



Torque Chart for ASTM A193 Grade B7 Studs in Ft./Lbs. at 100% of yield

| Bolt Diameter | Nut Size | Moly Lube | Nickel Lube | Copper Lube | Machine Oil | Dry |
|---------------|----------|-----------|-------------|-------------|-------------|---------|
| | | u=0.085 | u=0.110 | u=0.100 | u=0.160 | u=0.400 |
| 3/4" | 1-1/4" | 208 | 342 | 314 | 448 | 1118 |
| 7/8" | 1-7/16" | 330 | 544 | 500 | 716 | 1786 |
| 1" | 1-5/8" | 490 | 810 | 746 | 1066 | 2664 |
| 1-1/8" | 1-13/16" | 702 | 1170 | 1076 | 1544 | 3888 |
| 1-1/4" | 2" | 966 | 1622 | 1492 | 2150 | 5440 |
| 1-3/8" | 2-3/16" | 1288 | 2180 | 2000 | 2894 | 7356 |
| 1-1/2" | 2-3/8" | 1674 | 2850 | 2614 | 3792 | 9274 |
| 1-5/8" | 2-9/16" | 2142 | 3668 | 3364 | 4890 | 12520 |
| 1-3/4" | 2-3/4" | 2676 | 4602 | 4218 | 6144 | 15776 |
| 1-7/8" | 2-15/16" | 3292 | 5682 | 5204 | 7596 | 19550 |
| 2" | 3-1/8" | 3994 | 6920 | 6334 | 9260 | 23884 |
| 2-1/8" | N/A | 4790 | 8324 | 7618 | 11150 | 28816 |
| 2-1/4" | 3-1/2" | 5686 | 9906 | 9068 | 13282 | 34382 |
| 2-3/8" | N/A | 6686 | 11676 | 10678 | 15668 | 40620 |
| 2-1/2" | 3-7/8" | 7796 | 13646 | 12476 | 18324 | 47536 |
| 2-3/4" | 4-1/4" | 9382 | 16488 | 15066 | 22170 | 57692 |
| 3" | 4-5/8" | 13974 | 21464 | 19606 | 28894 | 75340 |
| 3-1/4" | 5" | 15470 | 27352 | 24976 | 36856 | 96258 |
| 3-1/2" | 5-3/8" | 19312 | 34226 | 31244 | 46158 | 120730 |
| 3-3/4" | 5-3/4" | 23742 | 42168 | 38482 | 56906 | 149032 |
| 4" | 6-1/8" | 27262 | 48590 | 44324 | 65652 | 172292 |
| 4-1/4" | 6-1/2" | 28802 | 51248 | 46758 | 69206 | 181440 |
| 4-1/2" | 6-7/8" | 32348 | 57742 | 52664 | 78058 | 205026 |

