GRADE 2 LOW CARBON STEEL

Typical fasteners in this category: All pan and flat machine screws. Most SEMS screws.

- Low Carbon Steel
- Tensile strength = 74,000 psi min.
- Proof load = 55,000 psi
- Yield strength = 41,250 psi

Size	Stress Area Sq. Inches	Clamp Load Pounds	Design Range Pounds	Torque Inch Pounds
2 - 56	.00370	152	122 - 183	1.6 - 2.3
4 - 40	.00604	249	199 - 299	3.4 - 4.8
6 - 32	.00909	375	300 - 450	6 - 10
8 - 32	.01401	578	462 - 693	12 - 16
10 - 32	.01999	825	660 - 990	20 - 27
1/4 - 20	.03182	1312	1050 - 1575	41 - 57
5/18 - 18	.05243	2162	1729 - 2594	84 - 117
3/8 - 16	.07749	3196	2557 - 3836	150 - 207

PARAMETERS THAT WILL CAUSE THE TORQUE TO LOWER

- Thin female thread (Press in style nut)
- Extruded and tapped hole in thin sheet metal
- Failure of the drive system to develop the recommended torque
- Tapped hole in soft material (die casting)
- Insert in plastic
- Over spin of power screw driver

GRADE 5 LOW CARBON STEEL

Typical fasteners in this category: Case hardened machine screws, some SEMS screws, thread forming screws.

- Medium carbon steel
- Tensile strength = 120,000 psi min.
- Proof Load = 85,000 psi
- Clamp load = 63,750 psi

Size	Stress Area Sq. Inches	Clamp Load Pounds	Design Range Pounds	Torque Inch Pounds
4 - 40	.00604	385	308 - 462	5 - 7
6 - 32	.00909	580	464 - 695	10 - 14
8 - 32	.01401	893	714 - 1072	18 - 25
10 - 32	.01999	1274	1020 - 1530	30 - 42
1/4 - 20	.03182	2028	1622 - 2432	65 - 88
5/16 - 18	.05243	3342	2674 - 4011	130 - 180
3/8 - 16	.07749	4940	3952 - 5928	231 - 320

PARAMETERS THAT WILL CAUSE THE TORQUE TO LOWER

- Thin female thread (Press in style nut)
- Extruded and tapped hole in thin sheet metal
- Failure of the drive system to develop the recommended torque
- Tapped hole in soft material (die casting)
- Insert in plastic
- Over spin of power screw driver

GRADE 8 LOW CARBON STEEL

Typical fasteners in this category: Socket head cap screws, through heat treated torx screws.

- Alloy steel
- Tensile strength = 150,000 psi min.
- Proof Load = 120,000 psi
- Clamp load = 90,000 psi

Size	Stress Area Sq. Inches	Clamp Load Pounds	Design Range Pounds	Torque Inch Pounds
4 - 40	.00604	543	435 - 649	8 -11
6 - 32	.00909	818	654 - 982	15 - 20
8 - 32	.01401	1260	1009 - 1513	30 - 37
10 - 32	.01999	1799	1439 - 2158	44 - 62
1/4 - 20	.03182	2864	2291 - 3437	93 - 129
5/16 - 18	.05243	4718	3775 - 5662	199 - 265
3/8 - 16	.07749	6974	5579 - 8369	339 - 471

PARAMETERS THAT WILL CAUSE THE TORQUE TO LOWER

- Thin female thread (Press in style nut)
- Extruded and tapped hole in thin sheet metal
- Failure of the drive system to develop the recommended torque
- Tapped hole in soft material (die casting)
- Insert in plastic
- Over spin of power screw driver

Optimum hole size may vary depending on material joined. Pencom recommends testing in the specific application to determine actual hole size and tightening requirements. Contact an account representative for samples.

METRIC CLASS 4.8

Typical fasteners in this category: All pan and flat machine screws. Most SEMS screws.

- Low Carbon Steel
- Tensile strength = 420 MPa (60,900 psi min.)
- Yield strength = 310 MPa (44,950 psi)

Size	Stress Area Sq. Inches	Clamp Load Pounds	Design Range Pounds	Torque Inch Pounds
M1.6 x 0.35	.00197	54	43 - 60	.53 - .73
M2 x 0.4	.00321	90	72 - 99	1.1 - 1.5
M2.5 x 0.45	.00525	150	120 - 165	2.2 - 3.1
M3 x 0.5	.00780	230	184 - 253	3.9 - 5.4
M3.5 x 0.6	.01051	306	245 - 337	6.0 - 8.3
M4 x 0.7	.01361	396	317 - 436	9.0 - 12
M5 x 0.8	.02201	647	517 - 712	18 - 24
M6 x 1.0	.03116	913	730 - 1005	30 - 41

PARAMETERS THAT WILL CAUSE THE TORQUE TO LOWER

- Thin female thread (Press in style nut)
- Extruded and tapped hole in thin sheet metal
- Failure of the drive system to develop the recommended torque
- Tapped hole in soft material (die casting)
- Insert in plastic
- Over spin of power screw driver

Optimum hole size may vary depending on material joined. Pencom recommends testing in the specific application to determine actual hole size and tightening requirements. Contact an account representative for samples.

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