

Engineering Design Reference Sheet

SAE Capscrews Standard Torque Chart, Bold Values (Dry) are the Standard

SAE COARSE AND FINE THREAD BOLTS



Torque Spec. Chart
Standard Torque
Values Unless Noted

NOM SIZE	THREAD SERIES	D CPSCR. DIA (IN.)	A TENSILE STRESS (IN2)	K (DRY) = 0.20						K (LUBED) = 0.15								
				SAE GRADE 2 CAPSCREWS			SAE GRADE 5 CAPSCREWS			SAE GRADE 8 CAPSCREWS								
				MIN. TENSILE STRENGTH (PSI)	PROOF LOAD (PSI)	CLAMP LOAD (LBS)	TORQUE (FT. LBS.)		MIN. TENSILE STRENGTH (PSI)	PROOF LOAD (PSI)	CLAMP LOAD (LBS)	TORQUE (FT. LBS.)		MIN. TENSILE STRENGTH (PSI)	PROOF LOAD (PSI)	CLAMP LOAD (LBS)	TORQUE (FT. LBS.)	
							DRY 0.2	LUBED 0.15				DRY 0.2	LUBED 0.15				DRY 0.2	LUBED 0.15
1/4	20 UNC	0.2500	0.0318	74,000	55,000	1,312	5	4	120,000	85,000	2,027	8	6	150,000	120,000	2,862	12	9
	28 UNF		0.0364	74,000	55,000	1,502	6	5	120,000	85,000	2,321	10	7	150,000	120,000	3,276	14	10
5/16	18 UNC	0.3125	0.0524	74,000	55,000	2,162	11	8	120,000	85,000	3,341	17	13	150,000	120,000	4,716	25	18
	24 UNF		0.0580	74,000	55,000	2,393	12	9	120,000	85,000	3,698	19	14	150,000	120,000	5,220	27	20
3/8	16 UNC	0.3750	0.0775	74,000	55,000	3,197	20	15	120,000	85,000	4,941	31	23	150,000	120,000	6,975	44	33
	24 UNF		0.0878	74,000	55,000	3,622	23	17	120,000	85,000	5,597	35	26	150,000	120,000	7,902	49	37
7/16	14 UNC	0.4375	0.1063	74,000	55,000	4,385	32	24	120,000	85,000	6,777	49	37	150,000	120,000	9,567	70	52
	20 UNF		0.1187	74,000	55,000	4,896	36	27	120,000	85,000	7,567	55	41	150,000	120,000	10,683	78	58
1/2	13 UNC	0.5000	0.1419	74,000	55,000	5,853	49	37	120,000	85,000	9,046	75	57	150,000	120,000	12,771	106	80
	20 UNF		0.1599	74,000	55,000	6,596	55	41	120,000	85,000	10,194	85	64	150,000	120,000	14,391	120	90
9/16	12 UNC	0.5625	0.1820	74,000	55,000	7,508	70	53	120,000	85,000	11,603	109	82	150,000	120,000	16,380	154	115
	18 UNF		0.2030	74,000	55,000	8,374	79	59	120,000	85,000	12,941	121	91	150,000	120,000	18,270	171	128
5/8	11 UNC	0.6250	0.2260	74,000	55,000	9,323	97	73	120,000	85,000	14,408	150	113	150,000	120,000	20,340	212	159
	18 UNF		0.2660	74,000	55,000	10,973	114	86	120,000	85,000	16,958	177	132	150,000	120,000	23,940	249	187
3/4	10 UNC	0.7500	0.3340	74,000	55,000	13,778	172	129	120,000	85,000	21,293	266	200	150,000	120,000	30,060	376	282
	16 UNF		0.3730	74,000	55,000	15,386	192	144	120,000	85,000	23,779	297	223	150,000	120,000	33,570	420	315
7/8	9 UNC	0.8750	0.4620	60,000	33,000	11,435	167	125	120,000	85,000	29,453	430	322	150,000	120,000	41,580	606	455
	14 UNF		0.5090	60,000	33,000	12,598	184	138	120,000	85,000	32,449	473	355	150,000	120,000	45,810	668	501
1	8 UNC	1.0000	0.6060	60,000	33,000	14,999	250	187	120,000	85,000	38,633	644	483	150,000	120,000	54,540	909	682
	14 UNF		0.6790	60,000	33,000	16,805	280	210	120,000	85,000	43,286	721	541	150,000	120,000	61,110	1,019	764
1-1/8	7 UNC	1.1250	0.7630	60,000	33,000	18,884	354	266	105,000	74,000	42,347	794	595	150,000	120,000	68,670	1,288	966
	12 UNF		0.8560	60,000	33,000	21,186	397	298	105,000	74,000	47,508	891	668	150,000	120,000	77,040	1,445	1,083
1-1/4	7 UNC	1.2500	0.9690	60,000	33,000	23,983	500	375	105,000	74,000	53,780	1,120	840	150,000	120,000	87,210	1,817	1,363
	12 UNF		1.0730	60,000	33,000	26,557	553	415	105,000	74,000	59,552	1,241	930	150,000	120,000	96,570	2,012	1,509
1-3/8	6 UNC	1.3750	1.1550	60,000	33,000	28,586	655	491	105,000	74,000	64,103	1,469	1,102	150,000	120,000	103,950	2,382	1,787
	12 UNF		1.3150	60,000	33,000	32,546	746	559	105,000	74,000	72,983	1,673	1,254	150,000	120,000	118,350	2,712	2,034
1-1/2	6 UNC	1.5000	1.4050	60,000	33,000	34,774	869	652	105,000	74,000	77,978	1,949	1,462	150,000	120,000	126,450	3,161	2,371
	12 UNF		1.5810	60,000	33,000	39,130	978	734	105,000	74,000	87,746	2,194	1,645	150,000	120,000	142,290	3,557	2,668
1-3/4	6 UN	1.7500	1.9800	60,000	33,000	49,005	1,429	1,072	105,000	74,000	109,890	3,205	2,404	150,000	120,000	178,200	5,198	3,898
	12 UN		2.1900	60,000	33,000	54,203	1,581	1,186	105,000	74,000	121,545	3,545	2,659	150,000	120,000	197,100	5,749	4,312

