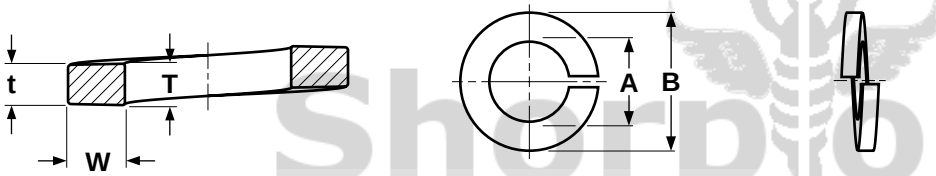
Regular & High-Alloy Split



Regular & High Alloy Helical Spring Lockwashers

ASME B18.21.1-1999

Nominal Washer Size		A		B	(T+t)/2	W
		Inside Diameter		Outside Diameter	Mean Section Thickness	Section Width
		Max	Min	Max	Min	Min
#2	0.086	0.094	0.088	0.172	0.020	0.035
#3	0.099	0.107	0.101	0.195	0.025	0.040
#4	0.112	0.120	0.114	0.209	0.025	0.040
#5	0.125	0.133	0.127	0.236	0.031	0.047
#6	0.138	0.148	0.141	0.250	0.031	0.047
#8	0.164	0.174	0.167	0.293	0.040	0.055
#10	0.190	0.200	0.193	0.334	0.047	0.062
#12	0.216	0.227	0.220	0.377	0.056	0.070
1/4	0.250	0.260	0.252	0.487	0.062	0.109
5/16	0.312	0.322	0.314	0.583	0.078	0.125
3/8	0.375	0.385	0.377	0.680	0.094	0.141
7/16	0.438	0.450	0.440	0.776	0.109	0.156
1/2	0.500	0.512	0.502	0.869	0.125	0.171
9/16	0.562	0.574	0.564	0.965	0.141	0.188
5/8	0.625	0.641	0.628	1.073	0.156	0.203
3/4	0.750	0.766	0.753	1.265	0.188	0.234
7/8	0.875	0.894	0.878	1.459	0.219	0.266
1	1.000	1.024	1.003	1.656	0.250	0.297
1-1/8	1.125	1.153	1.129	1.847	0.281	0.328
1-1/4	1.250	1.280	1.254	2.036	0.312	0.359
1-3/8	1.375	1.408	1.379	2.219	0.344	0.391
1-1/2	1.500	1.534	1.504	2.419	0.375	0.422
1-3/4	1.750	1.789	1.758	2.679	0.389	0.424
2	2.000	2.039	2.008	2.936	0.422	0.427

Description	**Regular:** A coiled, hardened, split circular washer with a slightly trapezoidal wire section. **High-Alloy:** Dimensionally identical to a regular split lock washer but made from 4037 alloy steel (sizes over 1" are equivalent to heavy split lockwashers in size and material). **Stainless:** A regular split lock washer made from austenitic stainless steel.
Applications/ Advantages	**Regular:** (A) Applies greater bolt tension per unit of applied torque; (B) Provides a hardened bearing surface, creating more uniform torque control; (C) Provides more uniform load distribution; (D) Resists loosening caused by vibration and corrosion; (E) Is preferred lockwasher for use with hardened bearing surfaces. **High-Alloy:** Designed for use with Grade-5 & Grade-8 bolts and nuts. **Stainless:** For use with stainless nuts and screws of a similar stainless alloy in corrosive environments.
Material	**Carbon Steel:** SAE J403 1055 - 1065 carbon steel. **High-Alloy Steel:** 1/4 thru 1": SAE J404 4037 alloy steel; 1-1/8 thru 1-1/2": SAE J403 1055 - 1065 carbon steel **18-8 Stainless:** SAE J405 302 - 305 stainless steel. **316 Stainless:** SAE J405 316 stainless steel.
Hardness	**Carbon & High-Alloy Steel:** Rockwell C38 - 46 **Stainless:** Thru 5/8": Rockwell C35 - 43; Sizes over 5/8": Rockwell C32 - 43
Twist Test	With the washer in a vice with the split ends free and straight above the vice jaws, a 90° segment of the free end is gripped with a wrench and bent. Washers are to withstand being twisted through a 90° angle without signs of fracture. When the washer ultimately fractures beyond the prescribed 90° limit, the structure at the breaking point shall show a fine grain.
Plating	See Appendix-A for information about the plating of carbon steel and alloy steel lock washers.