

# Bolt Torque Tables & Specifications



**Property Class 4.6**  
**ISO Metric Coarse Pitch Thread**  
 (AS1111.1 / AS1111.2 / AS4291.1)



**BSW (Grade 2)**  
 (AS / NZS 2451)

Diameter	Thread Pitch	Across Flats	Proof Load		Ultimate Tensile Strength (Min)		Recommended Assembly Torque*	
			kN	lbf	kN	lbf	Nm	lbf
M5	0.8	8	3.20	720	5.68	1280	2.1	1.6
M6	1	10	4.52	1020	8.04	1810	3.6	2.7
M8	1.25	13	8.24	1860	14.6	3290	8.6	6.4
M10	1.5	16	13.0	2930	23.2	5220	17	12.6
M12	1.75	18	19.0	4280	33.7	7580	30	22
M14	2	21	25.9	5830	46.0	10350	47	35
M16	2	24	35.3	7940	62.8	14120	74	55
M18	2.5	27	43.2	9720	76.8	17270	101	75
M20	2.5	30	55.1	12390	98.0	22040	144	106
M22	2.5	34	68.2	15340	121	27210	195	145
M24	3	36	79.4	17850	141	31700	248	184
M27	3	41	103	23160	184	41370	362	267
M30	3.5	46	126	28330	224	50360	491	363
M33	3.5	50	156	35080	278	62500	669	494
M36	4	55	184	41370	327	73520	861	636
M39	4	60	220	49460	390	87680	1115	823
M42	4.5	65	252	56660	448	100720	1376	1015
M48	5	75	332	74640	588	132190	2072	1528
M56	5.5	85	458	102970	812	182550	3334	2460
M64	5.5	95	605	136010	1072	241000	5034	3714

Diameter	Threads per Inch	Across Flats	Proof Load		Ultimate Tensile Strength (Min)		Recommended Assembly Torque*	
			kN	lbf	kN	lbf	Nm	lbf
1/4	20	11.18	5.2	1160	9.0	2020	4.3	3
5/16	18	13.21	8.4	1890	14.7	3310	8.7	6
3/8	16	15.05	12.5	2800	21.8	4890	15	11
7/16	14	17.84	17.1	3840	29.9	6710	25	18
1/2	12	20.57	22.1	4970	38.7	8690	37	27
5/8	11	25.34	36.2	8140	63.3	14240	75	55
3/4	10	30.16	53.6	12050	93.8	21080	133	98
7/8	9	32.64	74.0	16630	129.5	29110	214	158
1	8	37.21	97.0	21800	169.7	38140	320	236
1.1/8	7	42.04	122	27460	214	48050	454	335
1.1/4	7	46.67	156	35130	273	61470	645	476
1.1/2	6	55.82	225	50540	393	88440	1114	822

\*Induces preload equivalent to 65% of Proof Load. Torque values are for plain finish, unlubricated fasteners. Use of a lubricant will result in higher bolt pretension for the equivalent applied torque.

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# Bolt Torque Tables & Specifications



**Property Class 8.8**  
**ISO Metric Coarse Pitch Thread**  
 (AS1110.1 / AS1110.2 / AS4291.1)

Diameter	Thread Pitch	Across Flats	Proof Load		Ultimate Tensile Strength (Min)		Recommended Assembly Torque*	
			kN	lbf	kN	lbf	Nm	lbf
M6	1	10	11.6	2610	16.1	3620	9.1	6.8
M8	1.25	13	21.2	4770	29.2	6570	22	16.3
M10	1.5	16	33.7	7580	46.4	10440	44	33
M12	1.75	18	48.9	11000	67.4	15160	76	57
M14	2	21	66.7	15000	92.0	20690	122	90
M16	2	24	91.0	20460	125	28110	189	140
M18	2.5	27	115	25860	159	35750	269	199
M20	2.5	30	147	33050	203	45640	382	283
M22	2.5	34	182	40920	252	56660	521	384
M24	3	36	212	47660	293	65870	661	488
M27	3	41	275	61830	381	85660	966	713
M30	3.5	46	337	75770	466	104770	1315	970
M33	3.5	50	416	93530	576	129490	1785	1317
M36	4	55	490	110160	678	152430	2293	1692



