Features and Accuracies

Grade and Application

The following table can be used to select the gauge block grade according to usage (specified by ISO3650, 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

ACCURACY SPECIFICATIONS: JIS B 7506-2004 (JAPAN) ISO 3650:1998

(at 20 °C)

Nominal length (mm)		Grade K		Grade 0		Grade 1		Grade 2	
		Limit deviation of length at any point (µm)	Tolerance for the variation in length (µm)	Limit deviation of length at any point (µm)	Tolerance for the variation in length (µm)	Limit deviation of length at any point (µm)	Tolerance for the variation in length (µm)	Limit deviation of length at any point (µm)	Tolerance for the 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	±8.00	1.00

ACCURACY SPECIFICATIONS: BS 4311:2007 (UK)

(at 20 °C)

Nominal length (in)		Grade K		Grade 0		Grade 1		Grade 2	
		Limit deviation of length at any point (µin)	Tolerance for the variation in length (µin)	Limit deviation of length at any point (µin)	Tolerance for the variation in length (µin)	Limit deviation of length at any point (µin)	Tolerance for the variation in length (µin)	Limit deviation of length at any point (µin)	Tolerance for the variation in length (µin)
over 0	up to 0.4	±8	2	±5	4	±8	6	±18	12
over 0.4	up to 1	±12	2	±6	4	±12	6	±24	12
over 1	up to 2	±16	3	±8	4	±16	7	±32	12
over 2	up to 3	±20	3	±10	5	±20	7	±40	14
over 3	up to 4	±24	3	±12	5	±24	8	±48	14

Note 1: The accuracy of nominal lengths from 0.1 mm up to less than 0.5 mm follows that of nominal lengths from 0.5 mm up to 10 mm.
Note 2: Grade K gauge blocks are only available as made-to-order rectangular gauge blocks.
Note 3: Grade K gauge blocks are supplied with a JCSS calibration certificate. When ordering, kindly provide your formal name and contact information.

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

(at 20 °C)

Nominal length (in)		Grade K		Grade 00		Grade 0		Grade 1		Grade 2	
		Limit deviation of length at any point (µin)	Tolerance for the variation in length (µin)	Limit deviation of length at any point (µin)	Tolerance for the variation in length (µin)	Limit deviation of length at any point (µin)	Tolerance for the variation in length (µin)	Limit deviation of length at any point (µin)	Tolerance for the variation in length (µin)	Limit deviation of length at any point (µin)	Tolerance for the variation in length (µin)
	up to 0.05	±12	2	±4	2	±6	4	±12	6	±24	12
over 0.05	up to 0.4	±10	2	±3	2	±5	4	±8	6	±18	12
over 0.45	up to 1	±12	2	±3	2	±6	4	±12	6	±24	12
over 1	up to 2	±16	2	±4	2	±8	4	±16	6	±32	12
over 2	up to 3	±20	2	±5	3	±10	4	±20	6	±40	14
over 3	up to 4	±24	3	±6	3	±12	5	±24	8	±48	14
over 4	up to 5	±32	3	±8	3	±16	5	±32	8	±64	16
over 5	up to 6	±32	3	±8	3	±16	5	±32	8	±64	16
over 6	up to 7	±40	4	±10	4	±20	6	±40	10	±80	16
over 7	up to 8	±40	4	±10	4	±20	6	±40	10	±80	16
over 8	up to 10	±48	4	±12	4	±24	6	±48	10	±104	18
over 10	up to 12	±56	4	±14	4	±28	7	±56	10	±112	20
over 12	up to 16	±72	5	±18	5	±36	8	±72	12	±144	20
over 16	up to 20	±88	6	±20	6	±44	10	±88	14	±176	24
over 20	up to 24	±104	6	±25	6	±52	10	±104	16	±200	28
over 24	up to 28	±120	7	±30	7	±60	12	±120	18	±240	28
over 28	up to 32	±136	8	±34	8	±68	12	±136	20	±260	32
over 32	up to 36	±152	8	±38	8	±76	14	±152	20	±300	36
over 36	up to 40	±160	10	±40	10	±80	16	±168	24	±320	40

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

Note 1: The accuracy of nominal lengths from 0.1 mm up to less than 0.5 mm follows that of nominal lengths from 0.5 mm up to 10 mm.
Note 2: Grade K gauge blocks are only available as made-to-order rectangular gauge blocks.
Note 3: Grade K gauge blocks are supplied with a JCSS calibration certificate. When ordering, kindly provide your formal name and contact information.

Limit deviation of length at any point
This is the permitted deviation from nominal length.
The deviation of length, expressed as "actual length - nominal length", is measured at a total of five points: the "middle point" of the gauge block measuring face and the "four corners, at 1.5 mm on the inside from the side faces".

Tolerance for the variation in length
This is the permitted variation in length.
The variation in length is expressed as "deviation of length for the maximum (greatest length) - deviation of length for the minimum (smallest length)" among those measured at the five points mentioned above.

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Gauge Blocks with a Calibrated Coefficient of Thermal Expansion

- The products are the highest-quality gauge blocks exceeding Grade K and are provided with highly accurate thermal expansion coefficient data. They help minimize thermal correction and therefore are suitable for highly accurate calibration. (Uncertainty of thermal expansion coefficient: 0.035×10^{-6}/K (k=2))
- The thermal expansion coefficient is measured with a highly accurate double-faced interferometer (DFI), and the dimensional accuracy is guaranteed with gauge block interferometer (GBI).
- Useful in highly accurate calibration of CMMs.
- A mark "Coefficient of Thermal Expansion" is engraved on the surface. They are available in the nominal sizes (100 to 500 mm) of steel and ceramic rectangular gauge blocks.



SPECIFICATIONS

Metric Blocks with CTE

Code No. (steel)*1	Code No. (CERA)*1	Length (mm)
611681	613681	100
611802	613802	125
611803	613803	150
611804	613804	175
611682	613682	200
611805	613805	250
611683	613683	300
611684	613684	400
611685	613685	500

Inch Blocks with CTE

Code No. (steel)*1	Code No. (CERA)*1	Length (in)
611204	613204	4
611205	613205	5
611206	613206	6
611207	613207	7
611208	613208	8
611222	613222	10
611223	613223	12
611224	613224	16
611225	613225	20

Grade	K class in JIS/ISO, ASME
Uncertainty of thermal expansion coefficient	0.035×10^{-6}/K (k=2)
Uncertainty of length measurement	30 nm (k=2), for 100 mm block

Note: An inspection certificate and a JCSS calibration certificate are supplied as standard.
A calibration report and a calibration certificate for the thermal expansion coefficient are also supplied as standard.

PROPRIETARY INSPECTION CERTIFICATE

*1: Suffix No. (-■■■) for Selecting Standard Required

ISO / JIS

Suffix No.	Grade	Inspection Certificate	Calibration Certificate JCSS
-01B	K	✔	✔

ASME

Suffix No.	Grade	Inspection Certificate	Calibration Certificate JCSS
-51B	K	✔	✔

BS

Suffix No.	Grade	Inspection Certificate	Calibration Certificate JCSS
-11B	K	✔	✔

Note: Only for 100 mm type



Inspection Certificate

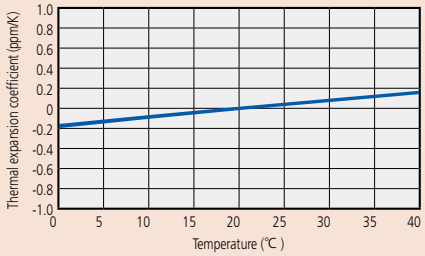
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PROPRIETARY INSPECTION CERTIFICATE

ZERO CERA Blocks (Ultra-low Thermal Expansion)

- ZERO CERA Blocks are next-generation gauge blocks made of special ceramic materials that have extremely low thermal expansion. They are lightweight, easy to handle, and slow in aging (thermal expansion coefficient: $0\pm0.02\times10^{-6}$/K (20 °C), specific gravity 2.4 kg/cm^3). Many research institutions and academic institutions rely on ZERO CERA Blocks in various applications, including the study of methods of calibrating CMM.
- Each block is marked with "ZERO CERA BLOCK" logo.
- Available in the nominal sizes (30 to 1,000 mm) of rectangular gauge blocks.

Thermal expansion coefficient–Temperature characteristic



Comparison of maximum errors at 23 °C (500 mm size)

Temperature compensation error of typical ISO/JIS-certified product: ±1.5 µm
Temperature compensation error of Mitutoyo standard gauge blocks: ±0.75 µm
Temperature compensation error of gauge blocks with thermal expansion coefficient: ±0.075 µm
Maximum thermal expansion of ZERO CERA Blocks: +0.03 µm
Thermal expansion of steel gauge blocks: +16.2 µm
Thermal expansion of CERA Blocks: +13.95 µm



SPECIFICATIONS

Metric Blocks

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

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Mitutoyo

Metric/Inch Rectangular Gauge Block Sets SERIES 516

- Mitutoyo provides a wide selection of boxed sets of gauge blocks to meet the various needs of industry. Please select the set most suited to your working conditions and applications.

Steel 1 mm Base Block Sets



Steel 112-block set



Steel 103-block set



Steel 76-block set



Steel 56-block set



Steel 47-block set



Steel 46-block set



Steel 34-block set



Steel 32-block set

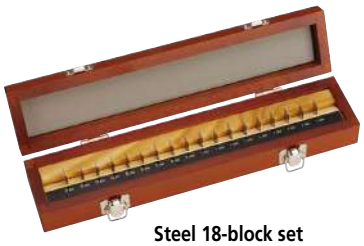
Steel 0.001 mm Step Block Sets



Steel 9-block set
(1.001 to 1.009 mm)



Steel 9-block set
(0.991 to 0.999 mm)



Steel 18-block set

Steel Long Block Sets



Steel 8-block set

Steel Wear Block Sets



Steel (1 mm)

Steel Thin Block Sets



Steel 9-block set

Note: Details of the contents of any particular set are given on pages 01-11 to 01-12.

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CERA 1 mm Base Block Sets



CERA 112-block set



CERA 103-block set



CERA 76-block set



CERA 56-block set



CERA 47-block set



CERA 46-block set



CERA 34-block set



CERA 32-block set

CERA 0.001 mm Step Block Sets



CERA 9-block set
(1.001 to 1.009 mm)



CERA 9-block set
(0.991 to 0.999 mm)

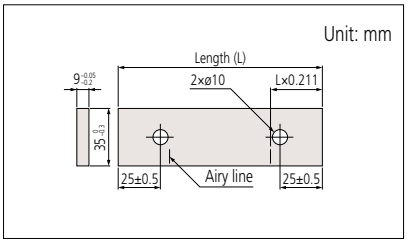


CERA 18-block set

CERA Long Block Sets



CERA 8-block set



CERA Wear Block Sets



CERA (1 mm)

Note: Details of the contents of any particular set are given on pages 01-11 to 01-12.

