

SOCKET CAP, SHOULDER, AND SET SCREWS, HEX AND SPLINE KEYS (INCH SERIES)

1 INTRODUCTORY NOTES

1.1 Scope

1.1.1 This Standard covers complete general and dimensional data for various types of hexagon and spline (fluted) socket cap screws, shoulder screws, set screws, and hexagon and spline keys recognized as an American National Standard. Also, included are appendices that provide specifications for hexagon and spline socket gages and gaging, tables showing applicability of keys and bits to various socket screws types and sizes, drill and counterbore sizes for socket head cap screws, and formulas on which dimensional data are based. However, where questions arise concerning acceptance of product, the dimensions in the tables shall govern over recalculation by formula.

1.1.2 The inclusion of dimensional data in this Standard is not intended to imply that all of the products described are stock production sizes. Consumers should consult with manufacturers concerning lists of stock production sizes.

1.2 Socket Cap Screws

The head types covered by this Standard are specified in paras. 1.2.1 through 1.2.5.

1.2.1 Socket Head Cap Screws. The socket head shall have a flat chamfered top surface with smooth or knurled cylindrical sides and a flat bearing surface. Specifications are given in Tables 1A through 1F. Both hexagon and spline socket types are included.

Dimensions for drilled holes and counterbores are included in Table A-1 of Nonmandatory Appendix A.

1.2.2 Drilled Hexagon Socket Head Cap Screws. Specifications for hexagon socket head cap screws having two, four, and six holes drilled in the head for lock wire application are given in Table 1F.

1.2.3 Socket Flat Countersunk Head Cap Screws. The flat countersunk head shall have a flat top surface and a conical bearing surface with included angle of approximately 82 deg. Specifications are given in Tables 2A, 2B, and 2C. Both hexagon and spline socket types are included.

1.2.4 Socket Button Head Cap Screws. The button head shall have a low rounded top surface with a large flat bearing surface. Specifications are given in Table 3. Both hexagon and spline socket types are included.

1.2.5 Socket Low Head Cap Screws. These are similar to socket head cap screws, except they have reduced head height and a smaller socket size. They are designed to be used in applications where height clearance is a problem. Specifications are given in Table 1G. Spline socket types are excluded.

1.3 Socket Head Shoulder Screws

The socket head shoulder screw is a hexagon socket head screw having a cylindrical shoulder under the head. Specifications are given in Table 4.

1.4 Socket Set Screws

The socket set screw is a screw threaded the entire length except for its length of point. The point is designed to bear on a mating part. The common point styles are cup, flat, oval, cone, and half dog. Specifications for set screws are shown in Tables 5A through 5C for both hexagon and spline socket types.

1.5 Keys and Bits for Driving Socket Screws

The tools for driving socket screws are hexagon or spline keys and bits, the specifications for which appear in Tables 8 and 9, respectively.

1.6 Dimensions

All dimensions in this Standard are given in inches unless stated otherwise.

All dimensions apply prior to coating unless stated otherwise.

1.7 Finish

Because of the high hardness of these products, it is recommended that they not be electroplated.

1.8 Identification Marking

Products described in paras. 1.2.1 through 1.2.4 and 1.3 with diameters larger than #10 must be marked with the identification of the source manufacturer or private label distributor accepting the responsibility for conformance to this Standard. Marking size, type, and location of marks are at manufacturer's option. Products shall not be marked on bearing surface.

1.9 Options

Options, where specified, shall be at the discretion of the manufacturer unless agreed upon otherwise by the manufacturer and purchaser.

1.10 Responsibility for Modifications

The manufacturer shall not be held responsible for malfunctions of product due to plating or other modifications, when such plating or modification is not accomplished under his control or direction.

1.11 Terminology

For definitions of terms relating to fasteners or to component features thereof used in this Standard, refer to ASME B18.12, Glossary of Terms for Mechanical Fasteners.

1.12 Referenced Standards

The following is a list of publications referenced in this Standard. Unless otherwise specified, the most recent standard available shall be used.

