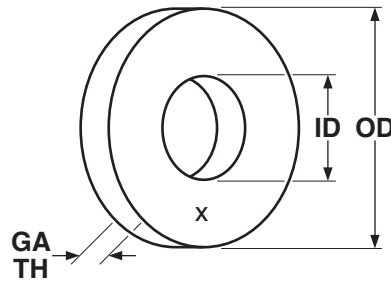


USS FLAT WASHERS



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	50 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	18050	-
1/4	3/4	0.749	0.727	5/16	0.327	0.307	16 (1/16)	.080	.051	7450	2985
5/16	7/8	0.905	0.868	3/8	0.390	0.370	14 (5/64)	.104	.064	4350	1738
3/8	1	1.030	0.993	7/16	0.453	0.433	14 (5/64)	.104	.064	2940	1342
7/16	1-1/4	1.280	1.243	1/2	0.515	0.495	14 (5/64)	.104	.064	2050	-
1/2	1-3/8	1.405	1.368	9/16	0.577	0.557	12 (7/64)	.132	.086	1300	519
9/16	1-1/2	1.499	1.462	5/8	0.640	0.620	21 (7/64)	.132	.086	1100	-
5/8	1-3/4	1.780	1.743	11/16	0.718	0.681	10 (9/64)	.160	.108	650	259
3/4	2	2.030	1.993	13/16	0.842	0.805	9 (5/32)	.177	.122	455	181
7/8	2-1/4	2.280	2.243	15/16	0.968	0.931	8 (11/64)	.192	.136	325	-
1	2-1/2	2.530	2.493	1-1/16	1.092	1.055	8 (11/64)	.192	.136	265	106
1-1/8	2-3/4	2.780	2.743	1-1/4	1.280	1.243	8 (11/64)	.192	.136	225	-
1-1/4	3	3.030	2.993	1-3/8	1.405	1.368	8 (11/64)	.192	.136	190	-
1-3/8	3-1/4	3.295	3.240	1-1/2	1.545	1.490	7 (3/16)	.213	.153	150	-
1-1/2	3-1/2	3.545	3.490	1-5/8	1.670	1.615	7 (3/16)	.213	.153	130	-
1-5/8	3-3/4	3.795	3.740	1-3/4	1.795	1.740	7 (3/16)	.213	.153	115	-
1-3/4	4	4.045	3.990	1-7/8	1.920	1.865	7 (3/16)	.213	.153	100	-
1-7/8	4-1/4	4.295	4.240	2	2.045	1.990	7 (3/16)	.213	.153	90	-
2	4-1/2	4.545	4.490	2-1/8	2.170	2.115	7 (3/16)	.213	.153	79	-
2-1/4	4-3/4	4.795	4.740	2-3/8	2.420	2.365	5 (7/32)	.248	.193	60	-
2-1/2	5	5.045	4.990	2-5/8	2.670	2.615	4 (15/64)	.280	.210	52	-
2-3/4	5-1/4	5.315	5.240	2-7/8	2.940	2.865	3 (1/4)	.310	.228	45	-
3	5-1/2	5.565	5.490	3-1/8	3.190	3.115	2 (5/32)	.327	.249	43	-

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 316 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.