

## Recommended Bolt Torque

Recommended Bolt Torque for Grade 8.8 Connection Bolts						
Bolt Size (mm)	Width Across Flats (mm)	Net Area (mm <sup>2</sup> )	Yield Stress (Mpa)	Tension Force (N)	Recommended Torque N*m	Pretension Force (N)
10	16	58	640 (8.8)	37120	37 (27 lb. ft.)	18560
12	18	84	641 (8.8)	53952	65 (48 lb. ft.)	26976
16	24	157	642 (8.8)	100480	161 (119 lb. ft.)	50240
20	30	245	643 (8.8)	156672	313 (231 lb. ft.)	78336
24	36	353	644 (8.8)	225600	541 (400 lb. ft.)	112800
27	41	459	645 (8.8)	294016	794 (586 lb. ft.)	147008
30	46	561	646 (8.8)	358784	1076 (795 lb. ft.)	1179392
33	50	694	647 (8.8)	444160	1466 (1083 lb. ft.)	222080
36	55	817	648 (8.8)	522688	1882 (1390 lb. ft.)	261344
42	65	1121	649 (8.8)	717440	3013 (2225 lb. ft.)	358720
48	75	1473	650 (8.8)	942720	4525 (3342 lb. ft.)	471360
56	85	2030	651 (8.8)	1299200	7276 (5373 lb. ft.)	469600
Recommended Bolt Torque for Anchor Bolts						
Bolt Size (mm)	Width Across Flats (mm)	Net Area (mm <sup>2</sup> )	Yield Stress (Mpa)	Tension Force (N)	Recommended Torque (N*m)	Pretension Force (N)
20	30	245	355 (45#)	86904	174 (128 lb. ft.)	43452
24	36	353	356 (45#)	125138	300 (222 lb. ft.)	62569
27	41	459	357 (45#)	163087	440 (325 lb. ft.)	81544
30	46	561	358 (45#)	199013	597 (441 lb. ft.)	99507
33	50	694	380 (GR55)	263720	870 (643 lb. ft.)	131860
36	55	817	358 (45#)	289929	1044 (777 lb. ft.)	144964
42	65	1121	359 (45#)	397955	1671 (1234 lb. ft.)	198978
48	75	1473	360 (45#)	522915	2510 (1854 lb. ft.)	261458
56	85	2030	361 (45#)	720650	4036 (2981 lb. ft.)	360325

### Notes:

1. In our experience, we would prefer to apply 50% of maximum tension of the bolt as pretension force
2. Pretension Torque:  $T_c = k * D * P_c$   
 $K = 0.2$  (According to the Machine Design Handbook)  
 D – Bolt Diameter  
 P<sub>c</sub> – Pretension force