

ASME B89.1.9-2002

TABLE 4a MAXIMUM PERMITTED DEVIATIONS OF THE LENGTH AT ANY POINT AND TOLERANCE ON VARIATION IN LENGTH FOR METRIC GAGE BLOCKS

Nominal Length Range	Calibration Grade K		Grade 00		Grade 0		Grade AS-1		Grade AS-2	
	Limit Deviations of Length at any Point From Nominal Length $\pm t_p$ μm	Tolerance for the Variation in Length t_v μm	Limit Deviations of Length at any Point From Nominal Length $\pm t_p$ μm	Tolerance for the Variation in Length t_v μm	Limit Deviations of Length at any Point From Nominal Length $\pm t_p$ μm	Tolerance for the Variation in Length t_v μm	Limit Deviations of Length at any Point From Nominal Length $\pm t_p$ μm	Tolerance for the Variation in Length t_v μm	Limit Deviations of Length at any Point From Nominal Length $\pm t_p$ μm	Tolerance for the Variation in Length t_v μm
$l_n \leq 0.5$	0.30	0.05	0.10	0.05	0.14	0.10	0.30	0.16	0.60	0.30
$0.5 < l_n \leq 10$	0.20	0.05	0.07	0.05	0.12	0.10	0.20	0.16	0.45	0.30
$10 < l_n \leq 25$	0.30	0.05	0.07	0.05	0.14	0.10	0.30	0.16	0.60	0.30
$25 < l_n \leq 50$	0.40	0.06	0.10	0.06	0.20	0.10	0.40	0.18	0.80	0.30
$50 < l_n \leq 75$	0.50	0.06	0.12	0.07	0.25	0.12	0.50	0.18	1.00	0.35
$75 < l_n \leq 100$	0.60	0.07	0.15	0.07	0.30	0.12	0.60	0.20	1.20	0.35
$100 < l_n \leq 150$	0.80	0.08	0.20	0.08	0.40	0.14	0.80	0.20	1.60	0.40
$150 < l_n \leq 200$	1.00	0.09	0.25	0.09	0.50	0.16	1.00	0.25	2.00	0.40
$200 < l_n \leq 250$	1.20	0.10	0.30	0.10	0.60	0.16	1.20	0.25	2.40	0.45
$250 < l_n \leq 300$	1.40	0.10	0.35	0.10	0.70	0.18	1.40	0.25	2.80	0.50
$300 < l_n \leq 400$	1.80	0.12	0.45	0.12	0.90	0.20	1.80	0.30	3.60	0.50
$400 < l_n \leq 500$	2.20	0.14	0.50	0.14	1.10	0.25	2.20	0.35	4.40	0.60
$500 < l_n \leq 600$	2.60	0.16	0.65	0.16	1.30	0.25	2.60	0.40	5.00	0.70
$600 < l_n \leq 700$	3.00	0.18	0.75	0.18	1.50	0.30	3.00	0.45	6.00	0.70
$700 < l_n \leq 800$	3.40	0.20	0.85	0.20	1.70	0.30	3.40	0.50	6.50	0.80
$800 < l_n \leq 900$	3.80	0.20	0.95	0.20	1.90	0.35	3.80	0.50	7.50	0.90
$900 < l_n \leq 1000$	4.20	0.25	1.00	0.25	2.00	0.40	4.20	0.60	8.00	1.00

ASME B89.1.9-2002

TABLE 4b MAXIMUM PERMITTED DEVIATIONS OF THE LENGTH AT ANY POINT AND TOLERANCE ON VARIATION IN LENGTH FOR INCH GAGE BLOCKS