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Gauge Blocks

SPECIFICATIONS

1 mm Base Block Sets

Blocks per set	Code No.		Standard/grade available and **Suffix No.**[*1]			Blocks included in set		
	Steel	CERA	ISO/JIS	ASME	BS	Size (mm)	Step (mm)	Qty.
122	—	—	—	—	—	1.0005		1
	516-596	—	K: **-■0**	—	—	1.001 - 1.009	0.001	9
	516-597	—	0: **-■0**	—	—	1.01 - 1.49	0.01	49
	516-598	—	1: **-■0**	—	—	1.6 - 1.9	0.1	4
	516-599	—	2: **-■0**	—	—	0.5 - 24.5	0.5	49
						30 - 100	10	8
						25, 75		2
112	**516-531**	**516-541**	—	K: **-■6**	—	1.0005		1
	516-937	**516-337**	K: **-■0**	00: **-■6**	K: **-■1**	1.001 - 1.009	0.001	9
	516-938	**516-338**	0: **-■0**	0: **-■6**	0: **-■1**	1.01 - 1.49	0.01	49
	516-939	**516-339**	1: **-■0**	1: **-■6**	1: **-■1**	0.5 - 24.5	0.5	49
	516-940	**516-340**	2: **-■0**	2: **-■6**	2: **-■1**	25 - 100	25	4
103	**516-533**	**516-542**	—	K: **-■6**	—	1.005		1
	516-941	**516-341**	K: **-■0**	00: **-■6**	K: **-■1**	1.01 - 1.49	0.01	49
	516-942	**516-342**	0: **-■0**	0: **-■6**	0: **-■1**	0.5 - 24.5	0.5	49
	516-943	**516-343**	1: **-■0**	1: **-■6**	1: **-■1**	25 - 100	25	4
	516-944	**516-344**	2: **-■0**	2: **-■6**	2: **-■1**			
88	—	—	—	—	—	1.0005		1
	516-969	**516-369**	—	—	K: **-■1**	1.001 - 1.009	0.001	9
	516-970	**516-370**	0: **-■0**	—	0: **-■1**	1.01 - 1.49	0.01	49
	516-971	**516-371**	1: **-■0**	—	1: **-■1**	0.5 - 9.5	0.5	19
	516-972	**516-372**	2: **-■0**	—	2: **-■1**	10 - 100	10	10
87	**516-535**	**515-543**	—	K: **-■6**	—	1.001 - 1.009	0.001	9
	516-945	**516-345**	K: **-■0**	00: **-■6**	K: **-■1**	1.01 - 1.49	0.01	49
	516-946	**516-346**	0: **-■0**	0: **-■6**	0: **-■1**	0.5 - 9.5	0.5	19
	516-947	**516-347**	1: **-■0**	1: **-■6**	1: **-■1**	10 - 100	10	10
	516-948	**516-348**	2: **-■0**	2: **-■6**	2: **-■1**			
76	—	—	—	—	—	1.005		1
	516-949	**516-349**	K: **-■0**	—	—	1.01 - 1.49	0.01	49
	516-950	**516-350**	0: **-■0**	—	—	0.5 - 9.5	0.5	19
	516-951	**516-351**	1: **-■0**	—	—	10 - 40	10	4
	516-952	**516-352**	2: **-■0**	—	—	50 - 100	25	3
56	**516-536**	**516-544**	—	K: **-■6**	—	0.5		1
	516-953	**516-353**	K: **-■0**	00: **-■6**	—	1.001 - 1.009	0.001	9
	516-954	**516-354**	0: **-■0**	0: **-■6**	—	1.01 - 1.09	0.01	9
	516-955	**516-355**	1: **-■0**	1: **-■6**	—	1.1 - 1.9	0.1	9
	516-956	**516-356**	2: **-■0**	2: **-■6**	—	1 - 24	1	24
						25 - 100	25	4
47	**516-537**	**516-545**	—	K: **-■6**	—	1.005		1
	516-957	**516-357**	K: **-■0**	00: **-■6**	—	1.01 - 1.09	0.01	9
	516-958	**516-358**	0: **-■0**	0: **-■6**	—	1.1 - 1.9	0.1	9
	516-959	**516-359**	1: **-■0**	1: **-■6**	—	1 - 24	1	24
	516-960	**516-360**	2: **-■0**	2: **-■6**	—	25 - 100	25	4
47	—	—	—	—	—	1.005		1
	516-961	**516-361**	K: **-■0**	—	K: **-■1**	1.01 - 1.19	0.01	19
	516-962	**516-362**	0: **-■0**	—	0: **-■1**	1.2 - 1.9	0.1	8
	516-963	**516-363**	1: **-■0**	—	1: **-■1**	1 - 9	1	9
	516-964	**516-364**	2: **-■0**	—	2: **-■1**	10 - 100	10	10
46	—	—	—	—	—	1.001 - 1.009	0.001	9
	516-994	**516-394**	K: **-■0**	—	—	1.01 - 1.09	0.01	9
	516-995	**516-395**	0: **-■0**	—	—	1.1 - 1.9	0.1	9
	516-996	**516-396**	1: **-■0**	—	—	1 - 9	1	9
	516-997	**516-397**	2: **-■0**	—	—	10 - 100	10	10
34	—	—	—	—	—	1.0005		1
	516-128	**516-178**	K: **-■0**	—	K: **-■1**	1.001 - 1.009	0.001	9
	516-129	**516-179**	0: **-■0**	—	0: **-■1**	1.01 - 1.09	0.01	9
	516-130	**516-180**	1: **-■0**	—	1: **-■1**	1.1 - 1.9	0.1	9
	516-131	**516-181**	2: **-■0**	—	2: **-■1**	1 - 5	1	5
						10		1
32	—	—	—	—	—	1.005		1
	516-965	**516-365**	K: **-■0**	—	K: **-■1**	1.01 - 1.09	0.01	9
	516-966	**516-366**	0: **-■0**	—	0: **-■1**	1.1 - 1.9	0.1	9
	516-967	**516-367**	1: **-■0**	—	1: **-■1**	1 - 9	1	9
	516-968	**516-368**	2: **-■0**	—	2: **-■1**	10 - 30	10	3
						60		1

Thin Block Sets

Blocks per set	Code No.		Standard/grade available and **Suffix No.**[*1]			Blocks included in set		
	Steel	CERA	ISO/JIS	ASME	BS	Size (mm)	Step (mm)	Qty.
9	**516-990**	—	0: **-■0**	—	—	0.10 - 0.50	0.05	9
	516-991	—	1: **-■0**	—	—			
	516-992	—	2: **-■0**	—	—			

Note: Details of the overall sizes for forms of block are given on page 01-3 and the accuracy standards to which they are manufactured are given on page 01-5.

PROPRIETARY INSPECTION CERTIFICATE

*1: Suffix No. (■) for Selecting Standard and Certificate Provided

ISO/JIS

Suffix No.	Inspection Certificate	Calibration Certificate JCSS
1	✔	
6	✔	✔

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

ASME

Suffix No.	Inspection Certificate	Calibration Certificate JCSS
1	✔	
6	✔	✔

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

BS

Suffix No.	Inspection Certificate	Calibration Certificate JCSS
1	✔	
6	✔	✔

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

Inspection Certificate



Mitutoyo reserves the right to change any or all aspects of any product specification, including prices, designs and service content, without notice.

PROPRIETARY INSPECTION CERTIFICATE

SPECIFICATIONS

0.001 mm Step Block Sets

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

Long Block Sets

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

Wear Block Sets

Blocks per set	Code No. Carbide	Code No. CERA	Standard/grade available and **Suffix No.**[*1] ISO/JIS	ASME	BS	Blocks included in set Size (mm)	Step (mm)	Qty.
2	**516-807** **516-806**	**516-832** **516-833**	0: **-■0** 1: **-■0**	0: **-■6** 1: **-■6**	— —	1		2
2	**516-803** **516-802**	**516-830** **516-831**	0: **-■0** 1: **-■0**	0: **-■6** 1: **-■6**	— —	2		2

Inch Block Sets

Blocks per set	Code No. Steel	Code No. CERA	Standard/grade available and **Suffix No.**[*1] ISO/JIS	ASME	BS	Blocks included in set Size (in)	Step (in)	Qty.
82	**516-548** **516-905** **516-906** **516-907** **516-908**	**516-556** **516-305** **516-306** **516-307** **516-308**	— — — — —	K: **-■6** 00: **-■6** 0: **-■6** 1: **-■6** 2: **-■6**	— — 0: **-■1** 1: **-■1** 2: **-■1**	0.10005 0.1001 - 0.1009 0.101 - 0.149 0.05 - 0.95 1 - 4	 0.0001 0.001 0.05 1	1 9 49 19 4
81	**516-549** **516-901** **516-902** **516-903** **516-904**	**516-557** **516-301** **516-302** **516-303** **516-304**	— — — — —	K: **-■6** 00: **-■6** 0: **-■6** 1: **-■6** 2: **-■6**	— — 0: **-■1** 1: **-■1** 2: **-■1**	0.1001 - 0.1009 0.101 - 0.149 0.05 - 0.95 1 - 4	0.0001 0.001 0.05 1	9 49 19 4
49	— — **516-910** **516-911** **516-912**	— — — — —	— — — — —	— — — — —	— — 0: **-■1** 1: **-■1** 2: **-■1**	0.1001 - 0.1009 0.101 - 0.109 0.01 - 0.19 0.2 - 0.9 1 - 4	0.0001 0.001 0.01 0.1 1	9 9 19 8 4
35	**516-550** **516-913** **516-914** **516-915** **516-916**	**516-558** **516-313** **516-314** **516-315** **516-316**	— — — — —	K: **-■6** 00: **-■6** 0: **-■6** 1: **-■6** 2: **-■6**	— — 0: **-■1** 1: **-■1** 2: **-■1**	0.10005 0.1001 - 0.1009 0.101 - 0.109 0.11 - 0.19 0.1 - 0.3 0.5, 1, 2, 4	 0.0001 0.001 0.01 0.1	1 9 9 9 3 4

Thin Block Sets

Blocks per set	Code No. Steel	Code No. CERA	Standard/grade available and **Suffix No.**[*1] ISO/JIS	ASME	BS	Blocks included in set Size (in)	Step (in)	Qty.
28	**516-551** **516-917** **516-918** **516-919** **516-920**	— — — — —	— — — — —	K: **-■6** 00: **-■6** 0: **-■6** 1: **-■6** 2: **-■6**	— — — — —	0.02005 0.0201 - 0.0209 0.021 - 0.029 0.01 - 0.09	 0.0001 0.001 0.01	1 9 9 9
10	**516-926** **516-927** **516-928**	— — —	— — —	0: **-■6** 1: **-■6** —	0: **-■1** 1: **-■1** 2: **-■1**	0.005 - 0.050	0.005	10

Long Block Sets

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

Wear Block Sets

Blocks per set	Code No. Carbide	Code No. CERA	Standard/grade available and **Suffix No.**[*1] ISO/JIS	ASME	BS	Blocks included in set Size (in)	Step (in)	Qty.
2	**516-809** **516-808**	**516-836** **516-837**	— —	0: **-■6** 1: **-■6**	— —	0.05		2
2	**516-805** **516-804**	**516-834** **516-835**	— —	0: **-■6** 1: **-■6**	— —	0.1		2

Note: Details of the overall sizes for forms of block are given on page 01-3 and the accuracy standards to which they are manufactured are given on page 01-5.

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Mitutoyo

Gauge Blocks

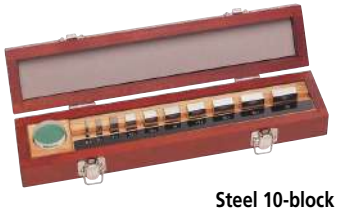
Micrometer Inspection Gauge Block Sets SERIES 516

- Special sets for micrometer inspection. **516-106/107/108** and **516-156/157/158** are useful for checking maximum permissible error. For inspection of large micrometers, we recommend using **516-115/116/117** and **516-165/166/167** together. **516-580/581/582** and **516-390/391/392** are special sets for inspection of QuantuMike, whose spindle moves 2.0 mm per one thimble rotation.

Steel



Steel 10-block set



Steel 10-block set



Steel 8-block set



Steel 10-block set

CERA



CERA 10-block set



CERA 10-block set



CERA 8-block set



CERA 10-block set



Gauge Block Sets for Micrometer Inspection

A set consisting of a Micro Checker and gauge blocks for micrometer inspection.

(516-132/133/134/135/136/137)



516-607

Micro Checker

Can clamp a stack of gauge blocks to be used for micrometer inspection.

