

Inch and Metric Gage Block Tolerances

ASME B89.1.9-2002 Standard

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B89 Grade	Grade 00			Grade 0			Grade AS1			Grade AS2		
Size	Size Tolerance	Variation in Length	Flatness	Size Tolerance	Variation in Length	Flatness	Size Tolerance	Variation in Length	Flatness	Size Tolerance	Variation in Length	Flatness
Thru .050 in. (0.5mm)	+4 / -4 (+.10 / -.10)	2 -0.05	2 -0.05	+6 / -6 (+.15 / -.15)	4 -0.1	4 -0.1	+12 / -12 (+.30 / -.30)	6 -0.16	6 -0.15	+24 / -24 (+.60 / -.60)	12 -0.3	10 -0.25
Thru .400 in. (10.0mm)	+3/-3 (+.07 / -.07)	2 -0.05	2 -0.05	+5 / -5 (+.12 / -.12)	4 -0.1	4 -0.1	+8 / -8 (+.20 / -.20)	6 -0.16	6 -0.15	+18 / -18 (+.45 / -.45)	12 -0.3	10 -0.25
Thru 1.000 in. (25.0mm)	+3/-3 (+.07 / -.07)	2 -0.05	2 -0.05	+6 / -6 (+.15 / -.15)	4 -0.1	4 -0.1	+12 / -12 (+.30 / -.30)	6 -0.16	6 -0.15	+24 / -24 (+.60 / -.60)	12 -0.3	10 -0.25
Thru 2.000 in. (50.0mm)	+4 / -4 (+.10 / -.10)	2 -0.06	2 -0.05	+8 / -8 (+.20 / -.20)	4 -0.1	4 -0.1	+16 / -16 (+.40 / -.40)	6 -0.18	6 -0.15	+32 / -32 (+.80 / -.80)	12 -0.3	10 -0.25
Thru 3.000 in. (75.0mm)	+5 / -5 (+.12 / -.12)	3 -0.06	Rect 2 (.05) Sqr 3 (.07)	+10 / -10 (+.25 / -.25)	4 -0.12	4 -0.1	+20 / -20 (+.50 / -.50)	6 -0.18	6 -0.15	+40 / -40 (+1.0 / -1.0)	14 -0.35	10 -0.25
Thru 4.000 in. (100.0mm)	+6 / -6 (+.15 / -.15)	3 -0.07	Rect 2 (.05) Sqr 3 (.07)	+12 / -12 (+.30 / -.30)	5 -0.12	4 -0.1	+24 / -24 (+.60 / -.60)	8 -0.2	6 -0.15	+48 / -48 (+1.2 / -1.2)	14 -0.35	10 -0.25
Thru 5.000 in. (125.0mm)	+8 / -8 (+.20 / -.20)	3 -0.08	Rect 2 (.05) Sqr 3 (.07)	+16 / -16 (+.40 / -.40)	5 -0.14	4 -0.1	+32 / -32 (+.80 / -.80)	8 -0.2	6 -0.15	+64 / -64 (+1.6 / -1.6)	16 -0.4	10 -0.25
Thru 6.000 in. (150.0mm)	+8 / -8 (+.20 / -.20)	3 -0.08	Rect 2 (.05) Sqr 3 (.07)	+16 / -16 (+.40 / -.40)	5 -0.14	4 -0.1	+32 / -32 (+.80 / -.80)	8 -0.2	6 -0.15	+64 / -64 (+1.6 / -1.6)	16 -0.4	10 -0.25
Thru 7.000 in. (175.0mm)	+10 / -10 (+.25 / -.25)	4 -0.09	4 -0.1	+20 / -20 (+.50 / -.50)	6 -0.16	6 -0.15	+40 / -40 (+1.0 / -1.0)	10 -0.25	7 -0.18	+80 / -80 (+2.0 / -2.0)	16 -0.4	10 -0.25
Thru 8.000 in. (200.0mm)	+10 / -10 (+.25 / -.25)	4 -0.09	4 -0.1	+20 / -20 (+.50 / -.50)	6 -0.16	6 -0.15	+40 / -40 (+1.0 / -1.0)	10 -0.25	7 -0.18	+80 / -80 (+2.0 / -2.0)	16 -0.4	10 -0.25
Thru 10.000 in. (250.0mm)	+12 / -12 (+.30 / -.30)	4 -0.1	4 -0.1	+24 / -24 (+.60 / -.60)	6 -0.16	6 -0.15	+48 / -48 (+1.2 / -1.2)	10 -0.25	7 -0.18	+104 / -104 (+2.4 / -2.4)	18 -0.45	10 -0.25
Thru 12.000 in. (300.0mm)	+14 / -14 (+.35 / -.35)	4 -0.1	4 -0.1	+28 / -28 (+.70 / -.70)	7 -0.18	6 -0.15	+56 / -56 (+1.4 / -1.4)	10 -0.25	7 -0.18	+112 / -112 (+2.6 / -2.6)	20 -0.5	10 -0.25
Thru 16.000 in. (400.0mm)	+18 / -18 (+.45 / -.45)	5 -0.12	4 -0.1	+36 / -36 (+.90 / -.90)	8 -0.2	6 -0.15	+72 / -72 (+1.8 / -1.8)	12 -0.3	7 -0.18	+144 / -144 (+3.6 / -3.6)	20 -0.5	10 -0.25
Thru 20.000 in. (500.0mm)	+20 / -20 (+.50 / -.50)	6 -0.14	4 -0.1	+44 / -44 (+1.1 / -1.1)	10 -0.25	6 -0.15	+88 / -88 (+2.2 / -2.2)	14 -0.35	7 -0.18	+176 / -176 (+4.4 / -4.4)	24 -0.6	10 -0.25

Inch system: Tolerances expressed in micro inches (.00001") 1 millionth of an inch

Tolerances are in micro inches or (micrometers).

1µin = .000001 Inches = 1 Microinch

1µm = .001mm = 1 Micron or 1 Micrometer

Grade B or "Toolroom Grade" which typically means the gage blocks tolerances are + / - Fifty millionths (.000050")

Gage Block Material Specification

Gage Blocks are manufactured in controlled environment to ensure maximum accuracy. Meets or exceeds the latest Federal Spec ASME B89.1.9-2002. Constructed of special alloy steel with high carbon and chrome content and hardened to 65 RC. Mirror polished surface finish provides superior wringing characteristics: .4 millionths (.01microns).

Gage Block Length and Width Tolerances

Square Gage Blocks

All Block Dimensions: .950" x .950"

All Blocks have a .265" thru hole in the center of their faces

Blocks .200" and over in size the hole is countersunk on both faces

Rectangular Gage Blocks

Standard Dimensions:

Blocks less than .050": .352" x 1.115"

Blocks .050" over over through .190": .352" x 1.180"

Blocks .200" and over: .352" x 1.380"