

Gauge Blocks



Pages 302–311

Calibration instruments



Pages 312–319



Basic information on gauge blocks

• Characteristics of Mitutoyo gauge blocks:

Mitutoyo, at its factory at Miyazaki in Japan, has followed a long tradition in the manufacture of its gauge blocks. The two materials used are steel and ceramic of outstanding quality and durability.

• Characteristics of Mitutoyo ceramic gauge blocks:

- Durability: 10 x greater wear resistance than steel.
- Virtually no corrosion which means particularly easy maintenance and storage.
- Free from "ageing", i.e. the gauge blocks retain their dimensional stability.
- Steel and ceramics have similar expansion coefficients when subjected to high temperatures, which reduces measurement errors when temperatures change.
- Ceramic gauge blocks can also be used without problem against steel gauge blocks.
- No magnetic dirt such as steel cuttings will cling to ceramic during use.

• Characteristics of Mitutoyo steel gauge blocks:

- Outstanding measuring stability because the steel gauge blocks are made exclusively from materials that have been subjected to sophisticated artificial ageing processes.
- High gauge reliability means that the Mitutoyo gauge block can continue to be a useful standard for a long period of time due to its high dimensional stability.
- Compliance with DIN standards.
- The maximum permitted length changes to gauge blocks over a year are set out clearly in DIN EN ISO 3650. Mitutoyo quality gauge blocks easily meet these and all other requirements.
- Steel gauge blocks are excellent for use as setting standards because of the low measurement uncertainty that can be achieved using them.
- Mitutoyo steel gauge blocks have top quality surfaces guaranteeing optimum positioning qualities.

Material characteristic	Zirkon Ceramic	Steel
HV Vickers hardness	1350	800
Coefficient of linear expansion ($10^{-6}/^{\circ}\text{C}$)	$9,3 \pm 1$	$10,9 \pm 1$
Resistance to bending (MPa)	1270	1960
Poisson's number	0,3	0,3
Specific mass (g/cm^3)	6,0	7,8
Modulus of elasticity (N/mm^2)	206000	206000
Thermal conductivity ($\text{W}/\text{m}^{\circ}\text{K}$)	2,9	54,4

Dimensional length tolerance from the nominal dimension at any point on the measuring surface

Nominal dimensional range mm	Length deviation from the nominal dimension at any point			
	Tolerance grade K	Tolerance grade 0	Tolerance grade 1	Tolerance grade 2
	μm	μm	μm	μm
from 0,5 to 10	0,2	0,12	0,2	0,45
over 10 to 25	0,3	0,14	0,3	0,60
over 25 to 50	0,4	0,20	0,4	0,80
over 50 to 75	0,5	0,25	0,5	1,00
over 75 to 100	0,6	0,30	0,6	1,20
over 100 to 150	0,8	0,40	0,8	1,60
over 150 to 200	1,0	0,50	1,0	2,00
over 200 to 250	1,2	0,60	1,2	2,40
over 250 to 300	1,4	0,70	1,4	2,80
over 300 to 400	1,8	0,90	1,8	3,60
over 400 to 500	2,2	1,10	2,2	4,40
over 500 to 600	2,6	1,30	2,6	5,00
over 600 to 700	3,0	1,50	3,0	6,00
over 700 to 800	3,4	1,70	3,4	6,50
over 800 to 900	3,8	1,90	3,8	7,50
over 900 to 1000	4,2	2,00	4,2	8,00



Sample application

Gauge Block Sets made of steel

- Made of high quality alloyed and stress relieved special steel of high stability and with good adhesive power. Carefully heat treated and lapped. Slightly broken edges.
- Each gauge block is provided with an identification number. The gauge block hardness is 800 HV (64 HRC); therefore they are extremely wear resistant.
- The gauge block sets are stored in a wooden box immediately after calibration. The wooden box is included in the price.

Series 516



516-943-10

Specifications

Accuracy: DIN EN ISO 3650

Tolerance grade: K
For laboratories

Tolerance grade: 0
As reference gauge for controlling workshop gauge blocks.
For adjusting high precision measuring instruments.

Tolerance grade: 1
For controlling test gauges, reference gauges, and for adjusting length measuring instruments as well as for accurate test works in the measuring room.

Tolerance grade: 2
Especially suited as workshop and adjusting gauge or for testing of lever gauges, dial indicators and as substitute for fixed snap gauges.

All gauge block sets are supplied with a factory calibration certificate which documents the traceability to national standards. Additionally, the gauge block sets of calibration class K are measured interferometrically by a NKO accredited laboratory.

No.	Calibration-/ Tolerance grade	Number per set	Contents	Nominal size mm	Grading mm
516-596-70	K	122 pcs.	1	1,0005	-
516-597-10*	0		9	1,001-1,009	0,001
516-598-10*	1		49	1,01 -1,49	0,01
			4	1,6 -1,9	0,1
			49	0,5 -24,5	0,5
			8	30 -100	10
			1	25	-
		(5,1 kg)	1	75	-
516-937-70	K	112 pcs.	1	1,0005	-
516-938-10*	0		9	1,001-1,009	0,001
516-939-10*	1		49	1,01 -1,49	0,01
516-940-10*	2		49	0,5 -24,5	0,5
		(3,7 kg)	4	25 -100	25
516-941-70	K	103 pcs.	1	1,005	-
516-942-10*	0		49	1,01 -1,49	0,01
516-943-10*	1		49	0,5 -24,5	0,5
516-944-10*	2	(3,8 kg)	4	25 -100	25
516-945-70	K	87 pcs.	9	1,001-1,009	0,001
516-946-10*	0		49	1,01 -1,49	0,01
516-947-10*	1		19	0,5 -9,5	0,5
516-948-10*	2	(3,3 kg)	10	10 -100	10
516-958-10*	0	47 pcs.	1	1,005	-
516-959-10*	1		9	1,01 -1,09	0,01
516-960-10*	2		9	1,1 -1,9	0,1
			24	1 -24	1
		(2,4 kg)	4	25 -100	25
516-961-70	K	47 pcs.	1	1,005	-
516-962-10*	0		19	1,01 -1,19	0,01
516-963-10*	1		8	1,2 -1,9	0,1
516-964-10*	2		9	1 -9	1
		(2,8 kg)	10	10 -100	10

