







# Technical Data



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Technical Data #: TD-4  
Part #: N/A  
Description: Bolt Torque Specifications  
TD Description: Torque specifications for various bolt sizes & grades

## BOLT TORQUE SPECIFICATIONS

Bolt Size Inches	Coarse Thread / inch						
		SAE 0-1-2 74,000 psi Low Carbon Steel	SAE Grade 3 100,000 psi Med. Carbon Steel	SAE Grade 5 120,000 psi Med. Carbon Heat T. Steel	SAE Grade 6 133,000 psi Med Carbon Temp. Steel	SAE Grade 7 133,000 psi Med. Carbon Alloy Steel	SAE Grade 8 150,000 psi Med. Carbon Alloy Steel
<b>Standard Dry Torque in Foot-Pounds</b>							
1/4	20	6	9	10	12.5	13	14
5/16	18	12	17	19	24	25	29
3/8	16	20	30	33	43	44	47
7/16	14	32	47	54	69	71	78
1/2	13	47	69	78	106	110	119
9/16	12	69	103	114	150	154	169
5/8	11	96	145	154	209	215	230
3/4	10	155	234	257	350	360	390
7/8	9	206	372	382	550	570	600
1	8	310	551	587	825	840	903
1-1/8	7	480	794	872	1304	1325	1430
1-1/4	7	675	1105	1211	1815	1825	1975
1-3/8	6	900	1500	1624	2434	2500	2650
1-1/2	6	1100	1775	1943	2913	3000	3200
1-5/8	5.5	1470	2425	2660	3985	4000	4400
1-3/4	5	1900	3150	3463	5189	5300	5650
1-7/8	5	2360	4200	4695	6980	7000	7600
2	4.5	2750	4550	5427	7491	7500	8200

In order to determine the torque for a fine thread bolt, increase the above coarse thread ratings by 9%.

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## Effect of Lubrication on Torque

Lubricant	Torque Rating in Foot-Pounds	
	5/16-18 thread/inch	1/2-13 thread/inch
NO LUBE, steel	29	121
Plated & cleaned	19 ( 34%)	90 ( 26%)
SAE 20 oil	18 ( 38%)	87 ( 28%)
SAE 40 oil	17 ( 41%)	83 ( 31%)
Plated & SAE 30	16 ( 45%)	79 ( 35%)
White grease	16 ( 45%)	79 ( 35%)
Dry Moly film	14 ( 52%)	66 ( 45%)
Graphite & oil	13 ( 55%)	62 ( 49%)

Use the above lubrication percentages to calculate the approximate decrease in torque rating for other bolt sizes.

Grades over Grade 8 are not common commercially, except in aircraft use. The following are a few of those types:  
Supertanium, 160,000 psi, 8 points on head, quenched and tempered special alloy steel.  
A354BD/A490, 150,000 psi, no markings, med. carbon quenched and tempered steel.  
N.A.S. 144, MS2000, Military and Aircraft Std, 160,000 psi, high carbon alloy, quenched and tempered.  
N.A.S. 623, National Aircraft Standard, 180,000 psi, high carbon alloy, quenched and tempered.  
Aircraft Assigned Steel, no number, 220,000 psi, high carbon alloy, quenched and tempered.

Torque ratings for the above special alloy bolts should be obtained from the manufacturer.