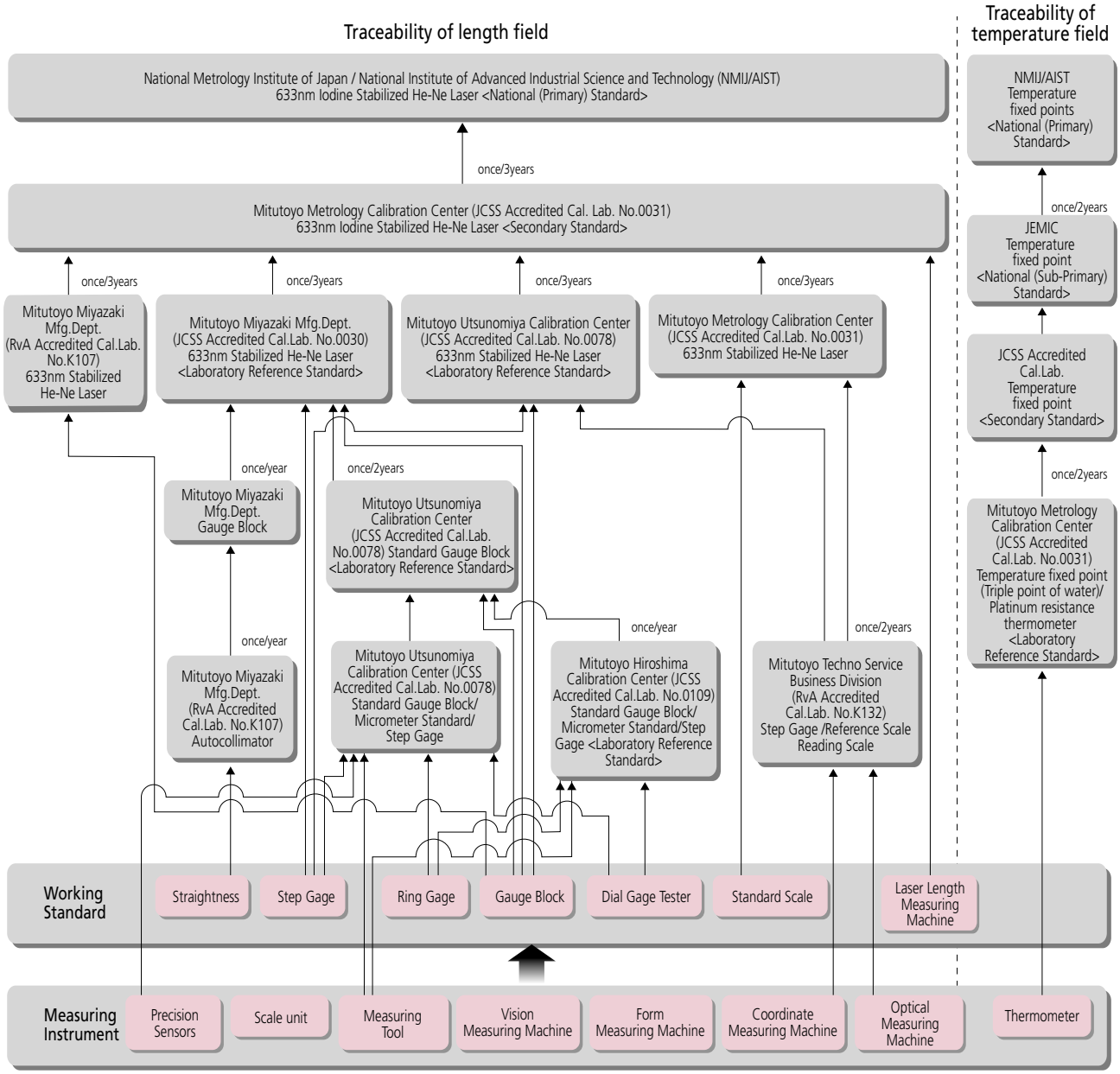


IMGC: Istituto di Metrologia "GUSTAVO COLONNETTI"
SIT: Servizio di Taratura in Italia
SP: Swedish National Testing and Research Institute
SWEDAC: Swedish Board for Accreditation and Conformity Assessment
INMETRO: Instituto Nacional de Metrologia Normalização e Qualidade Industrial
RBC: Rede Brasileira de Calibração
INTI: Instituto Nacional de Tecnologia Industrial
OAA: Organismo Argentino de Acreditaci
NPLI: National Physical Laboratory of India

NABL: National Accreditation Board for Testing and Calibration Laboratories
(ILAC): International Laboratory Accreditation Cooperation
(APLAC): Asia-Pacific Laboratory Accreditation Cooperation
(EA): European Accreditation Cooperation
(MRA): Mutual Recognition Arrangement
#: Accreditation No.

Traceability system

Mitutoyo has a traceability system made possible through an in-house calibration organization certified by the ISO/IEC 17025 international standard, with length standards directly related to the national standards (stabilized He-Ne laser) at the highest level.

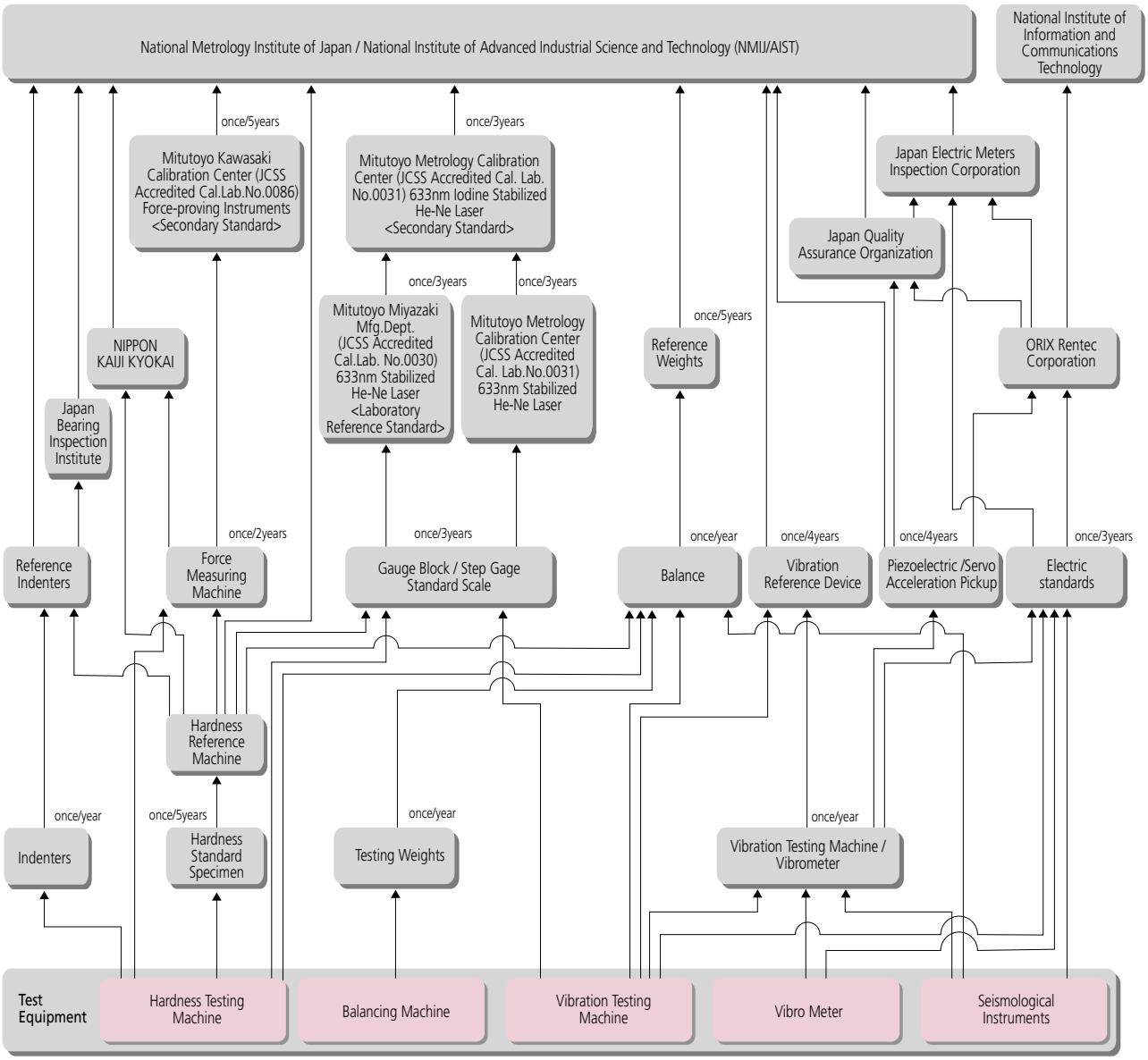


Certificate of JCSS accredited laboratory (Mitutoyo Metrology Calibration Center)

Certificate of RvA (Miyazaki Manufacturing Department)

The stabilized He-Ne laser assures a performance equivalent to that of this national standard.
Further, the national standard is mutually recognized by CIPM, and the certified calibration organization is mutually recognized by ILAC, so that the establishment and maintenance of traceability for Mitutoyo products is achieved both in Japan and overseas.

Traceability of Test Equipment



Features of Mitutoyo CERA Block

1. Corrosion-Resistant

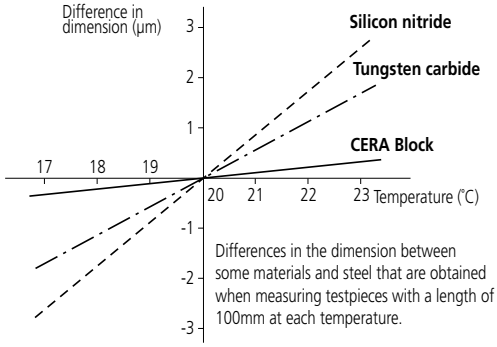
The CERA Block is made from zirconium-based ceramic which will not corrode unless subjected to the most corrosive chemicals. Anti-corrosion treatment is not required when handled normally (i.e. with fingers), resulting in simple maintenance and storage.

Steel gauge blocks are made of high-chromiun steel, which is similar to stainless steel in its resistance to corrosion. They must, however, be carefully cleaned after use, stored in a dry environment and be protected from corrosion.

2. Closest Expansion Coefficient to Steel

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

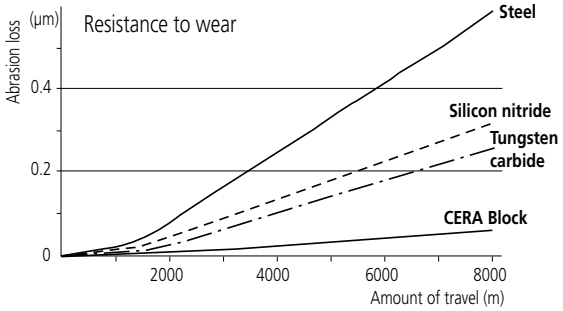
Material / Property	CERA Block (ZrO_2)	Steel (Fe)	Carbide (WC-Co)	Silicon nitride (Si_3N_4)
Hardness (HV)	1350	800	1650	1500
Coefficient of thermal expansion (10^{-6}/K)	9.3±0.5	10.8±0.5	5.5±1.0	2
Flexural strength by 3-point bending (MPa)	1275	1961	1961	588
Fracture toughness K1c (MPa·$m^{1/2}$)	7	20	12	6.5
Young's modulus x104 (MPa)	20.6	20.6	61.8	28.4
Poisson's ratio	0.3	0.3	0.2	0.2
Specific gravity	6.0	7.8	14.8	3.2
Thermal conductivity (W/m·k)	2.9	54.4	79.5	16.7



Differences in the dimension between some materials and steel that are obtained when measuring testpieces with a length of 100mm at each temperature.

3. Abrasion Resistant

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



4. Highly Resistant Against Drops and Other Shocks

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

5. Dimensional Stability

CERA Blocks are free from dimensional change over time.

6. 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).

7. Marking

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

8. Anti-magnetic Nature Keeps Away Steel Powders

Features of Square Gauge Blocks

1. Perfect wringing is possible using the center hole.

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

2. A height reference standard can easily be made.

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

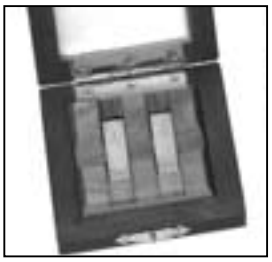
3. A dedicated inspection jig can be easily be made.

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

4. A wide measuring surface with cross section dimensions of [24.1x24.1mm] is available.

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

Tungsten Carbide Gauge Blocks for Wear Resistance



When used in accordance with accepted practices, steel gauge blocks will provide many years of useful life and still retain an acceptable degree of precision. Where a high surface hardness is required, however, tungsten carbide gauge blocks are often selected to provide increased life compared to steel blocks.

Selecting Gauge Blocks

> Select gauge blocks in accordance with the combination range required. If a large length is required, add a long block set.

> Select gauge blocks in accordance with the minimum length step required. Add wear block sets if necessary.

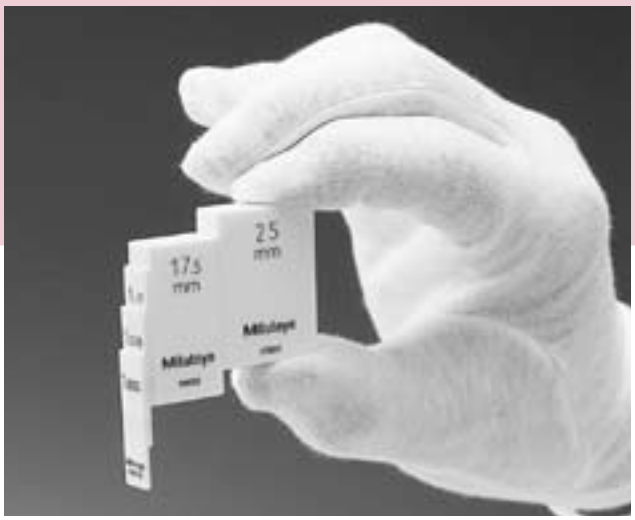
> If a set containing a large number of gauge blocks is selected, the number of combination gauge blocks required for a length is reduced and the number of combinations is increased. The accuracy will be retained and damage will be reduced.

> The specific gauge block set for micrometer inspection and caliper inspection is available.

> If using only one length repeatedly, it is a good idea to purchase discrete gauge blocks.

> The 2mm-based gauge blocks, which take the base of the minimum length step as 2mm, are easy to handle and will not warp, as compared to the 1mm-based gauge blocks.

Grade and Applications



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

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

Grade 2:
These gauge blocks are intended for shop floor use to set and calibrate fixtures as well as precision instruments.

Grade 1:
This grade is used within an inspection area to verify the accuracy of plug and snap gages as well as for setting electronic measuring devices.

Grade 0:
These higher accuracy gauges are intended for use within a controlled environment by skilled inspection staff.
Mainly used as reference standards for setting high precision measuring equipment and for the calibration of lower grade gauge blocks.

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

Combination of a Required Length

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

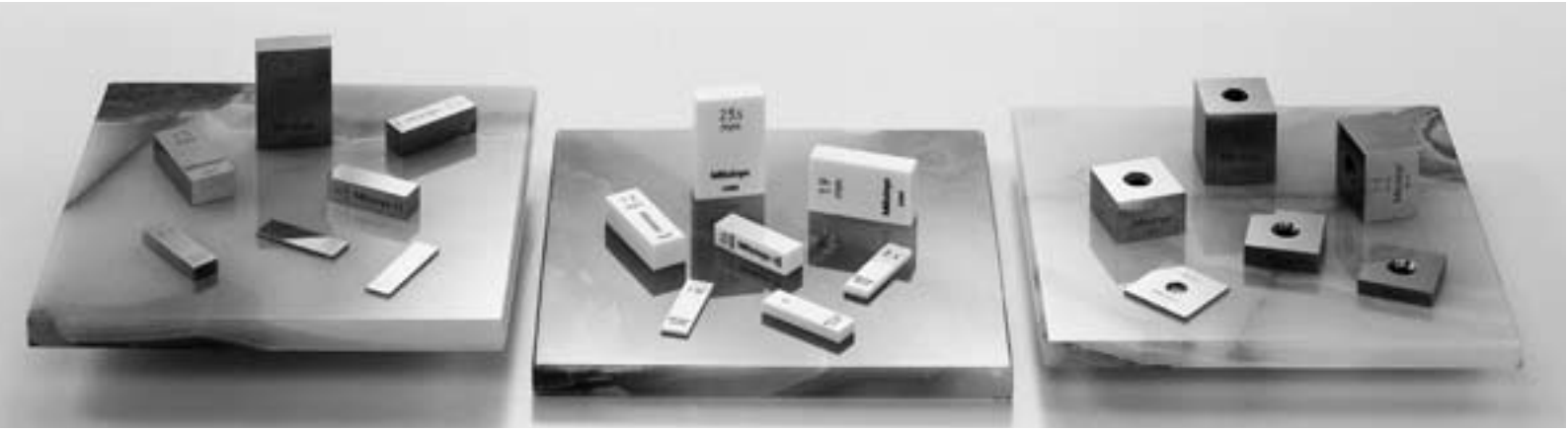
1. Use as few gauge blocks as possible to obtain the required length.
   (=Select thick gauge blocks whenever possible.)
2. Select gauge blocks starting with the one that has least significant digit required, and then work up to ones with more significant digits.
3. There are multiple combinations for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

Example combination

Required length=45.6785mm

For the 1mm-based gauge block set (112 pcs.)
- 1.0005
- 1.008
- 1.17
- 17.5
- 25
- 45.6785mm

For the 2mm-based gauge block set (112 pcs.)
- 2.0005
- 2.008
- 2.17
- 14.5
- 25
- 45.6785mm



Accuracies of Mitutoyo Gauge Blocks

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

ACCORDABLE STANDARDS OF MITUTOYO GAUGE BLOCKS

JIS B 7506-1997 "GAUGE BLOCKS"
DIN 861-1980 "PARALLELENDMASE"
ASME B89.1.9-2002 "GAGE BLOCKS AND ACCESSORIES (INCH AND METRIC)"
BS 4311: Part 1: 1993 "GAUGE BLOCKS AND ACCESSORIES (NEW GAUGE BLOCKS)"

Note: JIS B 7506-1997 standards are the same as DIN 861-1980 standards.