No.	Calibration-/ Tolerance grade	Number per set	Contents	Nominal size mm	Grading mm
516-995-10*	0	46 pcs.	9	1,001-1,009	0,001
516-996-10*	1		9	1,01 -1,09	0,01
516-997-10*	2		9	1,1 -1,9	0,1
			9	-9	1
		(2,9 kg)	10	10 -100	10
516-965-70	K	32 pcs.	1	1,005	-
516-966-10*	0		9	1,01 ~1,09	0,01
516-967-10*	1		9	1,1 ~1,9	0,1
516-968-10*	2		9	~9	1
		(1,1 kg)	3	10 ~30	10
			1	60	-
516-990-10	0	9 pcs.	9	0,1 ~0,50	0,05
516-991-10	1				
516-992-10	2	(0,2 kg)			
516-981-70	K	9 pcs.	9	1,001~1,009	0,001
516-982-10*	0				
516-983-10*	1				
516-984-10*	2	(0,2 kg)			
516-985-70	K	9 pcs.	9	0,991~0,999	0,001
516-986-10	0				
516-987-10	1				
516-988-10	2	(0,2 kg)			
516-115-10	0	8 pcs.	8	25 ~200	25
516-116-10	1				
516-117-10	2	(3,3 kg)			
516-702-10	0	8 pcs.	3	125, 150, 175	25
516-703-10	1		2	200, 250	50
516-704-10	2	(7,2 kg)	3	300, 400, 500	100

* Factory certificate of inspection with PTB tracing

Individual Gauge Blocks made of steel

- Made of high quality, especially alloyed and stress relieved special steel of high stability and good adhesive power. Carefully hardened and lapped, slightly broken edges.
- The hardness of these gauge blocks is 800 HV (64 HRC) which makes them extremely wear resistant.

Series 516



611675



Each individual gauge block is supplied with factory certificate of inspection.

* Special dimensions for the testing of caliper gauges
 ** Special dimensions for the testing of external screw type micrometers

Nominal size mm	No.	Nominal size mm	No.	Nominal size mm	No.	Nominal size mm	No.	Nominal size mm	No.	Nominal size mm	No.
0,10	611821	0,51	611892	0,92	611933	1,14	611574	2,0	611612	20,0	611672
0,11	611860	0,52	611893	0,93	611934	1,15	611575	2,5**	611642	20,2**	611855
0,12	611861	0,53	611894	0,94	611935	1,16	611576	3,0	611613	20,5	611660
0,13	611862	0,54	611895	0,95	611936	1,17	611577	3,5	611643	21,0	611631
0,14	611863	0,55	611896	0,96	611937	1,18	611578	4,0	611614	21,5	611661
0,15	611822	0,56	611897	0,97	611938	1,19	611579	4,5	611644	22,0	611632
0,16	611864	0,57	611898	0,98	611939	1,20	611580	5,0	611615	22,5	611662
0,17	611865	0,58	611899	0,99	611940	1,21	611581	5,1**	611850	22,8**	611856
0,18	611866	0,59	611900	0,991	611551	1,22	611582	5,5	611645	23,0	611633
0,19	611867	0,60	611901	0,992	611552	1,23	611583	6,0	611616	23,5	611663
0,20	611823	0,61	611902	0,993	611553	1,24	611584	6,5	611646	24,0	611634
0,21	611868	0,62	611903	0,994	611554	1,25	611585	7,0	611617	24,5	611664
0,22	611869	0,63	611904	0,995	611555	1,26	611586	7,5	611647	25,0**	611635
0,23	611870	0,64	611905	0,996	611556	1,27	611587	7,7**	611851	30,0	611673
0,24	611871	0,65	611906	0,997	611557	1,28	611588	8,0	611618	40,0	611674
0,25	611824	0,66	611907	0,998	611558	1,29	611589	8,5	611648	41,3*	611857
0,26	611872	0,67	611908	0,999	611559	1,30	611590	9,0	611619	50,0	611675
0,27	611873	0,68	611909	1,0	611611	1,31	611591	9,5	611649	60,0	611676
0,28	611874	0,69	611910	1,0005	611520	1,32	611592	10,0	611671	70,0	611677
0,29	611875	0,70	611911	1,001	611521	1,33	611593	10,3**	611852	75,0	611801
0,30	611825	0,71	611912	1,002	611522	1,34	611594	10,5	611650	80,0	611678
0,31	611876	0,72	611913	1,003	611523	1,35	611595	11,0	611621	90,0	611679
0,32	611877	0,73	611914	1,004	611524	1,36	611596	11,5	611651	100,0	611681
0,33	611878	0,74	611915	1,005	611525	1,37	611597	12,0	611622	125,0	611802
0,34	611879	0,75	611916	1,006	611526	1,38	611598	12,5	611652	131,4*	611858
0,35	611826	0,76	611917	1,007	611527	1,39	611599	12,9**	611853	150,0	611803
0,36	611880	0,77	611918	1,008	611528	1,40	611600	13,0	611623	175,0	611804
0,37	611881	0,78	611919	1,009	611529	1,41	611601	13,5	611653	200,0	611682
0,38	611882	0,79	611920	1,01	611561	1,42	611602	14,0	611624	250,0	611805
0,39	611883	0,80	611921	1,02	611562	1,43	611603	14,5	611654	300,0	611683
0,40	611827	0,81	611922	1,03	611563	1,44	611604	15,0**	611625	400,0	611684
0,41	611884	0,82	611923	1,04	611564	1,45	611605	15,5	611655	500,0	611685
0,42	611885	0,83	611924	1,05	611565	1,46	611606	16,0	611626	600,0	611840
0,43	611886	0,84	611925	1,06	611566	1,47	611607	16,5	611656	700,0	611841
0,44	611887	0,85	611926	1,07	611567	1,48	611608	17,0	611627	750,0	611842
0,45	611828	0,86	611927	1,08	611568	1,49	611609	17,5	611657	800,0	611843
0,46	611888	0,87	611928	1,09	611569	1,5	611641	17,6**	611854	900,0	611844
0,47	611889	0,88	611929	1,10	611570	1,6	611516	18,0	611628	1000,0	611845
0,48	611890	0,89	611930	1,11	611571	1,7	611517	18,5	611658		
0,49	611891	0,90	611931	1,12	611572	1,8	611518	19,0	611629		
0,50	611506	0,91	611932	1,13	611573	1,9	611519	19,5	611659		