- ASME B1.1, Unified Inch Screw Threads (UN and UNR Thread Form)
- ASME B1.3M, Screw Thread Gaging Systems for Dimensional Acceptability — Inch and Metric Screw Threads (UN, UNR, UNJ, M, and MJ)
- ANSI B18.12, Glossary of Terms for Mechanical Fasteners
- ASME B18.18.1M, Inspection and Quality Assurance for General Purpose Fasteners
- ASME B18.18.2M, Inspection and Quality Assurance for High Volume Machine Assembly Fasteners
- ASME B18.18.3M, Inspection and Quality Assurance for Special Purpose Fasteners
- ASME B18.18.4M, Fasteners Produced from a Single Mill Heat With In-Process Control and Lot Traceability
- ASME B18.24.1, Part Identifying Number (PIN) Code System Standard for B18 Externally Threaded Products
- ASME B46.1, Surface Texture
- ASME B47.1, Gage Blanks
- ASME Y14.5M, Engineering Drawing and Related Documentation Practices, Dimensioning and Tolerancing
- ASME Y14.6, Engineering Drawing and Related Documentation Practices, Screw Thread Representation
- Publisher: The American Society of Mechanical Engineers (ASME), Three Park Avenue, New York, NY 10016-5990; Order Department: 22 Law Drive, Box 2300, Fairfield, NJ 07007-2300
- ASTM A 574, Standard Specification for Alloy Steel Socket-Head Cap Screws
- ASTM F 835, Standard Specification for Alloy Steel Socket Button and Flat Countersunk Head Cap Screws
- ASTM F 837, Standard Specification for Stainless Steel Socket-Head Cap Screws
- ASTM F 879, Standard Specification for Stainless Steel Socket Button and Flat Countersunk Head Cap Screws
- ASTM F 880, Standard Specification for Stainless Steel Socket Set Screws
- ASTM F 912, Standard Specification for Alloy Steel Socket Set Screws

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2 GENERAL DATA

2.1 Sockets

In accordance with the provisions set forth in the notes to the respective dimensional tables, screws shall have hexagon or spline sockets as designated by the purchaser.

Gages and gaging procedures are included in Mandatory Appendix I. For coated products, use GO gages identical in design and tolerances to those shown in Mandatory Appendix I, except having minimum dimensions equal to minimum sizes of keys and bits shown in Tables 8 and 9, respectively. Due to possible buildup of the socket, coated products may not accept a standard hex or spline key.

2.1.1 Hexagon Sockets. Hexagon sockets shall conform with the specifications given in Table 6.

2.1.2 Spline Sockets. Spline sockets shall conform with the specifications given in Table 7.

2.2 Threads

Threads on all screw products covered by this Standard shall be in accordance with ASME B1.1 for the series and class specified in the notes to the respective product dimensional tables.

Acceptability of screw threads shall be based on System 22, ASME B1.1, except where otherwise specified in Note (14) of Table 5A.

2.3 Quality Assurance

Products will be furnished in accordance with ASME B18.18.1M, with the thread acceptability to Inspection Level C, unless otherwise specified.

2.4 Dimensional Characteristics

Products shall conform to the dimensions indicated in the respective tables. The designated characteristics defined within the notes of each product table shall be inspected in accordance with ASME B18.18.2M. For nondesignated dimensional characteristics, the provisions of ASME B18.18.1M shall apply. Should a nondesignated dimension be determined to have a variance, it shall be deemed conforming to this Standard if the user, who is the installer, accepts the variance based on fit, form, and function considerations. Where verifiable in-process inspection is used in accordance with ASME B18.18.3M or ASME B18.18.4M, the final inspection level sample sizes of those respective standards shall apply.

