

Twenty-Eighth Edition

Machinery's Handbook



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A REFERENCE BOOK
FOR THE MECHANICAL ENGINEER, DESIGNER,
MANUFACTURING ENGINEER, DRAFTSMAN,
TOOLMAKER, AND MACHINIST



Machinery's Handbook

28th Edition

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Table 9. American National Standard Slotted Oval Countersunk Head Machine Screws ANSI B18.6.3-1972 (R1991)

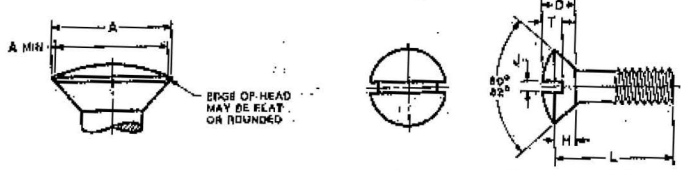


Diagram showing the geometry of a slotted oval countersunk head machine screw. Dimensions include: A (Head Dia.), B (Max. L^b), C (Max. Edge Sharp), D (Min. Edge Rnded. or Flat), E (Head Side Height, H), F (Total Head Height, O), G (Slot Width, J), H (Slot Depth, T), I (Nominal Size^a or Basic Screw Dia.), J (Max. L^b), K (Max. Edge Sharp), L (Min. Edge Rnded. or Flat), M (Head Side Height, H), N (Total Head Height, O), O (Slot Width, J), P (Slot Depth, T), Q (Nominal Size^a or Basic Screw Dia.), R (Max. L^b), S (Max. Edge Sharp), T (Min. Edge Rnded. or Flat), U (Head Side Height, H), V (Total Head Height, O), W (Slot Width, J), X (Slot Depth, T), Y (Nominal Size^a or Basic Screw Dia.), Z (Max. L^b).

Nominal Size ^a or Basic Screw Dia.	Max L ^b	Head Dia., A		Head Side Height, H	Total Head Height, O		Slot Width, J		Slot Depth, T	
		Max. Edge Sharp	Min. Edge Rnded. or Flat		Max.	Min.	Max.	Min.	Max.	Min.
00	0.0470	...	.093	.028	.042	.034	.017	.010	.023	.016
0	0.0600	1/8	.119	.035	.056	.041	.023	.016	.030	.025
1	0.0730	1/8	.146	.043	.068	.052	.026	.019	.038	.031
2	0.0860	1/8	.172	.051	.080	.063	.031	.023	.045	.037
3	0.0990	1/8	.199	.059	.092	.073	.035	.027	.052	.043
4	0.1120	3/16	.225	.067	.104	.084	.039	.031	.059	.049
5	0.1250	3/16	.252	.075	.116	.095	.043	.035	.067	.055
6	0.1380	3/16	.279	.083	.128	.105	.048	.039	.074	.060
8	0.1640	1/4	.332	.100	.152	.126	.054	.045	.088	.072
10	0.1900	3/16	.385	.116	.176	.148	.060	.050	.103	.084
12	0.2160	3/8	.438	.132	.200	.169	.067	.056	.117	.096
1/4	0.2500	3/16	.507	.153	.232	.197	.075	.064	.136	.112
3/16	0.3125	1/2	.635	.191	.290	.240	.084	.072	.171	.141
3/8	0.3750	3/16	.762	.230	.347	.300	.094	.081	.206	.170
7/16	0.4375	3/8	.812	.223	.345	.295	.094	.081	.210	.174
1/2	0.5000	3/4	.875	.223	.354	.299	.106	.091	.216	.176
9/16	0.5625	...	1.000	.260	.410	.350	.118	.102	.250	.207
5/8	0.6250	...	1.125	.298	.467	.399	.133	.116	.285	.235
3/4	0.7500	...	1.375	.372	.578	.497	.149	.131	.353	.293

^a When specifying nominal size in decimals, zeros preceding decimal points and in the fourth decimal place are omitted.

^b These lengths or shorter are undercut.

All dimensions are in inches.

Table 10. American National Standard Header Points for Machine Screws before Threading ANSI B18.6.3-1972 (R1991)

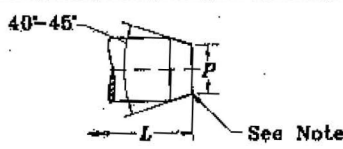


Diagram showing the geometry of a header point for a machine screw. Dimensions include: L (Length), P (Pitch), and a 40-45 degree angle. See Note.