Specifications

Accuracy: DIN EN ISO 3650

Tolerance grade: 0

As reference gauge for controlling workshop gauges. For adjusting high accuracy measuring instruments.

Tolerance grade: 1

For controlling test gauges, reference gauges, and for adjusting length measuring instruments as well as for accurate test works in the measuring room.

Tolerance grade "K" on request.

When ordering, please always state the suffix of the required tolerance grade.

- 021: Tolerance grade 0
- 031: Tolerance grade 1

Example:

No. 611611-021 Gauge block with nominal size 1 mm, tolerance grade 0

Tolerance grade "K" on request.

Special dimensions on request

Gauge blocks from 125 mm nominal size with connector bores (connectors see page 310)

Micrometer gauge block set made of steel

- Gauge block sets with optical glass parallel.
- For adjusting and calibrating micrometers according to DIN 863.

Series 516



516-107-10

No.	Tolerance grade	Number per set	Contents pcs.	Nominal size mm
516-106-10	0	10	1	2,5
516-107-10	1		1	5,1
516-108-10	2		1	7,7
			1	10,3
			1	12,9
			1	15,0
			1	17,6
			1	20,2
			1	22,8
			1	25,0

Specifications

Accuracy: DIN EN ISO 3650

Delivery in a wooden box

Including 1 piece optical glass parallel no. 157-101, nominal size 12 mm, Ø 30 mm

Optional accessory

516-607 Gauge block holder



Steel caliper gauge block set made of steel

- For testing the accuracy of calipers according to DIN 862.
- Including 3 gauge blocks and 2 ring gauges made of steel.

Series 516



516-124-10

No.	Nominal size mm	Tolerance grade	Mass kg
516-124-10	30 mm, 41,3 mm, and 131,4 mm ring gouge Ø 4 mm and 25 mm material: steel	1	1,72

Specifications

Gauge blocks: Accuracy according to DIN EN ISO 3650

Delivery in a wooden box and a pair of gloves

"Cera Block" Gauge Blocks Sets made of ceramics

- Gauge blocks made of ceramics, of high stability, lapped, with good adhesive power.
- Each gauge block is provided with an identification number. The hardness of the gauge blocks is 1.350 HV. They are very stable and extremely wear resistant.
- Each gauge block set is supplied with a factory certificate of calibration which documents the traceability to national standards.
- Additionally, the gauge blocks are measured interferometrically by a NKO accredited laboratory.

Series 516



516-343-10

No.	Calibration/ Tolerance grade	Number per set	Con- tents	Nominal size mm	Grading mm
516-341-70	K	103 pcs.	1	1,005	-
516-342-10	0		49	1,01 -1,49	0,01
516-343-10	1		49	0,5 -24,5	0,5
516-344-10	2		4	25 -100	25
516-345-70	K	87 pcs.	9	1,001-1,009	0,001
516-346-10	0		49	1,01 -1,49	0,01
516-347-10	1		19	0,5 -9,5	0,5
516-348-10	2		10	10 -100	10
516-361-70	K	47 pcs.	1	1,005	-
516-362-10	0		19	1,01 -1,19	0,01
516-363-10	1		8	1,2 -1,9	0,1
516-364-10	2		9	1 -9	1
			10	10 -100	10
No.	Calibration/ Tolerance grade	Number per set	Con- tents	Nominal size mm	Grading mm
516-395-10	0	46 pcs.	9	1,001-1,009	0,001
516-396-10	1		9	1,01 -1,09	0,01
516-397-10	2		9	1,1 -1,9	0,1
			9	1 -9	1
			10	10 -100	10
516-366-10	0	32 pcs.	1	1,005	-
516-367-10	1		9	1,01 -1,09	0,01
516-368-10	2		9	1,1 -1,9	0,1
			9	1 -9	1,0
			3	10 -30	10
			1	60	-
516-732-10	0	8 pcs.	3	125, 150, 175	25
516-733-10	1		2	200, 250	50
			3	300, 400, 500	100

Specifications

Accuracy: DIN EN ISO 3650

Tolerance grade: K
For laboratories

Tolerance grade: 0
As reference gauge for controlling workshop gauge blocks.
For adjusting high precision measuring instruments.

Tolerance grade: 1
For controlling test gauges, reference gauges, and for adjusting length measuring instruments as well as for accurate test works in the measuring room.

Tolerance grade: 2
Especially suited as workshop and adjusting gauge or for testing of lever gauges, dial indicators and as substitute for fixed snap gauges.

All gauge block sets are supplied with a factory calibration certificate which documents the traceability to national standards. Additionally, the gauge block sets of calibration class K are measured interferometrically by a NKO accredited laboratory.

"Cera Block" Individual Gauge Blocks made of ceramics

- Each gauge block is supplied with a factory certificate of inspection.