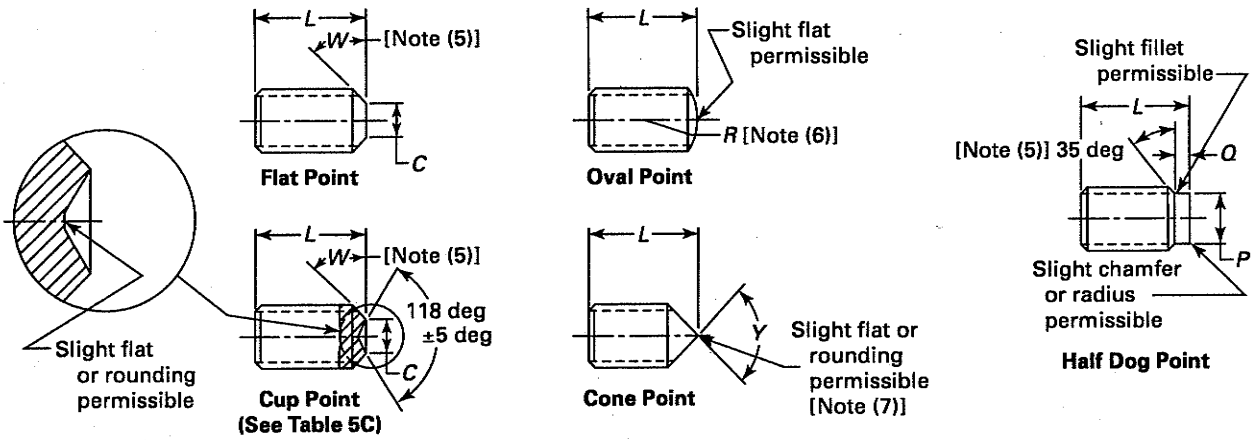
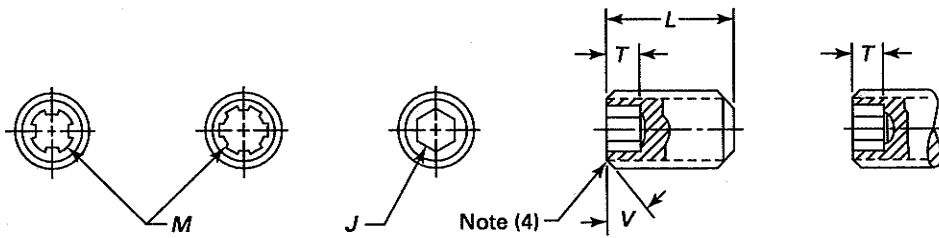


