



Nickel Systems Torque Tables

Nitronic 60

Min Yield Strength (σ_y)	50.0	KSI	50,000	PSI	UNS S21800 Fastener Torque	
Bolt Nominal Diameter (D)	Threads	Stress Area (A)	Proof Load	Clamping Load	K value	
					Dry	0.18
					Lubricated	0.13
					Dry	Lubricated
in	#/in	in ²	lbf	lbf	ft-lbf	ft-lbf
1/4	20	0.0318	1,431.0	1,073.3	4.0	2.9
1/4	28	0.0364	1,638.0	1,228.5	4.6	3.3
5/16	18	0.0524	2,410.4	1,807.8	8.5	6.1
5/16	24	0.0580	2,668.0	2,001.0	9.4	6.8
3/8	16	0.0775	3,565.0	2,673.8	15.0	10.9
3/8	24	0.0878	4,038.8	3,029.1	17.0	12.3
7/16	14	0.1063	4,889.8	3,667.4	24.1	17.4
7/16	20	0.1187	5,460.2	4,095.2	26.9	19.4
1/2	13	0.1419	6,527.4	4,895.6	36.7	26.5
1/2	20	0.1599	7,355.4	5,516.6	41.4	29.9
9/16	12	0.1820	8,372.0	6,279.0	53.0	38.3
9/16	18	0.2030	9,338.0	7,003.5	59.1	42.7
5/8	11	0.2260	10,396.0	7,797.0	73.1	52.8
5/8	18	0.2560	11,776.0	8,832.0	82.8	59.8
3/4	10	0.3340	15,364.0	11,523.0	129.6	93.6
3/4	16	0.3730	17,158.0	12,868.5	144.8	104.6
7/8	9	0.4620	21,252.0	15,939.0	209.2	151.1
7/8	14	0.5090	23,414.0	17,560.5	230.5	166.5
1	8	0.6060	27,876.0	20,907.0	313.6	226.5
1	12	0.6630	30,498.0	22,873.5	343.1	247.8
1 1/4	7	0.9690	44,574.0	33,430.5	626.8	452.7
1 1/4	12	1.0730	49,358.0	37,018.5	694.1	501.3
1 1/2	6	1.4050	64,630.0	48,472.5	1,090.6	787.7
1 1/2	12	1.5800	72,680.0	54,510.0	1,226.5	885.8

Equations

$$= \pi / 4 * (D - 0.9743 / n)^2$$

$$= \sigma_y * A * 90\%$$

$$= \text{Proof Load} * 75\%$$

$$= k * D * \text{Clamp Load} * (1\text{ft}/12\text{in})$$

Assumptions: (1) Yield Strength is chosen based on ASTM A276 minimum standard for S21800 0.2% offset at room temperature. (2) This is for standard bolt, washer and nut connection. (3) This is for uniform materials for the bolt, washer & the nut. (4) This is for full thread engagement. (5) This is for new bolts and nuts without corrosion. (6) Our k values are typical. Typical Molybdenum disulfide-based anti-seize lubricant were considered for lubrication. These values can fluctuate depending upon the source, type of oil and a variety of other factors. (7) This is considered under static load. Other factors such as vibration or dynamic applications were not considered. (8) These values are only appropriate for bolts under 6 inches. *This table was reviewed by an engineer & is believed by Nickel Systems to be accurate. However, it is not to be used as a substitute for professional engineering bolt design. Please consult a professional engineer. Nickel Systems assumes no liability for any use of this table beyond its intended purpose.*