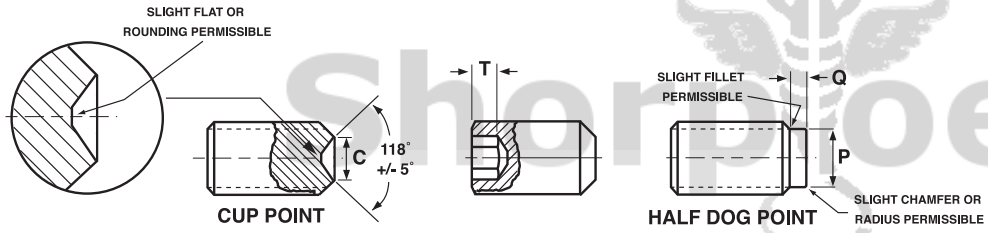
SOCKET SET SCREWS — Alloy Steel



Socket Set Screws - Alloy Steel

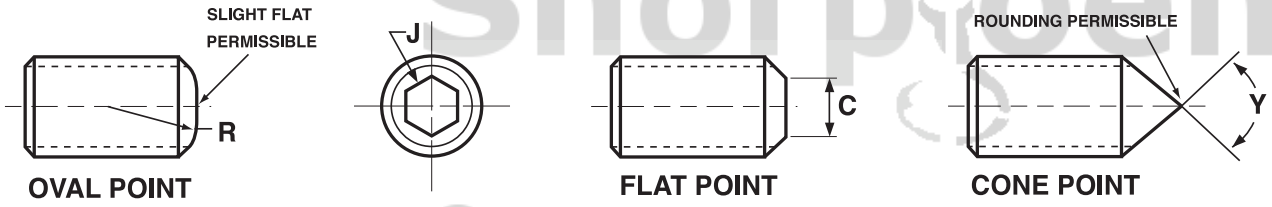
ASME B18.3-2012, Blue Devil®

Nominal Size	Shortest Nominal Length To Which Column T Applies			J	Tightening Torque (Inch-Lbs.)
	Cup & Flat Point	Cone & Oval Point	Half Dog Point	Hex Key Size	
0	0.13	0.13	0.13	.028	.86
1	0.13	0.19	0.13	.035	1.8
2	0.13	0.19	0.19	.035	1.8
3	0.19	0.19	0.19	.050	5.
4	0.19	0.19	0.19	.050	5.
5	0.19	0.19	0.19	1/16	9.5
6	0.19	0.25	0.19	1/16	9.5
8	0.19	0.25	0.25	5/64	19.4
10	0.19	0.25	0.25	3/32	33.5
1/4	0.25	0.31	0.31	1/8	77.9
5/16	0.31	0.44	0.38	5/32	156
3/8	0.38	0.44	0.44	3/16	273
7/16	0.44	0.63	0.50	7/32	428
1/2	0.50	0.63	0.63	1/4	615
5/8	0.63	0.88	0.88	5/16	1315
3/4	0.75	1.00	1.00	3/8	2150
7/8	0.88	1.00	1.00	1/2	5130
1	1.00	1.25	1.25	9/16	7010

