Metric Bolt Torque Chart (Class 8.8, 10.9, 12.9)

Recommended tightening torque for metric bolts. Dry = clean plain steel threads. Lubed = oiled, greased or anti-seized threads. Dry zinc-plated bolts: about 15% below the dry value. Use the vehicle or equipment maker's spec when one exists.

Coarse thread, N·m

Size	Class 8.8		Class 10.9		Class 12.9	
	Dry	Lubed	Dry	Lubed	Dry	Lubed
M5 x 0.8	6.2	4.6	8.8	6.6	10	7.7
M6 x 1	11	7.9	15	11	18	13
M8 x 1.25	25	19	36	27	43	32
M10 x 1.5	50	38	72	54	84	63
M12 x 1.75	88	66	126	94	147	110
M14 x 2	141	105	201	151	235	176
M16 x 2	218	164	312	234	365	274
M18 x 2.5	312	234	431	323	504	378
M20 x 2.5	441	330	610	457	712	534
M22 x 2.5	601	451	831	623	971	728
M24 x 3	761	571	1,053	790	1,231	923
M27 x 3	1,116	837	1,544	1,158	1,805	1,354
M30 x 3.5	1,514	1,135	2,094	1,570	2,447	1,835

Fine thread, N·m

Size	Class 8.8		Class 10.9		Class 12.9	
	Dry	Lubed	Dry	Lubed	Dry	Lubed
M8 x 1	27	20	39	29	46	34
M10 x 1.25	53	40	76	57	89	67
M10 x 1	56	42	80	60	94	70
M12 x 1.5	92	69	132	99	154	115
M12 x 1.25	96	72	138	103	161	121
M14 x 1.5	152	114	217	163	254	190
M16 x 1.5	233	175	333	250	389	292
M18 x 1.5	350	263	485	363	566	425
M20 x 1.5	489	367	676	507	790	593
M22 x 1.5	659	495	912	684	1,066	800
M24 x 2	830	623	1,149	861	1,342	1,007

Coarse thread, ft-lb

Size	Class 8.8		Class 10.9		Class 12.9	
	Dry	Lubed	Dry	Lubed	Dry	Lubed
M5 x 0.8	4.6	3.4	6.5	4.9	7.6	5.7
M6 x 1	7.7	5.8	11	8.3	13	9.7
M8 x 1.25	19	14	27	20	31	24
M10 x 1.5	37	28	53	40	62	47
M12 x 1.75	65	49	93	70	109	81
M14 x 2	104	78	148	111	173	130
M16 x 2	161	121	230	173	269	202
M18 x 2.5	230	172	318	239	372	279
M20 x 2.5	325	244	450	337	525	394
M22 x 2.5	443	332	613	460	716	537
M24 x 3	562	421	777	583	908	681
M27 x 3	823	618	1,139	854	1,331	998
M30 x 3.5	1,116	837	1,544	1,158	1,805	1,354



Class 8.8
Stamped 8.8



Class 10.9
Stamped 10.9



Class 12.9
Stamped 12.9

Dry or lubed? Oil, grease and anti-seize cut friction, so the same torque clamps harder. Using a dry value on a lubricated bolt can stretch it past its limit.

Torque in steps. Clean the threads, snug every bolt, then bring them to full torque in two or three passes in a cross pattern. Check the final value with a click or beam wrench.

Not for: head bolts, connecting rods, torque-to-yield bolts, wheel nuts or aluminum threads. Those have their own specs.

Read the size: M10 x 1.5 = 10 mm thread diameter, 1.5 mm pitch. The wrench size is larger (16 or 17 mm on an M10). ft-lb = N·m x 0.738.

Clamp load = 75% of ISO 898-1 proof load; T = K x d x F, K 0.20 dry, 0.15 lubricated. Inch bolts: 33gears.com/bolt-torque-chart/