**Property Class 8.8**  
**ISO Metric Fine Pitch Thread**  
 (ISO8765 / ISO8786 / AS4291.1)

Diameter	Thread Pitch	Across Flats	Proof Load		Ultimate Tensile Strength (Min)		Recommended Assembly Torque*	
			kN	lbf	kN	lbf	Nm	lbf
M8	1	13	22.7	5110	31.36	7060	24	17.5
M10	1	16	37.4	8410	51.6	11610	49	36
M10	1.25	16	35.5	7990	49.0	11020	46	35
M12	1.25	18	53.4	12010	73.7	16570	84	62
M12	1.5	18	51.1	11490	70.5	15850	80	59
M14	1.5	21	72.5	16300	100	22490	132	98
M16	1.5	24	96.9	21790	134	30130	202	149
M18	1.5	27	130	29230	179	40250	304	225
M20	1.5	30	163	36650	226	50810	424	313
M22	1.5	34	200	44970	276	62050	572	422
M24	2	36	230	51710	319	71720	718	530
M27	2	41	298	67000	412	92630	1046	772
M30	2	46	373	83860	515	115780	1455	1074
M33	2	50	457	102740	632	142080	1961	1447
M36	3	55	519	116680	718	161420	2429	1792

\*Induces preload equivalent to 65% of Proof Load. Torque values are for plain finish, unlubricated fasteners. Use of a lubricant will result in higher bolt pretension for the equivalent applied torque.

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# Bolt Torque Tables & Specifications



## Property Class 10.9 ISO Metric Coarse Pitch Thread (AS1110.1 / AS1110.2 / AS4291.1)

Diameter	Thread Pitch	Across Flats	Proof Load		Ultimate Tensile Strength (Min)		Recommended Assembly Torque*	
			kN	lbf	kN	lbf	Nm	lbf
M6	1	10	16.7	3760	20.9	4700	13.1	9.7
M8	1.25	13	30.4	6840	38.1	8570	32	23
M10	1.5	16	48.1	10820	60.3	13560	63	47
M12	1.75	18	70.0	15740	87.7	19720	109	81
M14	2	21	95.5	21470	120	26980	174	129
M16	2	24	130	29230	163	36650	270	200
M18	2.5	27	159	35750	200	44970	372	275
M20	2.5	30	203	45640	255	57330	528	390
M22	2.5	34	252	56660	315	70820	721	532
M24	3	36	293	65870	367	82510	914	675
M27	3	41	381	85660	477	107240	1338	987
M30	3.5	46	466	104770	583	131070	1817	1341
M33	3.5	50	576	129490	722	162320	2471	1823
M36	4	55	678	152430	850	191090	3173	2341



## Property Class 10.9 ISO Metric Fine Pitch Thread (ISO8765 / ISO8786 / AS4291.1)

Diameter	Thread Pitch	Across Flats	Proof Load		Ultimate Tensile Strength (Min)		Recommended Assembly Torque*	
			kN	lbf	kN	lbf	Nm	lbf
M8	1	13	32.5	7310	40.80	9180	34	25
M10	1	16	53.5	12030	67.1	15090	70	52
M10	1.25	16	50.8	11430	63.6	14300	66	49
M12	1.25	18	76.4	17180	95.8	21540	119	88
M12	1.5	18	73.1	16440	91.6	20600	114	85
M14	1.5	21	104	23390	130	29230	189	140
M16	1.5	24	139	31250	174	39120	289	214
M18	1.5	27	179	40250	225	50590	419	310
M20	1.5	30	226	50810	283	63630	588	434
M22	1.5	34	276	62050	346	77790	789	583
M24	2	36	319	71720	399	89700	996	735
M27	2	41	412	92630	516	116010	1446	1067
M30	2	46	515	115780	646	145230	2009	1482
M33	2	50	632	142080	791	177830	2711	2000
M36	3	55	718	161420	900	202330	3360	2479

\*Induces preload equivalent to 65% of Proof Load. Torque values are for plain finish, unlubricated fasteners. Use of a lubricant will result in higher bolt pretension for the equivalent applied torque.

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# Bolt Torque Tables & Specifications



**Grade 5  
UNC Thread**  
(AS2465 / SAE J429)

Diameter	Threads per Inch	Across Flats in	Proof Load		Ultimate Tensile Strength (Min)		Recommended Assembly Torque*	
			kN	lbf	kN	lbf	Nm	lbf
1/4	20	7/16	12.0	2700	16.9	3800	9.9	7.3
5/16	18	1/2	19.8	4450	28.0	6300	20	15
3/8	16	9/16	29.4	6600	41.4	9300	36	27
7/16	14	5/8	40.3	9050	56.9	12800	58	43
1/2	13	3/4	53.8	12100	75.6	17000	89	66
9/16	12	13/16	69.0	15500	97.0	21800	128	95
5/8	11	15/16	85.4	19200	120.6	27100	176	130
3/4	10	1 1/8	126.3	28400	178.4	40100	313	231
7/8	9	1 5/16	174.8	39300	246	55400	505	373
1	8	1 1/2	229	51500	323	72700	757	558
1.1/8	7	1 11/16	251	56500	356	80100	934	689
1.1/4	7	1 7/8	319	71700	452	101700	1317	971
1.3/8	6	2 1/16	380	85500	540	121300	1727	1274
1.1/2	6	2 1/4	463	104000	656	147500	2291	1690