SPECIFICATIONS

Metric Micro Checker (holder only)

Code No.	516-607
Applicable gauge block sets	**516-106/107/108**, **516-156/157/158**
Applicable gauge block sizes (mm)	2.5, 5.1, 7.7, 10.3, 12.9, 15, 17.6, 20.2, 22.8, 25

Inch Micro Checker (holder only)

Code No.	516-608
Applicable gauge block sets	**516-921/922/923**, **516-321/322/323**
Applicable gauge block sizes (in)	0.105, 0.210, 0.315, 0.420, 0.5, 0.605, 0.710, 0.815, 0.920, 1

Typical application



(The gauge block and optical parallel shown are optional accessories.)

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PROPRIETARY INSPECTION CERTIFICATE

*1: Suffix No. (■) for Selecting Standard and Certificate Provided

ISO/JIS

Suffix No.	Inspection Certificate	Calibration Certificate JCSS
1	✔	
6	✔	✔

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

ASME

Suffix No.	Inspection Certificate	Calibration Certificate JCSS
1	✔	
6	✔	✔

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

BS

Suffix No.	Inspection Certificate	Calibration Certificate JCSS
1	✔	

Inspection Certificate



SPECIFICATIONS

Metric Block Sets

Blocks per set	Code No. Steel	Code No. CERA	Standard/grade available and Suffix No.*1 ISO/JIS	ASME	BS	Blocks included in set
16	516-111 516-112 516-113	516-161 516-162 516-163	0: -■0 1: -■0 2: -■0	— — —	— — —	1.00, 1.25, 1.5, 2, 3, 5, 10, 15, 20, 25, 25.25, 30, 35, 40, 45, 50 mm, Cerastone, Optical parallels (t=12 mm, 25 mm)
10	516-977 516-978 516-979 516-980	— 516-378 516-379 516-380	K: -■0 0: -■0 1: -■0 2: -■0	— — — —	— — — —	1.00, 1.25, 1.50, 2, 3, 5, 10, 15, 20, 25 mm, Optical parallel (t=12 mm)
10	516-103 516-101 —	516-152 516-153 516-154	0: -■0 1: -■0 2: -■0	0: -■6 1: -■6 —	— — —	1.00, 1.25, 1.50, 2, 3, 5, 10, 15, 20, 25 mm
10	516-580 516-581 516-582	516-390 516-391 516-392	0: -■0 1: -■0 2: -■0	— — —	— — —	2.2, 4.8, 7.8, 10.4, 12, 15.2, 17.4, 19.6, 22.6, 25 mm
10	516-106 516-107 516-108	516-156 516-157 516-158	0: -■0 1: -■0 2: -■0	— — —	— — —	2.5, 5.1, 7.7, 10.3, 12.9, 15, 17.6, 20.2, 22.8, 25 mm, Optical parallel (t=12 mm)
10	516-132 516-133 516-134	516-182 516-183 516-184	0: -■0 1: -■0 2: -■0	— — —	— — —	1.25, 1.50, 1, 2, 3, 5, 10, 15, 20, 25 mm, Micro Checker, Optical parallel (t=12 mm)
10	516-135 516-136 516-137	516-185 516-186 516-187	0: -■0 1: -■0 2: -■0	— — —	— — —	2.5, 5.1, 7.7, 10.3, 12.9, 15, 17.6, 20.2, 22.8, 25 mm, Micro Checker, Optical parallel (t=12 mm)
8	— — 516-115 516-116 516-117	516-547 516-164 516-165 516-166 516-167	— K: -■0 0: -■0 1: -■0 2: -■0	K: -■6 00: -■6 0: -■6 1: -■6 2: -■6	— — — — —	25, 50, 75, 100, 125, 150, 175, 200 mm

Inch Block Sets

Blocks per set	Code No. Steel	Code No. CERA	Standard/grade available and Suffix No.*1 ISO/JIS	ASME	BS	Blocks included in set
10	516-528 516-529 516-530	516-318 516-319 516-320	— — —	00: -■6 0: -■6 1: -■6	0: -■1 1: -■1 2: -■1	0.087, 0.189, 0.307, 0.409, 0.472, 0.598, 0.669, 0.772, 0.890, 1 in
10	516-552 516-921 516-922 516-923	516-559 516-321 516-322 516-323	— — — —	K: -■6 00: -■6 0: -■6 1: -■6	— 0: -■1 1: -■1 2: -■1	0.105, 0.210, 0.315, 0.420, 0.500, 0.605, 0.710, 0.815, 0.920, 1 in, Optical parallel (t=0.5 in)
10	516-553 516-138 516-139 516-140	516-560 516-188 516-189 516-190	— — — —	K: -■6 00: -■6 0: -■6 1: -■6	— 0: -■1 1: -■1 2: -■1	0.105, 0.210, 0.315, 0.420, 0.500, 0.605, 0.710, 0.815, 0.920, 1 in, Micro checker, Optical parallel (t=0.5 in)
9	516-554 516-929 516-930 516-931 516-932	516-561 516-333 516-334 516-335 516-336	— — — — —	K: -■6 00: -■6 0: -■6 1: -■6 2: -■6	— — — — —	0.0625, 0.100, 0.125, 0.200, 0.250, 0.300, 0.500, 1, 2 in, Optical parallel (t=0.5 in)
9	516-555 516-141 516-142 516-143 516-144	516-562 516-191 516-192 516-193 516-194	— — — — —	K: -■6 00: -■6 0: -■6 1: -■6 2: -■6	— — — — —	0.0625, 0.100, 0.125, 0.200, 0.250, 0.300, 0.500, 1, 2 in, Micro Checker, Optical parallel (t=0.5 in)
9	— — 516-934 516-935 516-936	516-563 516-329 516-330 516-331 516-332	— — — — —	K: -■6 00: -■6 0: -■6 1: -■6 2: -■6	— — — — —	0.0625, 0.100, 0.125, 0.200, 0.250, 0.300, 0.500, 1, 2 in
8	516-126 516-127	516-176 516-177	— —	0: -■6 1: -■6	— —	1, 2, 3, 4, 5, 6, 7, 8 in

SERIES 516 – Caliper Inspection Gauge Block Sets

SPECIFICATIONS

Metric Block Sets

Blocks per set	Code No. Steel	Code No. CERA	Standard/grade available and Suffix No. ISO/JIS	ASME	BS	Blocks included in set
5	— —	— 516-174	— 2: -10	— —	— —	5 pcs.: 10.3, 24.5, 50, 75, 100 mm, Ceramic plain jaws, Holder (250 mm), Glove
4	516-526 516-527	516-566 516-567	1: -10 2: -10	— —	— —	4 pcs.: 10, 30, 50, 125 mm, Setting ring (ø4 mm, ø10 mm), Pin gage (ø10 mm), Glove
3	516-124 516-125	516-150 516-151	1: -10 2: -10	— —	— —	3 pcs.: 30, 41.3, 131.4 mm, Setting ring (ø4 mm, ø25 mm), Glove
2	516-122 516-123	516-172 516-173	1: -10 2: -10	— —	— —	2 pcs.: 41.3, 131.4 mm, Setting ring (ø20 mm), Glove

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Mitutoyo

Gauge Blocks

Individual Metric Rectangular Gauge Blocks

- One or more gauge blocks can be purchased separately. If using only one length repeatedly, it is good practice to purchase discrete gauge blocks.
- Nominal sizes not shown in the list can also be manufactured.
- Each gauge block is supplied with an inspection certificate. When placing an order, please give us the code number with the suffix number corresponding to the applicable standard (see the suffix list).



SPECIFICATIONS

Metric Blocks

Length (mm)	Code No.*1	
	Steel	CERA
0.1	**611821**	—
0.11	**611860**	—
0.12	**611861**	—
0.13	**611862**	—
0.14	**611863**	—
0.15	**611822**	—
0.16	**611864**	—
0.17	**611865**	—
0.18	**611866**	—
0.19	**611867**	—
0.2	**611823**	—
0.21	**611868**	—
0.22	**611869**	—
0.23	**611870**	—
0.24	**611871**	—
0.25	**611824**	—
0.26	**611872**	—
0.27	**611873**	—
0.28	**611874**	—
0.29	**611875**	—
0.3	**611825**	—
0.31	**611876**	—
0.32	**611877**	—
0.33	**611878**	—
0.34	**611879**	—
0.35	**611826**	—
0.36	**611880**	—
0.37	**611881**	—
0.38	**611882**	—
0.39	**611883**	—
0.4	**611827**	—
0.41	**611884**	—
0.42	**611885**	—
0.43	**611886**	—
0.44	**611887**	—
0.45	**611828**	—
0.46	**611888**	—
0.47	**611889**	—
0.48	**611890**	—
0.49	**611891**	—
0.5	**611506**	**613506**
0.51	**611892**	—
0.52	**611893**	—

Length (mm)	Code No.*1	
	Steel	CERA
0.53	**611894**	—
0.54	**611895**	—
0.55	**611896**	—
0.56	**611897**	—
0.57	**611898**	—
0.58	**611899**	—
0.59	**611900**	—
0.6	**611901**	—
0.61	**611902**	—
0.62	**611903**	—
0.63	**611904**	—
0.64	**611905**	—
0.65	**611906**	—
0.66	**611907**	—
0.67	**611908**	—
0.68	**611909**	—
0.69	**611910**	—
0.7	**611911**	—
0.71	**611912**	—
0.72	**611913**	—
0.73	**611914**	—
0.74	**611915**	—
0.75	**611916**	—
0.76	**611917**	—
0.77	**611918**	—
0.78	**611919**	—
0.79	**611920**	—
0.8	**611921**	—
0.81	**611922**	—
0.82	**611923**	—
0.83	**611924**	—
0.84	**611925**	—
0.85	**611926**	—
0.86	**611927**	—
0.87	**611928**	—
0.88	**611929**	—
0.89	**611930**	—
0.9	**611931**	—
0.91	**611932**	—
0.92	**611933**	—
0.93	**611934**	—
0.94	**611935**	—
0.95	**611936**	—

Length (mm)	Code No.*1	
	Steel	CERA
0.96	**611937**	—
0.97	**611938**	—
0.98	**611939**	—
0.99	**611940**	—
0.991	**611551**	**613551**
0.992	**611552**	**613552**
0.993	**611553**	**613553**
0.994	**611554**	**613554**
0.995	**611555**	**613555**
0.996	**611556**	**613556**
0.997	**611557**	**613557**
0.998	**611558**	**613558**
0.999	**611559**	**613559**
1	**611611**	**613611**
1.0005	**611520**	**613520**
1.001	**611521**	**613521**
1.002	**611522**	**613522**
1.003	**611523**	**613523**
1.004	**611524**	**613524**
1.005	**611525**	**613525**
1.006	**611526**	**613526**
1.007	**611527**	**613527**
1.008	**611528**	**613528**
1.009	**611529**	**613529**
1.01	**611561**	**613561**
1.02	**611562**	**613562**
1.03	**611563**	**613563**
1.04	**611564**	**613564**
1.05	**611565**	**613565**
1.06	**611566**	**613566**
1.07	**611567**	**613567**
1.08	**611568**	**613568**
1.09	**611569**	**613569**
1.1	**611570**	**613570**
1.11	**611571**	**613571**
1.12	**611572**	**613572**
1.13	**611573**	**613573**
1.14	**611574**	**613574**
1.15	**611575**	**613575**
1.16	**611576**	**613576**
1.17	**611577**	**613577**
1.18	**611578**	**613578**
1.19	**611579**	**613579**

Note: Details of the overall sizes for forms of block are given on page 01-3 and the accuracy standards to which they are manufactured are given on page 01-5.

