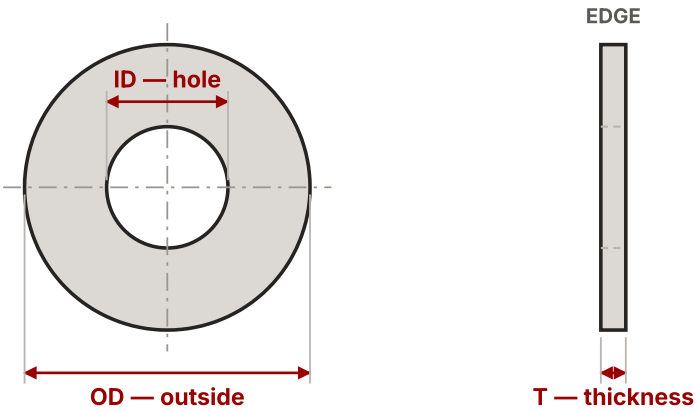
Flat Washer Dimensions

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J & E Supply & FASTENER CO.

Hole, outside diameter and thickness for SAE and USS flat washers and F436 hardened structural washers, by the bolt they fit.

A washer is named for the **bolt it fits**, not for its own measurements: a ½″ washer goes on a ½″ bolt, and its hole is a little bigger than ½″. For the same bolt, an **SAE** washer has a tighter hole and a smaller outside; a **USS** washer is bigger all around. **F436** is the hardened washer for structural bolts.



Letters match the table columns: **ID** the hole, **OD** across the outside, **T** thickness.

SAE flat washers (Type A narrow) — ASME B18.21.1 (inches)

BOLT SIZE	HOLE ID	ID MAX / MIN	OUTSIDE OD	OD MAX / MIN	THICKNESS	T MAX / MIN
#2	3/32″	.094 / .089	1/4″	.250 / .245	.020	.025 / .016
#4	1/8″	.133 / .120	5/16″	.320 / .307	.032	.040 / .025
#6	5/32″	.164 / .151	3/8″	.390 / .370	.049	.065 / .036
#8	3/16″	.196 / .183	7/16″	.453 / .433	.049	.065 / .036
#10	7/32″	.227 / .214	1/2″	.515 / .495	.049	.065 / .036
3/16″	1/4″	.265 / .245	9/16″	.577 / .557	.049	.065 / .036
#12	1/4″	.265 / .245	9/16″	.577 / .557	.065	.080 / .051
1/4″	9/32″	.296 / .276	5/8″	.640 / .620	.065	.080 / .051
5/16″	11/32″	.359 / .339	11/16″	.703 / .681	.065	.080 / .051
3/8″	13/32″	.421 / .401	13/16″	.827 / .805	.065	.080 / .051
7/16″	15/32″	.484 / .464	59/64″	.937 / .915	.065	.080 / .051
1/2″	17/32″	.546 / .526	1-1/16″	1.092 / 1.055	.095	.121 / .074
9/16″	19/32″	.609 / .589	1-5/32″	1.186 / 1.149	.095	.121 / .074
5/8″	21/32″	.686 / .649	1-5/16″	1.342 / 1.305	.095	.121 / .074
3/4″	13/16″	.842 / .805	1-15/32″	1.499 / 1.462	.134	.160 / .108
7/8″	15/16″	.968 / .931	1-3/4″	1.780 / 1.743	.134	.160 / .108
1″	1-1/16″	1.092 / 1.055	2″	2.030 / 1.993	.134	.160 / .108
1-1/8″	1-1/4″	1.280 / 1.243	2-1/4″	2.280 / 2.243	.134	.160 / .108
1-1/4″	1-3/8″	1.405 / 1.368	2-1/2″	2.530 / 2.493	.165	.192 / .136
1-3/8″	1-1/2″	1.530 / 1.493	2-3/4″	2.780 / 2.743	.165	.192 / .136
1-1/2″	1-5/8″	1.655 / 1.618	3″	3.030 / 2.993	.165	.192 / .136

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The tighter, smaller washer — for finished work and smaller bearing surfaces. Number sizes (#2–#12) and 3/16″ come in one size only and are sold as SAE.

USS flat washers (Type A wide) — ASME B18.21.1 (inches)