Accuracy Specifications of Gauge Blocks by JIS B 7506-1997 (Japan)

(at 20°C)

Nominal length (mm)	Grade K		Grade 0		Grade 1		Grade 2	
	Tolerance on length at any point (µm)	Permissible variation in length (µm)	Tolerance on length at any point (µm)	Permissible variation in length (µm)	Tolerance on length at any point (µm)	Permissible variation in length (µm)	Tolerance on length at any point (µm)	Permissible variation in length (µm)
from 0.5 up to 10	±0.20	0.05	±0.12	0.10	±0.20	0.16	±0.45	0.30
over 10 up to 25	±0.30	0.05	±0.14	0.10	±0.30	0.16	±0.60	0.30
over 25 up to 50	±0.40	0.06	±0.20	0.10	±0.40	0.18	±0.80	0.30
over 50 up to 75	±0.50	0.06	±0.25	0.12	±0.50	0.18	±1.00	0.35
over 75 up to 100	±0.60	0.07	±0.30	0.12	±0.60	0.20	±1.20	0.35
over 100 up to 150	±0.80	0.08	±0.40	0.14	±0.80	0.20	±1.60	0.40
over 150 up to 200	±1.00	0.09	±0.50	0.16	±1.00	0.25	±2.00	0.40
over 200 up to 250	±1.20	0.10	±0.60	0.16	±1.20	0.25	±2.40	0.45
over 250 up to 300	±1.40	0.10	±0.70	0.18	±1.40	0.25	±2.80	0.50
over 300 up to 400	±1.80	0.12	±0.90	0.20	±1.80	0..30	±3.60	0.50
over 400 up to 500	±2.20	0.14	±1.10	0.25	±2.20	0.35	±4.40	0.60
over 500 up to 600	±2.60	0.16	±1.30	0.25	±2.60	0.40	±5.00	0.70
over 600 up to 700	±3.00	0.18	±1.50	0.30	±3.00	0.45	±6.00	0.70
over 700 up to 800	±3.40	0.20	±1.70	0.30	±3.40	0.50	±6.50	0.80
over 800 up to 900	±3.80	0.20	±1.90	0.35	±3.80	0.50	±7.50	0.90
over 900 up to 1000	±4.20	0.25	±2.00	0.40	±4.20	0.60	±8.0	1.00

Accuracy Specifications of Gauge Blocks by BS 4311: Part 1: 1993 (UK)

(at 20°C)

Nominal length (mm)	Grade K			Grade 0			Grade 1			Grade 2		
	Tolerance on length* (µinches)	Parallelism (µinches)	Flatness (µinches)	Tolerance on length* (µinches)	Parallelism (µinches)	Flatness (µinches)	Tolerance on length* (µinches)	Parallelism (µinches)	Flatness (µinches)	Tolerance on length* (µinches)	Parallelism (µinches)	Flatness (µinches)
over 0 up to 0.4	±5	2	2	±5	4	4	±10	6	6	±20	12	10
over 10 up to 25	±6	2	2	±6	4	4	±12	6	6	±25	12	10
over 25 up to 50	±8	3	2	±8	4	4	±15	7	6	±30	12	10
over 50 up to 75	±10	3	2	±10	5	4	±20	7	6	±40	14	10
over 75 up to 100	±12	3	2	±12	5	4	±25	8	6	±50	14	10

*At the center point

Nominal length (mm)	Grade K			Grade 0			Grade 1			Grade 2		
	Tolerance on length* (0.01µm)	Parallelism (0.01µm)	Flatness (0.01µm)	Tolerance on length* (0.01µm)	Parallelism (0.01µm)	Flatness (0.01µm)	Tolerance on length* (0.01µm)	Parallelism (0.01µm)	Flatness (0.01µm)	Tolerance on length* (0.01µm)	Parallelism (0.01µm)	Flatness (0.01µm)
over 0 up to 10	±12	5	5	±12	10	10	±25	16	15	±50	30	25
over 10 up to 25	±15	5	5	±15	10	10	±30	16	15	±60	30	25
over 25 up to 50	±20	6	5	±20	10	10	±40	18	15	±80	30	25
over 50 up to 75	±25	6	5	±25	12	10	±50	18	15	±100	35	25
over 75 up to 100	±30	7	5	±30	12	10	±60	20	15	±120	35	25

*At the center point

Accuracy Specifications of Gauge Blocks by ASME B89.1.9-2002 (USA)

(at 20°C)

Nominal length (mm)		Grade K		Grade K				Grade 0		Grade 1		Grade 2	
		Tolerance on length at any point		Tolerance on length at any point				Tolerance on length at any point		Tolerance on length at any point		Tolerance on length at any point	
				Rectangular		Square							
over 0.5	up to 50	+0.05	-0.05	+0.05	-0.05	+0.05	-0.05	+0.1	-0.1	+0.15	0.15	+0.25	-0.25
over 50	up to 150	+0.05	-0.05	+0.05	-0.05	+0.07	-0.07	+0.1	-0.1	+0.15	-0.15	+0.25	-0.25
over 150	up to 500	+0.1	-0.1	+0.1	-0.1	+0.1	-0.1	+0.15	-0.15	+0.18	-0.18	+0.25	-0.25
over 500	up to 1000	+0.15	-0.15	+0.15	-0.15	+0.15	-0.15	+0.18	-0.18	+0.20	-0.20	+0.25	-0.25

**This grade is not specified by GGG-G-15C

(at 68°F)

Nominal length (mm)		Grade K		Grade K				Grade 0		Grade 1		Grade 2	
		Tolerance on length at any point		Tolerance on length at any point				Tolerance on length at any point		Tolerance on length at any point		Tolerance on length at any point	
				Rectangular		Square							
over 0.01	up to 2	+2	-2	+2	-2	+2	-2	+4	-4	+6	-6	+10	-10
over 2	up to 6	+2	-2	+2	-2	+2	-2	+4	-4	+6	-6	+10	-10
over 6	up to 20	+4	-4	+4	-4	+4	-4	+6	-6	+7	-7	+10	-10
over 20	up to 40	+6	-6	+6	-6	+6	-6	+7	-7	+8	-8	+10	-10

Mitutoyo Gauge Blocks and Inspection Certificates

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

ISO/DIN/JIS METRIC RECTANGULAR GAUGE BLOCK SETS WITH NKO CERTIFICATE

ISO/DIN/JIS gauge block sets that come with an NKO Certificate in addition to a regular one are also available.

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

NKO certificate (example)

1mm Base Sets (Standard Sets)

112 pcs./set	**516-937-70**	Steel	Grade K	(See page 10)
	516-337-70	CERA	Grade K	(See page 10)
103 pcs./set	**516-941-70**	Steel	Grade K	(See page 10)
	516-942-70	Steel	Grade 0	(See page 10)
	516-943-70	Steel	Grade 1	(See page 10)
	516-341-70	CERA	Grade K	(See page 10)
	516-342-70	CERA	Grade 0	(See page 10)
	516-343-70	CERA	Grade 1	(See page 10)
87 pcs./set	**516-945-70**	Steel	Grade K	(See page 10)
	516-946-70	Steel	Grade 0	(See page 10)
	516-947-70	Steel	Grade 1	(See page 10)
	516-345-70	CERA	Grade K	(See page 10)
	516-346-70	CERA	Grade 0	(See page 10)
	516-347-70	CERA	Grade 1	(See page 10)
76 pcs./set	**516-949-70**	Steel	Grade K	(See page 10)
	516-349-70	CERA	Grade K	(See page 10)
56 pcs./set	**516-953-70**	Steel	Grade K	(See page 10)
	516-353-70	CERA	Grade K	(See page 10)
47 pcs./set	**516-957-70**	Steel	Grade K	(See page 10)
	516-357-70	CERA	Grade K	(See page 10)
47 pcs./set	**516-961-70**	Steel	Grade K	(See page 10)
	516-962-70	Steel	Grade 0	(See page 10)
	516-963-70	Steel	Grade 1	(See page 10)
	516-361-70	CERA	Grade K	(See page 10)
	516-362-70	CERA	Grade 0	(See page 10)
	516-363-70	CERA	Grade 1	(See page 10)
46 pcs./set	**516-994-70**	Steel	Grade K	(See page 12)
	516-394-70	CERA	Grade K	(See page 12)
32 pcs./set	**516-965-70**	Steel	Grade K	(See page 12)
	516-967-70	Steel	Grade 1	(See page 12)
	516-365-70	CERA	Grade K	(See page 12)
	516-367-70	CERA	Grade 1	(See page 12)

2mm Base Sets (Standard Sets)

112 pcs./set	**516-937-70**	Steel	Grade K	(See page 12)
88 pcs./set	**516-501-70**	Steel	Grade K	(See page 12)
88 pcs./set	**516-517-70**	Steel	Grade K	(See page 12)
47 pcs./set	**516-521-70**	Steel	Grade K	(See page 12)
46 pcs./set	**516-505-70**	Steel	Grade K	(See page 12)
33 pcs./set	**516-509-70**	Steel	Grade K	(See page 12)

0.001mm Step Bloc Sets

18 pcs./set	**516-973-70**	Steel	Grade K	(See page 14)
	516-373-70	CERA	Grade K	(See page 14)
9 pcs./set	**516-981-70**	Steel	Grade K	(See page 14)
	516-381-70	CERA	Grade 0	(See page 14)
9 pcs./set	**516-985-70**	Steel	Grade K	(See page 14)
	516-385-70	CERA	Grade 0	(See page 14)

Gauge Block Sets for Micrometer Inspection

10 pcs./set	**516-977-70**	Steel	Grade K	(See page 16)
10 pcs./set	**516-106-70**	Steel	Grade 0	(See page 16)
	516-107-70	Steel	Grade 1	(See page 16)
	516-156-70	CERA	Grade 0	(See page 16)
	516-157-70	CERA	Grade 1	(See page 16)

RECTANGULAR GAUGE BLOCK SETS

METRIC

Mitutoyo gauge blocks are available as individual units or in sets according to the nominal lengths and set compositions. Each gauge block set is supplied in a high quality wooden case with:

- Certificate of Calibration*, and Certificate of Inspection (Grade K only) or
- Certificate of Inspection (Other grades)

*The name and address of the client (customer) are registered on the Certificate of Calibration by Mitutoyo. The charge for calibration is included in the set price.

1mm Base Sets (Standard Sets)

Blocks per set	Blocks included in sets Nominal length (mm)		Steps
122	1 block	1.0005	
	9 blocks	1.001 thru 1.009	0.001mm
	49 blocks	1.01 thru 1.49	0.01mm
	4 blocks	1.6 thru 1.9	0.1mm
	49 blocks	0.5 thru 24.5	0.5mm
	8 blocks	30 thru 100	10mm
	2 blocks	25,75	
112	1 block	1.0005	
	9 blocks	1.001 thru 1.009	0.001mm
	49 blocks	1.01 thru 1.49	0.01mm
	49 blocks	0.5 thru 24.5	0.5mm
	4 blocks	25 thru 100	25mm
103	1 block	1.005	
	49 blocks	1.01 thru 1.49	0.01mm
	49 blocks	0.5 thru 24.5	0.5mm
	4 blocks	25 thru 100	25mm
88	1 block	1.0005	
	9 blocks	1.001 thru 1.009	0.001mm
	49 blocks	1.01 thru 1.49	0.01mm
	19 blocks	0.5 thru 9.5	0.5mm
	10 blocks	25 thru 100	10mm
87	9 blocks	1.001 thru 1.009	0.001mm
	49 blocks	1.01 thru 1.49	0.01mm
	19 blocks	0.5 thru 9.5	0.5mm
	10 blocks	10 thru 100	10mm
76	1 block	1.005	
	49 blocks	1.01 thru 1.49	0.01mm
	19 blocks	0.5 thru 9.5	0.5mm
	4 blocks	10 thru 40	10mm
	3 blocks	50 thru 100	25mm
56	1 block	0.5	
	9 blocks	1.001 thru 1.009	0.001mm
	9 blocks	1.01 thru 1.09	0.01mm
	9 blocks	1.1 thru 1.9	0.1mm
	24 blocks	1 thru 24	1mm
	4 blocks	25 thru 100	25mm
47	1 block	1.005	
	9 blocks	1.01 thru 1.09	0.01mm
	9 blocks	1.1 thru 1.9	0.1mm
	24 blocks	1 thru 24	1mm
	4 blocks	25 thru 100	25mm
47	1 block	1.005	
	21 blocks	1.01 thru 1.19	0.01mm
	8 blocks	1.2 thru 1.9	0.1mm
	8 blocks	1 thru 9	1mm
	9 blocks	10 thru 100	10mm

Ceramic/Steel Combination Block Sets (Economy CERA Block Sets)

These special gauge block sets contain mostly ceramic blocks with only the largest pieces (50 - 100mm) supplied as steel. In this way, users can enjoy the many advantages of ceramic blocks for most of the sizes with an economical advantage for the set. There is no difficulty in using ceramic and steel blocks together as Mitutoyo CERA Blocks wring easily with steel as well as with each other.

•Material of blocks
Steel: 50mm, 75mm, and 100mm blocks
Ceramic: Other blocks

•Classification of accuracy
ISO/DIN/JIS-Grade 2 only

•Order No.
516-340-13* (112 pcs./set)
516-344-13* (103 pcs./set)
516-352-13* (76 pcs./set)
516-356-13* (56 pcs./set)
516-360-13* (47 pcs./set)

*Use suffix -63 in place of -13 to order the gauge block sets with Certificate of Calibration.

STEEL

Order No.					
ISO/DIN/JIS		ASME		BS	
Grade K	**516-596-60**	—	**—**	—	**—**
Grade 0	**516-597-60**	—	**—**	—	**—**
Grade 1	**516-598-60**	—	**—**	—	**—**
Grade 2	**516-599-60**	—	**—**	—	**—**
—	**—**	—	**—**	—	**—**
—	**—**	—	**—**	—	**—**
—	**—**	—	**—**	—	**—**
—	**—**	Grade K	**516-531-66**	—	**—**
Grade K	**516-937-60**	Grade 00	**516-937-16**	Grade K	**516-937-71**
Grade 0	**516-938-10***	Grade 0	**516-938-16**	Grade 0	**516-938-11**
Grade 1	**516-939-10***	Grade 1	**516-939-16**	Grade 1	**516-939-11**
Grade 2	**516-940-10***	Grade 2	**516-940-16**	Grade 2	**516-940-11**
—	**—**	Grade K	**516-533-66**	—	**—**
Grade K	**516-941-60**	Grade 00	**516-941-16**	Grade K	**516-941-71**
Grade 0	**516-942-10***	Grade 0	**516-942-16**	Grade 0	**516-942-11**
Grade 1	**516-943-10***	Grade 1	**516-943-16**	Grade 1	**516-943-11**
Grade 2	**516-944-10***	Grade 2	**516-944-16**	Grade 2	**516-944-11**
—	**—**	—	**—**	—	**—**
—	**—**	—	**—**	Grade K	**516-969-71**
Grade 0	**516-970-10**	—	**—**	Grade 0	**516-970-11**
Grade 1	**516-971-10**	—	**—**	Grade 1	**516-971-11**
Grade 2	**516-972-10**	—	**—**	Grade 2	**516-972-11**
—	**—**	Grade K	**516-535-66**	—	**—**
Grade K	**516-945-60**	Grade 00	**516-945-16**	Grade K	**516-945-71**
Grade 0	**516-946-10**	Grade 0	**516-946-16**	Grade 0	**516-946-11**
Grade 1	**516-947-10**	Grade 1	**516-947-16**	Grade 1	**516-947-11**
Grade 2	**516-948-10**	Grade 2	**516-948-16**	Grade 2	**516-948-11**
Grade K	**516-949-60**	—	**—**	—	**—**
Grade 0	**516-950-10**	—	**—**	—	**—**
Grade 1	**516-951-10**	—	**—**	—	**—**
Grade 2	**516-952-10**	—	**—**	—	**—**
—	**—**	—	**—**	—	**—**
—	**—**	Grade K	**516-536-66**	—	**—**
Grade K	**516-953-60**	Grade 00	**516-953-16**	—	**—**
Grade 0	**516-954-10**	Grade 0	**516-954-16**	—	**—**
Grade 1	**516-955-10**	Grade 1	**516-955-16**	—	**—**
Grade 2	**516-956-10**	Grade 2	**516-956-16**	—	**—**
—	**—**	—	**—**	—	**—**
—	**—**	Grade K	**516-537-66**	—	**—**
Grade K	**516-957-60**	Grade 00	**516-957-16**	—	**—**
Grade 0	**516-958-10**	Grade 0	**516-958-16**	—	**—**
Grade 1	**516-959-10**	Grade 1	**516-959-16**	—	**—**
Grade 2	**516-960-10**	Grade 2	**516-960-16**	—	**—**
Grade K	**516-961-60**	—	**—**	Grade K	**516-961-71**
Grade 0	**516-962-10**	—	**—**	Grade 0	**516-962-11**
Grade 1	**516-963-10**	—	**—**	Grade 1	**516-963-11**
Grade 2	**516-964-10**	—	**—**	Grade 2	**516-964-11**
—	**—**	—	**—**	—	**—**