*1: Suffix No. (-■■■) for Selecting Standard and Certificate Provided

ISO / JIS

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

ASME

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

BS

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


Mitutoyo
CERTIFICATE OF INSPECTION
SAMPLE

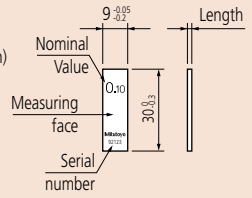
Inspection Certificate

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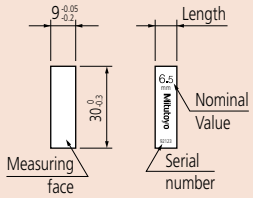
Dimensions

Unit: mm

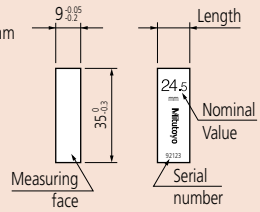
Nominal length:
0.1 mm to 5.5 mm
(0.004 in to 0.25 in)



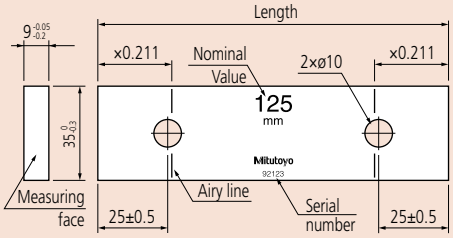
Nominal length:
6 mm to 10 mm
(0.3 in to 0.4 in)



Nominal length:
10.3 mm to 100 mm
(0.45 in to 4 in)



Nominal length 125 mm to 1000 mm (5 in to 20 in)



Length (mm)	Code No.*1 Steel	CERA
1.2	**611580**	**613580**
1.21	**611581**	**613581**
1.22	**611582**	**613582**
1.23	**611583**	**613583**
1.24	**611584**	**613584**
1.25	**611585**	**613585**
1.26	**611586**	**613586**
1.27	**611587**	**613587**
1.28	**611588**	**613588**
1.29	**611589**	**613589**
1.3	**611590**	**613590**
1.31	**611591**	**613591**
1.32	**611592**	**613592**
1.33	**611593**	**613593**
1.34	**611594**	**613594**
1.35	**611595**	**613595**
1.36	**611596**	**613596**
1.37	**611597**	**613597**
1.38	**611598**	**613598**
1.39	**611599**	**613599**
1.4	**611600**	**613600**
1.41	**611601**	**613601**
1.42	**611602**	**613602**
1.43	**611603**	**613603**
1.44	**611604**	**613604**
1.45	**611605**	**613605**
1.46	**611606**	**613606**
1.47	**611607**	**613607**
1.48	**611608**	**613608**
1.49	**611609**	**613609**
1.5	**611641**	**613641**
1.6	**611516**	**613516**
1.7	**611517**	**613517**
1.8	**611518**	**613518**
1.9	**611519**	**613519**
2	**611612**	**613612**
2.0005	**611690**	—
2.001	**611691**	—
2.002	**611692**	—
2.003	**611693**	—
2.004	**611694**	—
2.005	**611695**	—
2.006	**611696**	—
2.007	**611697**	—
2.008	**611698**	—
2.009	**611699**	—
2.01	**611701**	—
2.02	**611702**	—
2.03	**611703**	—
2.04	**611704**	—
2.05	**611705**	—
2.06	**611706**	—
2.07	**611707**	—
2.08	**611708**	—
2.09	**611709**	—
2.1	**611710**	—
2.11	**611711**	—
2.12	**611712**	—
2.13	**611713**	—
2.14	**611714**	—
2.15	**611715**	—
2.16	**611716**	—

Length (mm)	Code No.*1 Steel	CERA
2.17	**611717**	—
2.18	**611718**	—
2.19	**611719**	—
2.2	**611720**	—
2.21	**611721**	—
2.22	**611722**	—
2.23	**611723**	—
2.24	**611724**	—
2.25	**611725**	—
2.26	**611726**	—
2.27	**611727**	—
2.28	**611728**	—
2.29	**611729**	—
2.3	**611730**	—
2.31	**611731**	—
2.32	**611732**	—
2.33	**611733**	—
2.34	**611734**	—
2.35	**611735**	—
2.36	**611736**	—
2.37	**611737**	—
2.38	**611738**	—
2.39	**611739**	—
2.4	**611740**	—
2.41	**611741**	—
2.42	**611742**	—
2.43	**611743**	—
2.44	**611744**	—
2.45	**611745**	—
2.46	**611746**	—
2.47	**611747**	—
2.48	**611748**	—
2.49	**611749**	—
2.5	**611642**	**613642**
2.6	**611750**	—
2.7	**611751**	—
2.8	**611752**	—
2.9	**611753**	—
3	**611613**	**613613**
3.5	**611643**	**613643**
4	**611614**	**613614**
4.5	**611644**	**613644**
5	**611615**	**613615**
5.1	**611850**	**613850**
5.5	**611645**	**613645**
6	**611616**	**613616**
6.5	**611646**	**613646**
7	**611617**	**613617**
7.5	**611647**	**613647**
7.7	**611851**	**613851**
8	**611618**	**613618**
8.5	**611648**	**613648**
9	**611619**	**613619**
9.5	**611649**	**613649**
10	**611671**	**613671**
10.3	**611852**	**613852**
10.5	**611650**	**613650**
11	**611621**	**613621**
11.5	**611651**	**613651**
12	**611622**	**613622**
12.5	**611652**	**613652**
12.9	**611853**	**613853**

Length (mm)	Code No.*1 Steel	CERA
13	**611623**	**613623**
13.5	**611653**	**613653**
14	**611624**	**613624**
14.5	**611654**	**613654**
15	**611625**	**613625**
15.5	**611655**	**613655**
16	**611626**	**613626**
16.5	**611656**	**613656**
17	**611627**	**613627**
17.5	**611657**	**613657**
17.6	**611854**	**613854**
18	**611628**	**613628**
18.5	**611658**	**613658**
19	**611629**	**613629**
19.5	**611659**	**613659**
20	**611672**	**613672**
20.2	**611855**	**613855**
20.5	**611660**	**613660**
21	**611631**	**613631**
21.5	**611661**	**613661**
22	**611632**	**613632**
22.5	**611662**	**613662**
22.8	**611856**	**613856**
23	**611633**	**613633**
23.5	**611663**	**613663**
24	**611634**	**613634**
24.5	**611664**	**613664**
25	**611635**	**613635**
25.25	**611754**	**613754**
30	**611673**	**613673**
35	**611755**	**613755**
40	**611674**	**613674**
41.3	**611857**	**613857**
45	**611756**	**613756**
50	**611675**	**613675**
60	**611676**	**613676**
70	**611677**	**613677**
75	**611801**	**613801**
80	**611678**	**613678**
90	**611679**	**613679**
100	**611681**	**613681**
125	**611802**	**613802**
131.4	**611858**	**613858**
150	**611803**	**613803**
175	**611804**	**613804**
200	**611682**	**613682**
250	**611805**	**613805**
300	**611683**	**613683**
400	**611684**	**613684**
500	**611685**	**613685**
600	**611840**	—
700	**611841**	—
750	**611842**	—
800	**611843**	—
900	**611844**	—
1000	**611845**	—

Metric Wear Blocks

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

Note: Details of the overall sizes for forms of block are given on page 01-3 and the accuracy standards to which they are manufactured are given on page 01-5.

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Individual Inch Rectangular Gauge Blocks

SPECIFICATIONS

Inch Blocks

Length (in)	Code No.*1	
	Steel	CERA
0.004	**611304**	—
0.005	**611305**	—
0.006	**611306**	—
0.007	**611307**	—
0.008	**611308**	—
0.009	**611309**	—
0.01	**611310**	—
0.011	**611311**	—
0.012	**611312**	—
0.013	**611313**	—
0.014	**611314**	—
0.015	**611315**	—
0.016	**611316**	—
0.017	**611317**	—
0.018	**611318**	—
0.019	**611319**	—
0.02	**611320**	—
0.02005	**611240**	—
0.0201	**611231**	—
0.0202	**611232**	—
0.0203	**611233**	—
0.0204	**611234**	—
0.0205	**611235**	—
0.0206	**611236**	—
0.0207	**611237**	—
0.0208	**611238**	—
0.0209	**611239**	—
0.021	**611321**	—
0.022	**611322**	—
0.023	**611323**	—

Length (in)	Code No.*1	
	Steel	CERA
0.024	**611324**	—
0.025	**611325**	—
0.026	**611326**	—
0.027	**611327**	—
0.028	**611328**	—
0.029	**611329**	—
0.03	**611330**	—
0.031	**611331**	—
0.03125 (1/32)	**611101**	**613103**
0.032	**611332**	—
0.033	**611333**	—
0.034	**611334**	—
0.035	**611335**	—
0.036	**611336**	—
0.037	**611337**	—
0.038	**611338**	—
0.039	**611339**	—
0.04	**611340**	—
0.041	**611341**	—
0.042	**611342**	—
0.043	**611343**	—
0.044	**611344**	—
0.045	**611345**	—
0.046	**611346**	—
0.046875 (3/64)	**611102**	**613104**
0.047	**611347**	—
0.048	**611348**	—
0.049	**611349**	—
0.05	**611105**	**613105**
0.06	**611106**	—

Length (in)	Code No.*1	
	Steel	CERA
0.0625	**611303**	**613303**
0.07	**611107**	—
0.078125 (5/64)	**611103**	**613100**
0.08	**611108**	—
0.09	**611109**	—
0.09375 (3/32)	**611104**	**613101**
0.1	**611191**	**613191**
0.100025	**611111**	**613110**
0.10005	**611135**	**613135**
0.100075	**611112**	**613111**
0.1001	**611121**	**613121**
0.1002	**611122**	**613122**
0.1003	**611123**	**613123**
0.1004	**611124**	**613124**
0.1005	**611125**	**613125**
0.1006	**611126**	**613126**
0.1007	**611127**	**613127**
0.1008	**611128**	**613128**
0.1009	**611129**	**613129**
0.101	**611141**	**613141**
0.102	**611142**	**613142**
0.103	**611143**	**613143**
0.104	**611144**	**613144**
0.105	**611145**	**613145**
0.106	**611146**	**613146**
0.107	**611147**	**613147**
0.108	**611148**	**613148**
0.109	**611149**	**613149**
0.109375 (7/64)	**611110**	**613102**

Note: Details of the overall sizes for forms of block are given on page 01-3 and the accuracy standards to which they are manufactured are given on page 01-5.