Torque Chart for ASTM A193 Grade B7 Studs in Ft./Lbs at 70% of yield

| Bolt Diameter | Nut Size | Moly Lube | Nickel Lube | Copper Lube | Machine Oil | Dry |
|---------------|----------|-----------|-------------|-------------|-------------|---------|
| | | u=0.085 | u=0.110 | u=0.100 | u=0.160 | u=0.400 |
| 3/4" | 1-1/4" | 145 | 239 | 219 | 313 | 782 |
| 7/8" | 1-7/16" | 231 | 380 | 350 | 501 | 1250 |
| 1" | 1-5/8" | 343 | 567 | 522 | 746 | 1864 |
| 1-1/8" | 1-13/16" | 491 | 819 | 753 | 1080 | 2721 |
| 1-1/4" | 2" | 676 | 1135 | 1044 | 1505 | 3808 |
| 1-3/8" | 2-3/16" | 901 | 1526 | 1400 | 2025 | 5149 |
| 1-1/2" | 2-3/8" | 1171 | 1995 | 1829 | 2654 | 6491 |
| 1-5/8" | 2-9/16" | 1499 | 2567 | 2354 | 3423 | 8764 |
| 1-3/4" | 2-3/4" | 1873 | 3221 | 2952 | 4300 | 11043 |
| 1-7/8" | 2-15/16" | 2304 | 3977 | 3642 | 5317 | 13685 |
| 2" | 3-1/8" | 2795 | 4844 | 4433 | 6482 | 16718 |
| 2-1/8" | N/A | 3353 | 5826 | 5332 | 7805 | 20171 |
| 2-1/4" | 3-1/2" | 3980 | 6934 | 6343 | 9297 | 24067 |
| 2-3/8" | N/A | 4680 | 8173 | 7474 | 10367 | 28434 |
| 2-1/2" | 3-7/8" | 5457 | 9552 | 8733 | 12862 | 33275 |
| 2-3/4" | 4-1/4" | 6567 | 11541 | 10546 | 15519 | 40384 |
| 3" | 4-5/8" | 9781 | 15024 | 13724 | 20225 | 52738 |
| 3-1/4" | 5" | 10829 | 19146 | 17483 | 25799 | 67380 |
| 3-1/2" | 5-3/8" | 13518 | 23958 | 21870 | 32310 | 84511 |
| 3-3/4" | 5-3/4" | 16619 | 29517 | 26937 | 39834 | 10432 |
| 4" | 6-1/8" | 19083 | 34013 | 32730 | 45956 | 12700 |
| 4-1/4" | 6-1/2" | 20161 | 35873 | 31026 | 48444 | 12060 |
| 4-1/2" | 6-7/8" | 22643 | 40419 | 36864 | 54640 | 14351 |

u= The coefficient of friction of the

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| Torque Chart for ASTM A193 Grade B7 Studs in Ft./Lbs at 60% of yield | | | | | | |
|--|----------|-----------|-------------|-------------|-------------|---------|
| Bolt Diameter | Nut Size | Moly Lube | Nickel Lube | Copper Lube | Machine Oil | Dry |
| | | u=0.085 | u=0.110 | u=0.100 | u=0.160 | u=0.400 |
| 3/4" | 1-1/4" | 125 | 205 | 188 | 269 | 671 |
| 7/8" | 1-7/16" | 198 | 326 | 300 | 430 | 1072 |
| 1" | 1-5/8" | 294 | 486 | 447 | 640 | 1598 |
| 1-1/8" | 1-13/16" | 421 | 702 | 645 | 926 | 2333 |
| 1-1/4" | 2" | 579 | 973 | 895 | 1290 | 3264 |
| 1-3/8" | 2-3/16" | 773 | 1308 | 1200 | 1736 | 4414 |
| 1-1/2" | 2-3/8" | 1004 | 1704 | 1568 | 2275 | 5564 |
| 1-5/8" | 2-9/16" | 1285 | 2200 | 2018 | 2934 | 7512 |
| 1-3/4" | 2-3/4" | 1605 | 2761 | 2530 | 3686 | 9465 |
| 1-7/8" | 2-15/16" | 1975 | 3409 | 3122 | 4557 | 11730 |
| 2" | 3-1/8" | 2396 | 4152 | 3800 | 5556 | 14330 |
| 2-1/8" | N/A | 2874 | 4994 | 4570 | 6690 | 17289 |
| 2-1/4" | 3-1/2" | 3411 | 5943 | 5437 | 7969 | 20629 |
| 2-3/8" | N/A | 4011 | 7005 | 6406 | 9400 | 24372 |
| 2-1/2" | 3-7/8" | 4677 | 8187 | 7485 | 10994 | 28521 |
| 2-3/4" | 4-1/4" | 5629 | 9892 | 9039 | 13302 | 34615 |
| 3" | 4-5/8" | 8384 | 12878 | 11763 | 17336 | 45204 |
| 3-1/4" | 5" | 9282 | 16411 | 14985 | 22113 | 57754 |
| 3-1/2" | 5-3/8" | 11587 | 20535 | 18746 | 27694 | 72438 |
| 3-3/4" | 5-3/4" | 14245 | 25300 | 23089 | 34143 | 89419 |
| 4" | 6-1/8" | 15301 | 27227 | 24842 | 36767 | 96397 |
| 4-1/4" | 6-1/2" | 16357 | 29154 | 26594 | 39391 | 103375 |
| 4-1/2" | 6-7/8" | 19408 | 34645 | 31598 | 46834 | 123015 |

