FASTENAL®

**Stainless Steel Hex Cap Screw (ASTM F593) & Socket Head Cap Screw (ASTM F837) Torque-Tension Guide**

**Caution**: Stainless steel fasteners tend to gall, especially with long run downs, prevailing torque fasteners, impact drivers, and lack of lubrication. It is highly encouraged to use a lubricant such as graphite-based anti-seize or molybdenum disulfide based anti-seize or other commercially available anti-galling compounds and assemble with a slow and continuously applied torque to avoid galling.

| Nominal Dia. (in.) | Threads per inch | ASTM F593 Cold Worked | | | | ASTM F837 CW | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Lubricated Clamp Load (lbs) | Tightening Torque | | Dry Clamp Load (lbs.) | Lubricated Clamp Load (lbs) | Tightening Torque | | Dry Clamp Load (lbs.) |
| | | | Lubricated K = 0.16 | Dry K = 0.35 | | | Lubricated K = 0.16 | Dry K = 0.35 | |
| Coarse Thread Series | | | | | | | | | |
| 1/4 | 20 | 1551 | 62 in-lbs | 72 in-lbs | 827 | 955 | 38 in-lbs | 45 in-lbs | 509 |
| 5/16 | 18 | 2556 | 128 | 149 | 1363 | 1573 | 79 | 92 | 839 |
| 3/8 | 16 | 3778 | 19 ft-lbs | 22 ft-lbs | 2015 | 2325 | 12 ft-lbs | 14 ft-lbs | 1240 |
| 7/16 | 14 | 5183 | 30 | 35 | 2764 | 3189 | 19 | 22 | 1701 |
| 1/2 | 13 | 6918 | 46 | 54 | 3689 | 4257 | 28 | 33 | 2270 |
| 9/16 | 12 | 8870 | 67 | 78 | 4731 | 5458 | 41 | 48 | 2911 |
| 5/8 | 11 | 11018 | 92 | 107 | 5876 | 6780 | 57 | 66 | 3616 |
| 3/4 | 10 | 11288 | 113 | 132 | 6020 | 10034 | 100 | 117 | 5351 |
| 7/8 | 9 | 15584 | 182 | 212 | 8311 | 13852 | 162 | 189 | 7388 |
| 1 | 8 | 20444 | 273 | 318 | 10903 | 18172 | 242 | 283 | 9692 |
| 1 1/4 | 7 | 32708 | 545 | 636 | 17444 | 29073 | 485 | 565 | 15506 |
| 1 3/8 | 6 | 38977 | 715 | 834 | 20788 | 34646 | 635 | 741 | 18478 |
| 1 1/2 | 6 | 47427 | 949 | 1107 | 25295 | 42158 | 843 | 984 | 22484 |
| Fine Thread Series | | | | | | | | | |
| 1/4 | 28 | 1773 | 71 in-lbs | 83 in-lbs | 946 | 1091 | 44 in-lbs | 51 in-lbs | 582 |
| 5/16 | 24 | 2831 | 142 | 165 | 1510 | 1742 | 87 | 102 | 929 |
| 3/8 | 24 | 4282 | 21 ft-lbs | 25 ft-lbs | 2284 | 2635 | 13 ft-lbs | 15 ft-lbs | 1405 |
| 7/16 | 20 | 5787 | 34 | 39 | 3087 | 3561 | 21 | 24 | 1899 |
| 1/2 | 20 | 7798 | 52 | 61 | 4159 | 4799 | 32 | 37 | 2559 |
| 9/16 | 18 | 9895 | 74 | 87 | 5277 | 6089 | 46 | 53 | 3248 |
| 5/8 | 18 | 12478 | 104 | 121 | 6655 | 7679 | 64 | 75 | 4095 |
| 3/4 | 16 | 12587 | 126 | 147 | 6713 | 11189 | 112 | 131 | 5967 |
| 7/8 | 14 | 17195 | 201 | 234 | 9171 | 15284 | 178 | 208 | 8152 |
| 1 | 14 | 22946 | 306 | 357 | 12238 | 20397 | 272 | 317 | 10878 |
| 1 1/4 | 12 | 36212 | 604 | 704 | 19313 | 32188 | 536 | 626 | 17167 |
| 1 3/8 | 12 | 44372 | 813 | 949 | 23665 | 39441 | 723 | 844 | 21035 |
| 1 1/2 | 12 | 53360 | 1067 | 1245 | 28458 | 47431 | 949 | 1107 | 25296 |

Notes: Lubricated Clamp Load based on 75% of yield. Dry Clamp Load based on 40% of yield to avoid galling

The torque values can only be achieved if nut (or tapped hole) has a proof load greater than or equal to the bolt's minimum ultimate tensile strength.

Torque values calculated from formula T=KDF, where

K = 0.16 for "lubricated" conditions

K = 0.35 "dry"