PROPRIETARY INSPECTION CERTIFICATE

*1: Suffix No. (-■■■) for Selecting Standard and Certificate Provided

ASME

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

BS

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


Mitutoyo
CERTIFICATE OF INSPECTION
SAMPLE

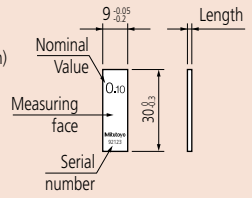
Inspection Certificate

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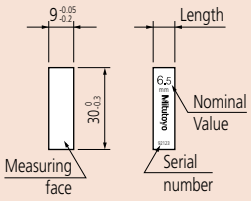
Dimensions

Unit: mm

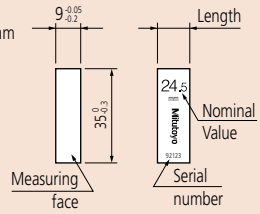
Nominal length:
0.1 mm to 5.5 mm
(0.004 in to 0.25 in)



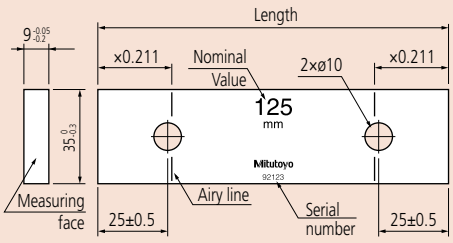
Nominal length:
6 mm to 10 mm
(0.3 in to 0.4 in)



Nominal length:
10.3 mm to 100 mm
(0.45 in to 4 in)



Nominal length 125 mm to 1000 mm (5 in to 20 in)



SPECIFICATIONS

Inch Blocks

Length (in)	Code No.*1	
	Steel	CERA
0.11	**611150**	**613150**
0.111	**611151**	**613151**
0.112	**611152**	**613152**
0.113	**611153**	**613153**
0.114	**611154**	**613154**
0.115	**611155**	**613155**
0.116	**611156**	**613156**
0.117	**611157**	**613157**
0.118	**611158**	**613158**
0.119	**611159**	**613159**
0.12	**611160**	**613160**
0.121	**611161**	**613161**
0.122	**611162**	**613162**
0.123	**611163**	**613163**
0.124	**611164**	**613164**
0.125	**611165**	**613165**
0.126	**611166**	**613166**
0.127	**611167**	**613167**
0.128	**611168**	**613168**
0.129	**611169**	**613169**
0.13	**611170**	**613170**
0.131	**611171**	**613171**
0.132	**611172**	**613172**
0.133	**611173**	**613173**
0.134	**611174**	**613174**
0.135	**611175**	**613175**
0.136	**611176**	**613176**
0.137	**611177**	**613177**
0.138	**611178**	**613178**
0.139	**611179**	**613179**
0.14	**611180**	**613180**
0.141	**611181**	**613181**
0.142	**611182**	**613182**
0.143	**611183**	**613183**
0.144	**611184**	**613184**
0.145	**611185**	**613185**
0.146	**611186**	**613186**
0.147	**611187**	**613187**
0.148	**611188**	**613188**
0.149	**611189**	**613189**
0.15	**611115**	**613115**
0.16	**611116**	**613116**
0.17	**611117**	**613117**
0.18	**611118**	**613118**
0.19	**611119**	**613119**
0.2	**611192**	**613192**
0.21	**611221**	**613221**
0.25	**611212**	**613212**
0.3	**611193**	**613193**
0.315	**611209**	**613209**
0.35	**611213**	**613213**
0.375 (3/8)	**611113**	**613112**
0.4	**611194**	**613194**
0.420	**611210**	**613210**
0.45	**611214**	**613214**
0.5	**611195**	**613195**
0.55	**611215**	**613215**
0.6	**611196**	**613196**
0.605	**611211**	**613211**
0.65	**611216**	**613216**
0.7	**611197**	**613197**
0.710	**611220**	**613220**
0.75	**611217**	**613217**
0.8	**611198**	**613198**
0.815	**611226**	**613226**
0.85	**611218**	**613218**
0.9	**611199**	**613199**
0.920	**611227**	**613227**
0.95	**611219**	**613219**
1	**611201**	**613201**
2	**611202**	**613202**
3	**611203**	**613203**
4	**611204**	**613204**
5	**611205**	**613205**
6	**611206**	**613206**
7	**611207**	**613207**
8	**611208**	**613208**
10	**611222**	**613222**
12	**611223**	**613223**
16	**611224**	**613224**
20	**611225**	**613225**

Inch Wear Blocks

Length (in)	Code No.*1 Tungsten carbide
0.05	**612105**
0.1	**612191**

Note: Details of the overall sizes for forms of block are given on page 01-3 and the accuracy standards to which they are manufactured are given on page 01-5.
4 inch or more is not listed in the standard of British Standards Institution.

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Rectangular Gauge Block Accessories SERIES 516

- Accessory sets for extending the range of application for rectangular gauge blocks.
- Available in 22-piece and 14-piece sets. Each accessory is also available separately for applications where a full set is not needed.
- Can be used with both steel and CERA blocks.



516-601
(22 pcs.)

SPECIFICATIONS

Item Description	Code No.	Nominal capacity/ dimension (mm)	Set		Quantity Supplied
			22 pcs. **516-601**	14 pcs. **516-602**	
Holder	**619002**	15 to 60		✔	1 pc.
	619003	5 to 100	✔	✔	
	619004	15 to 160	✔	✔	
	619005	20 to 250	✔	✔	
Base	**619009**	35	✔	✔	
Half-round jaw	**619010***	2	✔	✔	One pair (2 pcs.)
	619011*	5	✔	✔	
	619012*	8	✔	✔	
	619013*	12	✔		
	619014*	20	✔		
Plain jaw	**619018***	160	✔		
Scriber point	**619019**	—	✔	✔	1 pc.
Center point	**619020**	—	✔	✔	
Tram point	**619021***	—	✔		One pair (2 pcs.)
Triangular straightedge	**619022**	100	✔	✔	1 pc.
	619023	160	✔		

* A single piece is supplied for each code number, except for half-round jaws, plain jaws (B type) and tram points, which are supplied as a two-pack.

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Typical application



Half-round jaw (**619013**) 2 pcs.
Holder (**619002**) 1 pc.
Gauge block



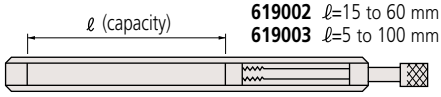
Base (**619009**) 1 pc.
Holder (**619003**) 1 pc.
Scriber point (**619019**) 1 pc.
Gauge block



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

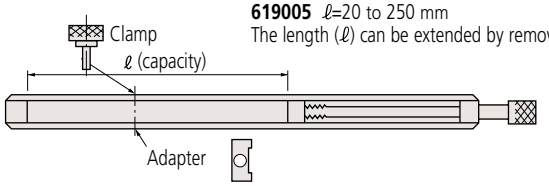
Holder

Thickness=15 mm
Width=29.5 mm

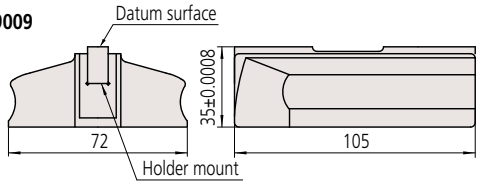


619002 ℓ=15 to 60 mm
619003 ℓ=5 to 100 mm

619004 ℓ=15 to 160 mm
619005 ℓ=20 to 250 mm
The length (ℓ) can be extended by removing the adapter.



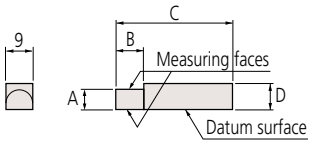
Base **619009**



Flatness of the datum surface 0.5 µm
Parallelism 0.8 µm
Flatness of the bottom surface 1 µm

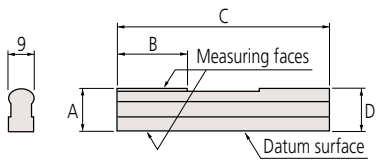
Half-round jaws

Type I



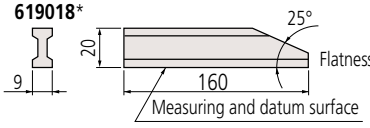
Flatness of the datum surface 0.5 µm
Parallelism of A 0.5 µm

Type II



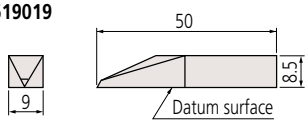
Code No.	Type	Size (mm)	A (mm)	B (mm)	C (mm)	D (mm)
619010*	I	2	2±0.0005	5.5	40	7.5
619011*		5	5±0.0005	15.5	45	7.5
619012*		8	8±0.0005	20	50	8.5
619013*	II	12	12±0.0005	25	75	13
619014*		20	20±0.0005	25	125	20.5

Plain jaw (B type) **619018***



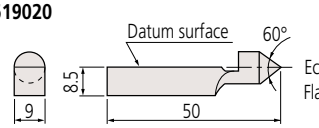
Flatness of the datum surface 1 µm

Scriber point **619019**



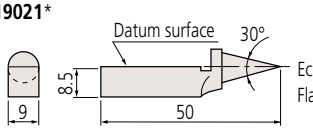
Flatness of the datum surface 0.5 µm

Center point **619020**



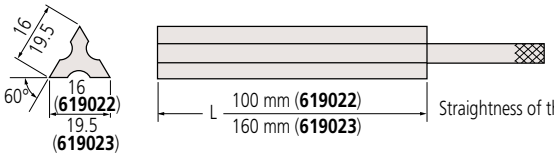
Eccentricity tolerance of the point ±10 µm
Flatness of the datum surface 0.5 µm

Tram point **619021***



Eccentricity tolerance of the point ±10 µm
Flatness of the datum surface 0.5 µm

Triangular straightedge (for handheld use only)



Straightness of the edges 1.2 µm

* A single piece is supplied for each code number, except for half-round jaws, plain jaws (B type) and tram points, which are supplied as a two-pack.

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Mitutoyo

Accessories for Rectangular Gauge Blocks over 100 mm SERIES 516

- Specially designed for long rectangular gauge blocks of 100 mm and over which have two coupling holes in the body: coupling of two long gauge blocks, a stack of regular gauge blocks and attachment of jaws is possible.
- Can be used with both long steel and CERA blocks.

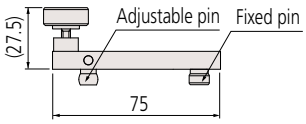


516-605
(14 pcs.)

SPECIFICATIONS

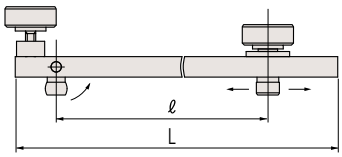
Set code No.	Code No.	Description	Quantity Supplied
516-605	619031	Connector A	1 pc.
	619032	Connector B	
	619033	Connector C	
	619034	Connector D	
	619035	Connector E	
	619036	Adapter	3 pcs.
	619009	Base	1 pc.
	619018	Plain jaw (B-type)	2 pcs.
	619013	Half-round jaw	
	619019	Scriber point	1 pc.

Connector A **619031**



Used for directly coupling two long gauge blocks.

Connectors B and C



Unit: mm

Code No.	ℓ (max.)	L		Adapter Qty.
619032	90	126	Connector B	2
619033	200	236	Connector C	

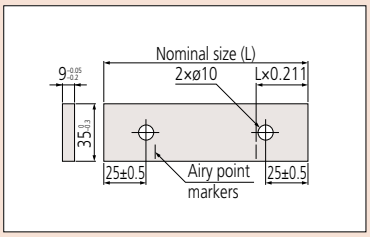

Adapter (2 pcs.) **619036**

In addition to connecting long gauge blocks, the holders can also connect long gauge blocks with other types of gauge blocks inserted in between. Connector B is for gauge blocks with nominal size of 40 mm or less, and connector C for gauge blocks with nominal size of 150 mm or less (connector C can also be used to connect hole-less gauge blocks of 100 mm or less with various types of jaw). Adapters can be used to attach jaws on the edges of long gauge blocks.

Typical application


Using an A-type connector


Use of B-type connectors in gage construction



Coupling holes in long gauge blocks

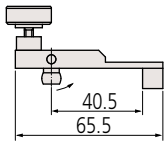
Mitutoyo reserves the right to change any or all aspects of any product specification, including prices, designs and service content, without notice.

Typical application



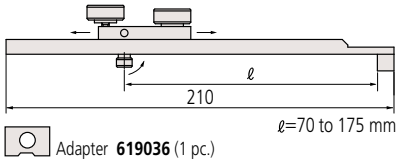
Setting a dial test indicator to a long-gauge-block stack attached to the base with a D-type connector

Connector D 619034



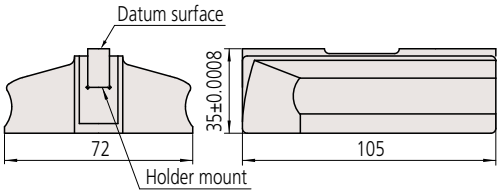
Used for attaching a long gauge block directly to the base.

Connector E 619035



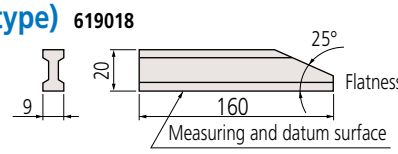
Used for attaching a long gauge block to the base over a stack of regular gauge blocks wrung between the base and long gauge block.
The length ℓ is highly adjustable to accommodate the variable length of the stack.