CERAMIC

Order No.					
ISO/DIN/JIS		ASME		BS	
—	**—**	—	**—**	—	**—**
—	**—**	—	**—**	—	**—**
—	**—**	—	**—**	—	**—**
—	**—**	—	**—**	—	**—**
—	**—**	—	**—**	—	**—**
—	**—**	—	**—**	—	**—**
—	**—**	—	**—**	—	**—**
—	**—**	Grade K	**516-541-66**	—	**—**
Grade K	**516-337-60**	Grade 00	**516-337-16**	Grade K	**516-337-71**
Grade 0	**516-338-10**	Grade 0	**516-338-16**	Grade 0	**516-338-11**
Grade 1	**516-339-10**	Grade 1	**516-339-16**	Grade 1	**516-339-11**
Grade 2	**516-340-10***	Grade 2	**516-340-16**	Grade 2	**516-340-11**
—	**—**	Grade K	**516-542-66**	—	**—**
Grade K	**516-341-60**	Grade 00	**516-341-16**	Grade K	**516-341-71**
Grade 0	**516-342-10**	Grade 0	**516-342-16**	Grade 0	**516-342-11**
Grade 1	**516-343-10**	Grade 1	**516-343-16**	Grade 1	**516-343-11**
Grade 2	**516-344-10***	Grade 2	**516-344-16**	Grade 2	**516-344-11**
—	**—**	—	**—**	—	**—**
—	**—**	—	**—**	Grade K	**516-369-71**
—	**—**	—	**—**	Grade 0	**516-370-11**
—	**—**	—	**—**	Grade 1	**516-371-11**
—	**—**	—	**—**	Grade 2	**516-372-11**
—	**—**	Grade K	**516-543-66**	—	**—**
Grade K	**516-345-60**	Grade 00	**516-345-16**	Grade K	**516-345-71**
Grade 0	**516-346-10**	Grade 0	**516-346-16**	Grade 0	**516-346-11**
Grade 1	**516-347-10**	Grade 1	**516-347-16**	Grade 1	**516-347-11**
Grade 2	**516-348-10***	Grade 2	**516-348-16**	Grade 2	**516-348-11**
Grade K	**516-349-60**	—	**—**	—	**—**
Grade 0	**516-350-10**	—	**—**	—	**—**
Grade 1	**516-351-10**	—	**—**	—	**—**
Grade 2	**516-352-10***	—	**—**	—	**—**
—	**—**	—	**—**	—	**—**
—	**—**	Grade K	**516-544-66**	—	**—**
Grade K	**516-353-60**	Grade 00	**516-353-16**	—	**—**
Grade 0	**516-354-10**	Grade 0	**516-354-16**	—	**—**
Grade 1	**516-355-10**	Grade 1	**516-355-16**	—	**—**
Grade 2	**516-356-10***	Grade 2	**516-356-16**	—	**—**
—	**—**	—	**—**	—	**—**
—	**—**	Grade K	**516-545-66**	—	**—**
Grade K	**516-357-60**	Grade 00	**516-357-16**	—	**—**
Grade 0	**516-358-10**	Grade 0	**516-358-16**	—	**—**
Grade 1	**516-359-10**	Grade 1	**516-359-16**	—	**—**
Grade 2	**516-360-10***	Grade 2	**516-360-16**	—	**—**
Grade K	**516-361-60**	—	**—**	Grade K	**516-361-71**
Grade 0	**516-362-10**	—	**—**	Grade 0	**516-362-11**
Grade 1	**516-363-10**	—	**—**	Grade 1	**516-363-11**
Grade 2	**516-364-10***	—	**—**	Grade 2	**516-364-11**
—	**—**	—	**—**	—	**—**

* Use suffix -60 in place of -10 to order the gauge block sets with Certificate of Calibration. (The charge for calibration is not included in the prior set price.)
Use suffix -71 in place of -11 to order the gauge block sets with Certificate of Calibration. (The charge for calibration is not included in the prior set price.)
Economy CERA Block sets consisting of ceramic and steel gauge blocks are also available. (See above for order numbers.)

RECTANGULAR GAUGE BLOCK SETS

METRIC

47-piece set

46-piece set

32-piece set

112-piece set

The 2mm-based gauge blocks, which take the base of the minimum length step as 2mm, are easy to handle and will not warp, as compared to the 1mm-based gauge blocks.

47-piece set

1mm Base Sets (Standard Sets)

Blocks per set	Blocks included in sets Nominal length (mm)		Steps
46	9 blocks	1.001 thru 1.009	0.001mm
	9 blocks	1.01 thru 1.09	0.01mm
	9 blocks	1.1 thru 1.9	0.1mm
	9 blocks	1 thru 9	1mm
	10 blocks	10 thru 100	10mm
34	1 block	1.0005	
	9 blocks	1.001 thru 1.009	0.001mm
	9 blocks	1.01 thru 1.09	0.01mm
	9 blocks	1.1 thru 1.9	0.1mm
	6 blocks	1 thru 5, 10	10mm
32	1 block	1.005	
	9 blocks	1.01 thru 1.09	0.01mm
	9 blocks	1.1 thru 1.9	0.1mm
	9 blocks	1 thru 9	1mm
	3 blocks	10 thru 30	10mm
	1 block	60	

2mm Base Sets (Standard Sets)

Blocks per set	Blocks included in sets Nominal length (mm)		Steps
112	1 block	2.0005	
	9 blocks	2.001 thru 2.009	0.001mm
	49 blocks	2.01 thru 2.49	0.01mm
	49 blocks	0.5 thru 24.5	0.5mm
	4 blocks	25 thru 100	25mm
88	1 block	1.0005	
	9 blocks	2.001 thru 2.009	0.001mm
	49 blocks	2.01 thru 2.49	0.01mm
	19 blocks	0.5 thru 9.5	0.5mm
	10 blocks	10 thru 100	10mm
88	1 block	2.0005	
	9 blocks	2.001 thru 2.009	0.001mm
	49 blocks	2.01 thru 2.49	0.01mm
	49 blocks	0.5 thru 9.5	0.5mm
	10 blocks	10 thru 100	10mm
47	1 block	2.0005	
	9 blocks	2.001 thru 2.009	0.001mm
	9 blocks	2.01 thru 2.09	0.01mm
	9 blocks	2.1 thru 2.9	0.1mm
	9 blocks	1 thru 9	1mm
	10 blocks	10 thru 100	10mm
46	9 block	2.001 thru 2.009	0.001mm
	9 blocks	2.01 thru 2.09	0.01mm
	9 blocks	2.1 thru 2.9	0.1mm
	9 blocks	1 thru 9	1mm
	10 blocks	10 thru 100	10mm
33	1 block	2.005	
	9 blocks	2.01 thru 2.09	0.01mm
	9 blocks	2.1 thru 2.9	0.1mm
	9 blocks	1 thru 9	1mm
	3 blocks	10 thru 30	10mm
	1 block	60, 100	

STEEL

Order No.					
ISO/DIN/JIS		ASME		BS	
Grade K	**516-994-60**	—	—	—	—
Grade 0	**516-995-10***	—	—	—	—
Grade 1	**516-996-10***	—	—	—	—
Grade 2	**516-997-10***	—	—	—	—
—	—	—	—	—	—
Grade K	**516-128-60**	—	—	Grade K	**516-128-71**
Grade 0	**516-129-10**	—	—	Grade 0	**516-129-11**
Grade 1	**516-130-10**	—	—	Grade 1	**516-130-11**
Grade 2	**516-131-10**	—	—	Grade 2	**516-131-11**
—	—	—	—	—	—
Grade K	**516-965-60**	—	—	Grade K	**516-965-71**
Grade 0	**516-966-10**	—	—	Grade 0	**516-966-11**
Grade 1	**516-967-10**	—	—	Grade 1	**516-967-11**
Grade 2	**516-968-10**	—	—	Grade 2	**516-968-11**
—	—	—	—	—	—
—	—	—	—	—	—

CERAMIC

Order No.					
ISO/DIN/JIS		ASME		BS	
Grade K	**516-394-60**	—	—	—	—
Grade 0	**516-395-10***	—	—	—	—
Grade 1	**516-396-10***	—	—	—	—
Grade 2	**516-397-10***	—	—	—	—
—	—	—	—	—	—
Grade K	**516-178-60**	—	—	Grade K	**516-178-71**
Grade 0	**516-179-10**	—	—	Grade 0	**516-179-11**
Grade 1	**516-180-10**	—	—	Grade 1	**516-180-11**
Grade 2	**516-181-10**	—	—	Grade 2	**516-181-11**
—	—	—	—	—	—
Grade K	**516-365-60**	—	—	Grade K	**516-365-71**
Grade 0	**516-366-10**	—	—	Grade 0	**516-366-11**
Grade 1	**516-367-10**	—	—	Grade 1	**516-367-11**
Grade 2	**516-368-10**	—	—	Grade 2	**516-368-11**
—	—	—	—	—	—
—	—	—	—	—	—

* Use suffix -60 in place of -10 to order the gauge block sets with Certificate of Calibration. (The charge for calibration is not included in the prior set price.)
Economy CERA Block sets consisting of ceramic and steel gauge blocks are also available. (See above for order numbers.)

STEEL

Order No.					
ISO/DIN/JIS		ASME		BS	
—	—	Grade K	**516-532-66**	—	—
Grade K	**516-513-60**	Grade 00	**516-513-16**	Grade K	**516-513-71**
Grade 0	**516-514-10**	Grade 0	**516-514-16**	Grade 0	**516-514-11**
Grade 1	**516-515-10**	Grade 1	**516-515-16**	Grade 1	**516-515-11**
Grade 2	**516-516-10**	Grade 2	**516-516-16**	Grade 2	**516-516-11**
Grade K	**516-501-60**	—	—	Grade K	**516-501-71**
Grade 0	**516-502-10**	—	—	Grade 0	**516-502-11**
Grade 1	**516-503-10**	—	—	Grade 1	**516-503-11**
Grade 2	**516-504-10**	—	—	Grade 2	**516-504-11**
—	—	—	—	—	—
—	—	Grade K	**516-534-66**	—	—
Grade K	**516-517-60**	Grade 00	**516-517-16**	—	—
Grade 0	**516-518-10**	Grade 0	**516-518-16**	—	—
Grade 1	**516-519-10**	Grade 1	**516-519-16**	—	—
Grade 2	**516-520-10**	Grade 2	**516-520-16**	—	—
—	—	Grade K	**516-538-66**	—	—
Grade K	**516-521-60**	Grade 00	**516-521-16**	—	—
Grade 0	**516-522-10**	Grade 0	**516-522-16**	—	—
Grade 1	**516-523-10**	Grade 1	**516-523-16**	—	—
Grade 2	**516-524-10**	Grade 2	**516-524-16**	—	—
—	—	—	—	—	—
Grade K	**516-505-60**	—	—	Grade K	**516-505-71**
Grade 0	**516-506-10**	—	—	Grade 0	**516-506-11**
Grade 1	**516-507-10**	—	—	Grade 1	**516-507-11**
Grade 2	**516-508-10**	—	—	Grade 2	**516-508-11**
—	—	—	—	—	—
—	—	Grade K	**516-539-66**	—	—
Grade K	**516-509-60**	Grade 00	**516-509-16**	Grade K	**516-961-71**
Grade 0	**516-510-10**	Grade 0	**516-510-16**	Grade 0	**516-962-11**
Grade 1	**516-511-10**	Grade 1	**516-511-16**	Grade 1	**516-963-11**
Grade 2	**516-512-10**	Grade 2	**516-512-16**	Grade 2	**516-964-11**
—	—	—	—	—	—

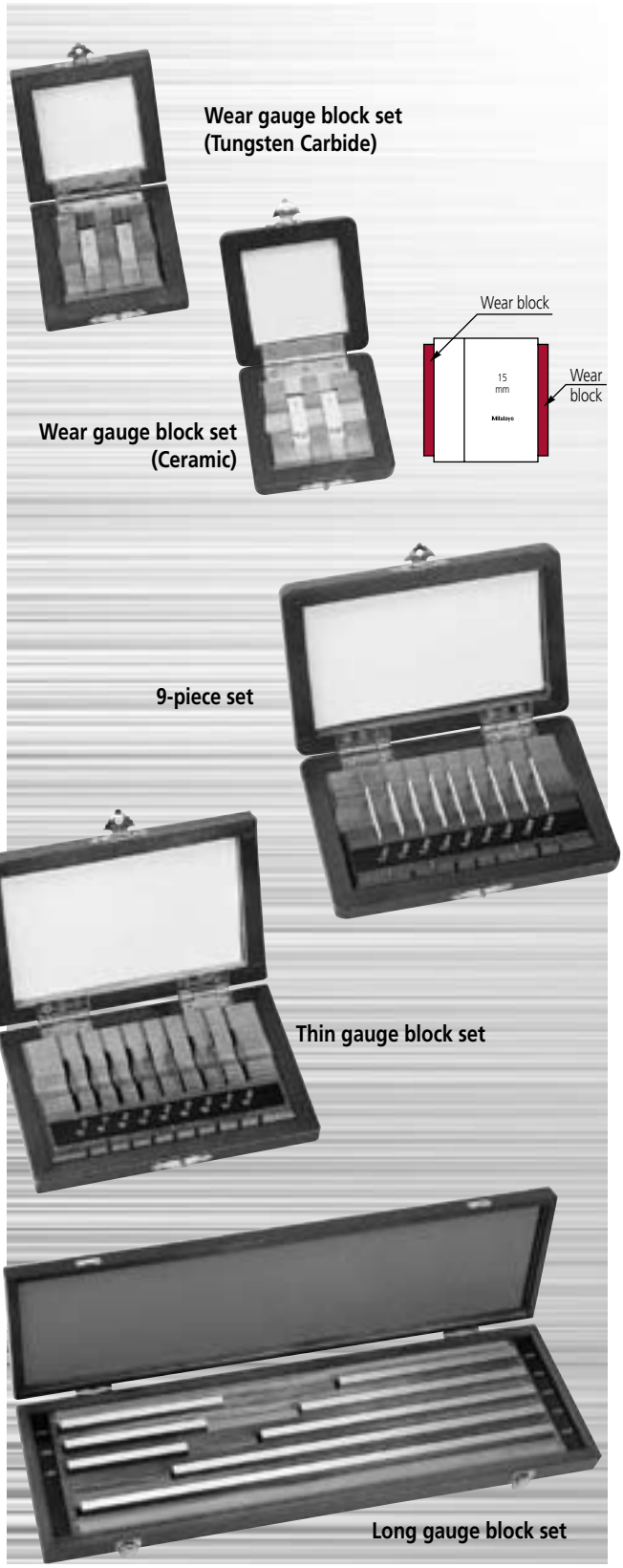
CERAMIC

Order No.					
ISO/DIN/JIS		ASME		BS	
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—

*Use suffix -60 in place of -10 to order the gauge block sets with Certificate of Calibration. (The charge for calibration is not included in the prior set

RECTANGULAR GAUGE BLOCK SETS

METRIC



1mm Base Sets (Standard Sets)

Blocks per set	Blocks included in sets		
	Nominal length (mm)		Steps
18	9 blocks	0.991 thru 0.999	0.001mm
	9 blocks	1.001 thru 1.009	0.001mm
9	9 blocks	1.001 thru 1.009	0.001mm
9	9 blocks	0.991 thru 0.999	0.001mm

Thin Block Sets

Blocks per set	Blocks included in sets		
	Nominal length (mm)		Steps
9	9 blocks	0.10 thru 0.50	0.005mm

1mm Base Sets (Standard Sets)

Blocks per set	Blocks included in sets		
	Nominal length (mm)		Steps
8	3 blocks	125, 150, 175	25mm
	2 blocks	200, 250	50mm
	3 blocks	300, 400, 500	100mm

1mm Base Sets (Standard Sets)

Blocks per set	Blocks included in sets		
	Nominal length (mm)		Steps
2	2 blocks	1, 1 (Pair)	0.001mm
2	2 blocks	2, 2 (Pair)	0.001mm

These gauge block sets are specially configured for micrometer inspection.