Series 516

Specifications

Accuracy: DIN EN ISO 3650

Tolerance grade: 0

As reference standard for controlling workshop gauge blocks.
For adjusting high accuracy measuring instruments.

Tolerance grade: 1

For controlling test gauges, reference gauges, and for adjusting length measuring instruments as well as for accurate test works in the measuring room.

When ordering, please always state the suffix of the required tolerance grade.

- 021: Tolerance grade 0
- 031: Tolerance grade 1

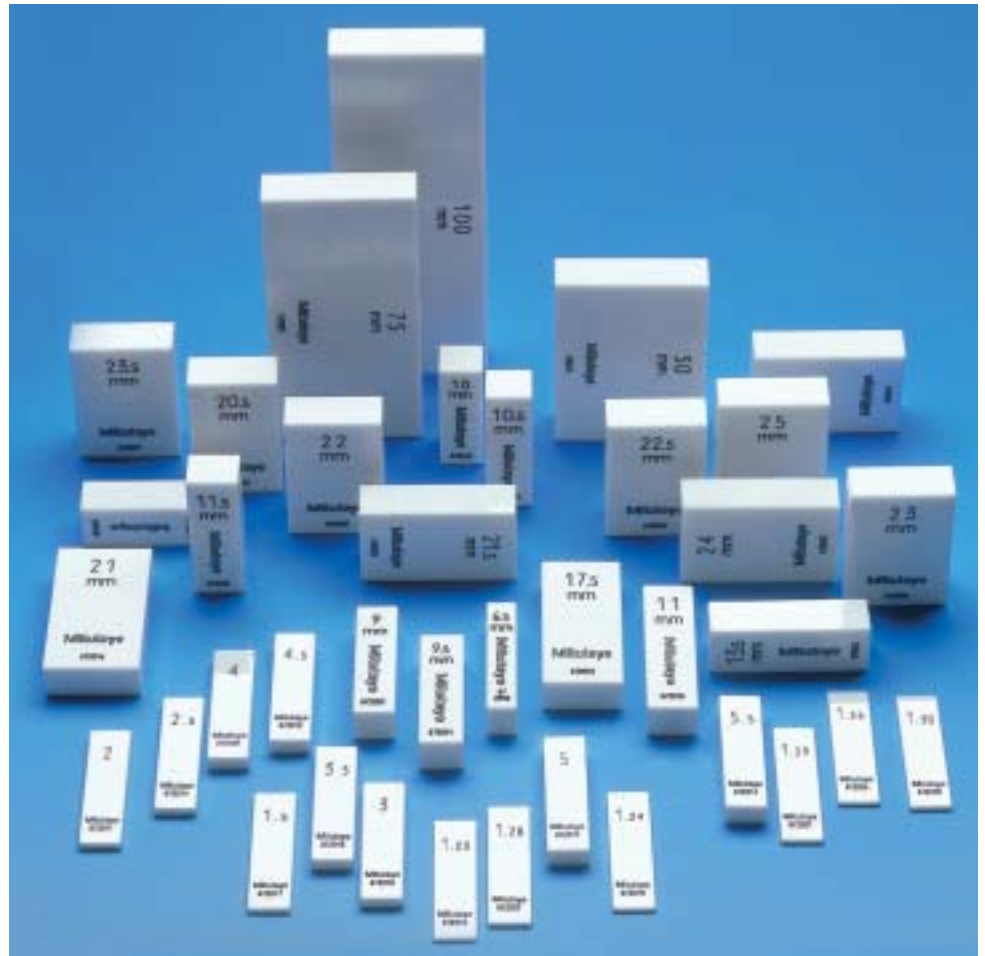
Example:

No. 613611-021 Gauge block with nominal size 1 mm, tolerance grade 0

Tolerance grade "K" on request.

Special dimensions on request

Gauge blocks from 125 mm nominal size with connector bores (connectors see page 310)



* Special dimensions for the testing of caliper gauges

** Special dimensions for the testing of external screw type micrometers

Nominal size mm	No.	Nominal size mm	No.	Nominal size mm	No.	Nominal size mm	No.	Nominal size mm	No.
0,50	613506	1,10	613570	1,40	613600	8,5	613648	21,5	613661
0,991	613551	1,11	613571	1,41	613601	9,0	613619	22,0	613632
0,992	613552	1,12	613572	1,42	613602	9,5	613649	22,5	613662
0,993	613553	1,13	613573	1,43	613603	10,0	613671	22,8**	613856
0,994	613554	1,14	613574	1,44	613604	10,3**	613852	23,0	613633
0,995	613555	1,15	613575	1,45	613605	10,5	613650	23,5	613663
0,996	613556	1,16	613576	1,46	613606	11,0	613621	24,0	613634
0,997	613557	1,17	613577	1,47	613607	11,5	613651	24,5	613664
0,998	613558	1,18	613578	1,48	613608	12,0	613622	25,0**	613635
0,999	613559	1,19	613579	1,49	613609	12,5	613652	30,0	613673
1,0	613611	1,20	613580	1,5	613641	12,9**	613853	40,0	613674
1,0005	613520	1,21	613581	1,6	613516	13,0	613623	41,3*	613857
1,001	613521	1,22	613582	1,7	613517	13,5	613653	50,0	613675
1,002	613522	1,23	613583	1,8	613518	14,0	613624	60,0	613676
1,003	613523	1,24	613584	1,9	613519	14,5	613654	70,0	613677
1,004	613524	1,25	613585	2,0	613612	15,0**	613625	75,0	613801
1,005	613525	1,26	613586	2,5**	613642	15,5	613655	80,0	613678
1,006	613526	1,27	613587	3,0	613613	16,0	613626	90,0	613679
1,007	613527	1,28	613588	3,5	613643	16,5	613656	100,0	613681
1,008	613528	1,29	613589	4,0	613614	17,0	613627	125,0	613802
1,009	613529	1,30	613590	4,5	613644	17,5	613657	131,4*	613858
1,01	613561	1,31	613591	5,0	613615	17,6**	613854	150,0	613803
1,02	613562	1,32	613592	5,1**	613850	18,0	613628	175,0	613804
1,03	613563	1,33	613593	5,5	613645	18,5	613658	200,0	613682
1,04	613564	1,34	613594	6,0	613616	19,0	613629	250,0	613805
1,05	613565	1,35	613595	6,5	613646	19,5	613659	300,0	613683
1,06	613566	1,36	613596	7,0	613617	20,0	613672	400,0	613684
1,07	613567	1,37	613597	7,5	613647	20,2**	613855	500,0	613685
1,08	613568	1,38	613598	7,7**	613851	20,5	613660		
1,09	613569	1,39	613599	8,0	613618	21,0	613631		

