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Nickel Systems Torque Tables

Haynes 242

Min Yield Strength (σ_y)	122.4	KSI	122,400	PSI	UNS N10242 Fastener Torque

Bolt Nominal Diameter (D)	Threads (n)	Stress Area (A)	Proof Load	Clamping Load	K value	
					Dry	0.22
					Lubricated	0.13
					Dry	Lubricated
in	#/in	in^2	lbf	lbf	ft-lbf	ft-lbf
1/4	20	0.0318	3,503.1	2,627.3	12.0	7.1
1/4	28	0.0364	4,009.8	3,007.4	13.8	8.1
5/16	18	0.0524	5,900.7	4,425.5	25.4	15.0
5/16	24	0.0580	6,531.3	4,898.4	28.1	16.6
3/8	16	0.0775	8,727.1	6,545.3	45.0	26.6
3/8	24	0.0878	9,887.0	7,415.2	51.0	30.1
7/16	14	0.1063	11,970.2	8,977.7	72.0	42.6
7/16	20	0.1187	13,366.6	10,024.9	80.4	47.5
1/2	13	0.1419	15,979.1	11,984.3	109.9	64.9
1/2	20	0.1599	18,006.0	13,504.5	123.8	73.1
9/16	12	0.1820	20,494.7	15,371.0	158.5	93.7
9/16	18	0.2030	22,859.4	17,144.6	176.8	104.5
5/8	11	0.2260	25,449.4	19,087.1	218.7	129.2
5/8	18	0.2560	28,827.6	21,620.7	247.7	146.4
3/4	10	0.3340	37,611.1	28,208.3	387.9	229.2
3/4	16	0.3730	42,002.8	31,502.1	433.2	256.0
7/8	9	0.4620	52,024.9	39,018.7	625.9	369.9
7/8	14	0.5090	57,317.5	42,988.1	689.6	407.5
1	8	0.6060	68,240.4	51,180.3	938.3	554.5
1	12	0.6630	74,659.1	55,994.3	1,026.6	606.6
1 1/4	7	0.9690	109,117.2	81,837.9	1,875.5	1,108.2
1 1/4	12	1.0730	120,828.4	90,621.3	2,076.7	1,227.2
1 1/2	6	1.4050	158,214.2	118,660.7	3,263.2	1,928.2
1 1/2	12	1.5800	177,920.6	133,440.5	3,669.6	2,168.4
Equations		$= \pi / 4 * (D - 0.9743 / n)^2$	$= \sigma_y * A * 90\%$	= Proof Load * 75%	= k * D * Clamp Load * (1ft/12in)	

Assumptions: (1) Yield Strength is chosen based on Special Metals Haynes 242 Technical Data sheet 0.2% offset at room temperature for annealed and aged bars. (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. Molybdenum disulfide-based and nickel-based anti-seize lubricants 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.*