STEEL

Order No.					
ISO/DIN/JIS		ASME		BS	
Grade K	**516-973-60**	—	—	—	—
Grade 0	**516-974-10***	—	—	—	—
Grade 1	**516-975-10***	—	—	—	—
Grade 2	**516-976-10***	—	—	—	—
Grade K	**516-981-60**	—	—	Grade K	**516-981-71**
Grade 0	**516-982-10***	—	—	Grade 0	**516-982-11**
Grade 1	**516-983-10***	—	—	Grade 1	**516-983-11**
Grade 2	**516-984-10***	—	—	Grade 2	**516-984-11**
Grade K	**516-985-60***	—	—	—	—
Grade 0	**516-986-10***	—	—	—	—
Grade 1	**516-987-10***	—	—	—	—
Grade 2	**516-988-10***	—	—	—	—

CERAMIC

Order No.					
ISO/DIN/JIS		ASME		BS	
Grade K	**516-373-60**	—	—	—	—
Grade 0	**516-374-10***	—	—	—	—
Grade 1	**516-375-10***	—	—	—	—
Grade 2	**516-376-10***	—	—	—	—
Grade K	**516-381-60**	—	—	Grade K	**516-381-71**
Grade 0	**516-382-10**	—	—	Grade 0	**516-382-11**
Grade 1	**516-383-10**	—	—	Grade 1	**516-383-11**
Grade 2	**516-384-10**	—	—	Grade 2	**516-384-11**
Grade K	**516-385-60**	—	—	—	—
Grade 0	**516-386-10**	—	—	—	—
Grade 1	**516-387-10**	—	—	—	—
Grade 2	**516-388-10**	—	—	—	—

STEEL

Order No.					
ISO/DIN/JIS		ASME		BS	
Grade K	—	—	—	—	—
Grade 0	**516-990-10***	—	—	—	—
Grade 1	**516-991-10***	—	—	—	—
Grade 2	**516-992-10***	—	—	—	—

CERAMIC

Order No.					
ISO/DIN/JIS		ASME		BS	
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—

STEEL

Order No.					
ISO/DIN/JIS		ASME		BS	
—	—	Grade K	**516-540-66**		
Grade K	**516-701-60**	Grade 00	**516-701-16**	—	—
Grade 0	**516-702-10**	Grade 0	**516-702-16**	—	—
Grade 1	**516-703-10**	Grade 1	**516-703-16**	—	—
Grade 2	**516-704-10**	Grade 2	**516-704-16**	—	—

CERAMIC

Order No.					
ISO/DIN/JIS		ASME		BS	
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—

STEEL

Order No.					
ISO/DIN/JIS		ASME		BS	
Grade 0	**516-807-10**	Grade 0	**516-807-16**	—	—
Grade 1	**516-806-10**	Grade 1	**516-806-16**	—	—
Grade 0	**516-803-10**	Grade 0	**516-803-16**	—	—
Grade 1	**516-802-10**	Grade 1	**516-802-16**	—	—

CERAMIC

Order No.					
ISO/DIN/JIS		ASME		BS	
Grade 0	**516-832-10**	Grade 0	**516-832-16**	—	—
Grade 1	**516-833-10**	Grade 1	**516-833-16**	—	—
Grade 0	**516-830-10**	Grade 0	**516-830-16**	—	—
Grade 1	**516-831-10**	Grade 1	**516-831-16**	—	—

*Use suffix -60 in place of -10 to order the gauge block sets with Certificate of Calibration. (The charge for calibration is not included in the prior set

RECTANGULAR GAUGE BLOCK SETS

INCH

Standard Sets

Blocks per set	Blocks included in sets Nominal length (inches)	Steps
82	1 block .10005	
	9 blocks .1001 thru .1009	.0001″
	49 blocks .101 thru .149	.001″
	19 blocks .05 thru .95	.05″
	4 blocks 1 thru 4	1″
81	9 blocks .1001 thru .1009	.0001″
	49 blocks .101 thru .149	.001″
	19 blocks .05 thru .95	.05″
	4 blocks 1 thru 4	1″
49	9 blocks .1001 thru .1009	.0001″
	9 blocks .101 thru .109	.001″
	19 blocks .01 thru .09	.01″
	8 blocks .2 thru .9	.1″
	4 blocks 1 thru 4	1″
35	1 block .10005	
	9 blocks .1001 thru .1009	.0001″
	9 blocks .101 thru .109	.001″
	9 blocks .11 thru .19	.01″
	3 blocks .1 thru .3	1″
	4 blocks .5, 1, 2, 4	

STEEL Order No.

ASME		BS	
Grade K	**516-548-66**	—	—
Grade 00	**516-905-16**	—	—
Grade 0	**516-906-16**	Grade 0	**516-906-11**
Grade 1	**516-907-16**	Grade 1	**516-907-11**
Grade 2	**516-908-16**	Grade 2	**516-908-11**
Grade K	**516-549-66**	—	—
Grade 00	**516-901-16**	—	—
Grade 0	**516-902-16**	Grade 0	**516-902-11**
Grade 1	**516-903-16**	Grade 1	**516-903-11**
Grade 2	**516-904-16**	Grade 2	**516-904-11**
—	—	Grade 0	**516-910-11**
—	—	Grade 1	**516-911-11**
—	—	Grade 2	**516-912-11**
—	—	—	—
—	—	—	—
Grade K	**516-550-66**	—	—
Grade 00	**516-913-16**	—	—
Grade 0	**516-914-16**	Grade 0	**516-914-11**
Grade 1	**516-915-16**	Grade 1	**516-915-11**
Grade 2	**516-916-16**	Grade 2	**516-916-11**
—	—	—	—

CERAMIC Order No.

ASME		BS	
Grade K	**516-556-66**	—	—
Grade 00	**516-305-16**	—	—
Grade 0	**516-306-16**	—	—
Grade 1	**516-307-16**	—	—
Grade 2	**516-308-16**	—	—
Grade K	**516-557-66**	—	—
Grade 00	**516-301-16***	—	—
Grade 0	**516-302-16***	Grade 0	**516-302-11**
Grade 1	**516-303-16**	Grade 1	**516-303-11**
Grade 2	**516-304-16**	Grade 2	**516-304-11**
Grade K	—	—	—
Grade 00	—	—	—
Grade 0	—	—	—
Grade 1	—	—	—
Grade 2	—	—	—
Grade K	**516-538-66**	—	—
Grade 00	**516-313-16***	—	—
Grade 0	**516-314-16***	Grade 0	**516-314-11**
Grade 1	**516-315-16**	Grade 1	**516-315-11**
Grade 2	**516-316-16**	Grade 2	**516-316-11**
—	—	—	—

Thin Block Sets

Blocks per set	Blocks included in sets Nominal length (inches)	Steps
28	1 block .02005	
	9 blocks .0201 thru .0209	.0001″
	9 blocks .021 thru .29	.001″
	9 blocks .01 thru .09	.01″
10	10 blocks .005 thru .050	.0001″

STEEL Order No.

ASME		BS	
Grade K	**516-551-66**	—	—
Grade 00	**516-917-16**	—	—
Grade 0	**516-918-16**	—	—
Grade 1	**516-919-16**	—	—
Grade 2	**516-920-16**	—	—
Grade 0	**516-926-16**	Grade 0	**516-926-11**
Grade 1	**516-927-16**	Grade 1	**516-927-11**
—	—	Grade 2	**516-928-11**

CERAMIC Order No.

ASME		BS	
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

Long Block Sets

Blocks per set	Blocks included in sets Nominal length (inches)	Steps
8	3 blocks 5 thru 7	1″
	3 blocks 8, 10, 12	2″
	2 blocks 16, 20	4″

STEEL Order No.

ASME		BS	
Grade K	—	—	—
Grade 00	—	—	—
Grade 0	**516-712-16**	—	—
Grade 1	**516-713-16**	—	—

CERAMIC Order No.

ASME		BS	
Grade K	**516-564-66**	—	—
Grade 00	**516-741-16**	—	—
Grade 0	**516-742-16**	—	—
Grade 1	**516-743-16**	—	—

Wear Block Sets

Blocks per set	Blocks included in sets Nominal length (inches)	Steps
2	2 blocks .05, .05 (Pair)	
2	2 blocks .10, .10 (Pair)	

TUNGSTEN CARBIDE Order No.

ASME		BS	
Grade 0	**516-809-16**	—	—
Grade 1	**516-808-16**	—	—
Grade 0	**516-805-16**	—	—
Grade 1	**516-804-16**	—	—

CERAMIC Order No.

ASME		BS	
Grade 0	**516-836-16**	—	—
Grade 1	**516-837-16**	—	—
Grade 0	**516-834-16**	—	—
Grade 1	**516-835-16**	—	—

Steel / CERA Combination Block Sets

These sets make a very economical package that keeps the cost of ownership to a minimum. A ceramic material, with a reputation for its high resistance to abrasion, has been adopted for the frequently-used 1mm, 2mm, 3mm, 4mm, 5mm and 10mm blocks to reduce wear. Compared to standard all-steel sets this minimizes the total accuracy drop over time and so reduces maintenance costs.

METRIC

Blocks per set	Blocks included in sets Nominal length (mm)		Steps
47	1 block	1.005	
	9 blocks	1.01 thru 1.09	0.01
	9 blocks	1.1 thru 1.9	0.1
	24 blocks	1 thru 24	1
	4 blocks	25 thru 100	25
47	1 block	1.005	
	21 blocks	1.00 thru 1.20	0.01
	8 blocks	1.3 thru 2.0	0.1
	8 blocks	3 thru 10	1
	9 blocks	25 thru 100	10
32	1 block	1.005	
	9 blocks	1.01 thru 1.09	0.01
	9 blocks	1.1 thru 1.9	0.1
	9 blocks	1 thru 9	1
	3 blocks	10 thru 30	10
	1 block	60	

Order No.					
ISO/DIN/JIS		**ASME**		**BS**	
Grade 0	**516-958N-13**	Grade 0	**516-958N-17**	—	—
Grade 1	**516-959N-13**	Grade 1	**516-959N-17**	—	—
Grade 2	**516-960N-13**	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
Grade 0	**516-962N-13**	—	—	Grade 0	**516-962N-15**
Grade 1	**516-963N-13**	—	—	Grade 1	**516-963N-15**
Grade 2	**516-964N-13**	—	—	Grade 2	**516-964N-15**
—	—	—	—	—	—
Grade 0	**516-966N-13**	—	—	Grade 0	**516-966N-15**
Grade 1	**516-967N-13**	—	—	Grade 1	**516-967N-15**
Grade 2	**516-968N-13**	—	—	Grade 2	**516-968N-15**
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—

INCH

Blocks per set	Blocks included in sets Nominal length (inches)		Steps
49	9 blocks	.1001 thru .1009	0.0001
	9 blocks	.101 thru .109	0.001
	9 blocks	.01 thru .09	0.01
	9 blocks	.11 thru .19	0.01
	9 blocks	.1 thru .9	0.1
	4 blocks	1 thru 4	1
35	1 block	1.0005	
	9 blocks	.1001 thru .1009	0.0001
	9 blocks	.101 thru .109	0.01
	9 blocks	.11 thru .19	0.01
	3 blocks	.1 thru .3	0.1
	4 blocks	.5, 1, 2, 4	

Order No.					
ISO/DIN/JIS		**ASME**		**BS**	
—	—	—	—	Grade 0	**516-910N-15**
—	—	—	—	Grade 1	**516-911N-15**
—	—	—	—	Grade 2	**516-912N-15**
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	Grade 0	**516-914N-17**	Grade 0	**516-914N-15**
—	—	Grade 1	**516-915N-17**	Grade 1	**516-915N-15**
—	—	—	—	Grade 2	**516-916N-15**
—	—	—	—	—	—

RECTANGULAR GAUGE BLOCK SETS

METRIC

Gauge Block Sets for Caliper Inspection*

Blocks per set	Blocks included in sets Nominal length (mm)	Steps	STEEL Order No. ISO/DIN/JIS		ASME		CERAMIC Order No. ISO/DIN/JIS		ASME	
5	10.3, 24.5, 50, 100 •Ceramic Plain Jaw (2pcs.) •Holder 250mm (1pc.) •Inspecting glove		Grade 2	—	—	—	Grade 2	**516-174-10**	—	—
3	1 block 30, 1 block 41.3 1 block 131.4 •Setting ring (ø4mm, ø25mm) •Inspecting glove		Grade 1 Grade 2	**516-124-10** **516-125-10**	— —	— —	Grade 1 Grade 2	**516-150-10** **516-151-10**	— —	— —
2	1 block 41.3 1 block 131.4 •Setting ring (ø20mm) •Inspecting glove		Grade 1 Grade 2	**516-122-10** **516-123-10**	— —	— —	Grade 1 Grade 2	**516-172-10** **516-173-10**	— —	— —

Gauge Block Sets for Micrometer Inspection

Blocks per set	Blocks included in sets Nominal length (mm)	Steps	STEEL Order No. ISO/DIN/JIS		ASME		CERAMIC Order No. ISO/DIN/JIS		ASME	
16	2 blocks 1.25, 1.50 3 blocks 1, 2, 3 10 blocks 5 thru 50 1 block 25.25 •Optical parallels (t12mm, 25mm) •Ceraston grinding stone	0.25mm 1mm 5mm 0.5mm	Grade 0 Grade 1 Grade 2 —	**516-111-10** **516-112-10** **516-113-10** —	— — — —	— — — —	Grade 0 Grade 1 Grade 2 —	**516-161-10** **516-162-10** **516-163-10** —	— — — —	— — — —
10	2 blocks 1.25, 1.50 3 blocks 1, 2, 3 5 blocks 5 thru 25	0.25mm 1mm 5mm	Grade 0 Grade 1 —	**516-103-10** **516-101-10** —	Grade 0 Grade 1 —	**516-103-16** **516-101-16** —	Grade 0 Grade 1 Grade 2	**516-152-10** **516-153-10** **516-154-10**	Grade 0 Grade 1 —	**516-152-16** **516-153-16** —
10	2 blocks 1.25, 1.50 3 blocks 1, 2, 3 5 blocks 5 thru 25 •Optical parallel (t=12mm)	0.25mm 1mm 5mm	Grade K Grade 0 Grade 1 Grade 2	**516-977-60** **516-978-10** **516-979-10** **516-980-10**	— — — —	— — — —	Grade K Grade 0 Grade 1 Grade 2	— **516-378-10** **516-379-10** **516-380-10**	— — — —	— — — —
10	10 blocks 2.5, 5.1, 7.7, 10.3, 12.9, 15.0, 17.6, 20.2, 22.8, 25.0 •Optical parallel (t=12mm)		Grade 0 Grade 1 Grade 2	**516-106-10** **516-107-10** **516-108-10**	— — —	— — —	Grade 0 Grade 1 Grade 2	**516-156-10** **516-157-10** **516-158-10**	— — —	— — —
10	2 blocks 1.25 thru 1.50 3 blocks 1 thru 3 5 blocks 5 thru 25	0.25mm 1mm 5mm	Grade 0 Grade 1 Grade 2	**516-132-10** **516-133-10** **516-134-10**	— — —	— — —	Grade 0 Grade 1 Grade 2	**516*-182-10** **516-183-10** **516-184-10**	— — —	— — —
10	10 blocks 2.5, 5.1, 7.7, 10.3, 12.9, 15.0, 17.6, 20.2, 22.8, 25.0 •Microcheck GB holder •Optical parallel (t=12mm)		Grade 0 Grade 1 Grade 2	**516-135-10** **516-136-10** **516-137-10**	— — —	— — —	Grade 0 Grade 1 Grade 2	**516-185-10** **516-186-10** **516-187-10**	— — —	— — —
8	8 blocks 25 thru 200	25mm	— Grade K Grade 0 Grade 1 Grade 2	— — **516-115-10** **516-116-10** **516-117-10**	Grade K Grade 00 Grade 0 Grade 1 Grade 2	— — **516-115-16** **516-116-16** —	— Grade K Grade 0 Grade 1 Grade 2	— **516-164-60** **516-165-10** **516-166-10** **516-167-10**	Grade K Grade 00 Grade 0 Grade 1 Grade 2	**516-547-66** **516-164-16** **516-165-16** **516-166-16** **516-167-16**

*Use suffix -60 in place of -10 to order the gauge block sets with Certificate of Calibration. (The charge for calibration is not included in the prior set price.)

