Nominal bolt size	'A' Quality 15 Tons per sq. in. Yield				'P' Quality 22 Tons per sq. in. Yield				'R' quality 34 Tons per sq. in. Yield			
	Torque lbf/ft		Bolt tension lb		Torque lbf/ft		Bolt tension lb		Torque lbf/ft		Bolt tension lb	
B.A.	U.N.F.	B.A.	U.N.F.	B.A.	U.N.F.	B.A.	U.N.F.	B.A.	U.N.F.	B.A.	U.N.F.	B.A.	U.N.F.
8	2	0.154	0.150	107	105	0.226	0.220	157	154	0.350	0.341	243	238
7	3	0.228	0.231	139	140	0.335	0.338	204	205	0.517	0.523	316	317
6	4	0.322	0.326	176	175	0.473	0.478	258	258	0.731	0.739	396	396
5	5	0.489	0.459	233	220	0.717	0.673	341	323	1.01	1.04	528	500
4	6	0.699	0.624	296	271	1.03	0.916	434	398	1.58	1.42	671	615
3	8	1.04	1.07	387	392	1.21	1.57	568	576	2.36	2.43	877	890
2	10	1.59	1.69	516	535	2.33	2.48	757	785	3.61	3.84	1170	1210
1	12	2.30	2.49	660	691	3.37	3.65	968	1010	5.20	5.64	1500	1570
0	—	3.35	—	851	—	4.91	—	1250	—	7.60	—	1930	—
Ins.		Whit. U.N.C.	B.S.F. U.N.F.	Whit. U.N.C.	B.S.F. U.N.F.	Whit. U.N.C.	B.S.F U.N.F.	Whit. U.N.C.	B.S.F. U.N.F.	Whit. U.N.C.	B.S.F. U.N.F.	Whit. U.N.C.	B.S.F. U.N.F.
1/4		4	4	860	960	5	6	1260	1400	8	9	1950	2170
5/16		7	8	1420	1520	11	12	2080	2230	17	18	3210	3450
3/8		13	14	2090	2260	19	21	3070	3310	30	32	4750	5120
7/16		21	22	2870	3110	31	33	4210	4560	47	51	6510	7060
1/2		31	34	3720	4090	46	50	5460	5990	70	77	8440	9260
9/16		46	50	4920	5320	68	73	7210	7810	105	112	11150	12060
5/8		63	68	6100	6530	93	100	8950	9580	145	155	13830	14810
3/4		113	118	9030	9460	166	173	13240	13880	255	268	20470	21450
7/8		182	191	12450	13090	266	280	18250	19200	410	432	28210	29670
1		272	288	16340	17250	400	422	23970	25310	620	650	37050	39120
1 1/8		388	410	20430	21700	567	602	30240	32120	—	—	—	—

Nominal bolt size	'S' Quality 38 Tons per sq. in. Yield				'T' Quality 44 Tons per sq. in. Yield				'X' Quality 63 Tons per sq. in. Yield			
	Torque lbf/ft		Bolt tension lb		Torque lbf/ft		Bolt tension lb		Torque lbf/ft		Bolt tension lb	
B.A.	U.N.F.	B.A.	U.N.F.	B.A.	U.N.F.	B.A.	U.N.F.	B.A.	U.N.F.	B.A.	U.N.F.	B.A.	U.N.F.
8	2	0.392	0.381	271	266	0.453	0.440	314	308	0.649	0.631	449	440
7	3	0.578	0.584	353	354	0.670	0.676	408	410	0.959	0.969	585	587
6	4	0.817	0.826	445	443	0.946	0.956	515	512	1.35	1.37	737	734
5	5	1.24	1.16	590	558	1.43	1.35	683	646	2.05	1.93	978	926
4	6	1.77	1 58	750	688	2.06	1.83	868	796	2.94	2.62	1243	1140
3	8	2.64	2.72	980	994	2.42	3.14	1136	1150	4.37	4.51	1626	1650
2	10	4.03	4.29	1310	1350	4.66	4.96	1510	1570	6.69	7.11	2170	2250
1	12	5.81	6.30	1670	1750	6.74	7.30	1940	2020	9.64	10.4	2770	2900
0	—	8.49	—	2160	—	9.82	—	2500	—	14.1	—	3580	—
Ins.		Whit. U.N.C.	B.S.F. U.N.F.	Whit. U.N.C.	B.S.F. U.N.F.	Whit. U.N.C.	B.S.F. U.N.F.	Whit. U.N.C.	B.S.F. U.N.F.	Whit. U.N.C.	B.S.F. U.N.F.	Whit. U.N.C.	B.S.F. U.N.F.
1/4		9	10	2180	2420	10	12	2520	2800	15	17	3610	4020
5/16		19	20	3590	3860	22	24	4160	4460	31	33	5950	6400
3/8		33	36	5300	5710	38	41	6140	6620	55	59	8790	9470
7/16		53	57	7280	7890	62	66	8420	9120	85	95	12070	13070
1/2		79	86	9430	10350	91	100	10920	11980	130	143	15640	17160
9/16		117	126	12460	13480	135	146	14420	15620	194	209	20660	22350
5/8		161	172	15460	16550	186	200	17900	19160	267	286	25630	27430
3/4		294	300	22880	23970	331	357	26480	27760	475	485	37940	39740
7/8		460	484	31530	32400	532	560	36500	38400	—	—	—	—
1		690	729	41400	43720	—	—	—	—	—	—	—	—

Additional Data

Lubrication factor

		Plating condition of bolt			
		Self	Zinc	Cadmium	Phosphate
Plating Condition of Nut	Self	1.00	1.00	0.80	0.90
	Zinc	1.15	1.20	1.35	1.15
	Cadmium	0.85	0.90	1.20	1.00
	Phosphate and Oil	0.70	0.65	0.70	0.75
	Zinc with Wax	0.60	0.55	0.65	0.55

The above factors were determined by Firth Cleveland Fastenings Ltd., the tests were conducted with the combinations of nut and bolt shown, on Norber Torque-Load test equipment using a hardened and ground abutment disc.

ISO Metric Grade Bolt Head marking

In the ISO grades, the first figure in the grade number is the ultimate tensile strength in Kgf/mm² divided by 10, and the second figure is the proportion of yield to ultimate, so that by multiplying the two figures together and then multiplying by 10, gives the minimum yield.

Identification of bolt material grade

How to identify bolt and nut quality

BSF—Whitworth BS 1083		Quality marked by letter		Unmarked nuts are used with unmarked and R quality bolts
UNF—UNC BS 1763		as above with circular recess in addition		With S bolt use grade 1 nut marked number and circular groove on non bearing face
High Strength Friction Grip bolts to BS 3139		3 radial lines 'S' quality etc.		Use nut with same number of circumferential dashes
High Strength Friction Grip bolts to BS 4395		metric general grade  metric higher grade		Nut general grade  Higher grade
Metric to BS 3692 and BS 4190		Plain then steps up to 12.9 grade Note:—the two parts of grade number multiplied together give the minimum yield stress i.e. 6.6 = 36 kgf/mm²		Nuts marked like a clock, dot at 12 o'clock line at 8 = grade 8 nut (2 dots grade 12)
American made		Grade 6 U.T.S. 62.5 ton/sq in. grades range from Grade 4 (unmarked), 5 marked 3 lines, 6 as above, 8 marked 6 lines		Grade 4 not marked Grade 5 nuts for Grade 5 bolts Grade 8 nuts for all above