

ASTM A307

Bolt Size (inches)	TPI	Proof Load (lbs.)	Clamp Load (lbs.)	Tightening Torque (ft. lbs.)		
				Waxed	Galv.	Plain
1/4	20	1,145	859	2	4	4
5/16	18	1,886	1,415	4	9	7
3/8	16	2,790	2,093	7	16	13
7/16	14	3,827	2,870	10	26	21
1/2	13	5,108	3,831	16	40	32
9/16	12	6,552	4,914	23	58	46
5/8	11	8,136	6,102	32	79	64
3/4	10	12,024	9,018	56	141	113
7/8	9	15,200	11,400	83	208	166
1	8	20,000	15,000	125	313	250
1 1/8	7	25,200	18,900	177	443	354
1 1/4	7	32,000	24,000	250	625	500
1 3/8	6	38,100	28,575	327	819	655
1 1/2	6	46,400	34,800	435	1,088	870
1 3/4	5	68,400	51,300	748	1,870	1,496
2	4 1/2	90,000	67,500	1,125	2,813	2,250
2 1/4	4 1/2	117,000	87,750	1,645	4,113	3,291
2 1/2	4	144,000	108,000	2,250	5,625	4,500
2 3/4	4	177,480	133,110	3,050	7,626	6,101
3	4	214,920	161,190	4,030	10,074	8,060
3 1/4	4	255,600	191,700	5,192	12,980	10,384
3 1/2	4	299,880	224,910	6,560	16,400	13,120
3 3/4	4	347,760	260,820	8,151	20,377	16,301
4	4	398,880	299,160	9,972	24,930	19,944

This chart of estimated torque calculations is only offered as a guide. Use of it's content by anyone is the sole responsibility of that person and they assume all risk. Due to many variables that affect the torque-tension relationship like human error, surface texture, and lubrication the only way to determine the correct torque is through experimentation under actual joint and assembly conditions.