Steel micrometer gauge block set made of ceramic

- Gauge block sets with optical glass parallel.
- For adjusting and calibrating micrometers according to DIN 863.

Series 516



516-156-10

No.	Tolerance grade	Number per set	Contents pcs.	Nominal size mm
516-156-10	0	10	1	2,5
516-157-10	1		1	5,1
			1	7,7
			1	10,3
			1	12,9
			1	15,0
			1	17,6
			1	20,2
			1	22,8
			1	25,0

Specifications

Accuracy: DIN EN ISO 3650

Delivery in a wooden box

Including 1 piece optical glass parallel no. 157-101, nominal size 12 mm, Ø 30 mm

Optional accessory

516-607 Gauge block holder



Ceramic caliper testing kit

- For testing the accuracy of calipers according to DIN and/or VDI/VDE/DGQ 2613.
- Including 3 gauge blocks and 2 ring gauges made of ceramics.

Series 516



516-150-10

No.	Nominal size mm	Tolerance grade	Mass kg
516-150-10	30 mm, 41,3 mm, and 131,4 mm ring gauge Ø 4 mm and 25 mm material: ceramic	1	1,72

Specifications

Gauge blocks: Accuracy according to DIN EN ISO 3650

Delivery in a wooden box and a pair of gloves

Ceramics wear gauge block sets

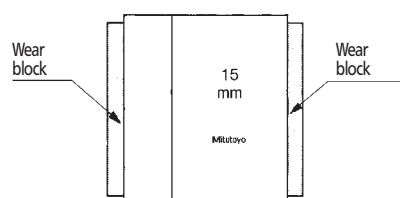
- For protecting measuring surfaces of gauge blocks.

Series 516



516-830-10

No.	Tolerance grade	Contents pcs.	Nominal size mm
516-830-10	0	2	2
516-831-10	1	2	2
516-832-10	0	2	1
516-833-10	1	2	1



Specifications

Accuracy: DIN EN ISO 3650

Gauge block sets made of steel and ceramics

Combination

Gauge block sets made of steel and ceramics

- Intelligent set composition
- Replaces frequently-used steel gauge blocks with ceramic gauge blocks.
- Ceramic gauge blocks included: 1, 2, 3, 4, 5 and 10 mm
- Excellent price/performance ratio
- Outstanding gauge block quality
- Each individual gauge block bears an identification number
- All gauge block sets are supplied with a factory calibration certificate.

Series 516



Gauge blocks made of ceramics
Nominal size:
1, 2, 3, 4, 5 and 10 mm

Specifications

Accuracy: DIN EN ISO 3650

Tolerance grade: K

For laboratories

Tolerance grade: 0

As reference gauge for controlling workshop gauge blocks.

For adjusting high precision measuring instruments.

Tolerance grade: 1

For controlling test gauges, reference gauges, and for adjusting length measuring instruments as well as for accurate test works in the measuring room.

Tolerance grade: 2

Especially suited as workshop and adjusting gauge or for testing of lever gauges, dial indicators and as substitute for fixed snap gauges.

All gauge block sets are supplied with a factory calibration certificate documenting traceability to national standards.



Sample application
Steel and ceramic gauge blocks used together.

No.	Number per set	Calibration-/Tolerance grade
516-962-13	47 pcs.	0
516-963-13	47 pcs.	1
516-964-13	47 pcs.	2
516-966-13	32 pcs.	0
516-967-13	32 pcs.	1
516-968-13	32 pcs.	2

Nuber per set	Mass kg	Contents	Nominal size	Grading
			mm	mm
47 pcs.	2,8	1	1,005	-
		21	1,00 - 1,20	0,01
		8	1,3 - 2,0	0,1
		8	3 - 10	1
32 pcs.	1,1	9	20 - 100	10
		1	1,005	-
		9	1,01 - 1,09	0,01
		9	1,1 - 1,9	0,1
		9	1 - 9	1
3	10	3	10 - 30	10
		1	60	-

Carbide wear gauge sets

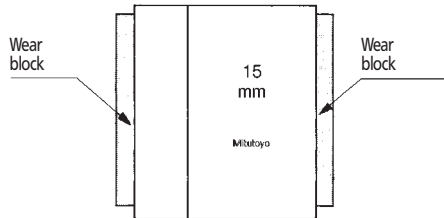
• For protecting the measuring surfaces from gauge blocks.

Series 516



516-803-10

No.	Tolerance grade	Contents pcs.	Nominal size mm
516-803-10	0	2	2,0
516-802-10	1	2	2,0
516-807-10	0	2	1,0
516-806-10	1	2	1,0



Maintenance set

• Contains everything you need for maintaining steel gauge blocks.