Base 619009



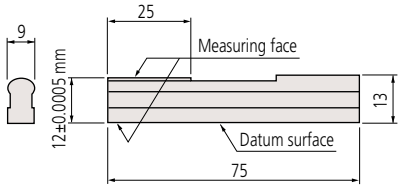
Flatness of the datum surface 0.5 µm
Parallelism 0.8 µm
Flatness of the bottom surface 1 µm

Plain jaw (B-type) 619018



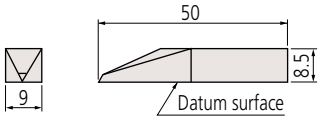
Flatness of the datum surface 1 µm

Half-round jaw 619013



Flatness of the datum surface 0.5 µm
Parallelism 0.5 µm

Scriber point 619019



Flatness of the datum surface 0.5 µm

Example of use of accessories with long gauge blocks

The table below shows the appropriate combination of long rectangular gauge blocks and accessories for making inside and outside measurements in the approximate range 300 mm to 1000 mm in 100 mm steps. The numbers in the table represent the number of gauge blocks or accessories in use. Note that the ranges shown do not take into account the combined thickness of the half-round jaws for inside measurement (24 mm) and the length of any regular gauge block stack used.

Items		Code No.	300 mm		400 mm		500 mm		600 mm		700 mm		800 mm		900 mm		1000 mm	
			Inner	Outer	Inner	Outer	Inner	Outer	Inner	Outer	Inner	Inner	Inner	Outer	Inner	Outer	Inner	Outer
Rectangular gauge block (nominal dimension)	200 mm	**611682**							1	1								
	300 mm	**611683**	1	1							1	1	1	1				
	400 mm	**611684**			1	1			1	1	1	1			1	1		
	500 mm	**611685**					1	1					1	1	1	1	2	2
Connector A		**619031**							1	1	1	1	1	1	1	1	1	1
Connector B*		**619032**	2		2		2		2		2		2		2		2	
Half-round jaws 2 pcs./set		**619013**	2		2		2		2		2		2		2		2	
Adapter		**619036**	(2)		(2)		(2)		(2)		(2)		(2)		(2)		(2)	

* Provided with adapters (2 pcs.).

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Mitutoyo

Metric/Inch Square Gauge Block Sets
SERIES 516 — Metric Block Sets, Long Block Sets, Wear Block Sets

- A square gauge block can retain stable orientation both longitudinally and laterally. A wide range of application measurements can be made. From various sets of 2 pieces up to 112 pieces, you can select the best type for your application.
- Always use genuine gauge block accessories.



Steel 112-block set



Steel 103-block set



Steel 76-block set



Steel 47-block set



Steel 32-block set

Wear block set



Tungsten Carbide

Long block set



Steel 8-block set

These square wear gauge blocks made of cemented carbide have excellent resistance to abrasion, making them ideal for protecting the ends of a stack of blocks subject to frequent use. Available in two nominal sizes: 1 mm and 2 mm. We recommend that these wear gauge blocks of both sizes be wrung firmly to the stack when in use.

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PROPRIETARY INSPECTION CERTIFICATE

*1: Suffix No. (■) for Selecting Standard and Certificate Provided

ISO / JIS

Suffix No.	Inspection Certificate	Calibration Certificate JCSS
1	✔	
6	✔	✔

ASME

Suffix No.	Inspection Certificate	Calibration Certificate JCSS
1	✔	



Inspection Certificate

SPECIFICATIONS

Metric Block Sets

Blocks per set	Code No. Steel	Code No. CERA	Standard/grade available and Suffix No.*1 ISO/JIS	Standard/grade available and Suffix No.*1 ASME	Blocks included in set Size (mm)	Step (mm)	Qty.
112	516-437	—	—	00: -■6	1.005		1
	516-438	—	0: -■0	0: -■6	1.001 - 1.009	0.001	9
	516-439	—	1: -■0	1: -■6	1.01 - 1.49	0.01	49
	516-440	—	2: -■0	2: -■6	0.5 - 24.5	0.5	49
	—	—	—	—	25 - 100	25	4
103	516-441	—	—	00: -■6	1.005		1
	516-442	—	0: -■0	0: -■6	1.01 - 1.49	0.01	49
	516-443	—	1: -■0	1: -■6	0.5 - 24.5	0.5	49
	516-444	—	2: -■0	2: -■6	25 - 100	25	4
76	516-449	—	—	00: -■6	1.005		1
	516-450	—	0: -■0	0: -■6	1.01 - 1.49	0.01	49
	516-451	—	1: -■0	1: -■6	0.5 - 9.5	0.5	19
	516-452	—	2: -■0	2: -■6	10 - 40	10	4
	—	—	—	—	50 - 100	25	3
47	516-457	—	—	00: -■6	1.005		1
	516-458	—	0: -■0	0: -■6	1.01 - 1.09	0.01	9
	516-459	—	1: -■0	1: -■6	1.1 - 1.9	0.1	9
	516-460	—	2: -■0	2: -■6	1 - 24	1	24
		—	—	—	25 - 100	25	4
32	516-465	—	—	00: -■6	1.005		1
	516-466	—	0: -■0	0: -■6	1.01 - 1.09	0.01	9
	516-467	—	1: -■0	1: -■6	1.1 - 1.9	0.1	9
	516-468	—	2: -■0	2: -■6	1 - 9	1	9
	—	—	—	—	10 - 30	10	3
	—				60		1

Metric Long Block Sets

Blocks per set	Code No. Steel	Code No. CERA	Standard/grade available and Suffix No.*1 ISO/JIS	Standard/grade available and Suffix No.*1 ASME	Blocks included in set Size (mm)	Step (mm)	Qty.
8	516-751	—	—	00: -■6	125, 150, 175	25	3
	516-752	—	0: -■0	0: -■6	200, 250	50	2
	516-753	—	1: -■0	1: -■6	300, 400, 500	100	3
	516-754	—	2: -■0	2: -■6			

Metric Wear Block Sets

Blocks per set	Code No. Steel	Code No. CERA	Standard/grade available and Suffix No.*1 ISO/JIS	Standard/grade available and Suffix No.*1 ASME	Blocks included in set Size (mm)	Step (mm)	Qty.
2	516-820	—	0: -■0	—	1	—	2
	516-821	—	1: -■0	—			
2	516-822	—	0: -■0	—	2	—	2
	516-823	—	1: -■0	—			

Inch Block Sets

Blocks per set	Code No. Steel	Code No. CERA	Standard/grade available and Suffix No.*1 ISO/JIS	Standard/grade available and Suffix No.*1 ASME	Blocks included in set Size (in)	Step (in)	Qty.
81	516-401	516-201	—	00: -■6	0.1001 - 0.1009	0.0001	9
	516-402	516-202	—	0: -■6	0.101 - 0.149	0.001	49
	516-403	516-203	—	1: -■6	0.05 - 0.95	0.05	19
	516-404	516-204	—	2: -■6	1 - 4	1	4
36	516-421	516-221	—	00: -■6	0.05		1
	516-422	516-222	—	0: -■6	0.1001 - 0.1009	0.0001	9
	516-423	516-223	—	1: -■6	0.101 - 0.109	0.001	9
	516-424	516-224	—	2: -■6	0.11 - 0.19	0.01	9
	—	—	—	—	0.1 - 0.5	0.1	5
	—	—	—	—	1, 2, 4	1	3
28	516-417	—	—	00: -■6	0.02005		1
	516-418	—	—	0: -■6	0.0201 - 0.0209	0.0001	9
	516-419	—	—	1: -■6	0.021 - 0.029	0.001	9
	516-420	—	—	2: -■6	0.010 - 0.090	0.01	9
	—		—	—			

Inch Long Block Sets

Blocks per set	Code No. Steel	Code No. CERA	Standard/grade available and Suffix No.*1 ISO/JIS	Standard/grade available and Suffix No.*1 ASME	Blocks included in set Size (in)	Step (in)	Qty.
8	516-762	—	—	0: -■0	5 - 7	1	3
	516-763	—	—	1: -■0	8, 10, 12	2	3
	—	—	—		16, 20	4	2

Inch Wear Block Sets

Blocks per set	Code No. Carbide	Code No. CERA	Standard/grade available and Suffix No.*1 ISO/JIS	Standard/grade available and Suffix No.*1 ASME	Blocks included in set Size (in)	Step (in)	Qty.
2	516-824	516-846	—	0: -■0	0.05	—	2
	516-825	516-847	—	1: -■0			
2	516-826	516-844	—	0: -■0	0.1	—	2
	516-827	516-845	—	1: -■0			

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Mitutoyo

Gauge Blocks

Individual Metric Square Gauge Blocks

- One or more gauge blocks can be purchased separately. Purchasing them loose is helpful. If using only one length repeatedly, it is good practice to purchase discrete gauge blocks.
- Each gauge block is supplied with an inspection certificate. When placing an order, please give us the code number with the suffix number corresponding to the applicable standard (see the suffix list).
- We make custom length gauge blocks.
- Always use genuine gauge block accessories.



SPECIFICATIONS

Metric Blocks

Length (mm)	Code No.	
	Steel	CERA
0.5	**614506**	—
1	**614611**	—
1.0005	**614520**	—
1.001	**614521**	—
1.002	**614522**	—
1.003	**614523**	—
1.004	**614524**	—
1.005	**614525**	—
1.006	**614526**	—
1.007	**614527**	—
1.008	**614528**	—
1.009	**614529**	—
1.01	**614561**	—
1.02	**614562**	—
1.03	**614563**	—
1.04	**614564**	—
1.05	**614565**	—
1.06	**614566**	—
1.07	**614567**	—
1.08	**614568**	—
1.09	**614569**	—
1.1	**614570**	—
1.11	**614571**	—
1.12	**614572**	—
1.13	**614573**	—
1.14	**614574**	—
1.15	**614575**	—
1.16	**614576**	—
1.17	**614577**	—
1.18	**614578**	—
1.19	**614579**	—
1.2	**614580**	—
1.21	**614581**	—
1.22	**614582**	—
1.23	**614583**	—
1.24	**614584**	—
1.25	**614585**	—
1.26	**614586**	—
1.27	**614587**	—
1.28	**614588**	—
1.29	**614589**	—
1.3	**614590**	—
1.31	**614591**	—
1.32	**614592**	—

Length (mm)	Code No.	
	Steel	CERA
1.33	**614593**	—
1.34	**614594**	—
1.35	**614595**	—
1.36	**614596**	—
1.37	**614597**	—
1.38	**614598**	—
1.39	**614599**	—
1.4	**614600**	—
1.41	**614601**	—
1.42	**614602**	—
1.43	**614603**	—
1.44	**614604**	—
1.45	**614605**	—
1.46	**614606**	—
1.47	**614607**	—
1.48	**614608**	—
1.49	**614609**	—
1.5	**614641**	—
1.6	**614516**	—
1.7	**614517**	—
1.8	**614518**	—
1.9	**614519**	—
2	**614612**	—
2.5	**614642**	—
3	**614613**	—
3.5	**614643**	—
4	**614614**	—
4.5	**614644**	—
5	**614615**	—
5.5	**614645**	—
6	**614616**	—
6.5	**614646**	—
7	**614617**	—
7.5	**614647**	—
8	**614618**	—
8.5	**614648**	—
9	**614619**	—
9.5	**614649**	—
10	**614671**	—
10.5	**614650**	—
11	**614621**	—
11.5	**614651**	—
12	**614622**	—
12.5	**614652**	—

Length (mm)	Code No.	
	Steel	CERA
13	**614623**	—
13.5	**614653**	—
14	**614624**	—
14.5	**614654**	—
15	**614625**	—
15.5	**614655**	—
16	**614626**	—
16.5	**614656**	—
17	**614627**	—
17.5	**614657**	—
18	**614628**	—
18.5	**614658**	—
19	**614629**	—
19.5	**614659**	—
20	**614672**	—
20.5	**614660**	—
21	**614631**	—
21.5	**614661**	—
22	**614632**	—
22.5	**614662**	—
23	**614633**	—
23.5	**614663**	—
24	**614634**	—
24.5	**614664**	—
25	**614635**	—
30	**614673**	—
40	**614674**	—
50	**614675**	—
60	**614676**	—
75	**614801**	—
100	**614681**	—
125	**614802**	—
150	**614803**	—
175	**614804**	—
200	**614682**	—
250	**614805**	—
300	**614683**	—
400	**614684**	—
500	**614685**	—

Metric Wear Blocks

Length (mm)	Code No. Tungsten carbide
1	**615611**
2	**615612**

Note: Details of the overall sizes for forms of block are given on pages 01-3 and 01-26, and the accuracy standards to which they are manufactured are given on page 01-5.