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NOM SIZE	THREAD SERIES	D CPSCR. DIA (mm)	A TENSILE STRESS (mm ²)	K (DRY) = 0.20					K (LUBED) = 0.15									
				SAE GRADE 2 CAPSCREWS			SAE GRADE 5 CAPSCREWS					SAE GRADE 8 CAPSCREWS						
				MIN. TENSILE STRENGTH (MPa)	PROOF LOAD (MPa)	CLAMP LOAD (N)	TORQUE (Nm)		MIN. TENSILE STRENGTH (MPa)	PROOF LOAD (MPa)	CLAMP LOAD (N)	TORQUE (Nm)		MIN. TENSILE STRENGTH (MPa)	PROOF LOAD (MPa)	CLAMP LOAD (N)	TORQUE (Nm)	
							DRY 0.2	LUBED 0.15				DRY 0.2	LUBED 0.15				DRY 0.2	LUBED 0.15
1/4	20 UNC	6.350	20.5	510	379	5,835	7	6	827	586	9,018	11	9	1,034	827	12,731	16	12
	28 UNF		23.5	510	379	6,679	8	6	827	586	10,322	13	10	1,034	827	14,572	19	14
5/16	18 UNC	7.938	33.8	510	379	9,615	15	11	827	586	14,859	24	18	1,034	827	20,978	33	25
	24 UNF		37.4	510	379	10,642	17	13	827	586	16,447	26	20	1,034	827	23,220	37	28
3/8	16 UNC	9.525	50.0	510	379	14,220	27	20	827	586	21,977	42	31	1,034	827	31,027	59	44
	24 UNF		56.6	510	379	16,110	31	23	827	586	24,898	47	36	1,034	827	35,150	67	50
7/16	14 UNC	11.113	68.6	510	379	19,505	43	33	827	586	30,144	67	50	1,034	827	42,556	95	71
	20 UNF		76.6	510	379	21,780	48	36	827	586	33,660	75	56	1,034	827	47,521	106	79
1/2	13 UNC	12.700	91.5	510	379	26,037	66	50	827	586	40,239	102	77	1,034	827	56,809	144	108
	20 UNF		103.2	510	379	29,340	75	56	827	586	45,344	115	86	1,034	827	64,015	163	122
9/16	12 UNC	14.288	117.4	510	379	33,395	95	72	827	586	51,611	147	111	1,034	827	72,862	208	156
	18 UNF		131.0	510	379	37,249	106	80	827	586	57,566	164	123	1,034	827	81,270	232	174
5/8	11 UNC	15.875	145.8	510	379	41,469	132	99	827	586	64,088	203	153	1,034	827	90,477	287	215
	18 UNF		171.6	510	379	48,808	155	116	827	586	75,431	239	180	1,034	827	106,491	338	254
3/4	10 UNC	19.050	215.5	510	379	61,286	233	175	827	586	94,714	361	271	1,034	827	133,714	509	382
	16 UNF		240.6	510	379	68,442	261	196	827	586	105,774	403	302	1,034	827	149,328	569	427
7/8	9 UNC	22.225	298.1	414	228	50,864	226	170	827	586	131,012	582	437	1,034	827	184,958	822	617
	14 UNF		328.4	414	228	56,038	249	187	827	586	144,340	642	481	1,034	827	203,774	906	679
1	8 UNC	25.400	391.0	414	228	66,717	339	254	827	586	171,847	873	655	1,034	827	242,608	1,232	924
	14 UNF		438.1	414	228	74,754	380	285	827	586	192,548	978	734	1,034	827	271,833	1,381	1,036
1-1/8	7 UNC	28.575	492.3	414	228	84,002	480	360	724	510	188,368	1,077	807	1,034	827	305,461	1,746	1,309
	12 UNF		552.3	414	228	94,241	539	404	724	510	211,327	1,208	906	1,034	827	342,693	1,958	1,469
1-1/4	7 UNC	31.750	625.2	414	228	106,681	677	508	724	510	239,225	1,519	1,139	1,034	827	387,932	2,463	1,848
	12 UNF		692.3	414	228	118,131	750	563	724	510	264,900	1,682	1,262	1,034	827	429,567	2,728	2,046
1-3/8	6 UNC	34.925	745.2	414	228	127,159	888	666	724	510	285,144	1,992	1,494	1,034	827	462,396	3,230	2,422
	12 UNF		848.4	414	228	144,774	1,011	758	724	510	324,644	2,268	1,701	1,034	827	526,450	3,677	2,758
1-1/2	6 UNC	38.100	906.4	414	228	154,682	1,179	884	724	510	346,863	2,643	1,982	1,034	827	562,481	4,286	3,215
	12 UNF		1020.0	414	228	174,059	1,326	995	724	510	390,314	2,974	2,231	1,034	827	632,941	4,823	3,617
1-3/4	6 UN	44.450	1277.4	414	228	217,986	1,938	1,453	724	510	488,818	4,346	3,259	1,034	827	792,678	7,047	5,285
	12 UN		1412.9	414	228	241,106	2,143	1,608	724	510	540,662	4,806	3,605	1,034	827	876,750	7,794	5,846