Series 516



516-650

No.	including:
516-650	No. 600001 Rust preventive oil in spray spraying can (appr. 100 ml)
	No. 601645 "CERASTON" 100 x 25 x 12 mm
	No. 158-117 Optical flat glas Ø 45 x 12 mm
	No. 600004 Hand tweezers
	No. 600005 Bellow
	No. 600006 Paper cloth
	No. 600007 Leather cloth
	No. 600008 Plastics dropping bottle for cleaning solvent (100 ml)
	No. 600009 Pair of gloves

Connector for long gauge blocks



619031

Specifications

Accuracy: DIN EN ISO 3650

Consumable Spares

No. 601644 "CERASTON"* 150 x 50 x 20 mm

No. 601645 "CERASTON"* 100 x 25 x 12 mm

* Stone for removing burrs on steel gauge blocks



Sample application

No. 619031 Connector

Gauge Block Accessory

- This accessory offers an additional range of application for the representation of cylindrical limit gauges and the direct size transmission onto workpieces.

Series 516

Complete set:

No. 516-601 consisting of 22 parts

No. 516-602 consisting of 14 parts

Delivery in a wooden box



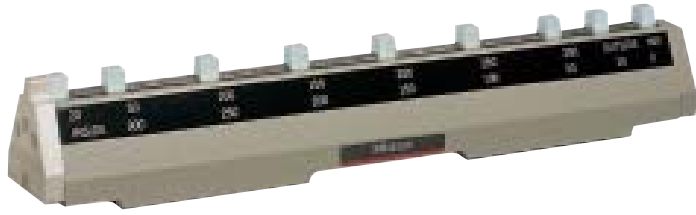
516-601

Part designation	No.	Quantity	No. 516-601 consists of	No. 516-602 consists of	
Holder					
15- 60 mm	619002 P	1	-	●	
5-100 mm	619003 P	1	●	●	
15-160 mm	619004 P	1	●	●	
20-250 mm	619005 P	1	●	●	
Holder base					
35 mm	619009 P	1	●	●	
Semi circular jaws					
Radius 2 mm	619010 P	2	●	●	
Radius 5 mm	619011 P	2	●	●	
Radius 8 mm	619012 P	2	●	●	
Radius 12 mm	619013 P	2	●	-	
Radius 20 mm	619014 P	2	●	-	
Flat jaws					
160 mm	619018 P	2	●	-	
Scriber					
	619019 P	1	●	●	
Centering tip					
	619020 P	1	●	●	
Control tips					
	619021 P	2	●	-	
Straight edges with 3 measuring edges					
100 mm	619022 P	1	●	●	
160 mm	619023 P	1	●	-	
Mass kg	-		5,6	4,6	

Stepped gauge block

- For checking caliper gauges, height gauges and tracers.
- With ceramic gauge blocks.

Series 515



515-555

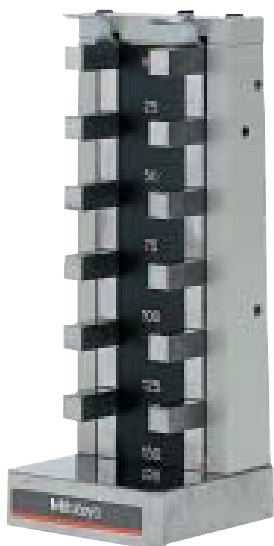
No.	Measuring range mm	Parallelism μm	Graduations mm	Mass kg
515-555	0-300	2	20, 50, 100, 150, 200, 250 and 300	4,0
515-556	0-600	4	20, 50, 100, 150, 200, 300, 400, 500, 550 and 600	8,5



Depth Microchecker

- For testing and calibrating depth micrometers.
- A 25 mm carbide tipped gauge block is provided as reference point.
- The gauge blocks are integrated in a rugged frame in increments of 25 mm and allow for accurate adjustment of the depth micrometer.

Series 515



515-570



No.	Measuring range mm	Graduation mm	Reference element
515-570	0-150	25	25 mm \pm 0,5 μm
515-571	0-300	25	25 mm \pm 0,5 μm

Specifications

Accuracy: Factory specification
 Error limits: 0-300 mm: 5 μm
 300-600 mm: 7 μm

Specifications

Accuracy: Factory specification
 Error limits: 0-150 mm: 2 μm
 150-300 mm: 3 μm

Inside Microchecker

- For checking, calibrating and setting inside micrometers
- A gauge block is integrated into the rugged frame. This enables the adjustment of inside micrometers in increments of 25 mm. An accessory set with two 10 mm gauge blocks and clamping elements is included. This accessory allows for calibration of an inside micrometer in any position. Furthermore, the instrument is designed for ZERO setting of inside micrometers prior to the measurement.

Series 515

with ceramics gauge blocks

Specifications

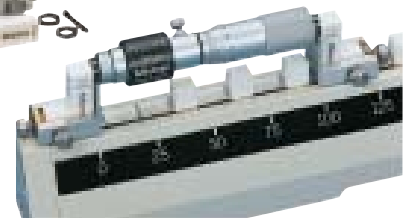
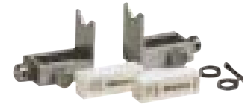
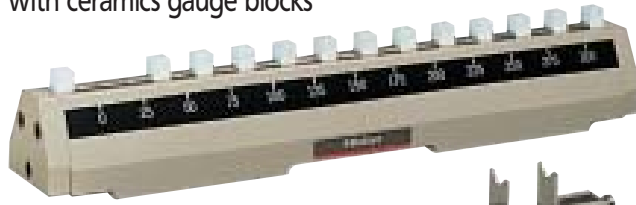
Accuracy: Factory specification

Error limits: 25–300 mm: 3 μm

300–600 mm: 5 μm

Delivery with accessory

515–585



For mechanical inside micrometers only

No.	Measuring range mm	Graduation mm	Mass kg
515–585	25–300	25	3,9
515–586	25–600	25	7,0

Inside Microchecker

- For setting 2-point inside micrometers series 511.