Gauge Block Sets for Micrometer Inspection

Blocks per set	Blocks included in sets Nominal length (inches)	Steps
10	.105, .210, .315, .420,.500, .605, .710, .815, .920, 1	
10	.105, .210, .315, .420,.500, .605, .710, .815, .920, 1	
9	.0625, .100, .125, .200, .250, .300, .500, 1, 2	
9	.0625, .100, .125, .200, .250, .300, .500, 1, 2	
9	.0625, .100, 3125, .200, .250, .300, .500, 1, 2	25mm
8	8 blocks 25 thru 200	25mm

STEEL

Order No. ISO/DIN/JIS		Order No. ASME	
Grade K	**516-552-66**	Grade K	—
Grade 00	**516-921-16**	Grade 0	**516-921-11**
Grade 0	**516-922-16**	Grade 1	**516-922-11**
Grade 1	**516-923-16**	Grade 2	**516-923-11**
Grade K	**516-533-66**	—	—
Grade 00	**516-138-16**	Grade 0	**516-138-11**
Grade 0	**516-139-16**	Grade 1	**516-139-11**
Grade 1	**516-140-16**	Grade 2	**516-140-11**
—	—	—	—
Grade K	**516-977-60**	—	—
Grade 00	**516-929-16**	—	—
Grade 0	**516-930-16**	—	—
Grade 1	**516-931-16**	—	—
Grade 2	**516-932-16**	—	—
Grade K	**516-555-66**	—	—
Grade 00	**516-141-16**	—	—
Grade 0	**516-142-16**	—	—
Grade 1	**516-143-16**	—	—
Grade 2	**516-144-16**	—	—
Grade K	—	—	—
Grade 00	—	—	—
Grade 0	**516-934-16**	—	—
Grade 1	**516-935-16**	—	—
Grade 2	**516-936-16**	—	—
Grade 0	**516-126-16**	—	—
Grade 1	**516-127-16**	—	—

CERAMIC

Order No. ISO/DIN/JIS		Order No. ASME	
Grade K	**516-559-66**	Grade K	—
Grade 00	**516-321-16**	Grade 0	**516-321-11**
Grade 0	**516-322-16**	Grade 1	**516-322-11**
Grade 1	**516-323-16**	Grade 2	**516-323-11**
Grade K	**516-560-66**	—	—
Grade 00	**516-188-16**	Grade 0	**516-188-11**
Grade 0	**516-189-16**	Grade 1	**516-189-11**
Grade 1	**516-190-16**	Grade 2	**516-190-11**
—	—	—	—
Grade K	**516-561-66**	—	—
Grade 00	**516-333-16**	—	—
Grade 0	**516-334-16**	—	—
Grade 1	**516-335-16**	—	—
Grade 2	**516-336-16**	—	—
Grade K	**516-562-66**	—	—
Grade 00	**516-191-16**	—	—
Grade 0	**516-192-16**	—	—
Grade 1	**516-193-16**	—	—
Grade 2	**516-194-16**	—	—
Grade K	**516-563-66**	—	—
Grade 00	**516-329-16**	—	—
Grade 0	**516-330-16**	—	—
Grade 1	**516-331-16**	—	—
Grade 2	**516-332-16**	—	—
Grade 0	**516-176-16**	—	—
Grade 1	**516-177-16**	—	—

RECTANGULAR GAUGE BLOCK SETS

> 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 ISO/DIN/JIS and BS grade K gauge block is specially supplied with a Certificate of Calibration which certificates that the gauge block was manufactured through interferometry.


Certificate of Inspection

METRIC

RECTANGULAR GAUGE BLOCK (METRIC)

If ordering a gauge block, append either of the following suffixes to the order number to specify the grade of the gauge block and the standard to which the block must conform.

Standard	ISO/DIN/JIS				ASME				BS			
Grade	K	0	1	2	K	00	0	1	2	K	0	1	2
Suffix	-016	-021	-031	-041	-516	-521	-531	-541	-551	-117	-121	-131	-141

Example... A grade 0 ISO/DIN/JIS steel gauge block with a nominal length of 10mm: **611671-021**
Note 1: Grade K ISO/DIN/JIS tungsten-carbide gauge blocks are not manufactured.
Note 2: Grade 1 ASME tungsten-carbide gauge blocks are not manufactured.
Note 3: There is no specification for ASME gauge blocks with a nominal length greater than 500mm.
Note 4: There is no specification for BS gauge blocks with a nominal length greater than 100mm.
Note 5: There is no specification for BS tungsten-carbide gauge blocks.
Note 6: Use suffix -026 (Grade 0), -036 (Grade 1), and -046 (Grade 2) in place of standard ones above listed to order the ISO/DIN/JIS gauge block with Certificate of Calibration. (The charge for calibration is not included in the prior price.)

Nominal Length(mm)	Order No. STEEL	CERAMIC
0.10	**611821-zzz**	—
0.11	**611860-zzz**	—
0.12	**611861-zzz**	—
0.13	**611862-zzz**	—
0.14	**611863-zzz**	—
0.15	**611822-zzz**	—
0.16	**611864-zzz**	—
0.17	**611865-zzz**	—
0.18	**611866-zzz**	—
0.19	**611867-zzz**	—
0.20	**611823-zzz**	—

Nominal Length(mm)	Order No. STEEL	CERAMIC
0.21	**611868-zzz**	—
0.22	**611869-zzz**	—
0.23	**611870-zzz**	—
0.24	**611871-zzz**	—
0.25	**611824-zzz**	—
0.26	**611872-zzz**	—
0.27	**611873-zzz**	—
0.28	**611874-zzz**	—
0.29	**611875-zzz**	—
0.30	**611825-zzz**	—
0.31	**611876-zzz**	—

Nominal Length(mm)	Order No. STEEL	CERAMIC
0.32	**611879-zzz**	—
0.33	**611878-zzz**	—
0.34	**611826-zzz**	—
0.35	**611880-zzz**	—
0.36	**611881-zzz**	—
0.37	**611882-zzz**	—
0.38	**611883-zzz**	—
0.39	**611827-zzz**	—
0.40	**611884-zzz**	—
0.41	**611885-zzz**	—
0.42	**611886-zzz**	—
0.43	**611887-zzz**	—
0.44	**611877-zzz**	—
0.45	**611828-zzz**	—
0.46	**611888-zzz**	—
0.47	**611889-zzz**	—
0.48	**611890-zzz**	—
0.49	**611891-zzz**	—
0.5	**611506-zzz**	**613506-zzz**
0.51	**611892-zzz**	—
0.52	**611895-zzz**	—
0.53	**611894-zzz**	—
0.54	**611893-zzz**	—
0.55	**611896-zzz**	—
0.56	**611897-zzz**	—
0.57	**611898-zzz**	—
0.58	**611899-zzz**	—
0.59	**611900-zzz**	—
0.60	**611901-zzz**	—
0.61	**611902-zzz**	—
0.62	**611903-zzz**	—
0.63	**611904-zzz**	—
0.64	**611905-zzz**	—
0.65	**611906-zzz**	—
0.66	**611907-zzz**	—
0.67	**611908-zzz**	—
0.68	**611909-zzz**	—
0.69	**611910-zzz**	—

Nominal Length(mm)	Order No. STEEL	CERAMIC
0.70	611911-zzz	—
0.71	611912-zzz	—
0.72	611913-zzz	—
0.73	611914-zzz	—
0.74	611915-zzz	—
0.75	611916-zzz	—
0.76	611917-zzz	—
0.77	611918-zzz	—
0.78	611919-zzz	—
0.79	611920-zzz	—
0.80	611921-zzz	—
0.81	611922-zzz	—
0.82	611923-zzz	—
0.83	611924-zzz	—
0.84	611925-zzz	—
0.85	611926-zzz	—
0.86	611927-zzz	—
0.87	611928-zzz	—
0.88	611929-zzz	—
0.89	611930-zzz	—
0.90	611931-zzz	—
0.91	611932-zzz	—
0.92	611933-zzz	—
0.93	611934-zzz	—
0.94	611935-zzz	—
0.95	611936-zzz	—
0.96	611937-zzz	—
0.97	611938-zzz	—
0.98	611939-zzz	—
0.99	611940-zzz	—
0.991	611551-zzz	613551-zzz
0.992	611552-zzz	613552-zzz
0.993	611553-zzz	613553-zzz
0.994	611554-zzz	613554-zzz
0.995	611555-zzz	613555-zzz
0.996	611556-zzz	613556-zzz
0.997	611557-zzz	613557-zzz
0.998	611558-zzz	613558-zzz
0.999	611559-zzz	613559-zzz
1	611611-zzz	613611-zzz
1.0005	611520-zzz	613520-zzz
1.001	611521-zzz	613521-zzz
1.002	611522-zzz	613522-zzz
1.003	611523-zzz	613523-zzz
1.004	611524-zzz	613524-zzz
1.005	611525-zzz	613525-zzz
1.006	611526-zzz	613526-zzz
1.007	611527-zzz	613527-zzz
1.008	611528-zzz	613528-zzz
1.009	611529-zzz	613529-zzz
1.01	611561-zzz	613561-zzz
1.02	611562-zzz	613562-zzz
1.03	611563-zzz	613563-zzz
1.04	611564-zzz	613564-zzz
1.05	611565-zzz	613565-zzz
1.06	611566-zzz	613566-zzz
1.07	611567-zzz	613567-zzz
1.08	611568-zzz	613568-zzz
1.09	611569-zzz	613569-zzz
1.1	611570-zzz	613570-zzz

Nominal Length(mm)	Order No. STEEL	CERAMIC
1.11	611571-zzz	613571-zzz
1.12	611572-zzz	613572-zzz
1.13	611573-zzz	613573-zzz
1.14	611574-zzz	613574-zzz
1.15	611575-zzz	613575-zzz
1.16	611576-zzz	613576-zzz
1.17	611577-zzz	613577-zzz
1.18	611578-zzz	613578-zzz
1.19	611579-zzz	613579-zzz
1.20	611580-zzz	613580-zzz
1.21	611581-zzz	613581-zzz
1.22	611582-zzz	613582-zzz
1.23	611583-zzz	613583-zzz
1.24	611584-zzz	613584-zzz
1.25	611585-zzz	613585-zzz
1.26	611586-zzz	613586-zzz
1.27	611587-zzz	613587-zzz
1.28	611588-zzz	613588-zzz
1.29	611589-zzz	613589-zzz
1.3	611590-zzz	613590-zzz
1.31	611591-zzz	613591-zzz
1.32	611592-zzz	613592-zzz
1.33	611593-zzz	613593-zzz
1.34	611594-zzz	613594-zzz
1.35	611595-zzz	613595-zzz
1.36	611596-zzz	613596-zzz
1.37	611597-zzz	613597-zzz
1.38	611598-zzz	613598-zzz
1.39	611599-zzz	613599-zzz
1.4	611600-zzz	613600-zzz
1.41	611601-zzz	613601-zzz
1.42	611602-zzz	613602-zzz
1.43	611603-zzz	613603-zzz
1.44	611604-zzz	613604-zzz
1.45	611605-zzz	613605-zzz
1.46	611606-zzz	613606-zzz
1.47	611607-zzz	613607-zzz
1.48	611608-zzz	613608-zzz
1.49	611609-zzz	613609-zzz
1.5	611641-zzz	613641-zzz
1.6	611516-zzz	613516-zzz
1.7	611517-zzz	613517-zzz
1.8	611518-zzz	613518-zzz
1.9	611519-zzz	613519-zzz
2	611612-zzz	613612-zzz
2.0005	611690-zzz	—
2.001	611691-zzz	—
2.002	611692-zzz	—
2.003	611693-zzz	—
2.004	611694-zzz	—
2.005	611695-zzz	—
2.006	611696-zzz	—
2.007	611697-zzz	—
2.008	611698-zzz	—
2.009	611699-zzz	—
2.01	611701-zzz	—
2.02	611702-zzz	—
2.03	611703-zzz	—
2.04	611704-zzz	—
2.05	611705-zzz	—

Nominal Length(mm)	Order No. STEEL	CERAMIC
2.06	611706-zzz	—
2.07	611707-zzz	—
2.08	611708-zzz	—
2.09	611709-zzz	—
2.1	611710-zzz	—
2.11	611711-zzz	—
2.12	611712-zzz	—
2.13	611713-zzz	—
2.14	611714-zzz	—
2.15	611715-zzz	—
2.16	611716-zzz	—
2.17	611717-zzz	—
2.18	611718-zzz	—
2.19	611719-zzz	—
2.2	611720-zzz	—
2.21	611721-zzz	—
2.22	611722-zzz	—
2.23	611723-zzz	—
2.24	611724-zzz	—
2.25	611725-zzz	—
2.26	611726-zzz	—
2.27	611727-zzz	—
2.28	611728-zzz	—
2.29	611729-zzz	—
2.3	611730-zzz	—
2.31	611731-zzz	—
2.32	611732-zzz	—
2.33	611733-zzz	—
2.34	611734-zzz	—
2.35	611735-zzz	—
2.36	611736-zzz	—
2.37	611737-zzz	—
2.38	611738-zzz	—
2.39	611739-zzz	—
2.4	611740-zzz	—
2.41	611741-zzz	—
2.42	611742-zzz	—
2.43	611743-zzz	—
2.44	611744-zzz	—
2.45	611745-zzz	—
2.46	611746-zzz	—
2.47	611747-zzz	—
2.48	611748-zzz	—
2.49	611749-zzz	—
2.5	611642-zzz	613642-zzz
2.6	611750-zzz	—
2.7	611751-zzz	—
2.8	611752-zzz	—
2.9	611753-zzz	—
3	611613-zzz	613613-zzz
3.5	611643-zzz	613643-zzz
4	611614-zzz	613614-zzz
4.5	611644-zzz	613644-zzz
5	611615-zzz	613615-zzz
5.1	611850-zzz	613850-zzz
5.5	611645-zzz	613645-zzz
6	611616-zzz	613616-zzz
6.5	611646-zzz	613646-zzz
7	611617-zzz	613617-zzz
7.5	611647-zzz	613647-zzz

RECTANGULAR GAUGE BLOCKS (INDIVIDUAL)

Nominal Length(mm)	Order No. STEEL	CERAMIC
7.7	611851-zzz	613851-zzz
8	611618-zzz	613618-zzz
8.5	611648-zzz	613648-zzz
9	611619-zzz	613619-zzz
9.5	611649-zzz	613649-zzz
10	611671-zzz	613671-zzz
10.3	611852-zzz	613852-zzz
10.5	611650-zzz	613650-zzz
11	611621-zzz	613621-zzz
11.5	611651-zzz	613651-zzz
12	611622-zzz	613622-zzz
12.5	611652-zzz	613652-zzz
12.9	611853-zzz	613853-zzz
13	611623-zzz	613623-zzz
13.5	611653-zzz	613653-zzz
14	611624-zzz	613624-zzz
14.5	611654-zzz	613654-zzz
15	611625-zzz	613625-zzz
15.5	611655-zzz	613655-zzz
16	611626-zzz	613626-zzz
16.5	611656-zzz	613656-zzz
17	611627-zzz	613627-zzz
17.5	611657-zzz	613657-zzz
17.6	611854-zzz	613854-zzz
18	611628-zzz	613628-zzz
18.5	611658-zzz	613658-zzz
19	611629-zzz	613629-zzz
19.5	611659-zzz	613659-zzz
20	611672-zzz	613672-zzz
20.2	611855-zzz	613855-zzz
20.5	611660-zzz	613660-zzz
21	611631-zzz	613631-zzz
21.5	611661-zzz	613661-zzz
22	611632-zzz	613632-zzz
22.5	611662-zzz	613662-zzz
22.8	611856-zzz	613856-zzz
23	611633-zzz	613633-zzz
23.5	611663-zzz	613663-zzz
24	611634-zzz	613634-zzz
24.5	611664-zzz	613664-zzz
25	611635-zzz	613635-zzz
25.25	611754-zzz	613754-zzz
30	611673-zzz	613673-zzz
35	611755-zzz	613755-zzz
40	611674-zzz	613674-zzz
41.3	611857-zzz	613857-zzz
45	611756-zzz	613756-zzz
50	611675-zzz	613675-zzz
60	611676-zzz	613676-zzz
70	611677-zzz	613677-zzz
75	611801-zzz	613801-zzz
80	611678-zzz	613678-zzz
90	611679-zzz	613679-zzz
100	611681-zzz	613681-zzz
125	611802-zzz	613802-zzz
131.4	611858-zzz	613858-zzz
150	611803-zzz	613803-zzz
175	611804-zzz	613804-zzz
200	611682-zzz	613682-zzz
250	611805-zzz	613805-zzz

Nominal Length(mm)	Order No. STEEL	CERAMIC
300	611683-zzz	613683-zzz
400	611684-zzz	613684-zzz
500	611685-zzz	613685-zzz
600	611840-zzz	—
700	611841-zzz	—
750	611842-zzz	—
800	611843-zzz	—
900	611844-zzz	—
1000	611845-zzz	—

Nominal Length(mm)	Order No. TUNGSTEN CARBIDE
1	612611-zzz
2	612612-zzz

INCH

RECTANGULAR GAUGE BLOCK (INCH)

If ordering a gauge block, append either of the following suffixes to the order number to specify the grade of the gauge block and the standard to which the block must conform.

Standard	ASME					BS			
Grade	K	00	0	1	2	K	0	1	2
Suffix	-516	-521	-531	-541	-551	—	-121	-131	-141

Example... A grade 1 ASME steel gauge block with a nominal length of .375": 611113-221
Note 1: Grade 1 ASME tungsten-carbide gauge blocks are not manufactured.
Note 2: There is no specification for BS gauge blocks with a nominal length greater than 4".
Note 3: There is no specification for BS tungsten-carbide gauge blocks.