Nom. Size	Threads per Inch	Max. P	Min. P	Max. L
10	24	0.125	0.112	1 1/4
	32	0.138	0.124	1 1/4
12	24	0.149	0.134	1 3/8
	28	0.156	0.141	1 3/8
2	56	0.057	0.050	1/2
	64	0.060	0.053	1/2
4	40	0.074	0.065	1/2
	48	0.079	0.070	1/2
5	40	0.086	0.076	1/2
	44	0.088	0.079	1/2
6	32	0.090	0.080	3/4
	40	0.098	0.087	3/4
8	32	0.114	0.102	1
	36	0.118	0.106	1

All dimensions in inches. Edges of point may be rounded and end of point need not be flat nor perpendicular to shank. Machine screws normally have plain sheared ends but when specified may have header points, as shown above.

Ends of Screws: When screws are made with rolled threads, the "lead" formed by the thread rolling operation is normally regarded as providing the necessary chamfer and no other machining is necessary. The ends of screws with cut threads are normally finished with a chamfer conforming to the dimension in Fig. 1a through Fig. 1d. At the option of the manufacturer, the ends of screws smaller than M6 (6-mm diameter) may be finished with a radius approximately equal to $1\frac{1}{4}$ times the nominal diameter of the shank. When cone point ends are required, they should have the dimensions given in Fig. 1a through Fig. 1d.

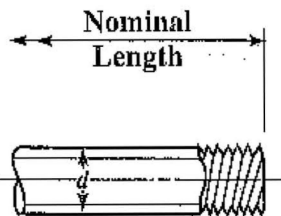
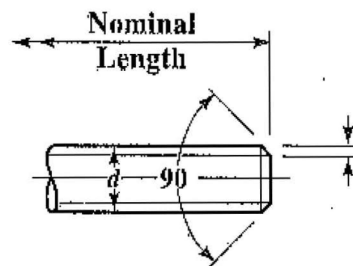


Fig. 1a. Rolled Thread End
(Approximate Form as Rolled)



Cut Thread Chamfered End

Fig. 1b. Chamfer to Extend to Slightly
Below the Minor Dia.

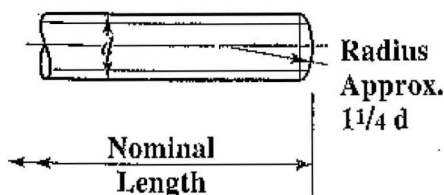


Fig. 1c. Cut Thread Radiused End
(Permissible on Sizes Below M6 Dia.)

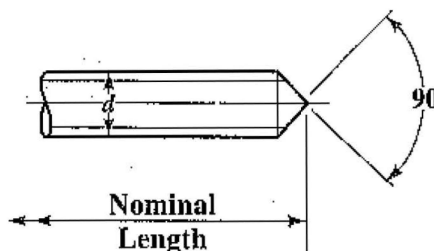


Fig. 1d. Cone Pointed End (Permissible on Cut or
Rolled Thread Screws, but Regarded as "Special")

Dimensions of 90-Degree Countersunk Head Screws: One of the appendices to this British Standard states that countersunk head screws should fit into the countersunk hole with as great a degree of flushness as possible. To achieve this condition, it is necessary for the dimensions of both the head of the screw and the countersunk hole to be controlled within prescribed limits. The maximum or design size of the head is controlled by a theoretical diameter to a sharp corner and the minimum head angle of 90 degrees. The minimum head size is controlled by a minimum head diameter, the maximum head angle of 92 degrees and a flushness tolerance (see Fig. 2). The edge of the head may be flat or rounded, as shown in Fig. 3.