Nominal Length Range	Calibration Grade K			Grade 00			Grade 0			Grade AS-1			Grade AS-2		
	Limit Deviations of Length at any Point From Nominal Length $\pm t_p$ μ in.	Tolerance for the Variation in Length t_v μ in.	Limit Deviations of Length at any Point From Nominal Length $\pm t_p$ μ in.	Tolerance for the Variation in Length t_v μ in.	Limit Deviations of Length at any Point From Nominal Length $\pm t_p$ μ in.	Tolerance for the Variation in Length t_v μ in.	Limit Deviations of Length at any Point From Nominal Length $\pm t_p$ μ in.	Tolerance for the Variation in Length t_v μ in.	Limit Deviations of Length at any Point From Nominal Length $\pm t_p$ μ in.	Tolerance for the Variation in Length t_v μ in.	Limit Deviations of Length at any Point From Nominal Length $\pm t_p$ μ in.	Tolerance for the Variation in Length t_v μ in.	Limit Deviations of Length at any Point From Nominal Length $\pm t_p$ μ in.	Tolerance for the Variation in Length t_v μ in.	
															Limit Deviations of Length at any Point From Nominal Length $\pm t_p$ μ in.
$l_n \leq 0.05$	12	2	4	2	6	4	4	12	6	12	6	24	12		
$0.05 < l_n \leq 0.4$	10	2	3	2	5	3	4	8	4	8	4	18	12		
$0.45 < l_n \leq 1$	12	2	3	2	6	3	4	12	4	12	4	24	12		
$1 < l_n \leq 2$	16	2	4	2	8	4	4	16	4	16	4	32	12		
$2 < l_n \leq 3$	20	2	5	3	10	5	4	20	4	20	4	40	14		
$3 < l_n \leq 4$	24	3	6	3	12	6	5	24	5	24	8	48	14		
$4 < l_n \leq 5$	32	3	8	3	16	8	5	32	5	32	8	64	16		
$5 < l_n \leq 6$	32	3	8	3	16	8	5	32	5	32	8	64	16		
$6 < l_n \leq 7$	40	4	10	4	20	10	6	40	6	40	10	80	16		
$7 < l_n \leq 8$	40	4	10	4	20	10	6	40	6	40	10	80	16		
$8 < l_n \leq 10$	48	4	12	4	24	12	6	48	6	48	10	104	18		
$10 < l_n \leq 12$	56	4	14	4	28	14	7	56	7	56	10	112	20		
$12 < l_n \leq 16$	72	5	18	5	36	18	8	72	8	72	12	144	20		
$16 < l_n \leq 20$	88	6	20	6	44	20	10	88	10	88	14	176	24		
$20 < l_n \leq 24$	104	6	25	6	52	25	10	104	10	104	16	200	28		
$24 < l_n \leq 28$	120	7	30	7	60	30	12	120	12	120	18	240	28		
$28 < l_n \leq 32$	136	8	34	8	68	34	12	136	12	136	20	260	32		
$32 < l_n \leq 36$	152	8	38	8	76	38	14	152	14	152	20	300	36		
$36 < l_n \leq 40$	160	10	40	10	80	40	16	168	16	168	24	320	40		



Gage Blocks
Pin Gages
Rings

Fred V. Fowler Company, Inc.

Previous Gage Block Standards

Cross reference for recent grade changes

Suggested Replacement Grades	
Former Federal Grade (Reference GGG-G-15C)	Grades (This Standard)
1	∅∅
2	∅
3	AS-1
...	AS-2

Tolerance on Length - Inch (error in .00001")

Gageblock Numerical Size	Grade 2 (old grade A+)	Grade 3 (falls between older grades A & B)	Grade B	Grade Economy
1" or less	+4 -2	+8 -4	+10 -6	+50 -50
2"	+8 -4	+16 -8	+20 -12	+50 -50
3"	+10 -5	+20 -10	+30 -18	+50 -50
4"	+12 -6	+24 -12	+40 -24	+50 -50

Tolerance on Length - Metric (error in .001mm)

Gage block Numerical Size	Grade 2 (Metric)
10mm or less	+1 +.05
Over 10mm thru 25mm	+.15 -.08
Over 25mm thru 50mm	+.2 -.12
Over 50mm thru 5mm	+.25 -.15
Over 75mm thru 100mm	+.3 .15