

Gage Tolerances

HEMCO

X Tolerance									W Tolerance											
Pitch Diameter					Major & Minor		Half Angle	Lead	Pitch Diameter					Major & Minor			Half Angle	Lead		
Thread per Inch	To & Incl. 1-1/2"	Above 1-1/2" to 4"	Above 4" to 8"	Above 8" to 12"	To 4" Incl.	Above 4"	Tol. +/-	Tol +/-	Thread per Inch	To and Incl. 1/2" Dia.	Above 1/2" to 1-1/2" Dia.	Above 1-1/2" to 4" Dia.	Above 4" to 8" Dia.	Above 8" to 12" Dia.	To and Incl. 1/2" to 2" Dia.	Above 1/2" to 4"	Above 4"	Tol +/-	To and incl. 1/2" tol. +/-	Above 1/2" tol. +/-
80	.0002				.0003		30'	.0002	80	.0001	.00015				.0003	.0003		20'	.0001	.00015
72	.0002				.0003		30'	.0002	72	.0001	.00015				.0003	.0003		20'	.0001	.00015
64	.0002				.0004		30'	.0002	64	.0001	.00015				.0003	.0004		20'	.0001	.00015
56	.0002	.0003			.0004		30'	.0002	56	.0001	.00015	.0002			.0003	.0004		20'	.0001	.00015
48	.0002	.0003			.0004		30'	.0002	48	.0001	.00015	.0002			.0003	.0004		18'	.0001	.00015
44	.0002	.0003			.0004		20'	.0002	44	.0001	.00015	.0002			.0003	.0004		15'	.0001	.00015
40	.0002	.0003			.0004		20'	.0002	40	.0001	.00015	.0002			.0003	.0004		15'	.0001	.00015
36	.0002	.0003			.0004		20'	.0002	36	.0001	.00015	.0002			.0003	.0004		12'	.0001	.00015
32	.0003	.0004	.0005	.0006	.0005	.0007	15'	.0003	32	.0001	.00015	.0002	.00025	.0003	.0005	.0005	.0007	12'	.0001	.00015
28	.0003	.0004	.0005	.0006	.0005	.0007	15'	.0003	28	.0001	.00015	.0002	.00025	.0003	.0005	.0005	.0007	8	.00015	.00015
24	.0003	.0004	.0005	.0006	.0005	.0007	15'	.0003	24	.0001	.00015	.0002	.00025	.0003	.0005	.0005	.0007	8	.00015	.00015
20	.0003	.0004	.0005	.0006	.0005	.0007	15'	.0003	20	.0001	.00015	.0002	.00025	.0003	.0005	.0005	.0007	8	.00015	.00015
18	.0003	.0004	.0005	.0006	.0005	.0007	10'	.0003	18	.0001	.00015	.0002	.00025	.0003	.0005	.0005	.0007	8	.00015	.00015
16	.0003	.0004	.0006	.0008	.0006	.0009	10'	.0003	16	.0001	.0002	.00025	.0003	.0004	.0006	.0006	.0009	8	.00015	.00015
14	.0003	.0004	.0006	.0008	.0006	.0009	10'	.0003	14	.00015	.0002	.00025	.0003	.0004	.0006	.0006	.0009	6	.0002	.0002
13	.0003	.0004	.0006	.0008	.0006	.0009	10'	.0003	13	.00015	.0002	.00025	.0003	.0004	.0006	.0006	.0009	6	.0002	.0002
12	.0003	.0004	.0006	.0008	.0006	.0009	10'	.0003	12	.00015	.0002	.00025	.0003	.0004	.0006	.0006	.0009	6	.0002	.0002
11	.0003	.0004	.0006	.0008	.0006	.0009	10'	.0003	11	.00015	.0002	.00025	.0003	.0004	.0006	.0006	.0009	6	.0002	.0002
10	.0003	.0004	.0006	.0008	.0006	.0009	10'	.0003	10		.0002	.00025	.0003	.0004		.0006	.0009	6		.00025
9	.0003	.0004	.0006	.0008	.0007	.0011	10'	.0003	9		.0002	.00025	.0003	.0004		.0007	.0011	6		.00025
8	.0004	.0005	.0006	.0008	.0007	.0011	5	.0004	8		.0002	.00025	.0003	.0004		.0007	.0011	5		.00025
7	.0004	.0005	.0006	.0008	.0007	.0011	5	.0004	7		.0002	.00025	.0003	.0004		.0007	.0011	5		.0003
6	.0004	.0005	.0006	.0008	.0008	.0013	5	.0004	6		.0002	.00025	.0003	.0004		.0008	.0013	5		.0003
5		.0005	.0006	.0008	.0008	.0013	5	.0004	5			.00025	.0003	.0004		.0008	.0013	4		.0003
4 1/4		.0005	.0006	.0008	.0008	.0013	5	.0004	4 1/4			.00025	.0003	.0004		.0008	.0013	4		.0003
4		.0005	.0006	.0008	.0009	.0015	5	.0004	4			.00025	.0003	.0004		.0009	.0015	4		.0003

Cylindrical Gage Tolerances

Size Range Inches		Size Range MM		Gagemaker's Tolerances				
Above	To and Including	Above	To and Including	XX Tolerance	X Tolerance	Y Tolerance	Z Tolerance	ZZ Tolerance
.016	.825	.40	20.95	.000020	.00004	.00007	.00010	.00020
.825	1.510	20.95	38.35	.000030	.00006	.00009	.00012	.00024
1.510	2.510	38.35	63.75	.000040	.00008	.00012	.00016	.00032
2.510	4.510	63.75	114.55	.000050	.00010	.00015	.00020	.00040
4.510	6.510	114.55	165.35	.000065	.00013	.00019	.00025	.00050
6.510	9.010	165.35	228.85	.000080	.00016	.00024	.00032	.00064
9.010	12.010	228.85	305.05	.000100	.00020	.00030	.00040	.00080

Direction of Tolerances
 Cylindrical Rings:: Go: Minus Tolerance
 Notgo: Plus Tolerance
 Master: Bilateral,
 (1/2 Plus, 1/2 Minus)
 Cylindrical Plugs: Go: Plus Tolerance
 Notgo: Minus Tolerance
 Master Disc's: Bilateral, (1/2 Plus, 1/2 Minus)

What class of gage is right for a particular job? A good rule of thumb is to use gages that are accurate to 10% of the manufacturing tolerance. Typically, 1/2 of the 10% is applied to the Go gage, the other 1/2 is applied to the NoGo gage. Example: A part under .825" has a tolerance of .002". When using Go and NoGo gages each gage should be accurate to at least .0001", or a Class Z Gagemaker's Tolerance. Many Quality Control Technicians use a gage which is one class better than the 10% rule. ▲