Nominal Length(inches)	Order No. STEEL	CERAMIC
.004	611304-zzz	—
.005	611305-zzz	—
.006	611306-zzz	—
.007	611307-zzz	—
.008	611308-zzz	—
.009	611309-zzz	—
.010	611310-zzz	—
.011	611311-zzz	—
.012	611312-zzz	—
.013	611313-zzz	—
.014	611314-zzz	—
.015	611315-zzz	—
.016	611316-zzz	—
.017	611317-zzz	—
.018	611318-zzz	—
.019	611319-zzz	—
.020	611320-zzz	—
.02005	611240-zzz	—
.0201	611231-zzz	—
.0202	611232-zzz	—
.0203	611233-zzz	—
.0204	611234-zzz	—
.0205	611235-zzz	—

Nominal Length(inches)	Order No. STEEL	CERAMIC
.0206	611236-zzz	—
.0207	611237-zzz	—
.0208	611238-zzz	—
.0209	611239-zzz	—
.021	611321-zzz	—
.022	611322-zzz	—
.023	611323-zzz	—
.024	611324-zzz	—
.025	611325-zzz	—
.026	611326-zzz	—
.027	611327-zzz	—
.028	611328-zzz	—
.029	611329-zzz	—
.030	611330-zzz	—
.031	611331-zzz	—
.03125 (1/32")	611101-zzz	613103-zzz
.032	611332-zzz	—
.033	611333-zzz	—
.034	611334-zzz	—
.035	611335-zzz	—
.036	611336-zzz	—
.037	611337-zzz	—
.038	611338-zzz	—

Nominal Length(inches)	Order No. STEEL	CERAMIC
.039	611339-zzz	—
.040	611340-zzz	—
.041	611341-zzz	—
.042	611342-zzz	—
.043	611343-zzz	—
.044	611344-zzz	—
.045	611345-zzz	—
.046	611346-zzz	—
.046875 (3/64")	611102-zzz	613104-zzz
.047	611347-zzz	—
.048	611348-zzz	—
.049	611349-zzz	—
.050	611105-zzz	613105-zzz
.060	611106-zzz	—
.0625	611303-zzz	613303-zzz
.070	611107-zzz	—
.078125 (5/64")	611103-zzz	613100-zzz
.080·	611108-zzz	—
.090	611109-zzz	—
.09375 (3/32")	611104-zzz	613101-zzz
.100	611191-zzz	613191-zzz
.100025	611111-zzz	613111-zzz
.10005	611135-zzz	613135-zzz
.100075	611112-zzz	613112-zzz
.1001	611121-zzz	613121-zzz
.1002	611122-zzz	613122-zzz
.1003	611123-zzz	613123-zzz
.1004	611124-zzz	613124-zzz
.1005	611125-zzz	613125-zzz
.1006	611126-zzz	613126-zzz
.1007	611127-zzz	613127-zzz
.1008	611128-zzz	613128-zzz
.1009	611129-zzz	613129-zzz
.101	611141-zzz	613141-zzz
.102	611142-zzz	613142-zzz
.103	611143-zzz	613143-zzz
.104	611144-zzz	613144-zzz
.105	611145-zzz	613145-zzz
.106	611146-zzz	613146-zzz
.107	611147-zzz	613147-zzz
.108	611148-zzz	613148-zzz
.109	611149-zzz	613149-zzz
.109375 (7/64")	611110-zzz	613102-zzz
.110	611150-zzz	613150-zzz
.111	611151-zzz	613151-zzz
.112	611152-zzz	613152-zzz

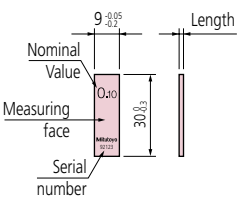
Nominal Length(inches)	Order No. STEEL	CERAMIC
.113	611153-zzz	613153-zzz
.114	611154-zzz	613154-zzz
.115	611155-zzz	613155-zzz
.116	611156-zzz	613156-zzz
.117	611157-zzz	613157-zzz
.118	611158-zzz	613158-zzz
.119	611159-zzz	613159-zzz
.120	611160-zzz	613160-zzz
.121	611161-zzz	613161-zzz
.122	611162-zzz	613162-zzz
.123	611163-zzz	613163-zzz
.124	611164-zzz	613164-zzz
.125	611165-zzz	613165-zzz
.126	611166-zzz	613166-zzz
.127	611167-zzz	613167-zzz
.128	611168-zzz	613168-zzz
.129	611169-zzz	613169-zzz
.130	611170-zzz	613170-zzz
.131	611171-zzz	613171-zzz
.132	611172-zzz	613172-zzz
.133	611173-zzz	613173-zzz
.134	611174-zzz	613174-zzz
.135	611175-zzz	613175-zzz
.136	611176-zzz	613176-zzz
.137	611177-zzz	613177-zzz
.138	611178-zzz	613178-zzz
.139	611179-zzz	613179-zzz
.140	611180-zzz	613180-zzz
.141	611181-zzz	613181-zzz
.142	611182-zzz	613182-zzz
.143	611183-zzz	613183-zzz
.144	611184-zzz	613184-zzz
.145	611185-zzz	613185-zzz
.146	611186-zzz	613186-zzz
.147	611187-zzz	613187-zzz
.148	611188-zzz	613188-zzz
.149	611189-zzz	613189-zzz
.150	611115-zzz	613115-zzz
.160	611116-zzz	613116-zzz
.170	611117-zzz	613117-zzz
.180	611118-zzz	613118-zzz
.190	611119-zzz	613119-zzz
.200	611192-zzz	613192-zzz
.210	611221-zzz	613221-zzz
.250	611212-zzz	613212-zzz
.300	611193-zzz	613193-zzz

Nominal Length(inches)	Order No. STEEL	CERAMIC
.315	611209-zzz	613209-zzz
.350	611213-zzz	613213-zzz
.375 (3/8")	611113-zzz	613112-zzz
.400	611194-zzz	613194-zzz
.420	611210-zzz	613210-zzz
.450	611214-zzz	613214-zzz
.500	611195-zzz	613195-zzz
.550	611215-zzz	613215-zzz
.600	611196-zzz	613196-zzz
.605	611211-zzz	613211-zzz
.650	611216-zzz	613216-zzz
.700	611197-zzz	613197-zzz
.710	611220-zzz	613220-zzz
.750	611217-zzz	613217-zzz
.800	611198-zzz	613198-zzz
.815	611226-zzz	613226-zzz
.850	611218-zzz	613218-zzz
.900	611199-zzz	613199-zzz
.920	611227-zzz	613227-zzz
.950	611219-zzz	613219-zzz
1	611201-zzz	613201-zzz
2	611202-zzz	613202-zzz
3	611203-zzz	613203-zzz
4	611204-zzz	613204-zzz
5	611205-zzz	613205-zzz
6	611206-zzz	613206-zzz
7	611207-zzz	613207-zzz
8	611208-zzz	613208-zzz
10	611222-zzz	613222-zzz
12	611223-zzz	613223-zzz
16	611224-zzz	613224-zzz
20	611225-zzz	613225-zzz

Nominal Length(inches)	Order No. TUNGSTEN CARBIDE
.050	612105-zzz
.100	612191-zzz

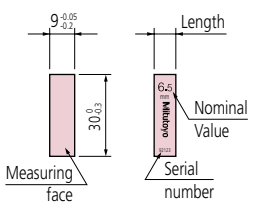
Standard dimensions of rectangular gauge blocks

Unit: mm



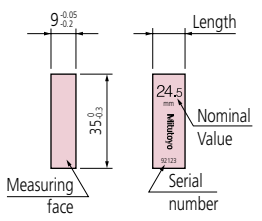
Nominal length 0.1mm - 5.5mm

Nominal length .004" - .25"



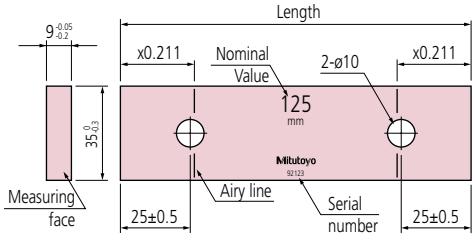
Nominal length 6mm - 10mm

Nominal length .3" - .4"



Nominal length 10.3mm - 100mm

Nominal length .45" - 4"



Nominal length 125mm - 1000mm

Nominal length 5" - 20"

ACCESSORIES FOR RECTANGULAR GAUGE BLOCKS

Rectangular Gauge Block Accessory Sets

516-601
(Complete Set)

516-602
(Economy Set)

Assortment of Accessories

Items	Order No.	
	516-601	516-602
Holder 15 - 60mm (**619002**)	—	0
Holder 5 - 100mm (**619003**)	0	0
Holder 15 - 160mm (**619004**)	0	0
Holder 20 - 250mm (**619005**)	0	0
Holder base 35mm (**619009**)	0	0
Half round jaw 2mm x 2 pcs. (**619010**)	0	0
Half round jaw 5mm x 2 pcs. (**619011**)	0	0
Half round jaw 8mm x 2 pcs. (**619012**)	0	0
Half round jaw 12mm x 2 pcs. (**619013**)	0	—
Half round jaw 20mm x 2 pcs. (**619014**)	0	—
Plain jaw x 2 pcs. (**619018**)	0	—
Scriber point (**619019**)	0	0
Center point (**619020**)	0	0
Tram point x 2 pcs. (**619021**)	0	—
Triangular straight edge 100mm (**619022**)	0	0
Triangular straight edge 160mm (**619023**)	0	—

To expand the variety of rectangular gauge block applications, Mitutoyo offers the Gauge Block Accessories Set. By assembling the items in the set, your gauge blocks are easily and quickly changed into a precision measuring system.

Holders

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

619002
619005

Holder base

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

619009

Half round jaws

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

619012
(2pcs. /set)

Plain jaws

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

619018
(2pcs. /set)

Scriber point

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

619019

Center point

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

619020

Tram point

- Inspects the scale of the height gage, etc., if used with the holder and holder base.

619021
(2pcs./set)

Triangular straight edges

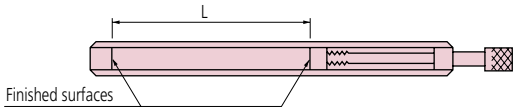
- Measures parallelism.

619022

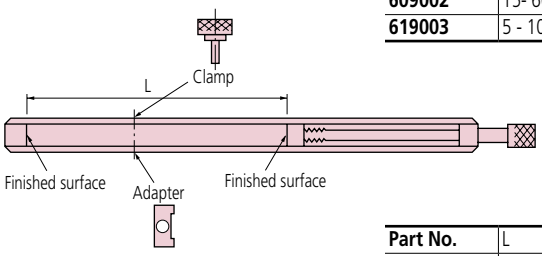
Dimensions

Unit: mm

Holders

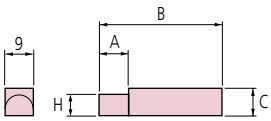


Part No.	L
609002	15- 60
619003	5 - 100

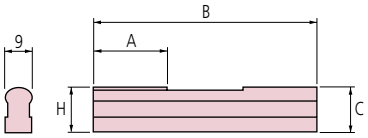


Part No.	L
609004	15- 160
619005	20 - 250

Half round jaws



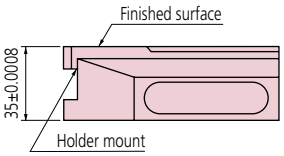
Part No.	H	A	B	C
619010	2±0.0005	5.5	40	7.5
619011	5±0.0005	14	45	7.5
619012	8±0.0005	20	50	8.5



Part No.	H	A	B	C
619013	12±0.0005	24	75	13
619014	20±0.0005	25	125	20

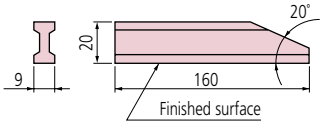
Holder base

Flatness
(finished surface): 0.5µm
(bottom surface): 1µm
619009



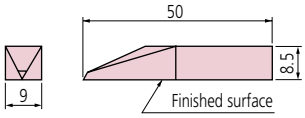
Plain jaws

Flatness
(finished surface): 1µm
619018



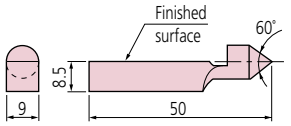
Scriber point

Flatness
(finished surface): 0.5µm
619019



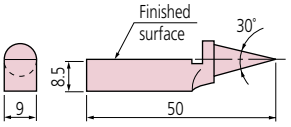
Center point

Off centerness
±10µm or less
Flatness
(finished surface): 0.5µm
619020



Tram point

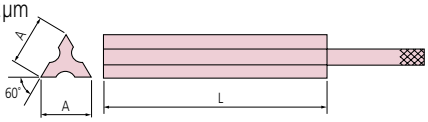
Off centerness
±10µm or less
Flatness
(finished surface): 0.5µm
619021

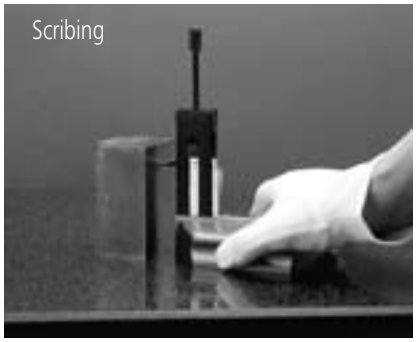


Holders

Straightness of edge: 1.2µm

Part No.	L	A
619022	100	16
619023	160	19.5





ACCESSORIES FOR RECTANGULAR GAUGE BLOCKS

516-605

For Gauge Blocks over 125mm

These gauge block accessories are specially designed for the long blocks over 125mm which have two holes on the body for coupling.

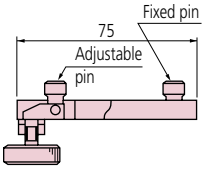
Assortment of Accessories

Items	Order No.
Holder A (**619031**)	**516-602**
Holder B (**619032**)	O
Holder C (**619033**)	O
Holder D (**619034**)	O
Holder E (**619035**)	O
Adapter (**619036**) x 3 pcs.	O
Holder base 35mm (**619009**)	O
Half round jaw 12mm x 2 pcs. (**619013**)	O
Plain jaw x 2 pcs. (**619018**)	O
Scriber point (**619019**)	O

Dimensions

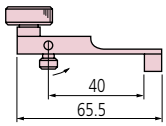
Holder A

619031



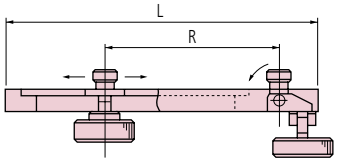
Holder D

619034



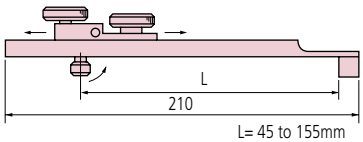
Holder B and C

Part No.	R	L
619032	85 Max.	126
619033	190 Max.	236



Holder E

619035



L= 45 to 155mm

Holder A

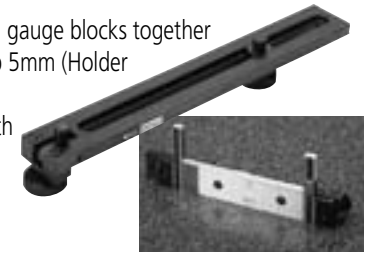
- Used for coupling two long gauge blocks.

619031

Holder B

- Used for coupling two long gauge blocks together with other gauge blocks up 5mm (Holder B) or 140mm (Holder C).
- Used for attaching jaws with two adapters.

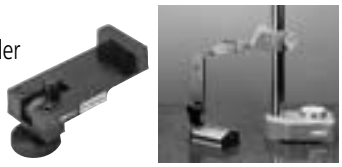
619032



Holder D

- Used for attaching to the holder base.

619032



Holder E

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

619032

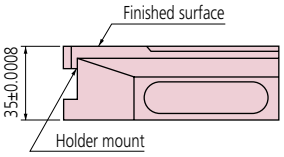
Adapter

619036

Holder base

Flatness
(finished surface): 0.5μm
(bottom surface): 1μm

619021

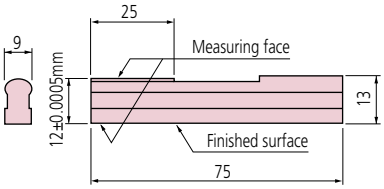


Half round jaws

Flatness
(finished surface): 1μm

619013

(2pcs./set)

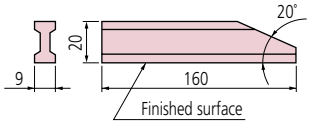


Half round jaws

Flatness
(finished surface): 0.5μm

619018

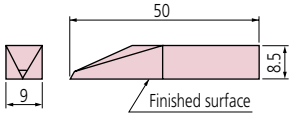
(2pcs./set)



Half round jaws

Flatness
(finished surface): 0.5μm

619019



SQUARE GAUGE BLOCKS SETS

METRIC

Standard Sets

Blocks per set	Blocks included in sets		
	Nominal length (mm)		Steps
122	1 block	1.0005	0.001
	9 blocks	1.001 thru 1.009	0.01mm
	49 blocks	1.01 thru 1.49	0.5mm
	49 blocks	0.5 thru 24.5	25mm
	4 blocks	25 thru 100	
103	1 block	1.005	
	49 blocks	1.01 thru 1.49	0.01mm
	49 blocks	0.5 thru 24.5	0.5mm
	4 blocks	25 thru 100	25mm
76	1 block	1.005	
	49 blocks	1.01 thru 1.49	0.01mm
	19 blocks	0.5 thru 9.5	0.5mm
	4 blocks	10 thru 40	10mm
	3 blocks	50 thru 100	25mm
47	1 block	1.005	
	9 blocks	1.01 thru 1.09	0.01mm
	9 blocks	1.1 thru 1.9	0.1mm
	24 blocks	1 thru 24	1mm
	4 blocks	25 thru 100	25mm
32	1 block	1.005	
	9 blocks	1.01 thru 1.19	0.01mm
	9 blocks	1.1 thru 1.9	0.1mm
	9 blocks	1 thru 9	1mm
	3 blocks	10 thru 30	10mm
	1 block	60	10mm

STEEL

Order No.			
ISO/DIN/JIS		ASME	
—	—	Grade 00	**516-437-16**
Grade 0	**516-438-10**	Grade 0	**516-438-16**
Grade 1	**516-439-10**	Grade 1	**516-439-16**
Grade 2	**516-440-10**	Grade 2	**516-440-16**
—	—	—	—
—	—	Grade 00	**516-441-16**
Grade 0	**516-442-10**	Grade 0	**516-442-16**
Grade 1	**516-443-10**	Grade 1	**516-443-16**
Grade 2	**516-444-10**	Grade 2	**516-444-16**
—	—	Grade 00	**516-449-16**
Grade 0	**516-450-10**	Grade 0	**516-450-16**
Grade 1	**516-451-10**	Grade 1	**516-451-16**
Grade 2	**516-452-10**	Grade 2	**516-452-16**
—	—	—	—
—	—	Grade 00	**516-457-16**
Grade 0	**516-459-10**	Grade 0	**516-458-16**
Grade 1	**516-459-10**	Grade 1	**516-459-16**
Grade 2	**516-460-10**	Grade 1	**516-460-16**
—	—	—	—
—	—	Grade 00	**516-465-16**
Grade 0	**516-466-10**	Grade 0	**516-466-16**
Grade 1	**516-467-10**	Grade 1	**516-467-16**
Grade 2	**516-468-10**	Grade 2	**516-468-16**
—	—	—	—
—	—	—	—

CERAMIC

Order No.			
ISO/DIN/JIS		ASME	
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

SQUARE GAUGE BLOCKS SETS

METRIC

The wear to frequently used square gauge blocks can be drastically reduced by wringing the tungsten-carbide wear-resistant gauge block to them.