| Torque Chart for ASTM A193 Grade B7 Studs in Ft./Lbs at 50% of yield | | | | | | |
|--|----------|-----------|-------------|-------------|-------------|---------|
| Bolt Diameter | Nut Size | Moly Lube | Nickel Lube | Copper Lube | Machine Oil | Dry |
| | | u=0.085 | u=0.110 | u=0.100 | u=0.160 | u=0.400 |
| 3/4" | 1-1/4" | 104 | 171 | 157 | 224 | 559 |
| 7/8" | 1-7/16" | 165 | 272 | 250 | 358 | 893 |
| 1" | 1-5/8" | 245 | 405 | 373 | 533 | 1332 |
| 1-1/8" | 1-13/16" | 351 | 585 | 538 | 772 | 1944 |
| 1-1/4" | 2" | 483 | 811 | 746 | 1075 | 2720 |
| 1-3/8" | 2-3/16" | 644 | 1090 | 1000 | 1447 | 3678 |
| 1-1/2" | 2-3/8" | 837 | 1425 | 1307 | 1896 | 4637 |
| 1-5/8" | 2-9/16" | 1071 | 1834 | 1682 | 2445 | 6260 |
| 1-3/4" | 2-3/4" | 1338 | 2301 | 2109 | 3072 | 7888 |
| 1-7/8" | 2-15/16" | 1646 | 2841 | 2602 | 3798 | 9775 |
| 2" | 3-1/8" | 1997 | 3460 | 3167 | 4630 | 11942 |
| 2-1/8" | N/A | 2395 | 4162 | 3809 | 5575 | 14408 |
| 2-1/4" | 3-1/2" | 2843 | 4653 | 4531 | 6641 | 17191 |
| 2-3/8" | N/A | 3343 | 5838 | 5339 | 7834 | 20310 |
| 2-1/2" | 3-7/8" | 3898 | 6823 | 6238 | 9162 | 23768 |
| 2-3/4" | 4-1/4" | 4691 | 8244 | 7533 | 11085 | 28846 |
| 3" | 4-5/8" | 6987 | 10732 | 9803 | 14447 | 37670 |
| 3-1/4" | 5" | 7735 | 13676 | 12488 | 18428 | 48129 |
| 3-1/2" | 5-3/8" | 9656 | 17113 | 15622 | 23079 | 60365 |
| 3-3/4" | 5-3/4" | 11871 | 21084 | 19241 | 28453 | 74516 |
| 4" | 6-1/8" | 13631 | 24295 | 22162 | 32826 | 86146 |
| 4-1/4" | 6-1/2" | 14401 | 25624 | 23379 | 34603 | 90720 |
| 4-1/2" | 6-7/8" | 16174 | 28871 | 26332 | 39029 | 102513 |

u= The coefficient of friction of the

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Torque Chart for ASTM A193 Grade B7 Studs in Ft./Lbs at 40% of yield

