


  
**RECOMMENDED TORQUE VALUE CHART**

The below table should be used as a guideline for the correct torque to be applied to standard size metric and imperial bolts in grade 8.8 (metric) and ASTM A193 grade B7 (imperial) or similar. The torque figures are calculated in both metric (Nm) and imperial (lbf.ft) values using a choice of three commonly used bolt thread lubricants. The coefficient of friction applicable for the chosen bolt lubricant, using the 'k' value or the 'μ' (mu) value should always be considered. The below torque values are for guidance's purposes only. Always check with the equipment / bolt manufacturer for the actual torque required for the specific bolted components. Alternatively visit [www.catminh.com](http://www.catminh.com) to learn more about BOLTRIGHT PRO joint integrity software.

ALL VALUES ARE BASED ON 50% OF THE BOLT YIELD STRESS									
Bolt diameter (see note 1)	Nut AF Size (see note 2)	Bolt preload value (for grade ASTM A193 B7) (see note 3)		Torque value (for grade ASTM A193 B7 ) for specified lubricant(s)					
				Moly: f = 0.06 (see note 4)		Copper: f = 0.10 (see note 4)		Machine Oil: f = 0.15 (see note 4)	
inches	inches	kN	lbs.force	Nm	lbf.ft	Nm	lbf.ft	Nm	lbf.ft
5/8	1.1/16	52	11866	82	61	124	91	176	130
3/4	1.1/4	78	17560	142	105	315	159	307	227
7/8	1.7/16	107	24243	225	166	342	252	489	361
1	1.5/8	141	31804	334	246	509	376	728	537
1.1/8	1.13/16	184	41502	478	353	735	542	1056	779
1.1/4	2	233	52488	658	486	1019	751	1469	1083
1.3/8	2.3/16	288	64763	878	648	1367	1008	1977	1458
1.1/2	2.3/8	348	78327	1142	842	1786	1317	2591	1911
1.5/8	2.9/16	414	93179	1453	1072	2283	1684	3320	2448
1.3/4	2.3/4	486	109320	1817	1340	2864	2112	4173	3078
1.7/8	2.15/16	563	126750	2235	1649	3536	2608	5161	3807
2	3.1/8	647	145468	2714	2002	4305	3175	6294	4642
2.1/4	3.1/2	830	186771	3865	2851	6162	4545	9032	6662
2.1/2	3.7/8	938	211001	4796	3538	7678	5663	11279	8319
2.3/4	4.1/4	1146	257693	6383	4708	10252	7561	15088	11128
3	4.5/8	1374	309049	8284	6110	13344	9842	19669	14507
3.1/4	5	1623	365069	10530	7767	17003	12541	25094	18508
3.1/2	5.3/8	1893	425751	13148	9697	21275	15692	31434	23185
3.3/4	5.3/4	2184	491097	16167	11924	26208	19330	38761	28588
4	6.1/8	2495	561107	19615	14467	31850	23492	47145	34772

ALL VALUES ARE BASED ON 50% OF THE BOLT YIELD STRESS									
Bolt diameter (see note 1)	Nut AF Size (see note 2)	Bolt preload value (for grade 8.8)		Torque value (for grade 8.8) for specified lubricant(s)					
				Moly: f = 0.06 (see note 4)		Copper: f = 0.10 (see note 4)		Machine Oil: f = 0.15 (see note 4)	
mm	mm	kN	lbs.force	Nm	lbf.ft	Nm	lbf.ft	Nm	lbf.ft
M16	24	51	11623	75	55	114	84	163	120
M20	30	80	18161	147	108	223	164	318	235
M24	36	116	26151	253	186	384	283	548	404
M27	41	151	34082	365	270	561	414	805	594
M30	46	185	41588	500	369	765	564	1095	808
M33	50	228	51453	666	491	1026	756	1475	1088
M36	55	269	60590	863	637	1325	977	1901	1402
M39	60	322	72388	1104	814	1703	1256	2452	1808
M42	65	369	83157	1376	1015	2117	1561	3043	2244
M45	70	431	96888	1700	1254	2627	1938	3786	2793
M48	75	486	109288	2067	1524	3186	2350	4586	3383
M52	80	580	130408	2625	1936	4067	2999	5869	4329
M56	85	669	150601	3280	2419	5076	3744	7321	5400
M60	90	779	175231	4030	2972	6262	4618	9051	6676
M64	95	883	198522	4867	3590	7550	5569	10904	8042
M68	100	1008	226663	5833	4302	9080	6697	13139	9691
M72	105	1141	256668	6918	5102	10803	7968	15689	11549
M76	110	1283	288538	8128	5995	12729	9389	18481	13631
M80	115	1433	322272	9470	6985	14871	10968	21622	15948
M90	130	1845	414765	13519	9971	21357	15752	31155	22979
M100	145	2308	518911	18614	13729	29553	21797	43228	31883



**Note:** The above figures do not take into account either gasket stress or flange stress load loss that occur. To consider these load loss probability will require a full 'Bolt load / Stress calculation'.

- 1 = Bolt material grade ASTM A193 B7 (Imperial) or grade 8.8 (Metric)
- 2 = Nut AF size is based on heavy series nuts
- 3 = Bolt Preload equates to a bolt yield stress of 50% of the minimum yield strength
- 4 = Torque figure values are based on 50% of the minimum bolt yield stress