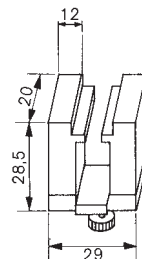
Series 515

Delivery as complete set in soft box

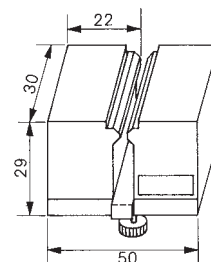


515–590 +
Parallel gauge block
(special accessory)

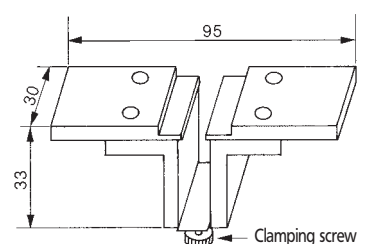
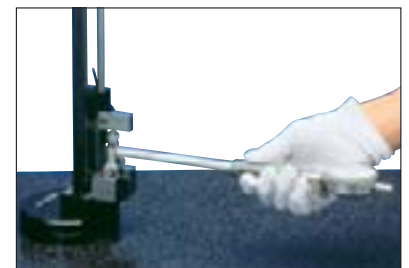
No.	consisting of:
515–590	1 Stand
No. 940088	1 receiver type A for measuring range 18– 35 mm, 35– 60 mm
No. 940089	1 receiver type B for measuring range 50–100 mm, 100–160 mm
No. 940090	1 receiver type C for measuring range 100–250 mm, 250–400 mm
No. 630030	2 flat jaws



940088



940089



940090

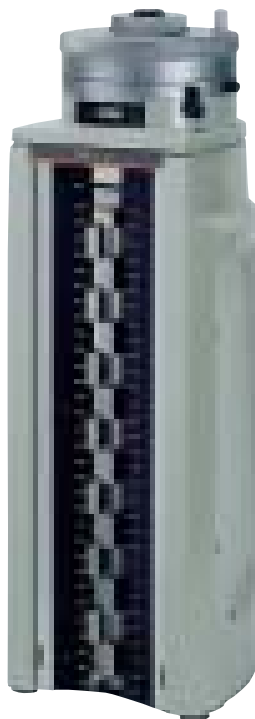
Height Micrometer "Heightmaster"

- For the calibration and setting e.g. of height gauges and tracers.
- Mitutoyo supplies a double gauge block height micrometer with counter which makes reading more rapid, easier and more faultless.
- The gauge blocks of the heightmaster are arranged in two parallel rows, on the left and on the right, with a height distance of 20 mm each.

Series 515



515-354



515-322

No.	Measuring range mm	Resolution mm	Graduation mm	Measuring span/block mm	Spindle accuracy mm	Parallelism μm	Total height mm	Mass kg
515-354	11-310	0,001	0,002	20	0,0020	2,0	469	9,5
515-356	11-460	0,001	0,002	20	0,0020	2,5	619	13,6
515-358	11-610	0,001	0,002	20	0,0025	2,5	769	16,0
515-322	6-310	-	0,001	20	0,0010	1,0	426	21,4

Specifications

Accuracy: Factory specification

Gauge block accuracy:

Error limits: - 300 mm: 1,5 μm
 - 450 mm: 2,5 μm
 - 600 mm: 3,5 μm

No. 515-354 / -356 / -358

With digital reading. Light weight and very handy construction, not only for measuring rooms but also for workshops.

No. 515-322

The lowest block 5 mm instead of 10 mm. This reduces the minimum measuring height to 5 mm.

Height Micrometer "CERA-Heightmaster"

- For calibrating and setting e.g. of height gauges and tracers.
- Integrated, high precision opto-electrical laser measuring system with a resolution of 0,1 μm .
- Gauge blocks made of ceramics, therefore rust proof and extremely resistant against rust and wear.
- Display of the selected gauge block on the LED display for easy operation.
- Two measuring modes: ABS (Absolute) mode, which displays the distance from the measuring plate surface to the surface of the selected gauge block and INC (Incremental) mode. Presetting is also possible (this is useful when using base blocks).

Specifications

Accuracy: Factory specification
 Power supply: via AC adapter
 (9 VDC, 500 mA)
 No. 526688 D

Hand wheel
 for coarse adjustment
 of the gauge blocks: 0,5 mm/revolution
 Hand wheel
 for fine adjustment
 of the gauge blocks: 0,015 mm/revolution

Optional accessory

No. 936937 "DIGIMATIC" Signal cable (1 m)
 No. 965014 "DIGIMATIC" Signal cable (2 m)
 No. 940269 Interface RS-232 C

Series 515

Same accuracy as gauge blocks



515-341

No.	Measuring range mm	Resolution μm	Measuring span/block mm	Error limits μm	Parallelism μm	Graduation mm	Mass kg
515-341	5-310	0,1	20	$0,5 + \frac{L}{200}$ L = mm	0,5	20	18



Function keys



LED display

Optional accessory for Height Micrometer "Heightmaster"

Series 515

For adjusting inside micrometers, inside measuring instruments, etc.



515-112

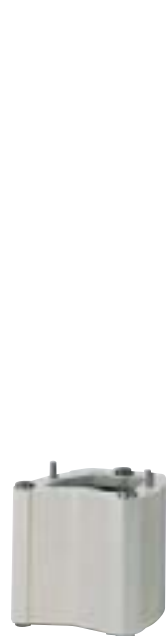


No.	suited for "Heightmaster"
515-111	515-354/-356/-358
515-112	515-322/515-341

Series 515

Bases for series 515

The measuring range can be extended up to 900 mm by using the bases 150, 300 and 600 mm.