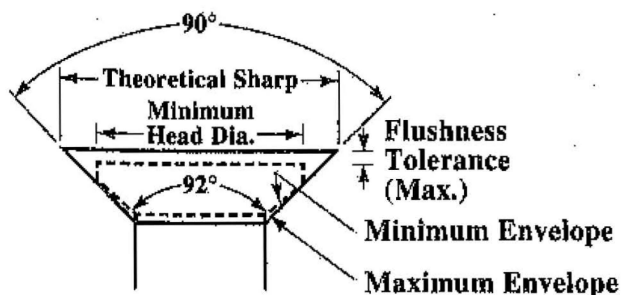


Fig. 2. Head Configuration

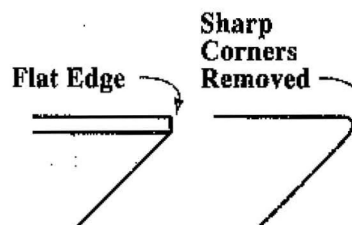
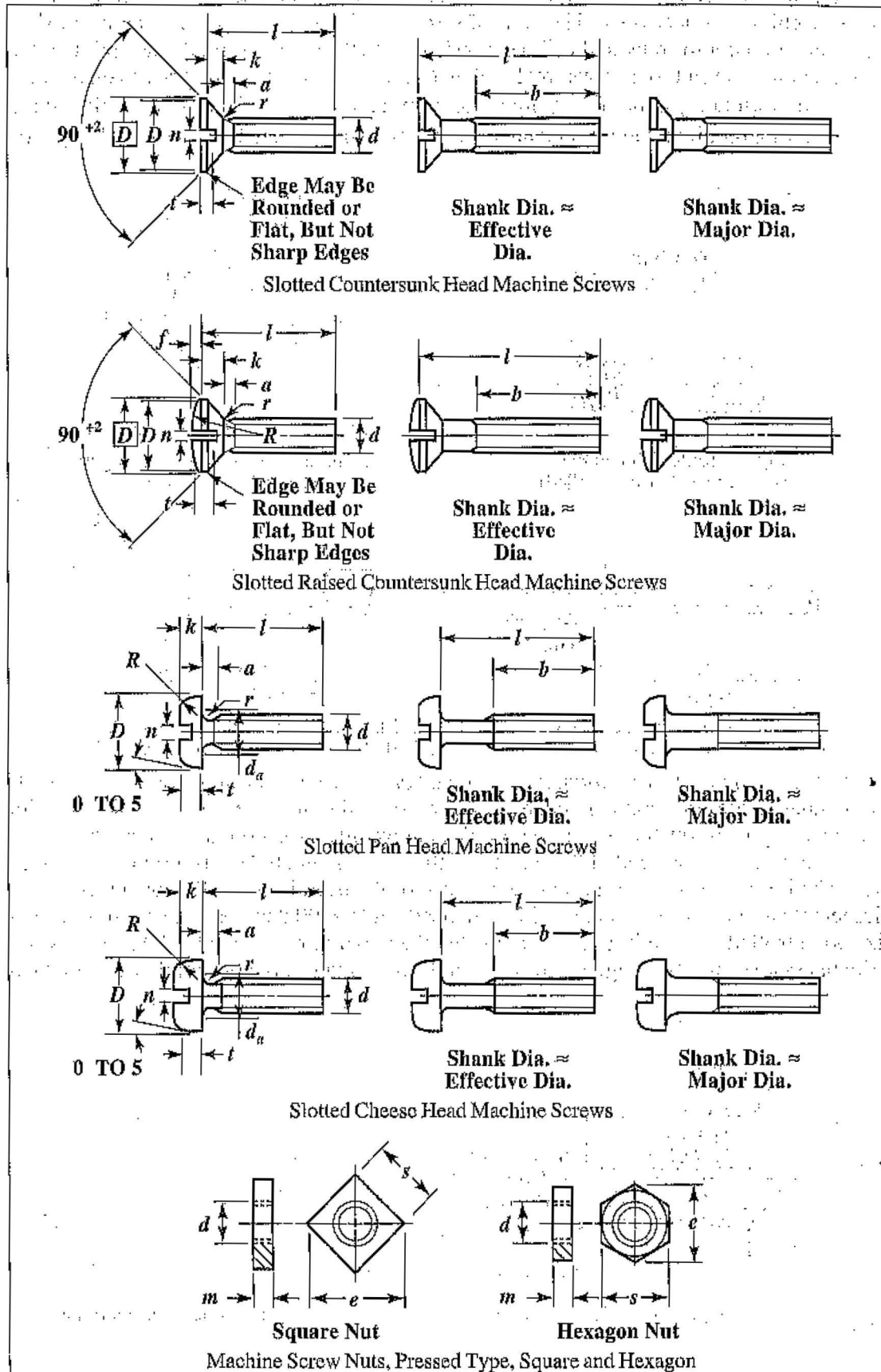


Fig. 3. Edge Configuration

British Standard Machine Screws and Machine Screw Nuts—Metric Series



For dimensions, see Tables 1 through 5.