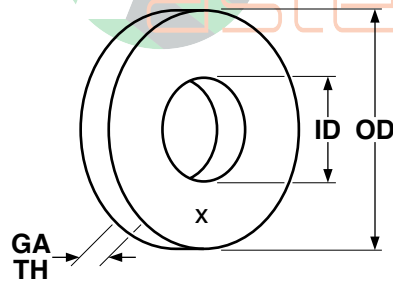


Low Carbon Steel /
18-8 Stainless /
316 Stainless

SAE Flat

Washers



| SAE LOW CARBON & STAINLESS WASHERS | | | | | | | | | | ASME B18.21.1-2009 |
|------------------------------------|------------------|-------|-------|-----------------|-------|-------|---------------------------|------|------|---|
| Bolt Size | Outside Diameter | | | Inside Diameter | | | Thickness | | | Approximate Number of STEEL Washers per 50 Pounds |
| | Nominal | Max | Min | Nominal | Max | Min | American Standard (Gauge) | Max | Min | |
| 4 | 5/16 | 0.320 | 0.307 | 1/8 | 0.133 | 0.120 | (1/32) | .040 | .025 | 16660 (10 lb. ctn) |
| 6 | 3/8 | 0.390 | 0.370 | 5/32 | 0.164 | 0.151 | 18 (3/64) | .065 | .036 | 39500 |
| 8 | 7/16 | 0.453 | 0.433 | 3/16 | 0.196 | 0.183 | 18 (3/64) | .065 | .036 | 29500 |
| 10 | 1/2 | 0.515 | 0.495 | 7/32 | 0.227 | 0.214 | 18 (3/64) | .065 | .036 | 22750 |
| 3/16 | 9/16 | 0.577 | 0.557 | 1/4 | 0.265 | 0.245 | 18 (3/64) | .065 | .036 | |
| 12 | 9/16 | 0.577 | 0.557 | 1/4 | 0.265 | 0.245 | 16 (1/16) | .080 | .051 | 14700 |
| 1/4 | 5/8 | 0.640 | 0.620 | 9/32 | 0.296 | 0.276 | 16 (1/16) | .080 | .051 | 11100 |
| 5/16 | 11/16 | 0.703 | 0.681 | 11/32 | 0.359 | 0.339 | 16 (1/16) | .080 | .051 | 9750 |
| 3/8 | 13/16 | 0.827 | 0.805 | 13/32 | 0.419 | 0.401 | 16 (1/16) | .080 | .051 | 7000 |
| 7/16 | 59/64 | 0.937 | 0.915 | 15/32 | 0.484 | 0.464 | 16 (1/16) | .080 | .051 | 5500 |
| 1/2 | 1-1/16 | 1.092 | 1.055 | 17/32 | 0.546 | 0.526 | 13 (3/32) | .121 | .074 | 2800 |
| 9/16 | 1-3/16 | 1.186 | 1.149 | 19/32 | 0.609 | 0.589 | 13 (3/32) | .121 | .074 | 2250 |
| 5/8 | 1-5/16 | 1.342 | 1.305 | 21/32 | 0.686 | 0.649 | 13 (3/32) | .121 | .074 | 1850 |
| 3/4 | 1-1/2 | 1.499 | 1.462 | 13/16 | 0.842 | 0.805 | 10 (9/64) | .160 | .108 | 1050 |
| 7/8 | 1-3/4 | 1.780 | 1.743 | 15/16 | 0.968 | 0.931 | 10 (9/64) | .160 | .108 | 775 |
| 1 | 2 | 2.030 | 1.993 | 1-1/16 | 1.092 | 1.055 | 10 (9/64) | .160 | .108 | 585 |
| 1-1/8 | 2-1/4 | 2.280 | 2.243 | 1-3/16 | 1.280 | 1.243 | 10 (9/64) | .160 | .108 | 460 |
| 1-1/4 | 2-1/2 | 2.530 | 2.493 | 1-5/16 | 1.405 | 1.368 | 9 (5/32) | .192 | .136 | 335 |
| 1-3/8 | 2-3/4 | 2.780 | 2.743 | 1-7/16 | 1.530 | 1.493 | 9 (5/32) | .213 | .136 | 275 |
| 1-1/2 | 3 | 3.030 | 2.993 | 1-9/16 | 1.655 | 1.618 | 9 (5/32) | .213 | .153 | 230 |

| | | |
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| Description | Similar to a USS washer, but with slightly smaller inside and outside diameters. Also, most but not all SAE washers are made from thinner materials than USS washers. | |
| Applications/Advantages | SAE washers were designed to serve similar purposes as the USS washers, but specifically to meet the requirements in the field of automotive engineering. | |
| Material | <i>Steel</i> | <i>Stainless</i> |
| | 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 may be forged at the manufacturer's option. | 18-8 Stainless Steel 316 Stainless Steel |
| Plating | Steel SAE washers are supplied in zinc and black oxide finishes. Other platings are available. See Appendix-A for more information. | Stainless SAE washers are usually supplied without any secondary finish. |