



DESCRIPTION

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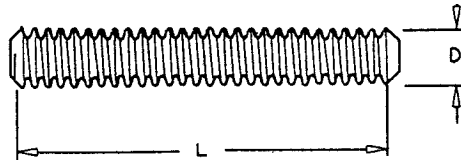
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SUGGESTED LENGTHS AND TORQUE FOR COMMON FLANGE APPLICATIONS

Calculating Stud Bolt Lengths (from first thread to first thread)



Stud Bolts for Pressure-Temperature Piping

The length of stud bolt, measured parallel to the axis, is the distance from first thread to first thread. **First thread is defined as the intersection of the major diameter of the thread with the base of the point.**

Recommended Flange Bolt Torque

40,000 PSI Stress

52,500 PSI Stress

| Bolt Size | Bolt Tension lbf | Make-up Torque ft-lbs | Bolt Tension lbf | Make-up Torque-ft-lbs |
|-----------|---------------------|-----------------------------|---------------------|--------------------------|
| 1/2 – 13 | 5674 | 45 | 7448 | 59 |
| 5/8 – 11 | 9026 | 86 | 11846 | 113 |
| 3/4 – 10 | 13355 | 150 | 17528 | 196 |
| 7/8 – 9 | 18482 | 239 | 24258 | 313 |
| 1 – 8 | 24229 | 361 | 31800 | 474 |
| 1-1/8 – 8 | 31617 | 522 | 41497 | 686 |
| 1-1/4 – 8 | 39987 | 726 | 52483 | 953 |
| 1-3/8 – 8 | 49339 | 976 | 64757 | 1281 |
| 1-1/2 – 8 | 59672 | 1277 | 78320 | 1676 |
| 1-5/8 – 8 | 70988 | 1635 | 93171 | 2146 |
| 1-3/4 – 8 | 83284 | 2054 | 109311 | 2695 |
| 1-7/8 – 8 | 96563 | 2538 | 126739 | 3331 |
| 2 – 8 | 110824 | 3093 | 145456 | 4060 |
| 2-1/4 – 8 | 142290 | 4435 | 186755 | 5821 |
| 2-1/2 – 8 | 177683 | 6116 | 233209 | 8028 |
| 2-5/8 – 8 | 196852 | 7097 | 258368 | 9314 |
| 2-3/4 – 8 | 217003 | 8176 | 284817 | 10731 |
| 3 – 8 | 260250 | 10653 | 341578 | 13982 |
| 3-1/4 – 8 | 307424 | 13585 | 403495 | 17830 |
| 3-3/4 – 8 | 413554 | 20967 | 542790 | 27519 |
| 3-7/8 – 8 | 442541 | 23157 | 580834 | 30393 |
| 4 – 8 | 472509 | 25494 | 620168 | 33461 |
| 4-1/2 – 8 | 602200 | 36412 | 790388 | 47790 |
| 4-3/4 – 8 | 672936 | 42879 | 883229 | 56289 |



