

Tensile Strength

Tensile Strength of Common Bolts, Cap Screws, and Threaded Rod

Page (1 of 2)

Size	ASTM A307, Gr. A (Hex Bolts/Thd Rod)		SAE J429, Gr. 2 ¹ (Cap Screws)		SAE J429, Gr. 5 (Cap Screws)		SAE J429, Gr. 8 (Cap Screws)	
	PSI	Pounds	PSI	Pounds	PSI	Pounds	PSI	Pounds
NC Threads								
1/4-20	60,000	1900	74,000	2350	120,000	3800	150,000	4750
5/16-18	60,000	3100	74,000	3900	120,000	6300	150,000	7850
3/8-16	60,000	4650	74,000	5750	120,000	9300	150,000	11,600
7/16-14	60,000	6350	74,000	7850	120,000	12,800	150,000	15,900
1/2-13	60,000	8500	74,000	10,500	120,000	17,000	150,000	21,300
9/16-12	60,000	11,000	74,000	13,500	120,000	21,800	150,000	27,300
5/8-11	60,000	13,550	74,000	16,700	120,000	27,100	150,000	33,900
3/4-10	60,000	20,050	74,000	24,700	120,000	40,100	150,000	50,100
7/8-9	60,000	27,700	60,000	27,700	120,000	55,400	150,000	69,300
1-8	60,000	36,350	60,000	36,400	120,000	72,700	150,000	90,900
1 1/8-7	60,000	45,800	60,000	45,800	105,000	80,100	150,000	114,400
1 1/4-7	60,000	58,150	60,000	58,100	105,000	101,700	150,000	145,400
1 3/8-6	60,000	69,300	60,000	69,300	105,000	121,300	150,000	173,200
1 1/2-6	60,000	84,300	60,000	84,300	105,000	147,500	150,000	210,800
1 3/4-5	60,000	114,000						
2-4 1/2	60,000	150,000						
NF Threads								
1/4-28			74,000	2700	120,000	4350	150,000	5450
5/16-24			74,000	4300	120,000	6950	150,000	8700
3/8-24			74,000	6500	120,000	10,500	150,000	13,200
7/16-20			74,000	8800	120,000	14,200	150,000	17,800
1/2-20			74,000	11,800	120,000	19,200	150,000	24,000
9/16-18			74,000	15,000	120,000	24,400	150,000	30,400
5/8-18			74,000	18,900	120,000	30,700	150,000	38,400
3/4-16			74,000	27,600	120,000	44,800	150,000	56,000
7/8-14			60,000	30,500	120,000	61,100	150,000	76,400
1-12			60,000	39,800	120,000	79,600	150,000	99,400
1-14			60,000	40,700	120,000	81,500	150,000	101,900
1 1/8-12			60,000	51,400	105,000	89,900	150,000	128,400
1 1/4-12			60,000	64,400	105,000	112,700	150,000	161,000
1 3/8-12			60,000	78,900	105,000	138,100	150,000	197,200
1 1/2-12			60,000	94,900	105,000	166,000	150,000	237,200

Ultimate Tensile Load:

Maximum tensile-applied load or force a fastener can support prior to or coincidental with it's fracture.
Normally expressed in pounds.

Note 1- Grade 2 requirements for sizes 1/4 through 3/4 inches apply only to bolts and screws 6 inches and shorter in length. For bolts & screws over 6 inches in length, Grade 1 requirements shall apply (same as ASTM A307, Grade A)

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