PROPRIETARY INSPECTION CERTIFICATE

Suffix No. (-■■■) for Selecting Standard and Certificate Provided

ISO / JIS

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

ASME

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


Mitutoyo
CERTIFICATE OF INSPECTION
SAMPLE

Inspection Certificate

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Individual Inch Square Gauge Blocks

*1: Suffix No. (-■■■) for Selecting Grade and Certificate Provided

ASME

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

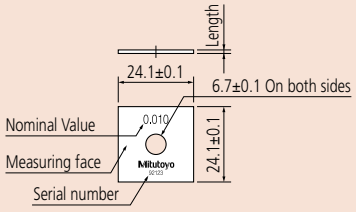


Inspection Certificate

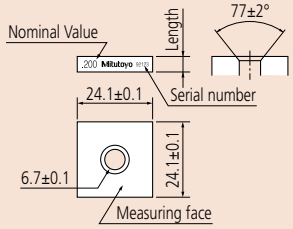
Dimensions

Unit: mm

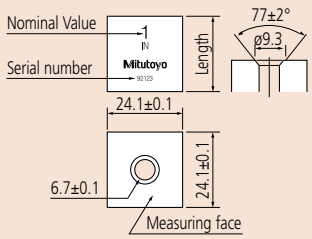
Nominal length: 0.5 mm to 4.5 mm (0.010 in to 0.19 in)



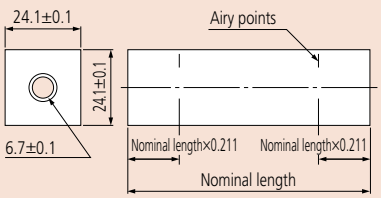
Nominal length: 5 mm to 14.5 mm (0.2 in to 0.450 in)



Nominal length: 15 mm to 500 mm (0.500 in to 20 in)



Nominal length: 125 mm to 500 mm (5 in to 20 in)



SPECIFICATIONS

Inch Blocks

Length (in)	Code No.*1 Steel	CERA
0.01	614310	—
0.02005	614240	—
0.0201	614231	—
0.0202	614232	—
0.0203	614233	—
0.0204	614234	—
0.0205	614235	—
0.0206	614236	—
0.0207	614237	—
0.0208	614238	—
0.0209	614239	—
0.02	614320	—
0.021	614321	—
0.022	614322	—
0.023	614323	—
0.024	614324	—
0.025	614325	—
0.026	614326	—
0.027	614327	—
0.028	614328	—
0.029	614329	—
0.03	614330	—
0.03125 (1/32)	614301	—
0.04	614340	—
0.046875 (3/64)	614302	—
0.05	614105	616105
0.06	614106	—
0.0625	614303	616303
0.07	614107	—
0.078125 (5/64)	614304	—
0.08	614108	—
0.09	614109	—
0.09375 (3/32)	614305	—
0.1	614191	616191
0.100025	614307	—
0.10005	614135	616135
0.100075	614308	—
0.1001	614121	616121
0.1002	614122	616122
0.1003	614123	616123
0.1004	614124	616124
0.1005	614125	616125
0.1006	614126	616126
0.1007	614127	616127
0.1008	614128	616128
0.1009	614129	616129
0.101	614141	616141
0.102	614142	616142
0.103	614143	616143
0.104	614144	616144
0.105	614145	616145
0.106	614146	616146
0.107	614147	616147
0.108	614148	616148
0.109	614149	616149
0.109375 (7/64)	614306	—
0.11	614150	616150
0.111	614151	616151
0.112	614152	616152
0.113	614153	616153
0.114	614154	616154
0.115	614155	616155
0.116	614156	616156
0.117	614157	616157
0.118	614158	616158
0.119	614159	616159
0.12	614160	616160
0.121	614161	616161
0.122	614162	616162
0.123	614163	616163
0.124	614164	616164
0.125	614165	616165
0.126	614166	616166
0.127	614167	616167
0.128	614168	616168
0.129	614169	616169
0.13	614170	616170
0.131	614171	616171
0.132	614172	616172
0.133	614173	616173
0.134	614174	616174
0.135	614175	616175
0.136	614176	616176
0.137	614177	616177
0.138	614178	616178
0.139	614179	616179
0.14	614180	616180
0.141	614181	616181
0.142	614182	616182
0.143	614183	616183
0.144	614184	616184
0.145	614185	616185
0.146	614186	616186
0.147	614187	616187
0.148	614188	616188
0.149	614189	616189
0.15	614115	616115
0.16	614116	616116
0.17	614117	616117
0.18	614118	616118
0.19	614119	616119
0.2	614192	616192
0.25	614212	616212
0.3	614193	616193
0.35	614213	616213
0.375 (3/8)	614309	—
0.4	614194	616194
0.45	614214	616214
0.5	614195	616195
0.55	614215	616215
0.6	614196	616196
0.65	614216	616216
0.7	614197	616197
0.75	614217	616217
0.8	614198	616198
0.85	614218	616218
0.9	614199	616199
0.95	614219	616219
1	614201	616201
2	614202	616202
3	614203	616203
4	614204	616204
5	614205	—
6	614206	—
7	614207	—
8	614208	—
10	614222	—
12	614223	—
16	614224	—
20	614225	—

Inch Wear Blocks

Length (in)	Code No. Tungsten carbide
0.05	615105
0.1	615191

Note: Details of the overall sizes for forms of block are given on page 01-3 and the accuracy standards to which they are manufactured are given on page 01-5.

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Square Gauge Block Accessories Set SERIES 516

- Mitutoyo offers the gauge block accessories set to expand the variety of square gauge block applications. Square gauge blocks with a hole at their center are much more widely used than rectangular gauge blocks. We also sell the accessories loose to meet your needs.
- Always use genuine gauge block accessories.



516-611

SPECIFICATIONS

Metric

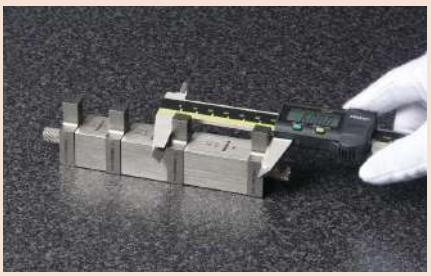
Code No. 516-611	Included in set	Quantity Supplied
619070	Half-round jaw 2 mm	2 pcs.
619071	Half-round jaw 5 mm	
619072	Plain jaw 10 mm	
619073	Center point 2 mm	1 pc.
619054	Scriber point	
619074	Base 10 mm	
619056	Stud	2 pcs.
619057	Flat head screw $1\frac{1}{4}$ in	
619058	Flat head screw $\frac{5}{8}$ in	
619059	Slotted head nut	
619060	Adjustable tie rod 6 in	
619061	Adjustable tie rod $4\frac{1}{2}$ in	
619062	Tie rod 3 in	1 pc.
619063	Tie rod $2\frac{1}{4}$ in	
619064	Tie rod $1\frac{1}{2}$ in	
619065	Tie rod $\frac{3}{4}$ in	
619066	Knurled head screw	2 pcs.

Inch

Code No. 516-612	Included in set	Quantity Supplied
619050	Half-round jaw 0.125 in	2 pcs.
619051	Half-round jaw 0.25 in	
619052	Plain jaw 0.5 in	
619053	Center point 0.1 in	1 pc.
619054	Scriber point	
619055	Base 0.5 in	
619056	Stud	2 pcs.
619057	Flat head screw $1\frac{1}{4}$ in	
619058	Flat head screw $\frac{5}{8}$ in	
619059	Slotted head nut	
619060	Adjustable tie rod 6 in	
619061	Adjustable tie rod $4\frac{1}{2}$ in	
619062	Tie rod 3 in	1 pc.
619063	Tie rod $2\frac{1}{4}$ in	
619064	Tie rod $1\frac{1}{2}$ in	
619065	Tie rod $\frac{3}{4}$ in	
619066	Knurled head screw	2 pcs.

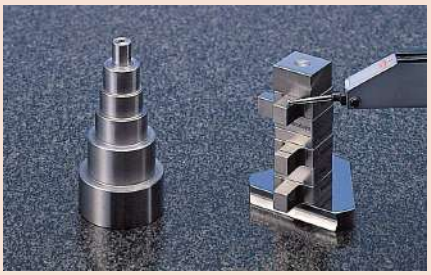
Note: 2 pcs. of half-round jaw, plain jaw, stud, flat head screw, slotted head nut, adjustable tie rod, and knurled head screw are included in each set. Please note that the abovementioned code number indicates only 1 set.

Typical application



Using plain jaws, tie rods, knurled head screws and gauge blocks, a gage was constructed to enable rapid comparison measurement of a stepped workpiece. (Sample workpiece)

Measurement example



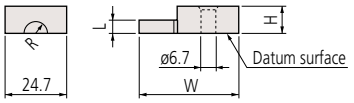
Using a base, plain jaws, tie rods, flat head screws and gauge blocks, a gage was constructed to enable rapid comparison measurement of a stepped workpiece. (Sample workpiece)

Note: Accuracy when using third-party accessories is not guaranteed.

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Half-round jaw

Unit: mm

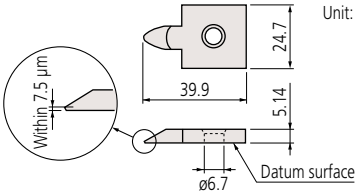


Code No.	R (mm)	L (mm)	W (mm)	H (mm)
619070	1.95	2	33.6	5.3
619071	4.95	5	39.9	10.3

- Flatness 0.5 µm
- Parallelism of L 0.5 µm
- Tolerance of L ±0.5 µm

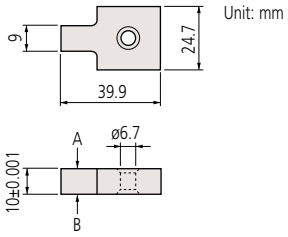
Scriber point 619054

Unit: mm



- Flatness of datum surface 0.5 µm

Plain jaw 619072

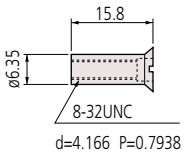


- Flatness 0.12 µm
- Parallelism 0.12 µm
- A and B are datum surfaces

Slotted head nut

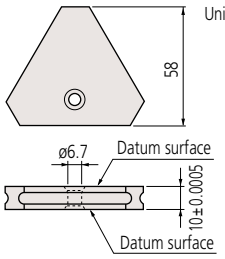
619059

Unit: mm



Base 619074

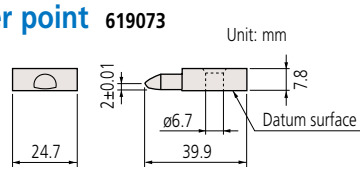
Unit: mm



- Flatness 1.5 µm
- Parallelism 1.5 µm
  (The surface within 1.5 mm of edge is excluded)

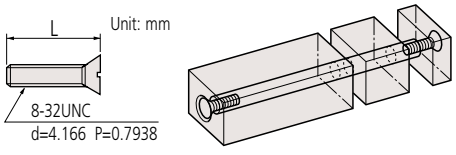
Center point 619073

Unit: mm



- Flatness 0.5 µm

Flat head screw

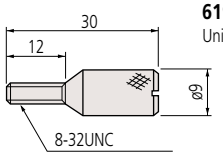


Code No.	L (mm)
619057	31.6
619058	15.8

Knurled head screw

619066

Unit: mm



- **Contraction caused by the clamping force**

The minimum recommended torque to be applied to the clamping screws is approximately 600 mN·m. The chart below shows the approximate length contraction of a 100 mm gage stack using typical torque values.

