Recommended assembly **torques**

Recommended Assembly Torques - Class 4.6

Property Class 4.6 Commercial Low Tensile Bolts

AS 1111.1

Diameter	Bolt Tension Corresponding to 65% of Proof Load		Breaking Load of Bolt (Min)	
mm	kN	lbf	Nm	lbft
5	2.08	468	2.1	1.5
6	2.94	660	3.5	2.5
8	5.34	1200	8.5	6.3
10	8.45	1900	17	12
12	12.4	2790	30	22
14	16.8	3780	47	35
16	22.9	5150	73	54
18	28.1	6320	101	75
20	35.8	8050	143	106
22	44.3	9960	195	145
24	51.6	11600	248	183
27	67	15060	362	265
30	81.9	18410	491	362
33	101	22800	669	495
36	120	26980	864	637
39	143	32150	1115	820
42	164	36870	1378	1020
48	215	48330	2064	1520
56	298	66990	3338	2460
64	393	88350	5030	3710

Recommended Assembly Torques - BSW

BSW Low Tensile Bolts

AS/NZS 2451

Diameter & Thread		Induced Bolt Preload or Tension Corresponding to 65% of Yield Load	Recommended Assembly Torque to Give induced Preload Equal to 65% of Yield Load
		lbf	lbft
1/4	BSW	750	3
5/16	BSW	1230	6
3/8	BSW	1820	12
7/16	BSW	2480	19
1/2	BSW	3250	28
5/8	BSW	5300	55
3/4	BSW	7830	98
7/8	BSW	10200	150
1	BSW	13300	230
1.1/8	BSW	16700	320
1.1/4	BSW	21500	450
1.1/2	BSW	30800	780

The torques listed are for plain finish (uncoated) fasteners as supplied.

RECOMMENDED ASSEMBLY TORQUES

Recommended Assembly Torques - Grade 5

Grade 5 Unifed High Tensile Bolts (Same as SAE J429 Grade 5)

AS/ NZS 2465

The torques listed are for plain finish (uncoated) fasteners as supplied.

Diameter & Thread		Induced Bolt Preload or Tension Corresponding to 65% of yield Load	Recommended Assembly Torque to Give induced Preload Equal to 65% of Yield Load
		lbf	lbft
1/4	UNF	2020	8
5/16	UNF	3190	17
3/8	UNF	4840	30
7/16	UNF	6570	48
1/2	UNF	8840	74
5/8	UNF	14170	150
3/4	UNF	20610	360
7/8	UNF	28150	410
1	UNF	36660	610
1/4	UNC	1760	7
5/16	UNC	2890	15
3/8	UNC	4290	27
7/16	UNC	5880	43
1/2	UNC	7870	66
5/8	UNC	12480	130
3/4	UNC	18400	230
7/8	UNC	25550	370
1	UNC	33480	560

Recommended Assembly Torques - Grade 8

Grade 5 Unifed High Tensile Bolts (Same as SAE J429 Grade 8)

AS/ NZS 2465

The torques listed are for plain finish (uncoated) fasteners as supplied.

Diameter & Thread		Induced Bolt Preload or Tension Corresponding to 65% of yield Load	Recommended Assembly Torque to Give induced Preload Equal to 65% of Yield Load
		lbf	lbft
1/4	UNF	2830	12
5/16	UNF	4520	23
3/8	UNF	6830	43
7/16	UNF	9230	67
1/2	UNF	12500	104
5/8	UNF	19960	207
3/4	UNF	29120	363
7/8	UNF	39720	577
1	UNF	51740	859
1/4	UNC	2470	10
5/16	UNC	4100	21
3/8	UNC	6050	38
7/16	UNC	8320	60
1/2	UNC	11050	92
5/8	UNC	17620	183
3/4	UNC	26070	325
7/8	UNC	36010	523
1	UNC	47200	785

Recommended Assembly Torques - Class 8.8

Property class 8.8 High Tensile Bolts, ISO Coarse Series Threads

AS 1110.1

Diameter	Bolt Tension Corresponding to 65% of Proof Load		Recommended Assembly Torque	
mm	kN	lbf	Nm	lbft
5	5.4	1210	5	4
6	7.6	1710	9	7
8	13.8	3100	22	16
10	21.9	4920	44	32
12	31.8	7150	77	57
14	43.4	9680	121	90
16	59.2	13310	190	140
18	74.8	16690	269	198
20	95.6	21490	370	270
22	118	26390	520	380
24	138	31020	640	470
27	177	39480	955	700
30	219	49230	1310	970
33	270	60330	1785	1320
36	319	71710	2300	1690
(39)	380	84980	2970	2190
(42)	437	98240	3670	2710
(48)	573	128820	5500	4060
(56)	792	178050	8870	6540
(64)	1045	234930	13380	9870

( ) Sizes not covered in standard. Data for sizes above this is given for information only.

The torques listed are for plain finish (uncoated) fasteners as supplied.

Recommended Assembly Torques - Class 10.9

Property class 10.9 High Tensile Bolts

AS 1110.1

Diameter	Bolt Tension Corresponding to 65% of Proof Load		Recommended Assembly Torque	
mm	kN	lbf	Nm	lbft
5	7.67	1720	8	6
6	10.86	2440	13	10
8	19.76	4440	32	12
10	31.27	7030	63	46
12	45.5	10230	109	81
14	62	13960	175	130
16	84.5	19000	270	200
18	103	23160	370	275
20	131.95	36900	528	390
22	164	42820	720	530
24	190.45	55750	915	675
27	248	68100	1340	990
30	302.9	83410	1820	1340
33	371	99070	2450	1810
36	440.7	99070	3170	2340
39	527	118470	4110	3030

The torques listed are for plain finish (uncoated) fasteners as supplied.