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.

PROPRIETARY INSPECTION CERTIFICATE

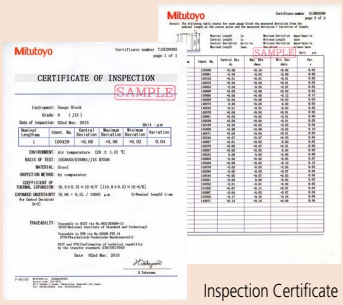
*1: Suffix No. (■) for Selecting Standard and Certificate Provided

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			

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.

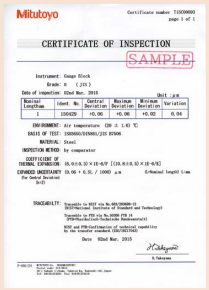
Suffix No. (-■■■) for Selecting Standard and Certificate Provided

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

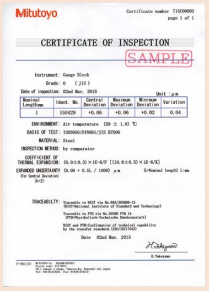
PROPRIETARY INSPECTION CERTIFICATE

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	✔	

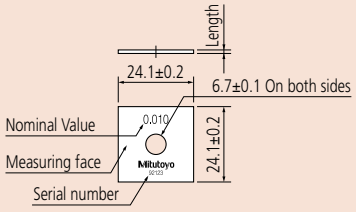


Inspection Certificate

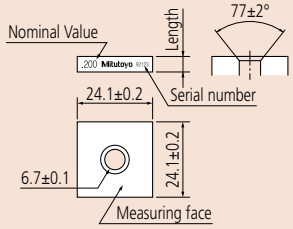
Dimensions

Unit: mm

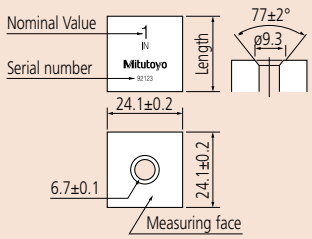
Nominal length: 0.5 mm to 4.5 mm (0.010 in to 0.19 in)



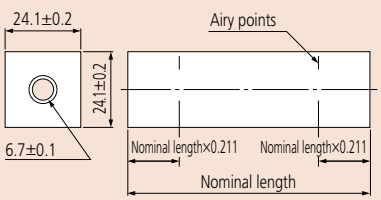
Nominal length: 5 mm to 14.5 mm (0.2 in to 0.450 in)



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	Code No.*1 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.

Mitutoyo

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

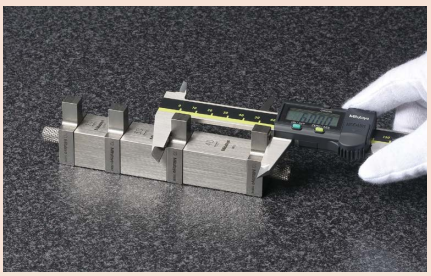
Code No. 516-611	Included in set	Quantity Supplied
619070	Half-round jaw 2 mm	2 pcs.
619071	Half-round jaw 5 mm	
619072	Plain jaw 10 mm	
619073	Center point 2 mm	1 pc.
619054	Scriber point	
619074	Base 10 mm	
619056	Stud	2 pcs.
619057	Flat head screw $1\frac{1}{4}$ in	
619058	Flat head screw $\frac{5}{8}$ 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.

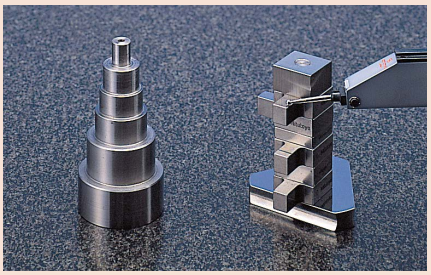
Note: 2 pcs. of half-round jaw, plain jaw, stud, flat head screw, slotted head nut, adjustable tie rod, and knurled head screw are included in each set. Please note that the abovementioned code number indicates only 1 set.

