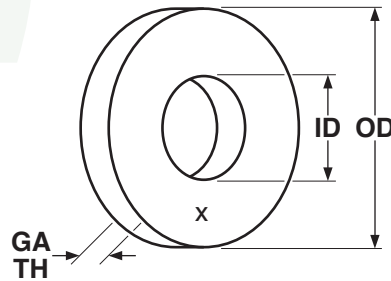


WASHERS

Low Carbon Steel &
Stainless Steel

USS FLAT



USS LOW CARBON & STAINLESS WASHERS

-ASME
B18.21.1-
2009

Bolt Size	Outside Diameter			Inside Diameter			Thickness			Approximate Number of STEEL washers per carton	
	Nominal	Max	Min	Nominal	Max	Min	American Standard (Gauge)	Max	Min	25 Lbs. (Zinc, Black Oxide or Plain finish)	20 Lbs. (Galvanized)
3/16	9/16	0.577	0.557	1/4	0.265	0.245	18 (3/64)	.065	.036	9025	-
1/4	3/4	0.749	0.727	5/16	0.327	0.307	16 (1/16)	.080	.051	3725	2985
5/16	7/8	0.905	0.868	3/8	0.390	0.370	14 (5/64)	.104	.064	2175	1738
3/8	1	1.030	0.993	7/16	0.453	0.433	14 (5/64)	.104	.064	1600	1342
7/16	1-1/4	1.280	1.243	1/2	0.515	0.495	14 (5/64)	.104	.064	1025	-
1/2	1-3/8	1.405	1.368	9/16	0.577	0.557	12 (7/64)	.132	.086	650	519
9/16	1-1/2	1.499	1.462	5/8	0.640	0.620	21 (7/64)	.132	.086	550	-
5/8	1-3/4	1.780	1.743	11/16	0.718	0.681	10 (9/64)	.160	.108	325	259
3/4	2	2.030	1.993	13/16	0.842	0.805	9 (5/32)	.177	.122	227	181
7/8	2-1/4	2.280	2.243	15/16	0.968	0.931	8 (11/64)	.192	.136	162	-
1	2-1/2	2.530	2.493	1-1/16	1.092	1.055	8 (11/64)	.192	.136	132	106
1-1/8	2-3/4	2.780	2.743	1-1/4	1.280	1.243	8 (11/64)	.192	.136	112	-
1-1/4	3	3.030	2.993	1-3/8	1.405	1.368	8 (11/64)	.192	.136	95	-
1-3/8	3-1/4	3.295	3.240	1-1/2	1.545	1.490	7 (3/16)	.213	.153	75	-
1-1/2	3-1/2	3.545	3.490	1-5/8	1.670	1.615	7 (3/16)	.213	.153	65	-
1-5/8	3-3/4	3.795	3.740	1-3/4	1.795	1.740	7 (3/16)	.213	.153	57	-
1-3/4	4	4.045	3.990	1-7/8	1.920	1.865	7 (3/16)	.213	.153	50	-
1-7/8	4-1/4	4.295	4.240	2	2.045	1.990	7 (3/16)	.213	.153	45	-
2	4-1/2	4.545	4.490	2-1/8	2.170	2.115	7 (3/16)	.213	.153	39	-
2-1/4	4-3/4	4.795	4.740	2-3/8	2.420	2.365	5 (7/32)	.248	.193	30	-
2-1/2	5	5.045	4.990	2-5/8	2.670	2.615	4 (15/64)	.280	.210	26	-
2-3/4	5-1/4	5.315	5.240	2-7/8	2.940	2.865	3 (1/4)	.310	.228	22	-
3	5-1/2	5.565	5.490	3-1/8	3.190	3.115	2 (5/32)	.327	.249	21	-

Description	A thin, flat, circular metal part with a centrally located hole.	
Applications/ Advantages	Washers are designed for assembly around a bolt or screw, between the bearing surface of the fastener and the part to which it is attached. Flat washers are used to improve stress distribution, and to span large clearance holes. USS washers are designed to meet the majority of industrial applications in manufacturing, maintenance and repair.	
Material	Steel	Stainless
	Plain washers shall be punched from hot-rolled, hot-rolled and pickled, or cold-rolled steel, or shall be machined from bar stock or tubing, or many be forged at the manufacturer's option.	18-8 Stainless
Plating	See Appendix-A for information about the plating of low carbon flat washers.	Stainless USS flat washers are typically furnished plain or with a black oxide finish.