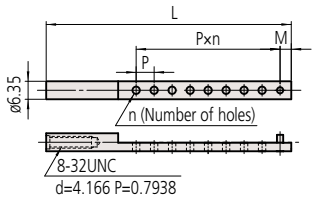
Driver	Contraction
Torque Driver 600 mN·m	0.2 µm/100 mm
Ordinary Driver 700 to 800 mN·m	0.3 µm/100 mm

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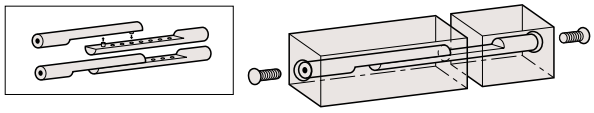
Square Gauge Block Accessories Set SERIES 516

Adjustable tie rod

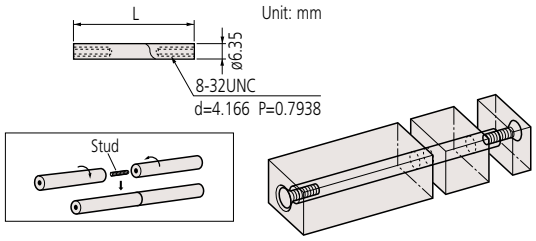
Unit: mm



Code No.	L (mm)	M (mm)	P (mm)	n (Number of holes)
619060	124.5	3.85	6.35	14
619061	86.5	3.95	6.35	8

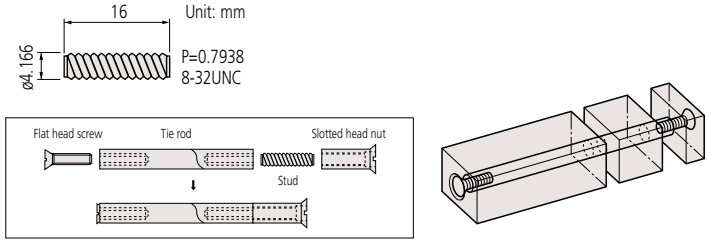


Tie rod



Code No.	L (mm)
619065	19
619064	38
619063	57
619062	76

Stud 619056



Accessories used for combining square gauge blocks

Overall length (mm)	Min.	21	36	34	41	45	58	64	72	77	82	91	95	109	117
Code No. / Included in set	Max.	30	43	43	50	60	72	79	88	91	97	107	109	125	135
619059 Slotted head nut		1	1		1										
619058 Flat head screw		1		2	1	2	1	2		1	2		1		1
619057 Flat head screw			1				1		2	1		2	1	2	1
619056 Stud					1										1
619065 Tie rod				1	1										1
619064 Tie rod						1	1		1						
619063 Tie rod								1		1		1			
619062 Tie rod											1		1	1	1
619061 Adjustable tie rod															
619060 Adjustable tie rod															

Overall length (mm)	Min.	130	148	121	167	143	160	205	180	223	240	258	295	375
Code No. / Included in set	Max.	150	169	180	184	210	255	270	285	288	345	363	445	520
619059 Slotted head nut														
619058 Flat head screw				2			2							
619057 Flat head screw		2	2		2	2		2	2	2	2	2	2	2
619056 Stud		1	1		1			1		1	1	1	1	2
619065 Tie rod		1												
619064 Tie rod			1											
619063 Tie rod					1			1			1			
619062 Tie rod		1	1		1					1		1		1
619061 Adjustable tie rod				2		2		2		2			2	2
619060 Adjustable tie rod							2		2		2	2	2	2

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Step Master
SERIES 516

- Step master is a master gage of different height that is useful for the z-axis (vertical direction) calibration of optical instruments.
- Each adjacent step is measured down to 0.01 µm by using a interferometer within ±0.20 µm allowance.
- Steel and ceramic types are available.



Steel type
516-199



Ceramic type
516-499

SPECIFICATIONS

Steel type

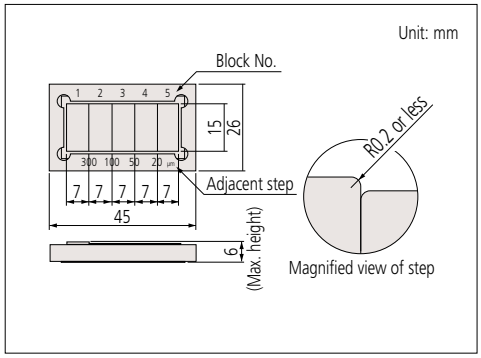
Code No.	516-198					516-199				
Block No.	1	2	3	4	5	1	2	3	4	5
Cumulative step (µm)	0	10	15	17	18	0	300	400	450	470
Step value between adjacent blocks (µm)		10	5	2	1		300	100	50	20

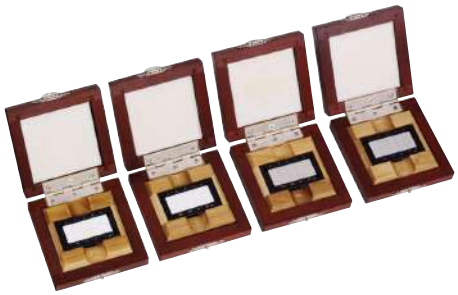
Ceramic type

Code No.	516-498					516-499				
Block No.	1	2	3	4	5	1	2	3	4	5
Cumulative step (µm)	0	10	15	17	18	0	300	400	450	470
Step value between adjacent blocks (µm)		10	5	2	1		300	100	50	20

Note: ○○○ - ○○○ **-24**: Provided with Calibration Certificate

DIMENSIONS





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Custom-made Blocks & Gages

Gauge blocks

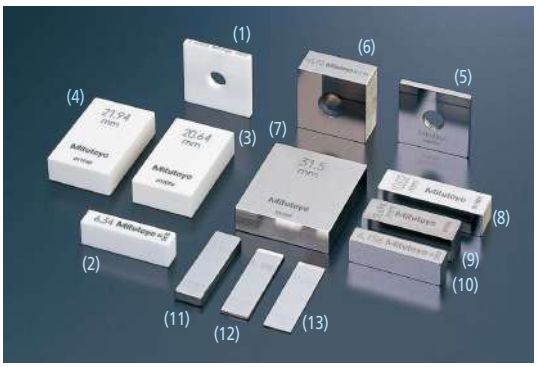
- We can provide gauge blocks in sizes for your specific needs. You can request a particular size you frequently use or a special size in small increments that cannot be created by wringing.
- Nominal size range
  - · 0.1 mm to 1000 mm (steel)
  - · 0.5 mm to 500 mm (ceramic)
  - · 30 mm to 1000 mm (ZERO CERA Blocks)
- Nominal size increment
  - · 0.0005 mm (up to 100 mm)
  - · 0.001 mm (over 100 mm)
- Cross section (same as the standard product)
  - · Nominal length of 10 mm or less: 30×9 mm
  - · Nominal length of more than 10 mm: 35×9 mm
  - · Square types are also available.

Reference gages

- We can provide gages in special dimensions not specified by JIS. Free yourself from the time-consuming work of gage creation by using our service that creates precision spacers and other gages in your preferred sizes. Gages with a hole or specified mark can also be created. Please contact us for details.
- Step masters
  We can create your preferred height difference between adjacent blocks.

Notes on "coupling holes" on custom gauge blocks:
· Steel, from 100 mm to less than 500 mm
Without coupling holes
(Let us know if a hole is required)
· Steel, from 500 mm to less than 1000 mm
With coupling holes
(Let us know if a hole is not required)
· Ceramic, from 100 mm to less than 500 mm
With coupling holes
(Let us know if a hole is not required)

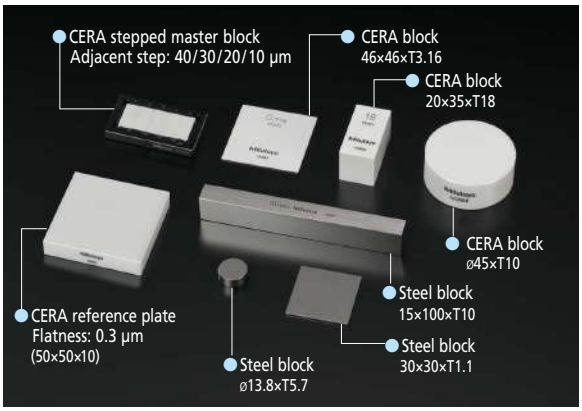
Special gauge blocks



Ceramic
(1) Square gauge block (2.1005 mm)
(2) Rectangular gauge block (6.34 mm)
(3) Rectangular gauge block (20.64 mm)
(4) Rectangular gauge block (21.94 mm)

Steel
(5) Square gauge block (2.2065 mm)
(6) Square gauge block (10.72 mm)
(7) Rectangular gauge block (31.5 mm)
(8) Rectangular gauge block (10.02 mm)
(9) Rectangular gauge block (9.694 mm)
(10) Rectangular gauge block (6.156 mm)
(11) Rectangular gauge block (3.603 mm)
(12) Rectangular gauge block (1.1505 mm)
(13) Rectangular gauge block (0.555 mm)

Special reference gages and step master (T: nominal size)



Unit: mm

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Maintenance Kit for Gauge Blocks SERIES 516

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



516-650E

Typical application



Recommendation for Regular Calibration

As is widely known, gauge blocks are end measures based on distance measurements traceable to the wavelength of the iodine stabilized He-Ne laser. Because they serve as the standard based on which measuring instruments are adjusted, even the smallest of errors can be critical. Therefore, we recommend periodical calibration even when use is infrequent. Please calibrate your gauge blocks as described in the table below (best practices may vary according to frequency of use and grade).

Application	Cycle (years)	Grade
Reference standard	1 to 2	K
Calibration	2	K or 0
Inspection	2	0 or 1
Shop floor	0.5 to 1	1 or 2

As an accredited calibration laboratory, Mitutoyo offers a periodical calibration service for gauge blocks.
Our regular calibration service features:
- Gauge blocks manufactured by any maker can be calibrated.
- Cleaning and removal of burrs.
- Central dimension and dimensional deviations of each block are measured.
- Calibration results are provided for immediate use and for building a calibration history of each block.
  For detailed information, contact the nearest Mitutoyo sales office.

Code No. 516-650E
Tools and accessories included:

(1) Ceraston (**601645**)
(both sides finished by lapping)
(100×25×12 mm)

(2) Optical flat (**158-117**)
(ø45, 12 mm thickness, Flatness 0.2 µm)
Used to check the wringing of thin gauge blocks and for the presence of burrs.

(3) Tweezers (**600004**)
Used for handling thin gauge blocks.

(4) Blower brush (**600005**)
Used for blowing dust from measuring surfaces.

(5) Cleaning paper (**600006**)
(lens paper, 82×304 mm, 500 pcs.)
Used for wiping off rust-preventative oil and contamination. Lint free.

(6) Artificial leather mat (B4 size, Artificial buckskin) (**600007**)
Used as a gauge block mat in order to avoid scratches on the work table.

(7) Reagent bottle (**600008**)
(polyethylene container, 100 ml)
Bottle of wiping solution.
(Mitutoyo employs n-Heptane for solvent.)

(8) Gloves (**600009**)
Used for handling large gauge blocks.
Effective for the prevention of corrosion and thermal expansion.

Mitutoyo reserves the right to change any or all aspects of any product specification, including prices, designs and service content, without notice.