BOLTING AND RING GASKET REQUIREMENTS for API AND ANSI FLANGES

| Primary Source Pressure Rating | Bolting | Nominal Pipe Size | | | | | | | | | | | | | | | | | | | | |
|--------------------------------|----------------------|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|-------|--------|--------|--------|--------|--------|
| | | Flange Facing | 1/2 | 3/4 | 1 | 1-1/4 | 1-1/2 | 2 | 2-1/2 | 3 | 3-1/2 | 4 | 5 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 24 |
| 150 Pound | Number Diameter | | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 8 | 8 | 8 | 8 | 8 | 12 | 12 | 12 | 16 | 16 | 20 | 20 |
| | Length of Stud Bolts | 1/16 1RF | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 7/8 | 7/8 | 1 | 1 | 1 | 1-1/8 | 1-1/8 |
| | Ring Size | RTJ | 2-1/2 | 2-1/2 | 2-3/4 | 2-3/4 | 3 | 3-1/4 | 3-1/2 | 3-3/4 | 4 | 4-1/4 | 4-1/4 | 4-1/2 | 4-1/2 | 5-1/4 | 5-1/4 | 5-3/4 | 6 | 6-1/2 | 6-3/4 | 7-1/2 |
| 300 Pound | Number Diameter | | 4 | 4 | 4 | 4 | 4 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 12 | 12 | 16 | 16 | 20 | 20 | 24 | 24 |
| | Length of Stud Bolts | 1/16 1RF | 1/2 | 5/8 | 5/8 | 5/8 | 3/4 | 5/8 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 5-1/2 | 5-1/2 | 6-1/4 | 6-1/4 | 7-1/2 | 7-1/2 | 8-1/4 | 8-1/4 |
| | Ring Size | R | 2-3/4 | 3 | 3-1/4 | 3-1/4 | 3-3/4 | 3-1/2 | 4 | 4-1/4 | 4-1/2 | 4-1/2 | 4-3/4 | 5 | 5-1/4 | 5-3/4 | 6-1/4 | 6-3/4 | 7 | 7-1/2 | 7-3/4 | 8-1/4 |
| 400 Pound | Number Diameter | | 4 | 4 | 4 | 4 | 4 | 8 | 8 | 8 | 8 | 8 | 8 | 12 | 12 | 16 | 16 | 20 | 20 | 24 | 24 | 24 |
| | Length of Stud Bolts | 1/4 1RF | 1/2 | 5/8 | 5/8 | 5/8 | 3/4 | 5/8 | 3/4 | 7/8 | 7/8 | 7/8 | 7/8 | 7/8 | 1 | 1-1/8 | 1-1/4 | 1-1/4 | 1-3/8 | 1-3/8 | 1-7/8 | 1-7/8 |
| | Ring Size | RTJ | 3-1/4 | 3-1/2 | 3-3/4 | 4 | 4-1/4 | 4-1/4 | 4-3/4 | 5 | 5-1/2 | 5-1/2 | 5-3/4 | 6 | 6-1/4 | 7 | 7-3/4 | 8-1/4 | 8-1/4 | 9 | 9-3/4 | 10-3/4 |
| 600 Pound | Number Diameter | | 4 | 4 | 4 | 4 | 4 | 8 | 8 | 8 | 8 | 8 | 8 | 12 | 12 | 16 | 16 | 20 | 20 | 24 | 24 | 24 |
| | Length of Stud Bolts | 1/4 1RF | 1/2 | 5/8 | 5/8 | 5/8 | 3/4 | 5/8 | 3/4 | 7/8 | 7/8 | 7/8 | 7/8 | 1 | 1 | 1-1/8 | 1-1/4 | 1-1/4 | 1-3/8 | 1-1/2 | 1-5/8 | 1-5/8 |
| | Ring Size | R | 3-1/4 | 3-1/2 | 3-3/4 | 4 | 4-1/4 | 4-1/4 | 4-3/4 | 5 | 5-1/2 | 5-3/7 | 6-1/2 | 6-3/4 | 7 | 8 | 8-3/4 | 9 | 9-1/2 | 10-1/4 | 11 | 11-3/4 |
| 900 Pound | Number Diameter | | 4 | 4 | 4 | 4 | 4 | 8 | 8 | 8 | - | 8 | 8 | 12 | 12 | 16 | 16 | 20 | 20 | 20 | 20 | 20 |
| | Length of Stud Bolts | 1/4 1RF | 3/4 | 3/4 | 7/8 | 7/8 | 1 | 7/8 | 1 | 7/8 | 1 | 1-1/8 | 1-1/4 | 1-1/2 | 1-1/2 | 1-3/8 | 1-3/8 | 1-3/8 | 1-5/8 | 1-7/8 | 2 | 2-1/2 |
| | Ring Size | RTJ | 4-1/4 | 4-1/2 | 5 | 5 | 5-1/2 | 5-3/4 | 6-1/4 | 6-1/4 | 6-3/4 | - | 6-3/4 | 7-1/2 | 7-3/4 | 8-3/4 | 9-1/4 | 10 | 10-3/4 | 11-1/4 | 13 | 13-3/4 |
| 1500 Pound | Number Diameter | | 4 | 4 | 4 | 4 | 4 | 8 | 8 | 8 | - | 8 | 8 | 12 | 12 | 12 | 12 | 16 | 16 | 16 | 16 | 16 |
| | Length of Stud Bolts | 1/4 1RF | 3/4 | 3/4 | 7/8 | - | 1 | 7/8 | 1 | 1-1/8 | 1 | 1-1/4 | 1-1/2 | 1-1/2 | 1-3/8 | 1-5/8 | 1-7/8 | 2 | 2-1/4 | 2-1/2 | 2-3/4 | 3 |
| | Ring Size | RTJ | 4-1/4 | 4-1/2 | 5 | 5 | 5-1/2 | 5-3/4 | 6-1/4 | 6-1/4 | 7 | - | 7-3/4 | 8 | 10 | 10-1/2 | 12 | 13-3/4 | 15-1/2 | 17 | 18-3/4 | 20-1/2 |
| 2500 Pound | Number Diameter | | 4 | 4 | 4 | 4 | 4 | 8 | 8 | 8 | - | 8 | 8 | 12 | 12 | 12 | - | - | - | - | - | - |
| | Length of Stud Bolts | 1/4 1RF | 3/4 | 3/4 | 7/8 | 1 | 1-1/8 | 1 | 1-1/8 | 1-1/4 | - | 1-1/2 | 1-3/4 | 2 | 2 | 2-1/2 | - | - | - | - | - | - |
| | Ring Size | RTJ | 5 | 5 | 5-1/2 | 6 | 6-3/4 | 7 | 7-3/4 | 8-3/4 | - | 10 | 11-3/4 | 13-3/4 | 15-1/4 | 19-1/4 | - | - | - | - | - | - |