Grade 8 Bolt Torque Chart

Grade 8 bolt torque chart, coarse threads

Torque = K × diameter × clamp load, with clamp load at 75% of proof load (a reusable joint). K is 0.20 for dry threads and 0.15 for lubricated threads. Proof load is tensile stress area times proof strength: grade 2 at 55 ksi, grade 5 at 85 ksi, grade 8 at 120 ksi, and ISO classes 8.8, 10.9 and 12.9 at 580, 830 and 970 MPa. Stress area is π/4 × (D − 0.9743/TPI)² for inch threads and π/4 × (D − 0.9382 × pitch)² for metric.

Bolt (diameter-TPI)	Stress area (in²)	Grade 8 clamp load (lb)	Grade 8 dry (ft-lb)	Grade 8 lubricated (ft-lb)	Grade 8 dry (N·m)	Grade 8 lubricated (N·m)
1/4-20	0.0318	2,864	12	9	16	12
5/16-18	0.0524	4,719	25	18	33	25
3/8-16	0.0775	6,974	44	33	59	44
7/16-14	0.1063	9,568	70	52	95	71
1/2-13	0.1419	12,771	106	80	144	108
9/16-12	0.1819	16,375	154	115	208	156
5/8-11	0.2260	20,340	212	159	287	215
3/4-10	0.3345	30,101	376	282	510	383
7/8-9	0.4617	41,556	606	455	822	616
1-8	0.6057	54,517	909	681	1232	924

Grade 8 bolt torque chart, fine threads

Bolt (diameter-TPI)	Stress area (in²)	Grade 8 clamp load (lb)	Grade 8 dry (ft-lb)	Grade 8 lubricated (ft-lb)	Grade 8 dry (N·m)	Grade 8 lubricated (N·m)
1/4-28	0.0364	3,274	14	10	18	14
5/16-24	0.0581	5,226	27	20	37	28
3/8-24	0.0878	7,905	49	37	67	50
7/16-20	0.1187	10,684	78	58	106	79

Bolt (diameter-TPI)	Stress area (in²)	Grade 8 clamp load (lb)	Grade 8 dry (ft-lb)	Grade 8 lubricated (ft-lb)	Grade 8 dry (N·m)	Grade 8 lubricated (N·m)
1/2-20	0.1600	14,396	120	90	163	122
9/16-18	0.2030	18,268	171	128	232	174
5/8-18	0.2560	23,036	240	180	325	244
3/4-16	0.3730	33,566	420	315	569	427
7/8-14	0.5095	45,853	669	502	907	680
1-12	0.6630	59,674	995	746	1348	1011

Disclaimer. Starting values for general use. Follow the manufacturer's specification for critical joints, wheels and engines. Charts & Specs is an independent reference site. It is not affiliated with any manufacturer, standards body or code organization, and it uses brand and standard names only to identify what a value applies to.