515-113



515-114



515-115



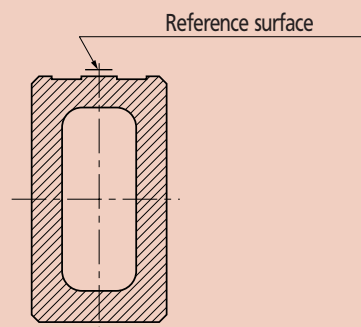
Sample application

No.	Height mm	Error limits μm	Parallelism μm	Mass kg
515-113	150	0,6	0,6	5,7
515-114	300	1,0	0,8	11,3
515-115	600	2,0	1,0	31,0

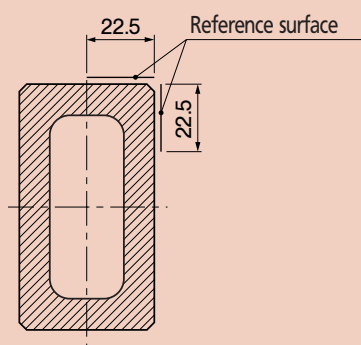
Specifications

Hardness of feet: 88 HRA (Carbide)
Hardness of upper support: 64 HRC

Standard and high-precision version



Double guide



Ceramic level

- For testing measuring instruments and fixtures, and as a reference for machine tools.
- Lightweight ceramic level.
- Dimensionally stable, abrasion-resistant, waterproof and non-corroding.

Series 311



Nominal length mm	No.	Total length mm	Profile mm	Straightness μm	Mass kg
Standard level with factory calibration certificate					
400	311-302-22	440	35x50	0,3	1,8
700	311-305-22	740	35x50	0,5	3,0
1000	311-307-22	1040	45x80	1,0	8,0
1300	311-309-22	1340	45x80	1,5	10,0
High-precision level with factory calibration certificate					
400	311-332-22	440	35x50	0,2	1,8
700	311-335-22	740	35x50	0,4	3,0
1000	311-337-22	1040	45x80	0,5	8,0
1300	311-339-22	1340	45x80	0,7	10,0
Double-guide level with factory calibration certificate					
400	311-352-22	440	45x80	0,3	3,2
700	311-355-22	740	45x80	0,5	5,5
1000	311-357-22	1040	45x80	1,0	8,0
1300	311-359-22	1340	45x80	1,5	10,0

Stepped gauge block "Check-Master"

- This standard is designed for testing the X-, Y- and Z-coordinate axes of precision tool machines and coordinate measuring machines.
- It consists of rigidly clamped gauge blocks with a step of 10 mm.

Series 515

Standard accuracy, steel



515-722

Measuring range mm	No.	Error limits 0-300 mm	Error limits 300-600 mm	Error limits 600-1000 mm	Error limits 1000-1500 mm	Parallelism μm	Mass kg
		μm	μm	μm	μm		
0- 300	515-720	2,5	-	-	-	1,2	8
0- 450	515-721	2,5	3,5	-	-	1,5	10
0- 600	515-722	2,5	3,5	-	-	1,5	13
0-1000	515-723	2,5	3,5	5,0	-	2,0	22
0-1500	515-724	2,5	3,5	5,0	8,0	2,5	30

Specifications

Accuracy: Factory specification

Hardness: more than 64 HRC

Delivery in a wooden box

Stepped gauge block "Check-Master"

- This standard is designed for testing the X-, Y- and Z-coordinate axes of precision tool machines and coordinate measuring machines.
- It consists of rigidly clamped gauge blocks with a step of 10 mm.

Series 515

High precision
Made of steel or ceramics



515-742

Specifications

Accuracy: Factory specification
Delivery in a wooden box

Measuring mm	No.	Error limits 0-300 mm μm	Error limits 300-600 mm μm	Error limits 600-1000 mm μm	Error limits 1000-1500 mm μm	Parallelism μm	Mass kg
Gauge block sets made of steel							
0- 300	515-740	1,2	-	-	-	1,0	3,6
0- 450	515-741	1,2	1,8	-	-	1,0	5,4
0- 600	515-742	1,2	1,8	-	-	1,5	7,2
0-1000	515-743	1,2	1,8	2,5	-	1,5	12,0
0-1500	515-744	1,2	1,8	2,5	4,0	2,0	18,0
Gauge block sets made of ceramics							
0- 300	515-760	1,2	-	-	-	1,0	3,4
0- 450	515-761	1,2	1,8	-	-	1,0	5,2
0- 600	515-762	1,2	1,8	-	-	1,5	6,9
0-1000	515-763	1,2	1,8	2,5	-	1,5	11,5
0-1500	515-764	1,2	1,8	2,5	4,0	2,0	17,3

Precision test gauge set

Specifications

Accuracy: DIN 2269
Hardness: HRC 60–62
Finish: very fine ground
from dia. 3 mm inscribed
Roughness: $\leq 0,1 \mu\text{m Ra}$
Length: up to dia. 6 mm = 50 mm
over dia. 6 mm = 70 mm
Made from alloyed tool steel, hardened.
Delivery in a wooden box

Series 926

Accuracy: DIN 2269

Complete measuring set of universal test gauges, consisting of 273 pieces for use in the control room, work on jig drill or in tool and fixture engineering.

From dia. 0.99–10.01 mm, rising by 0.1 mm, each test gauge delimited by test gauges at + 0.01 mm (oversize) and – 0.01 mm (undersize).



926–210

Individual test gauges on request

No.	Degree of accuracy
926–210	1
926–212	2

Specifications

Accuracy: DIN 2269
Hardness: HRC 60–62
Finish: very fine ground
from dia. 3 mm inscribed
Roughness: $\leq 0,1 \mu\text{m Ra}$
Length: up to dia. 6 mm = 50 mm
over dia. 6 mm = 70 mm
Aus legiertem Werkzeugstahl, gehärtet
Delivery in a wooden box

Series 926

Accuracy: DIN 2269

Complete set of test gauge, consisting of 91 pieces

From dia. 1–10 mm, rising by 0.1 mm



926–222

Individual test gauges on request

No.	Degree of accuracy
926–220	1
926–222	2