Long block set

Wear block set

Long Block Sets

Blocks per set	Blocks included in sets		
	Nominal length (mm)		Steps
8	3 blocks	125, 15, 175	25mm
	2 blocks	200, 250	50mm
	3 blocks	300, 400, 500	100mm

STEEL

Order No.			
ISO/DIN/JIS		ASME	
—	—	—	—
Grade 0	**516-752-10**	—	—
Grade 1	**516-753-10**	—	—
Grade 2	**516-754-10**	—	—

CERAMIC

Order No.			
ISO/DIN/JIS		ASME	
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

Wear Block Sets

Blocks per set	Blocks included in sets		
	Nominal length (mm)		Steps
2	2 blocks	.05, .05 (Pair)	
2	2 blocks	.10, .10 (Pair)	

TUNGSTEN CARBIDE

Order No.			
ISO/DIN/JIS		ASME	
Grade 0	**516-820-10**	—	—
Grade 1	**516-821-10**	—	—
Grade 0	**516-822-10**	—	—
Grade 1	**516-823-10**	—	—

CERAMIC

Order No.			
ISO/DIN/JIS		ASME	
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

*Use suffix -60 in place of -10 to order the gauge block sets with Certificate of Calibration. (The charge for calibration is not included in the prior set price.)

Standard Sets

Blocks per set	Blocks included in sets Nominal length (inches)		Steps
81	9 blocks	.1001 thru .1009	.0001″
	49 blocks	.101 thru .149	.001″
	19 blocks	.05 thru .95	.05″
	4 blocks	1 thru 4	1″
36	1 block	.050	
	9 blocks	.1001 thru .1009	.0001″
	9 blocks	.101 thru .109	.001″
	9 blocks	.11 thru .19	.01″
	5 blocks	.1 thru .5	.1″
	3 blocks	1, 2, 4	
28	1 block	.02005	
	9 blocks	.0201 thru .0209	.0001″
	9 blocks	.021 thru .928	.001″
	9 blocks	.010 thru .090	.01″

STEEL

Order No. ASME	
Grade 00	**516-401-16**
Grade 0	**516-402-16**
Grade 1	**516-403-16**
Grade 2	**516-404-16**
Grade 00	**516-421-16**
Grade 0	**516-422-16**
Grade 1	**516-423-16**
Grade 2	**516-424-16**
—	—
—	—
Grade 00	**516-417-16**
Grade 0	**516-418-16**
Grade 1	**516-419-16**
Grade 2	**516-420-16**

CERAMIC

Order No. ASME	
Grade 00	**516-201-16**
Grade 0	**516-202-16**
Grade 1	**516-203-16**
Grade 2	**516-204-16**
Grade 00	**516-221-16**
Grade 0	**516-222-16**
Grade 1	**516-223-16**
Grade 2	**516-224-16**
—	—
—	—
Grade 00	—
Grade 0	—
Grade 1	—
Grade 2	—

Long Block Sets

Blocks per set	Blocks included in sets Nominal length (inches)		Steps
8	3 blocks	5, 6, 7	.0001″
	3 blocks	8, 10, 12	.001″
	2 blocks	16, 20	.01″

STEEL

Order No. ASME	
Grade 0	**516-762-16**
Grade 1	**516-763-16**
—	—

CERAMIC

Order No. ASME	
—	—
—	—
—	—

Wear Block Sets

Blocks per set	Blocks included in sets Nominal length (inches)		Steps
2	2 blocks	.05, .05 (Pair)	
2	2 blocks	.10, .10 (Pair)	

TUNGSTEN CARBIDE

Order No. ASME	
Grade 0	**516-824-16**
Grade 1	**516-825-16**
Grade 0	**516-826-16**
Grade 1	**516-827-16**

CERAMIC

Order No. ASME	
Grade 0	**516-846-16**
Grade 1	**516-847-16**
Grade 0	**516-844-16**
Grade 1	**516-845-16**

SQUARE GAUGE BLOCKS (INDIVIDUAL)

> 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


Mitutoyo Certificate of Inspection

METRIC

SQUARE GAUGE BLOCK (METRIC)

If ordering a gauge block, append either of the following suffixes to the order number to specify the grade of the gauge block and the standard to which the block must conform.

Standard	ISO/DIN/JIS				ASME				
Grade	K	0	1	2	K	00	0	1	2
Suffix	—	-021	-031	-041	-521	-531	-541	-551	-561

Example... A grade 1 ISO/DIN/JIS steel gauge block with a nominal length of 10mm: 614671-031
Note: Grade 1 ASME tungsten-carbide gauge blocks are not manufactured.

Nominal Length(mm)	Order No. STEEL	CERAMIC
0.5	614506-zzz	—
1	614611-zzz	—
1.0005	614520-zzz	—
1.001	614521-zzz	—
1.002	614522-zzz	—
1.003	614523-zzz	—
1.004	614524-zzz	—
1.005	614525-zzz	—
1.006	614526-zzz	—
1.007	614527-zzz	—
1.008	614528-zzz	—
1.009	614529-zzz	—
1.01	614561-zzz	—
1.02	614562-zzz	—
1.03	614563-zzz	—
1.04	614564-zzz	—
1.05	614565-zzz	—

Nominal Length(mm)	Order No. STEEL	CERAMIC
1.06	614566-zzz	—
1.07	614567-zzz	—
1.08	614568-zzz	—
1.09	614569-zzz	—
1.1	614570-zzz	—
1.11	614571-zzz	—
1.12	614572-zzz	—
1.13	614573-zzz	—
1.14	614574-zzz	—
1.15	614575-zzz	—
1.16	614576-zzz	—
1.17	614577-zzz	—
1.18	614578-zzz	—
1.19	614579-zzz	—
1.20	614580-zzz	—
1.21	614581-zzz	—
1.22	614582-zzz	—

Nominal Length(mm)	Order No. STEEL	CERAMIC
1.23	614583-zzz	—
1.24	614584-zzz	—
1.25	614585-zzz	—
1.26	614586-zzz	—
1.27	614587-zzz	—
1.28	614588-zzz	—
1.29	614589-zzz	—
1.3	614590-zzz	—
1.31	614591-zzz	—
1.32	614592-zzz	—
1.33	614593-zzz	—
1.34	614594-zzz	—
1.35	614595-zzz	—
1.36	614596-zzz	—
1.37	614597-zzz	—
1.38	614598-zzz	—
1.39	614599-zzz	—
1.4	614600-zzz	—
1.41	614601-zzz	—
1.42	614602-zzz	—
1.43	614603-zzz	—
1.44	614604-zzz	—
1.45	614605-zzz	—

Nominal Length(mm)	Order No. STEEL	CERAMIC
1.46	**614606-zzz**	—
1.47	**614607-zzz**	—
1.48	**614608-zzz**	—
1.49	**614609-zzz**	—
1.5	**614641-zzz**	—
1.6	**614516-zzz**	—
1.7	**614517-zzz**	—
1.8	**614518-zzz**	—
1.9	**614519-zzz**	—
2	**614612-zzz**	—
2.5	**614642-zzz**	—
3	**614613-zzz**	—
3.5	**614643-zzz**	—
4	**614614-zzz**	—
4.5	**614644-zzz**	—
5	**614615-zzz**	—
5.5	**614645-zzz**	—
6	**614616-zzz**	—
6.5	**614646-zzz**	—
7	**614617-zzz**	—
7.5	**614647-zzz**	—
8	**614618-zzz**	—
8.5	**614648-zzz**	—
9	**614619-zzz**	—
9.5	**614649-zzz**	—
10	**614671-zzz**	—
10.5	**614650-zzz**	—
11	**614621-zzz**	—
11.5	**614651-zzz**	—
12	**614622-zzz**	—
12.5	**614652-zzz**	—
13	**614623-zzz**	—
13.5	**614653-zzz**	—
14	**614624-zzz**	—
14.5	**614654-zzz**	—
15	**614625-zzz**	—
15.5	**614655-zzz**	—
16	**614626-zzz**	—
16.5	**614656-zzz**	—
17	**614627-zzz**	—
17.5	**614657-zzz**	—
18	**614628-zzz**	—
18.5	**614658-zzz**	—
19	**614629-zzz**	—
19.5	**614659-zzz**	—
20	**614672-zzz**	—
20.5	**614660-zzz**	—
21	**614631-zzz**	—
21.5	**614661-zzz**	—
22	**614632-zzz**	—
22.5	**614662-zzz**	—
23	**614633-zzz**	—
23.5	**614663-zzz**	—
24	**614634-zzz**	—
24.5	**614664-zzz**	—
25	**614635-zzz**	—
30	**614673-zzz**	—
40	**614674-zzz**	—
50	**614675-zzz**	—

Nominal Length(mm)	Order No. STEEL	CERAMIC
60	**614676-zzz**	—
75	**614801-zzz**	—
100	**614681-zzz**	—
125	**614802-zzz**	—
150	**614803-zzz**	—
175	**614804-zzz**	—
200	**614682-zzz**	—
250	**614805-zzz**	—
300	**614683-zzz**	—
400	**614684-zzz**	—
500	**614685-zzz**	—

Nominal Length(mm)	Order No. TUNGSTEN CARBIDE
1	**615611-zzz**
2	**615612-zzz**

INCH

SQUARE GAUGE BLOCK (INCH)

If ordering a gauge block, append either of the following suffixes to the order number to specify the grade of the gauge block and the standard to which the block must conform.

Standard	ASME				
Grade	K	00	0	1	2
Suffix	-521	-531	-541	-551	-561

Example... A grade 1 ASME steel gauge block with a nominal length of .375": 611113-221
Note 1: Grade 1 ASME tungsten-carbide gauge blocks are not manufactured.

Nominal Length(mm)	Order No. STEEL	CERAMIC
.010	**614310-zzz**	—
.020	**614320-zzz**	—
.02005	**614240-zzz**	—
.0201	**614231-zzz**	—
.0202	**614232-zzz**	—
.0203	**614233-zzz**	—
.0204	**614234-zzz**	—
.0205	**614235-zzz**	—
.0206	**614236-zzz**	—
.0207	**614237-zzz**	—
.0208	**614238-zzz**	—
.0209	**614239-zzz**	—
.021	**614321-zzz**	—
.022	**614322-zzz**	—
.023	**614323-zzz**	—
.024	**614324-zzz**	—
.025	**614325-zzz**	—

Nominal Length(mm)	Order No. STEEL	CERAMIC
.026	**614326-zzz**	—
.027	**614327-zzz**	—
.028	**614328-zzz**	—
.029	**614329-zzz**	—
.030	**614330-zzz**	—
.03125 (1/32")	**614301-zzz**	—
.040	**614340-zzz**	—
.046875 (3/64")	**614302-zzz**	—
.050	**614105-zzz**	**616105-zzz**
.060	**614106-zzz**	—
.0625	**614303-zzz**	**616303-zzz**
.070	**614107-zzz**	—
.078125 (5/64")	**614304-zzz**	—
.080	**614108-zzz**	—
.090	**614109-zzz**	—
.09375 (3/32")	**614305-zzz**	—
.100	**614191-zzz**	**616191-zzz**

SQUARE GAUGE BLOCKS (INDIVIDUAL)

Nominal Length(mm)	Order No. STEEL	CERAMIC
.100025	**614307-zzz**	**—**
.10005	**614135-zzz**	**616135-zzz**
.100075	**614308-zzz**	**—**
.1001	**614121-zzz**	**616121-zzz**
.1002	**614122-zzz**	**616122-zzz**
.1003	**614123-zzz**	**616123-zzz**
.1004	**614124-zzz**	**616124-zzz**
.1005	**614125-zzz**	**616125-zzz**
.1006	**614126-zzz**	**616126-zzz**
.1007	**614127-zzz**	**616127-zzz**
.1008	**614128-zzz**	**616128-zzz**
.1009	**614129-zzz**	**616129-zzz**
.101	**614141-zzz**	**616141-zzz**
.102	**614142-zzz**	**616142-zzz**
.103	**614143-zzz**	**616143-zzz**
.104	**614144-zzz**	**616144-zzz**
.105	**614145-zzz**	**616145-zzz**
.106	**614146-zzz**	**616146-zzz**
.107	**614147-zzz**	**616147-zzz**
.108	**614148-zzz**	**616148-zzz**
.109	**614149-zzz**	**616149-zzz**
.109375 (7/64")	**614306-zzz**	**—**
.110	**614150-zzz**	**616150-zzz**
.111	**614151-zzz**	**616151-zzz**
.112	**614152-zzz**	**616152-zzz**
.113	**614153-zzz**	**616153-zzz**
.114	**614154-zzz**	**616154-zzz**
.115	**614155-zzz**	**616155-zzz**
.116	**614156-zzz**	**616156-zzz**
.117	**614157-zzz**	**616157-zzz**
.118	**614158-zzz**	**616158-zzz**
.119	**614159-zzz**	**616159-zzz**
.120	**614160-zzz**	**616160-zzz**
.121	**614161-zzz**	**616161-zzz**
.122	**614162-zzz**	**616162-zzz**

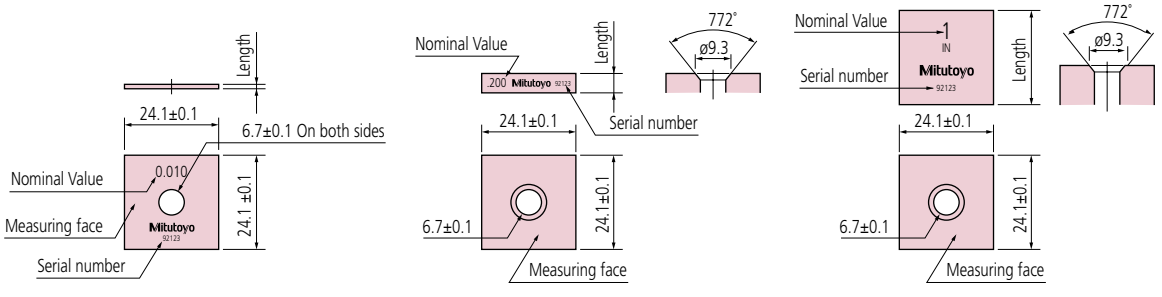
Nominal Length(mm)	Order No. STEEL	CERAMIC
.123	**614163-zzz**	**616163-zzz**
.124	**614164-zzz**	**616164-zzz**
.125	**614165-zzz**	**616165-zzz**
.126	**614166-zzz**	**616166-zzz**
.127	**614167-zzz**	**616167-zzz**
.128	**614168-zzz**	**616168-zzz**
.129	**614169-zzz**	**616169-zzz**
.130	**614170-zzz**	**616170-zzz**
.131	**614171-zzz**	**616171-zzz**
.132	**614172-zzz**	**616172-zzz**
.133	**614173-zzz**	**616173-zzz**
.134	**614174-zzz**	**616174-zzz**
.135	**614175-zzz**	**616175-zzz**
.136	**614176-zzz**	**616176-zzz**
.137	**614177-zzz**	**616177-zzz**
.138	**614178-zzz**	**616178-zzz**
.139	**614179-zzz**	**616179-zzz**
.140	**614180-zzz**	**616180-zzz**
.141	**614181-zzz**	**616181-zzz**
.142	**614182-zzz**	**616182-zzz**
.143	**614183-zzz**	**616183-zzz**
.144	**614184-zzz**	**616184-zzz**
.145	**614185-zzz**	**616185-zzz**
.146	**614186-zzz**	**616186-zzz**
.147	**614187-zzz**	**616187-zzz**
.148	**614188-zzz**	**616188-zzz**
.149	**614189-zzz**	**616189-zzz**
.150	**614115-zzz**	**616115-zzz**
.160	**614116-zzz**	**616116-zzz**
.170	**614117-zzz**	**616117-zzz**
.180	**614118-zzz**	**616118-zzz**
.190	**614119-zzz**	**616119-zzz**
.200	**614192-zzz**	**616192-zzz**
.250	**614212-zzz**	**616212-zzz**
.300	**614193-zzz**	**616193-zzz**