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

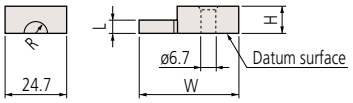


Using a base, plain jaws, tie rods, flat head screws and gauge blocks, a gage was constructed to enable rapid comparison measurement of a stepped workpiece. (Sample workpiece)

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

Half-round jaw

Unit: mm

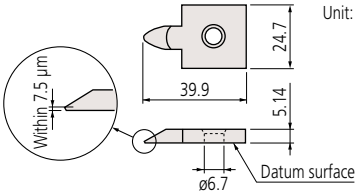


Code No.	R (mm)	L (mm)	W (mm)	H (mm)
619070	1.95	2	33.6	5.3
619071	4.95	5	39.9	10.3

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

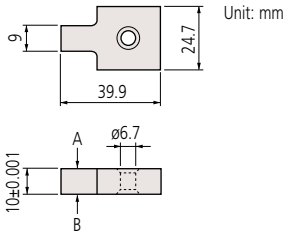
Scriber point 619054

Unit: mm



- Flatness of datum surface 0.5 µm

Plain jaw 619072

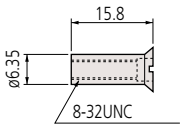


- Flatness 0.12 µm
- Parallelism 0.12 µm
- A and B are datum surfaces

Slotted head nut

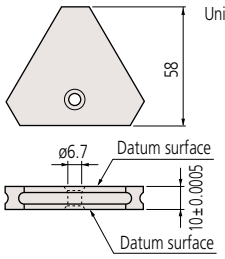
619059

Unit: mm



Base 619074

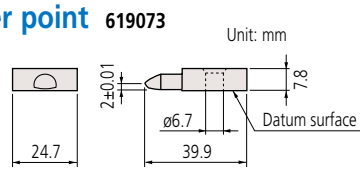
Unit: mm



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

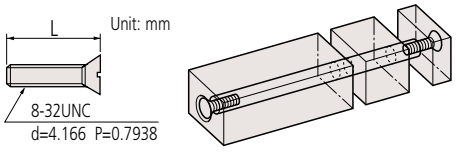
Center point 619073

Unit: mm



- Flatness 0.5 µm

Flat head screw

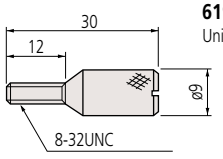


Code No.	L (mm)
619057	31.6
619058	15.8

Knurled head screw

619066

Unit: mm



- **Contraction caused by the clamping force**

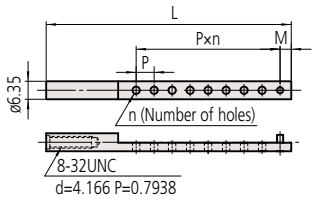
The minimum recommended torque to be applied to the clamping screws is approximately 600 mN·m. The chart below shows the approximate length contraction of a 100 mm gage stack using typical torque values.

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

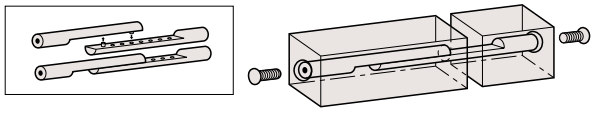
Square Gauge Block Accessories Set SERIES 516

Adjustable tie rod

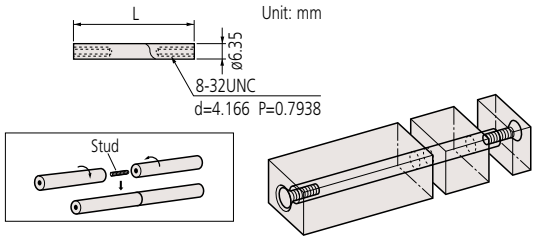
Unit: mm



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

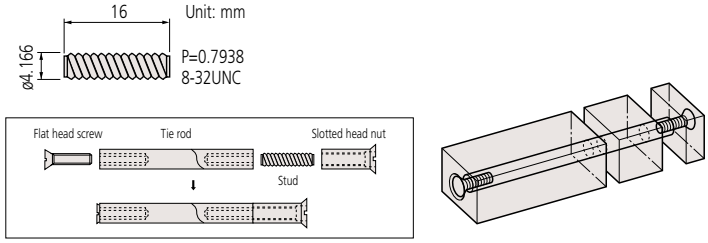


Tie rod



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