| Bolt Diameter | Nut Size | Moly Lube | Nickel Lube | Copper Lube | Machine Oil | Dry |
|---------------|----------|-----------|-------------|-------------|-------------|---------|
| | | u=0.085 | u=0.110 | u=0.100 | u=0.160 | u=0.400 |
| 3/4" | 1-1/4" | 83 | 136 | 126 | 179 | 447 |
| 7/8" | 1-7/16" | 132 | 217 | 200 | 286 | 714 |
| 1" | 1-5/8" | 196 | 324 | 298 | 426 | 1066 |
| 1-1/8" | 1-13/16" | 280 | 468 | 430 | 617 | 1555 |
| 1-1/4" | 2" | 386 | 649 | 597 | 1075 | 2176 |
| 1-3/8" | 2-3/16" | 515 | 872 | 800 | 1158 | 2942 |
| 1-1/2" | 2-3/8" | 669 | 1140 | 1045 | 1517 | 3710 |
| 1-5/8" | 2-9/16" | 857 | 1467 | 1345 | 1956 | 5008 |
| 1-3/4" | 2-3/4" | 1070 | 1841 | 1687 | 2458 | 6310 |
| 1-7/8" | 2-15/16" | 1317 | 2273 | 2082 | 3038 | 7820 |
| 2" | 3-1/8" | 1598 | 2768 | 2534 | 3704 | 9554 |
| 2-1/8" | N/A | 1916 | 3329 | 3047 | 4460 | 11526 |
| 2-1/4" | 3-1/2" | 2274 | 3962 | 3624 | 5312 | 13753 |
| 2-3/8" | N/A | 2674 | 4670 | 4271 | 6267 | 16248 |
| 2-1/2" | 3-7/8" | 3118 | 5458 | 4990 | 7329 | 19014 |
| 2-3/4" | 4-1/4" | 3752 | 6595 | 6026 | 8868 | 23076 |
| 3" | 4-5/8" | 5589 | 8585 | 7842 | 11557 | 30136 |
| 3-1/4" | 5" | 6188 | 10940 | 9990 | 14742 | 38503 |
| 3-1/2" | 5-3/8" | 7725 | 13690 | 12497 | 18463 | 44829 |
| 3-3/4" | 5-3/4" | 9497 | 16867 | 15392 | 28453 | 59612 |
| 4" | 6-1/8" | 10905 | 19436 | 17729 | 26260 | 68916 |
| 4-1/4" | 6-1/2" | 11520 | 20499 | 18703 | 27682 | 72576 |
| 4-1/2" | 6-7/8" | 12939 | 23096 | 21065 | 31232 | 82010 |

Torque Chart for ASTM A193 Grade B7 Studs in Ft./Lbs at 30% of yield

| Bolt Diameter | Nut Size | Moly Lube | Nickel Lube | Copper Lube | Machine Oil | Dry |
|---------------|----------|-----------|-------------|-------------|-------------|---------|
| | | u=0.085 | u=0.110 | u=0.100 | u=0.160 | u=0.400 |
| 3/4" | 1-1/4" | 62 | 103 | 94 | 134 | 335 |
| 7/8" | 1-7/16" | 99 | 163 | 150 | 215 | 536 |
| 1" | 1-5/8" | 147 | 243 | 224 | 320 | 799 |
| 1-1/8" | 1-13/16" | 211 | 351 | 322 | 463 | 1168 |
| 1-1/4" | 2" | 290 | 486 | 448 | 645 | 1632 |
| 1-3/8" | 2-3/16" | 386 | 649 | 600 | 868 | 2207 |
| 1-1/2" | 2-3/8" | 502 | 855 | 784 | 1137 | 2782 |
| 1-5/8" | 2-9/16" | 642 | 1100 | 1009 | 1467 | 3767 |
| 1-3/4" | 2-3/4" | 803 | 1380 | 1265 | 1843 | 4733 |
| 1-7/8" | 2-15/16" | 987 | 1705 | 1561 | 2278 | 5865 |
| 2" | 3-1/8" | 1198 | 2076 | 1900 | 3345 | 7165 |
| 2-1/8" | N/A | 1437 | 2497 | 2285 | 3984 | 8645 |
| 2-1/4" | 3-1/2" | 1706 | 2972 | 2719 | 4700 | 10310 |
| 2-3/8" | N/A | 2006 | 3503 | 3203 | 5497 | 12180 |
| 2-1/2" | 3-7/8" | 2339 | 4094 | 3743 | 6651 | 14260 |
| 2-3/4" | 4-1/4" | 2815 | 4946 | 4520 | 8668 | 17300 |
| 3" | 4-5/8" | 4192 | 6439 | 5882 | 11057 | 22600 |
| 3-1/4" | 5" | 4635 | 8206 | 7493 | 13847 | 28870 |
| 3-1/2" | 5-3/8" | 5793 | 10268 | 9373 | 17072 | 36210 |
| 3-3/4" | 5-3/4" | 7122 | 12650 | 11545 | 20761 | 44700 |
| 4" | 6-1/8" | 8641 | 15374 | 14027 | 19695 | 51680 |
| 4-1/4" | 6-1/2" | 8178 | 14577 | 13297 | 20761 | 54430 |
| 4-1/2" | 6-7/8" | 9704 | 17322 | 15799 | 23417 | 61500 |

u= The coefficient of friction of the

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