**Grade 5  
UNF Thread**  
(AS2465 / SAE J429)

Diameter	Threads per Inch	Across Flats in	Proof Load		Ultimate Tensile Strength (Min)		Recommended Assembly Torque*	
			kN	lbf	kN	lbf	Nm	lbf
1/4	28	7/16	13.8	3100	19.4	4350	11	8.4
5/16	24	1/2	21.8	4900	30.9	6950	23	17
3/8	24	9/16	33.1	7450	46.7	10500	41	30
7/16	20	5/8	44.9	10100	63.2	14200	65	48
1/2	20	3/4	60.5	13600	85.4	19200	100	74
9/16	18	13/16	77.0	17300	108.5	24400	143	105
5/8	18	15/16	97.0	21800	136.6	30700	200	148
3/4	16	1 1/8	141.0	31700	199.3	44800	349	258
7/8	14	1 5/16	192.6	43300	272	61100	557	411
1	12	1 1/2	251	56400	354	79600	828	611
1 SAE	14	1 1/2	257	57700	363	81500	848	625
1.1/8	12	1 11/16	282	63300	400	89900	1046	772
1.1/4	12	1 7/8	353	79400	501	112700	1458	1075
1.3/8	12	2 1/16	433	97300	614	138100	1965	1449
1.1/2	12	2 1/4	520	117000	738	166000	2578	1901

\*Induces preload equivalent to 65% of Proof Load. Torque values are for plain finish, unlubricated fasteners. Use of a lubricant will result in higher bolt pretension for the equivalent applied torque.

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# Bolt Torque Tables & Specifications



**Grade 8  
UNC Thread**  
(AS2465 / SAE J429)

Diameter	Threads per Inch	Across Flats in	Proof Load		Ultimate Tensile Strength (Min)		Recommended Assembly Torque*	
			kN	lbf	kN	lbf	Nm	lbf
1/4	20	7/16	16.9	3800	21.1	4750	14	10
5/16	18	1/2	28.0	6300	34.9	7850	29	21
3/8	16	9/16	41.4	9300	51.6	11600	51	38
7/16	14	5/8	56.9	12800	70.7	15900	82	61
1/2	13	3/4	75.6	17000	94.8	21300	125	92
9/16	12	13/16	97.0	21800	121.4	27300	180	133
5/8	11	15/16	120.6	27100	150.8	33900	249	184
3/4	10	1 1/8	178.4	40100	223	50100	442	326
7/8	9	1 5/16	246	55400	308	69300	712	525
1	8	1 1/2	323	72700	404	90900	1068	788
1.1/8	7	1 11/16	407	91600	509	114400	1514	1116
1.1/4	7	1 7/8	517	116300	647	145400	2135	1575
1.3/8	6	2 1/16	617	138600	770	173200	2799	2065
1.1/2	6	2 1/4	750	168600	938	210800	3715	2740



**Grade 8  
UNF Thread**  
(AS2465 / SAE J429)

Diameter	Threads per Inch	Across Flats in	Proof Load		Ultimate Tensile Strength (Min)		Recommended Assembly Torque*	
			kN	lbf	kN	lbf	Nm	lbf
1/4	28	7/16	19.4	4350	24.2	5450	16	12
5/16	24	1/2	30.9	6950	38.7	8700	32	24
3/8	24	9/16	46.7	10500	58.7	13200	58	43
7/16	20	5/8	63.2	14200	79.2	17800	91	67
1/2	20	3/4	85.4	19200	106.8	24000	141	104
9/16	18	13/16	108.5	24400	135.2	30400	202	149
5/8	18	15/16	136.6	30700	170.8	38400	282	208
3/4	16	1 1/8	199.3	44800	249	56000	494	364
7/8	14	1 5/16	272	61100	340	76400	785	579
1	12	1 1/2	354	79600	442	99400	1169	862
1 SAE	14	1 1/2	363	81500	453	101900	1197	883
1.1/8	12	1 11/16	457	102700	571	128400	1697	1252
1.1/4	12	1 7/8	573	128800	716	161000	2365	1744
1.3/8	12	2 1/16	702	157800	877	197200	3187	2351
1.1/2	12	2 1/4	844	189700	1055	237200	4180	3033

\*Induces preload equivalent to 65% of Proof Load. Torque values are for plain finish, unlubricated fasteners. Use of a lubricant will result in higher bolt pretension for the equivalent applied torque.

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