Nominal Length(mm)	Order No. STEEL	CERAMIC
.350	**614213-zzz**	**616213-zzz**
.375 (3/8")	**614309-zzz**	**—**
.400	**614194-zzz**	**616194-zzz**
.450	**614214-zzz**	**616214-zzz**
.500	**614195-zzz**	**616195-zzz**
.550	**614215-zzz**	**616215-zzz**
.600	**614196-zzz**	**616196-zzz**
.650	**614216-zzz**	**616216-zzz**
.700	**614197-zzz**	**616197-zzz**
.750	**614217-zzz**	**616217-zzz**
.800	**614198-zzz**	**616198-zzz**
.850	**614218-zzz**	**616218-zzz**
.900	**614199-zzz**	**616199-zzz**
.950	**614219-zzz**	**616219-zzz**
1	**614201-zzz**	**616201-zzz**
2	**614202-zzz**	**616202-zzz**
3	**614203-zzz**	**616203-zzz**
4	**614204-zzz**	**616204-zzz**
5	**614205-zzz**	**616205-zzz**
6	**614206-zzz**	**616206-zzz**
7	**614207-zzz**	**616207-zzz**
8	**614208-zzz**	**616208-zzz**
10	**614222-zzz**	**616222-zzz**
12	**614223-zzz**	**616223-zzz**
16	**614224-zzz**	**616224-zzz**
20	**614225-zzz**	**616225-zzz**

Nominal Length(mm)	Order No. TUNGSTEN CARBIDE
.050	**615105-zzz**
.100	**615191-zzz**

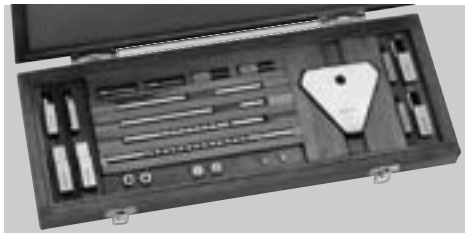
Standard dimensions of square gauge blocks

Unit: mm



ACCESSORIES FOR SQUARE GAUGE BLOCKS

Square Gauge Block Accessory Set



516-611

Assortment of Accessories

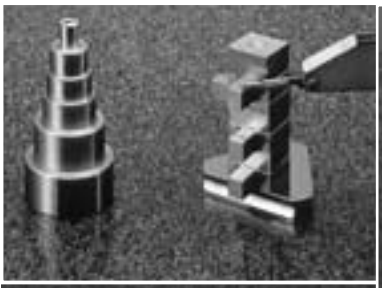
METRIC

Items included in set	Order No. 516-611
Half round jaw 2mm (**619070**)	2 pcs.
Half round jaw 5mm (**619071**)	2 pcs.
Plain jaw 10mm (**619072**)	2 pcs.
Center point 2mm (**619073**)	1 pc.
Scriber point (**619054**)	1 pc.
Base 10mm (**619074**)	1 pc.
Stud (**619056**)	2 pcs.
Flat head screw 1/4" (**619057**)	2 pcs.
Flat head screw 5/8" (**619058**)	2 pcs.
Slotted head nut (**619059**)	2 pcs.
Tie rod, adjustable 6" (**619060**)	1 pc. (matching pair)
Tie rod, adjustable 4·1/2" (**619061**)	1 pc. (matching pair)
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**)	1 pc.
Knurled head screw (**619066**)	2 pcs.

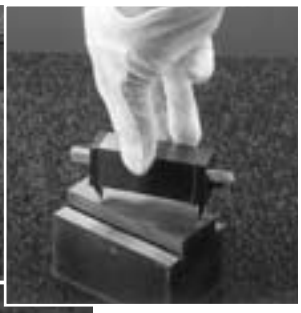
INCH

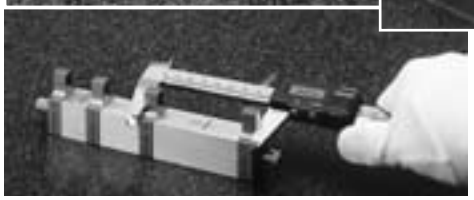
Items included in set	Order No. 516-612
Half round jaw .125" (**619050**)	2 pcs.
Half round jaw .25" (**619051**)	2 pcs.
Plain jaw .5" (**619052**)	2 pcs.
Center point .1" (**619053**)	1 pc.
Scriber point (**619054**)	1 pc.
Base .5" (**619054**)	1 pc.
Stud (**619056**)	2 pcs.
Flat head screw 1/4" (**619057**)	2 pcs.
Flat head screw 5/8" (**619058**)	2 pcs.
Slotted head nut (**619059**)	2 pcs.
Tie rod, adjustable 6" (**619060**)	1 pc. (matching pair)
Tie rod, adjustable 4·1/2" (**619061**)	1 pc. (matching pair)
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**)	1 pc.
Knurled head screw (**619066**)	2 pcs.

Comparison measurement



Scribing





Inspection of Digimatic Caliper

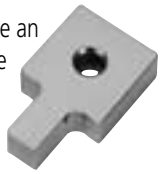
To expand the variety of square gauge block applications, Mitutoyo offers the Gauge Block Accessories Set. By assembling the items in the set, your gauge blocks are easily and quickly changed into a precision measuring system.

Half round jaw

- Used to measure an inside or outside diameter.

Plain jaw

- Used to measure an inside or outside diameter.



Center point

- Used to scribe a workpiece.

Scriber point

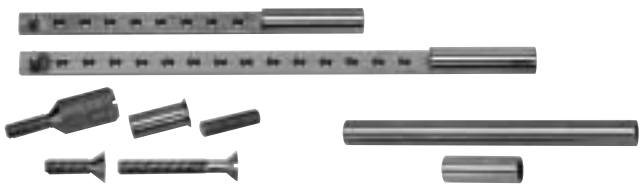
- Used to scribe a workpiece.

Base

- Used to measure a height on the surface plate and scribe a workpiece.

Tie rods, screws, and nuts

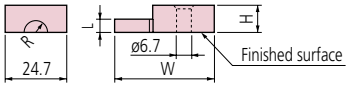
- Used as clamps by inserting them into the center hole of a square gauge block.



ACCESSORIES FOR SQUARE GAUGE BLOCKS

DIMENSIONS

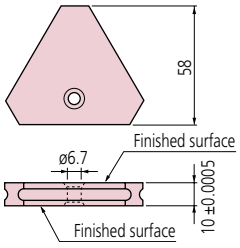
Half round jaws



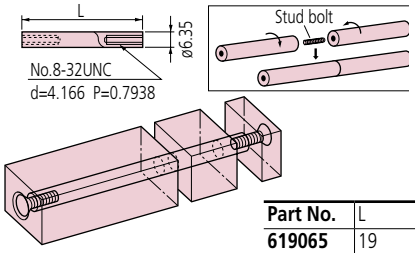
Part No.	R	L	W	H
619070	1.95	2	33.6	5.3
619071	4.95	5	39.9	10.3
619050	(.123")	(.125")	33.6	5.3
619051	(.248")	(.25")	39.9	10.3

Base

619074 (10mm)
619054 (.5")



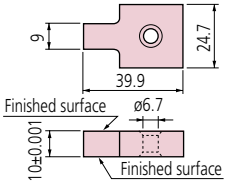
Tie rods



Part No.	L
619065	19
619064	38
619063	57
619062	76

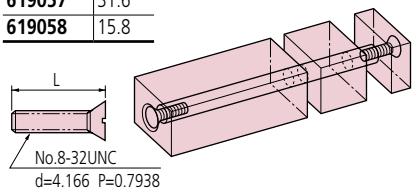
Plain jaws

619072 (10mm)
619052 (.5")



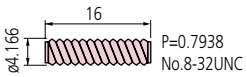
Flat head screw

Part No.	L
619057	31.6
619058	15.8

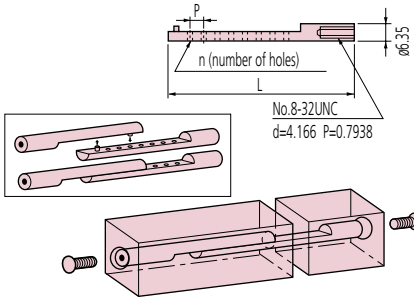


Stud

619056



Tie rods (adjustable)

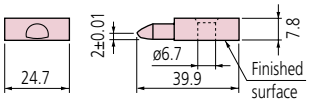


Part No.	L	P	Remarks
619060	124.5	6.35	n=14
619061	86.5	6.35	n=8

Note: Use these rods in a pair.

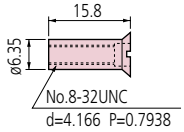
Center point

619073 (2mm)
619053 (.5")



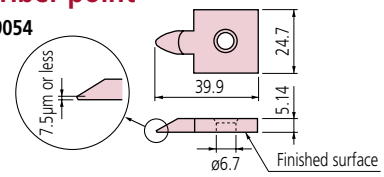
Slotted head nut

619059



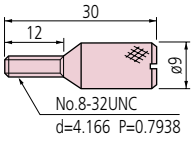
Scriber point

619054



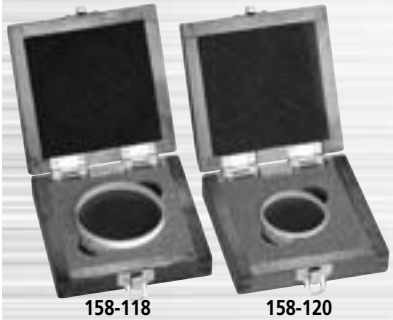
Knurled head nut

619066



OPTICAL FLATS

These Optical Flats are used for inspecting the flatness of micrometer's or gauge block's measuring faces with high accuracy.



158-118 158-120

METRIC

Order No.	Flatness	Dimensions
158-117	0.2µm	ø45mmx12mm (thickness)
158-119	0.2µm	ø60mmx15mm (thickness)
158-118	0.1µm	ø45mmx12mm (thickness)
158-120	0.1µm	ø60mmx15mm (thickness)

INCH

Order No.	Flatness	Dimensions
158-121	.000008"	ø45mmx12mm (thickness)
158-123	.000008"	ø60mmx15mm (thickness)
158-122	.000004"	ø45mmx12mm (thickness)
158-124	.000004"	ø60mmx15mm (thickness)

Maintenance

Gauge Block Maintenance Kit

516-650

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

Micro Checker

> Can be measured in both vertical and horizontal posture.
> Parallelism is measured by attaching the optical parallel (optional accessory) to the GB set

Gauge Block Maintenance Kit

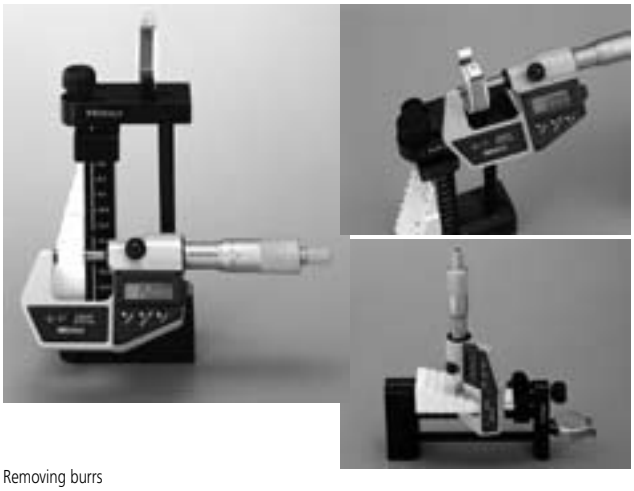
601644 601645

Order No.	Dimensions	Mass
601645	100x250x12mm	110g
601644	150x50x20mm	530g

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

Assortment of Maintenance Tools

Order No.	516-650
Items included in set	>Anti-corrosive oil (**600001**): Used for both steel and tungsten-carbide gauge blocks. >Ceraston (**601645**): Used for removing burrs on the measuring surface >Optical flat (**600003**): Used for checking whether burrs exist. >Tweezers (**600004**): Used for handling thin gauge blocks. >Blower brush (**600005**): Used for blowing out dust on the measuring surface. >Cleaning paper (**600006**): Used for wiping off rust preventive oil and contamination. >Artificial leather mat (**600007**): Used as a gauge block mat. >Reagent bottle (**600008**): Bottle of wiping solution (100mL) >Gloves (**600009**): Used for handling a large gauge block.

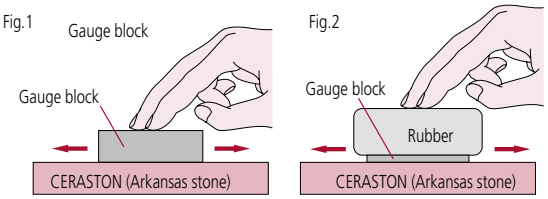


Removing burrs

Step 1: Wipe any dust and oil films from the gauge block and the Ceraston (or Arkansas stone) using a solvent

Step 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).

Step 3: Check the measuring face for burrs with an optical flat. If the burrs have not been removed, repeat step 2. If burrs are too large, they may not be removed with a deburring 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.

CALIBRATION & INSPECTION

Automatic Gauge Block Interferometer

GBI

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

SPECIFICATIONS

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

Patent Registered (Japan)
Registration of a design (Japan)

GBCD-100A

Dual-head Type Automatic Gauge Block Comparator

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

SPECIFICATIONS

Applications	Rectangular gauge block Square gauge block
Gauge block length to be measured	0.5mm - 100mm
Resolution	0.01µm (0.00001mm)
Probe (upper)	Measuring unit: Mu-Checker Measuring force: 1N Contact point: Carbide ball (20mm radius)
Probe (lower)	Measuring unit: Mu-Checker Measuring force: 0.6N Contact point: Carbide ball (5mm radius)
Accuracy in narrow range	Comparison measurement with a block having the same length (Uncertainty 95%) ±(0.03+0.3L/1000)µm*, L= Gauge block length (mm) (*Not including the calibration error of the standard block)
Data processing unit	AT PC Compatible
Air requirement	400KPa (4kgf/cm2)
Operating temperature	20°C ±1°C (Temperature variation must be moderate.)
Ambient humidity	58%RH or less

Patent Registered (U.S.A)
Patent Pending (UK, France, Germany)
Registration of a design (Japan)

Mitutoyo

Dual-head Type Gauge Block Comparator

GBCD-250

SPECIFICATIONS

Applications	Rectangular gauge block Square gauge block* (*Optional holder is required.)
Gauge block length to be measured	0.1mm - 250mm
Resolution	0.01µm (0.00001mm)
Measuring range Probe (upper)	±3mm Measuring unit: Laser Hologage Measuring force: 0.8N Contact point: Carbide ball (20mm radius)
Probe (lower)	Measuring unit: Mu-Checker Measuring force: 0.3N Contact point: Carbide ball (5mm radius)
Accuracy in narrow range	Comparison measurement with a block having the same length (Uncertainty 95%) ±(0.03+0.3L/1000)µm*, L= Gauge block length (mm) (*Not including the calibration error of the standard block)
Accuracy in wide range	Comparison measurement with a block having the difference ±3mm (Uncertainty 95%) ±(0.06+0.3L/1000)µm*, L= Gauge block length (mm) (*Not including the calibration error of the standard block)
Operating temperature	20°C ±1°C (Temperature variation must be moderate.)
Ambient humidity	58%±15%RH

Patent Registered (Japan)

Single-head Type Gauge Block Comparator

GBCS-250

Gauge blocks between 0.1mm and 250mm can be easily compared with the standard gauge block on the GBCS-250. This system employs a high accuracy laser holography gaging head so the Z-axis adjustment is not necessary for measuring gauge blocks in different nominal length with a single standard gauge block. An optional workpiece positioning device can be mounted for speedy and precision gauge block setting up.

Guiding plates and holders for gauge block positioning

SPECIFICATIONS

Applications	Rectangular gauge block Square gauge block* (*Optional holder is required.)
Gauge block length to be measured	0.1mm - 250mm
Resolution	0.01µm (0.00001mm)
Probe	Measuring unit: Laser Hologage Measuring force: 0.8N Contact point: Carbide ball (20mm radius)
Accuracy in narrow range	Comparison measurement with a block having the same length (Uncertainty 95%) ±(0.03+0.3L/1000)µm*, L= Gauge block length (mm) (*Not including the calibration error of the standard block)
Operating temperature	20°C ±1°C (Temperature variation must be moderate.)
Ambient humidity	58%±15%RH

Patent Registered (Japan)

Our products are classed as regulated items under Japanese Foreign Exchange and Foreign Trade Law. Please consult us in advance if you wish to export our products to any other country. If the purchased product is exported, even though it is not a regulated item (Catch-All controls item), the customer service available for that product may be affected. If you have any questions, please consult your local Mitutoyo sales office.

86.60 0702 4 E (PA) NE, Printed in Japan

- Coordinate Measuring Machines
- Vision Measuring Systems
- Form Measurement
- Optical Measuring
- Sensor Systems
- Test Equipment and Seismometers
- Digital Scale and DRO Systems
- Small Tool Instruments and Data Management

Mitutoyo Corporation
20-1, Sakado 1-Chome,
Takatsu-ku, Kawasaki-shi,
Kanagawa 213-8533, Japan
T +81 (0) 44 813-8230
F +81 (0) 44 813-8231
http://www.mitutoyo.co.jp

Mitutoyo