

## SAE Grade 2

Bolt Size (inches)	TPI	Proof Load (lbs.)	Clamp Load (lbs.)	Tightening Torque (ft. lbs.)		
				Waxed	Galv.	Plain
1/4	20	1,750	1,313	3	7	5
5/16	18	2,900	2,175	6	14	11
3/8	16	4,250	3,188	10	25	20
7/16	14	5,850	4,388	16	40	32
1/2	13	7,800	5,850	24	61	49
9/16	12	10,000	7,500	35	88	70
5/8	11	12,400	9,300	48	121	97
3/4	10	18,400	13,800	86	216	173
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

## ASTM A325

Bolt Size (inches)	TPI	Tension		Tightening Torque Range (ft. lbs.) (Min.-Max.)	
		Min.	Max.	Waxed	Plain
1/2	13	12,000	14,000	50 - 58	100 - 117
5/8	11	19,000	23,000	99 - 120	198 - 240
3/4	10	28,000	34,000	175 - 213	350 - 425
7/8	9	39,000	47,000	284 - 343	569 - 685
1	8	51,000	61,000	425 - 508	850 - 1,017
1-1/8	7	56,000	67,000	525 - 625	1,050 - 1,256
1-1/4	7	71,000	85,000	740 - 885	1,479 - 1,771
1-3/8	6	85,000	102,000	974 - 1,169	1,948 - 2,338
1-1/2	6	103,000	124,000	1,288 - 1,550	2,575 - 3,100

*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.*