Description	***Cup point:*** A headless screw threaded the entire length. It has a hexagonal drive at one end and a cup-shaped indentation at the other end. ***Half-Dog point:*** A set screw with a protruding tip with a flat surface at the end opposite that of the hexagonal drive. ***Oval point:*** A set screw with an oval-shaped point at the end opposite that of the hexagonal drive. ***Flat point:*** A set screw with a flat surface at the end opposite that of the hexagonal drive. ***Cone point:*** A set screw with a sharp conical-shaped point at the opposite end from the hexagonal drive.
Applications/ Advantages	***Cup point:*** The cup point is the most used style set screw. Designed for fast, permanent and semi-permanent location of parts on shafts with hardness differential of 10-15 Rockwell C points and where cutting in of cup edge on the shaft is acceptable. ***Half-Dog point:*** Intended for permanent setting. The point should fit closely to the diameter of the drilled hole or against the flat. Often used instead of a dowel pin. ***Oval point:*** Preferred style for frequent reset on soft or hard shafts with minimum deforming. Also chosen for permanent setting on shafts spotted, splined or grooved, and for applications where point meets shaft on an angle. Sometimes substituted for the cup point style. ***Flat point:*** Designed for frequent resetting or relocating on hard steel shafts and where minimal damage to shafts is necessary. Ground flats on the shaft improves the contacts. ***Cone point:*** For permanent setting on soft or hardened shafts. The deep penetration it offers gives this style set screw the highest torsional & axial holding power. For shafts of Rockwell hardness C15 or over, spot point half its depth. Can also be used as a pivot or hanger. When two set screws are used in a set screw collar, their holding power is determined by their location with respect to each other.
Material	Screws shall be made from an alloy steel which conforms to the following chemical composition requirements (per product analysis)-- *Carbon*: 0.28 to 0.50%; *Phosphorus*: 0.040% maximum; *Sulfur*: 0.045% maximum. Also, one or more of the following elements shall be present in sufficient quantity to meet the strength requirements listed below: chromium, nickel, molybdenum or vanadium.
Heat Treatment	Screws shall be heat treated by oil quenching from above the transformation temperature and then tempered at a temperature sufficient to meet the hardness requirements listed below.
Hardness	Rockwell C45 - 53
Torsional Strength	Socket set screws of a sufficient length to be tested (as listed in the above table) shall withstand application of the test torque specified in said table without evidence of the socket reaming or the screw bursting.
Finish	Screws are usually supplied plain.

Alloy Steel

SOCKET SET SCREWS



Socket Set Screws - Alloy Steel

ASME B18.3-2012

Nominal Size	J	T	C		R	Y	P		Q	
	Hexagon Socket Size	Key Engage-ment	Cup & Flat Point Diameter		Oval Point Radius	Cone Pt. Angle 90° ±2° for these Nominal lengths and over; 118° ± 2° for shorter Nominal lengths	Half Dog Point			
							Diameter		Length	
	Nom	Min	Max	Min	Basic		Max	Min	Max	Min
0	0.028	0.050	0.033	0.027	0.045	0.09	0.040	0.037	0.017	0.013
1	0.028	0.060	0.040	0.033	0.055	0.09	0.049	0.045	0.021	0.017
2	0.035	0.060	0.047	0.039	0.064	0.13	0.057	0.053	0.024	0.020
3	0.050	0.070	0.054	0.045	0.074	0.13	0.066	0.062	0.027	0.023
4	0.050	0.070	0.061	0.051	0.084	0.19	0.075	0.070	0.030	0.026
5	0.062	0.080	0.067	0.057	0.094	0.19	0.083	0.078	0.033	0.027
6	0.062	0.080	0.074	0.064	0.104	0.19	0.092	0.087	0.038	0.032
8	0.078	0.090	0.087	0.076	0.123	0.25	0.109	0.103	0.043	0.037
10	0.094	0.100	0.102	0.088	0.142	0.25	0.127	0.120	0.049	0.041
1/4	0.125	0.125	0.132	0.118	0.188	0.31	0.156	0.149	0.067	0.059
5/16	0.156	0.156	0.172	0.156	0.234	0.38	0.203	0.195	0.082	0.074
3/8	0.188	0.188	0.212	0.194	0.281	0.44	0.250	0.241	0.099	0.089
7/16	0.219	0.219	0.252	0.232	0.328	0.50	0.297	0.287	0.114	0.104
1/2	0.250	0.250	0.291	0.270	0.375	0.57	0.344	0.334	0.130	0.120
5/8	0.312	0.312	0.371	0.347	0.469	0.75	0.469	0.456	0.164	0.148
3/4	0.375	0.375	0.450	0.425	0.562	0.88	0.562	0.549	0.196	0.180
7/8	0.500	0.500	0.530	0.502	0.656	1.00	0.656	0.642	0.227	0.211
1	0.562	0.562	0.609	0.579	0.750	1.13	0.750	0.734	0.260	0.240

Tolerance on Length	Nominal Screw Length		
	Up to 0.63 in., Incl.	Over 0.63 to 2.00 in., Incl.	Over 2.00 to 6.00 in., Incl.
	±0.01	±0.02	±0.03