BOLT SIZE	HOLE ID	ID MAX / MIN	OUTSIDE OD	OD MAX / MIN	THICKNESS	T MAX / MIN
1/4″	5/16″	.327 / .307	47/64″	.749 / .727	.065	.080 / .051
5/16″	3/8″	.390 / .370	7/8″	.905 / .868	.083	.104 / .064
3/8″	7/16″	.453 / .433	1″	1.030 / .993	.083	.104 / .064
7/16″	1/2″	.515 / .495	1-1/4″	1.280 / 1.243	.083	.104 / .064
1/2″	9/16″	.577 / .557	1-3/8″	1.405 / 1.368	.109	.132 / .086
9/16″	5/8″	.640 / .620	1-15/32″	1.499 / 1.462	.109	.132 / .086
5/8″	11/16″	.718 / .681	1-3/4″	1.780 / 1.743	.134	.160 / .108
3/4″	13/16″	.842 / .805	2″	2.030 / 1.993	.148	.177 / .122
7/8″	15/16″	.968 / .931	2-1/4″	2.280 / 2.243	.165	.192 / .136
1″	1-1/16″	1.092 / 1.055	2-1/2″	2.530 / 2.493	.165	.192 / .136
1-1/8″	1-1/4″	1.280 / 1.243	2-3/4″	2.780 / 2.743	.165	.192 / .136
1-1/4″	1-3/8″	1.405 / 1.368	3″	3.030 / 2.993	.165	.192 / .136
1-3/8″	1-1/2″	1.545 / 1.490	3-1/4″	3.295 / 3.240	.180	.213 / .153
1-1/2″	1-5/8″	1.670 / 1.615	3-1/2″	3.545 / 3.490	.180	.213 / .153
1-5/8″	1-3/4″	1.795 / 1.740	3-3/4″	3.795 / 3.740	.180	.213 / .153
1-3/4″	1-7/8″	1.920 / 1.865	4″	4.045 / 3.990	.180	.213 / .153
1-7/8″	2″	2.045 / 1.990	4-1/4″	4.295 / 4.240	.180	.213 / .153
2″	2-1/8″	2.170 / 2.115	4-1/2″	4.545 / 4.490	.180	.213 / .153
2-1/4″	2-3/8″	2.420 / 2.365	4-3/4″	4.795 / 4.740	.220	.248 / .193
2-1/2″	2-5/8″	2.670 / 2.615	5″	5.045 / 4.990	.238	.280 / .210
2-3/4″	2-7/8″	2.940 / 2.865	5-1/4″	5.315 / 5.240	.259	.310 / .228
3″	3-1/8″	3.190 / 3.115	5-1/2″	5.565 / 5.490	.284	.327 / .249

The bigger washer — spreads the load wider and fits looser holes. 1-5/8″ and up come in one size only and are sold as USS.

F436 hardened structural washers, round — ASTM F436 (inches)

BOLT SIZE	HOLE ID	OUTSIDE OD	THICKNESS MIN – MAX
1/4″	9/32″	5/8″	.051 – .080
5/16″	11/32″	11/16″	.051 – .080
3/8″	13/32″	13/16″	.051 – .080
7/16″	15/32″	59/64″	.051 – .080
1/2″	17/32″	1-1/16″	.097 – .177
5/8″	11/16″	1-5/16″	.122 – .177
3/4″	13/16″	1-15/32″	.122 – .177
7/8″	15/16″	1-3/4″	.136 – .177
1″	—	2″	.136 – .177
1-1/8″	—	2-1/4″	.136 – .177

BOLT SIZE	HOLE ID	OUTSIDE OD	THICKNESS MIN – MAX
1-1/4"	1-3/8"	2-1/2"	.136 – .177
1-3/8"	1-1/2"	2-3/4"	.136 – .177
1-1/2"	1-5/8"	3"	.136 – .177
1-3/4"	1-7/8"	—	.178 – .280
2"	2-1/8"	3-3/4"	.178 – .280
2-1/4"	2-3/8"	4"	—
2-1/2"	2-5/8"	4-1/2"	—
2-3/4"	2-7/8"	5"	—
3"	3-1/8"	5-1/2"	—

Nominal hole and outside. The 1" and 1-1/8" hole changed between editions of the standard (1-1/16" / 1-3/16" before, 1-1/8" / 1-1/4" in ASME B18.2.6-2019) — give us a call at 405-670-1234 if the hole size matters. Hardness and use: ASTM F436.

How to measure a washer

Measure the hole (ID), across the outside (OD) and the thickness (T), then find the row whose numbers match. The bolt size on that row is the washer's size. If the hole fits your bolt but the outside is bigger or smaller than you expected, you have the other series — SAE and USS washers for the same bolt are different washers.

Which washer do I need?

Spreading the load under a nut or bolt head: SAE for finished work, USS or a fender washer to spread wider. Structural bolts (A325 / A490): F436. More on each kind on Washer Types & When to Use Them; bolt heads on the hex cap and heavy hex bolt charts.

Quick answers

What is the difference between SAE and USS washers?

For the same bolt, a USS washer is bigger: a 1/2" SAE washer is 1-1/16" across with a 17/32" hole; a 1/2" USS washer is 1-3/8" across with a 9/16" hole.

What is the outside diameter of a 3/8" USS washer?

1" (1.000"), with a 7/16" hole and .083" thick.

What size is a 1/4" SAE washer?

Hole 9/32", outside 5/8", .065" thick (ASME B18.21.1 Type A narrow).

How thick is an F436 washer?

.097–.177" for 1/2", and .136–.177" from 7/8" through 1-1/2".

What washer goes with an A325 bolt?

An ASTM F436 hardened washer — a 3/4" F436 has a 13/16" hole and is 1-15/32" across.

Reference values drawn from the governing standards. For critical applications, confirm against the standard and the manufacturer's published data. Technical information disclaimer →