

# MECHANICAL PROPERTIES/TORQUE DATA SOCKET HEAD CAP SCREWS

(TAKEN FROM CAMCAR TEXTRON TECHNICAL MANUAL)

**TABLE 12 MECHANICAL PROPERTIES**

Nominal Sizes	Tensile Strength psi Min.	Yield Strength psi Min.	Elongation* In 2 Inches Percent Min.	Reduction of Area* Percent Min.	Hardness Rockwell C
0 to 1/2"	180,000	162,000	8%	35%	39 - 45
Over 1/2"	170,000	153,000	8%	35%	37 - 45

\*The values for elongation and reduction of area apply only to cylindrical test specimens.

**TABLE 13 MECHANICAL PROPERTIES**

Nominal Size	Basic Screw Diameter	Tensile Stress Area		Tensile Strength (Pounds Min.)		Yield Strength (Pounds Min.)		Single Shear Strength* (Pounds Min.)
		UNRC	UNRF	UNRC	UNRF	UNRC	UNRF	Body Section
0	0.0600		0.00180		324		290	280
1	0.0730	0.00263	0.00278	473	500	425	450	420
2	0.0860	0.00370	0.00394	666	709	600	635	580
3	0.0990	0.00487	0.00523	877	941	790	845	770
4	0.1120	0.00604	0.00661	1,090	1,190	975	1,070	985
5	0.1250	0.00796	0.00830	1,430	1,490	1,290	1,345	1,225
6	0.1380	0.00909	0.01015	1,640	1,830	1,470	1,645	1,495
8	0.1640	0.01400	0.01474	2,520	2,650	2,270	2,385	2,110
10	0.1900	0.01750	0.02000	3,150	3,600	2,835	3,240	2,835
1/4	0.2500	0.03180	0.03640	5,725	6,500	5,150	5,900	4,910
5/16	0.3125	0.05240	0.05800	9,430	10,400	8,490	9,395	7,670
3/8	0.3750	0.07750	0.08780	13,950	15,800	12,555	14,225	11,045
7/16	0.4375	0.10630	0.11870	19,135	21,400	17,220	19,230	15,035
1/2	0.5000	0.14190	0.15990	25,540	28,800	22,990	25,905	19,635
5/8	0.6250	0.22600	0.25600	38,400	43,500	34,550	39,150	30,680
3/4	0.7500	0.33400	0.37300	56,750	63,400	51,100	57,050	44,180
7/8	0.8750	0.46200	0.50900	78,500	86,500	70,700	77,850	60,130
1	1.0000	0.60600	0.66300	103,000	113,000	92,700	101,450	78,540
1-1/4	1.2500	0.96900	1.07300	164,700	182,000	148,250	164,150	122,720
1-1/2	1.5000	1.40500	1.48100	238,800	269,000	214,950	241,900	176,710

\*Calculated at 100 ksi shear strength.

(22) The mechanical properties included in the above charts are based on testing that was performed at normal room temperatures. When application environment temperatures fall dramatically below or are substantially higher than room temperature, certain variables need to be taken into consideration. If temperatures exceed 400° F (204° C), short time tensile, creep and relaxation need to be evaluated. When application temperatures drop below -20° F (-29° C), lower ductility, impact strength and fatigue life should be taken into account.

(23) Material : Camcar Socket Head Cap Screws shall be fabricated from an alloy steel having one or more of the following alloying elements: chromium, nickel, molybdenum or vanadium, in sufficient quantity to assure that the specified hardness range of Rockwell C39-45 for sizes #0 to 1/2" and C37-45 for sizes over 1/2" is achieved. Decarburization and carburization limits shall be the same as those specified for Socket Head Cap Screws in ASTM Specification A 574, Alloy Steel Socket Head Cap Screws.

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