Table 5A Illustration

Table 5A Dimensions of Hexagon and Spline Socket Set Screws

Nominal Size (Basic Screw Diameter) [Note (5)]	Nominal Hexagon Socket Size, J [Note (8)]	Nominal Number of Splines and Spline Socket Size, M [Note (9)]	Minimum Key Engagement to Develop Functional Capability of Key, T [Note (10)]		Cup and Flat Point Diameters, C [Note (5)]		Basic Oval Point Radius, R [Note (6)]	Cone Point Angle 90 deg ± 2 deg for These Nominal Lengths or Longer: 118 ± 2 deg for Shorter Nominal Lengths, Y [Note (5)]	Half Dog Point [Notes (5), (11)]				Shortest Optimum Nominal Length to Which T_H Applies, B [Notes (4), (5), (10)]			Shortest Optimum Nominal Length to Which T_S Applies, B_1 [Notes (4), (5), (10)]			
			Hex Socket, T_H	Spline Socket, T_S	Max.	Min.			Diameter, P		Length, Q		Cup and Flat Points	Cone and Oval Points	Half Dog Point	Cup and Flat Points	Cone and Oval Points	Half Dog Point	
									Max.	Min.	Max.	Min.							
0 (0.0600)	...	0.028	4 (0.033)	0.050	0.026	0.033	0.027	0.045	0.09	0.040	0.037	0.017	0.013	0.13	0.13	0.13	0.06	0.13	0.13
1 (0.0730)	...	0.035	4 (0.033)	0.060	0.035	0.040	0.033	0.055	0.09	0.049	0.045	0.021	0.017	0.13	0.19	0.13	0.13	0.19	0.13
2 (0.0860)	...	0.035	4 and 6 (0.048) [Note (12)]	0.060	0.040	0.047	0.039	0.064	0.13	0.057	0.053	0.024	0.020	0.13	0.19	0.19	0.13	0.19	0.19
3 (0.0990)	...	0.050	4 and 6 (0.048) [Note (12)]	0.070	0.040	0.054	0.045	0.074	0.13	0.066	0.062	0.027	0.023	0.19	0.19	0.19	0.13	0.19	0.19
4 (0.1120)	...	0.050	6 (0.060)	0.070	0.045	0.061	0.051	0.084	0.19	0.075	0.070	0.030	0.026	0.19	0.19	0.19	0.13	0.19	0.19
5 (0.1250)	1/16	0.062	4 (0.069)	0.080	0.055	0.067	0.057	0.094	0.19	0.083	0.078	0.033	0.027	0.19	0.19	0.19	0.13	0.19	0.19
5 (0.1250)	1/16	0.062	6 (0.072) [Note (12)]	0.080	0.055	0.067	0.057	0.094	0.19	0.083	0.078	0.033	0.027	0.19	0.19	0.19	0.13	0.19	0.19
6 (0.1380)	1/16	0.062	6 (0.072)	0.080	0.055	0.074	0.064	0.104	0.19	0.092	0.087	0.038	0.032	0.19	0.25	0.19	0.13	0.25	0.19
6 (0.1380)	1/16	0.062	4 (0.076) [Note (10)]	0.080	0.055	0.074	0.064	0.104	0.19	0.092	0.087	0.038	0.032	0.19	0.25	0.19	0.13	0.25	0.19
8 (0.1640)	5/64	0.078	6 (0.096)	0.090	0.080	0.087	0.076	0.123	0.25	0.109	0.103	0.043	0.037	0.19	0.25	0.25	0.19	0.25	0.25
10 (0.1900)	3/32	0.094	6 (0.111)	0.100	0.080	0.102	0.088	0.142	0.25	0.127	0.120	0.049	0.041	0.19	0.25	0.25	0.19	0.25	0.25
1/4 (0.2500)	1/8	0.125	6 (0.145)	0.125	0.125	0.132	0.118	0.188	0.31	0.156	0.149	0.067	0.059	0.25	0.31	0.31	0.25	0.31	0.31
5/16 (0.3125)	5/32	0.156	6 (0.183)	0.156	0.156	0.172	0.156	0.234	0.38	0.203	0.195	0.082	0.074	0.31	0.44	0.38	0.31	0.44	0.38
3/8 (0.3750)	3/16	0.188	6 (0.216)	0.188	0.188	0.212	0.194	0.281	0.44	0.250	0.241	0.099	0.089	0.38	0.44	0.44	0.38	0.44	0.44
7/16 (0.4375)	7/32	0.219	6 (0.251)	0.219	0.219	0.252	0.232	0.328	0.50	0.297	0.287	0.114	0.104	0.44	0.63	0.50	0.44	0.63	0.50
1/2 (0.5000)	1/4	0.250	6 (0.291)	0.250	0.250	0.291	0.270	0.375	0.57	0.344	0.334	0.130	0.120	0.50	0.63	0.63	0.50	0.63	0.63
5/8 (0.6250)	5/16	0.312	6 (0.372)	0.312	0.312	0.371	0.347	0.469	0.75	0.469	0.456	0.164	0.148	0.63	0.88	0.88	0.63	0.88	0.88
3/4 (0.7500)	3/8	0.375	6 (0.454)	0.375	0.375	0.450	0.425	0.562	0.88	0.562	0.549	0.196	0.180	0.75	1.00	1.00	0.75	1.00	1.00
7/8 (0.8750)	1/2	0.500	6 (0.595)	0.500	0.500	0.530	0.502	0.656	1.00	0.656	0.642	0.227	0.211	0.88	1.00	1.00	0.88	1.25	1.00
1 (1.0000)	9/16	0.562	...	0.562	...	0.609	0.579	0.750	1.13	0.750	0.734	0.260	0.240	1.00	1.25	1.25	...	...	...
1 1/8 (1.1250)	9/16	0.562	...	0.562	...	0.689	0.655	0.844	1.25	0.844	0.826	0.291	0.271	1.25	1.50	1.25	...	...	...
1 1/4 (1.2500)	5/8	0.625	...	0.625	...	0.767	0.733	0.938	1.50	0.938	0.920	0.323	0.303	1.25	1.50	1.50	...	...	...
1 3/8 (1.3750)	5/8	0.625	...	0.625	...	0.848	0.808	1.031	1.63	1.031	1.011	0.354	0.334	1.50	1.75	1.50	...	...	...
1 1/2 (1.5000)	3/4	0.750	...	0.750	...	0.926	0.886	1.125	1.75	1.125	1.105	0.385	0.365	1.50	2.00	1.75	...	...	...
1 3/4 (1.7500)	1	1.000	...	1.000	...	1.086	1.039	1.312	2.00	1.312	1.289	0.448	0.428	1.75	2.25	2.00	...	...	...
2 (2.0000)	1	1.000	...	1.000	...	1.244	1.193	1.500	2.25	1.500	1.474	0.510	0.490	2.00	2.50	2.50	...	...	...

Table 5A Dimensions of Hexagon and Spline Socket Set Screws (Cont'd)

GENERAL NOTE: For additional requirements, refer to Notes (4) through (17) and section 2, General Data, of this Standard.

NOTES:

- (1) *Nominal Size.* Where specifying nominal size in decimals, zeros preceding decimal and in the fourth decimal place shall be omitted.
- (2) *Length.* The length of the screw shall be measured overall, parallel to the axis of the screw. The basic length dimension on the product shall be the nominal length expressed as a two-place decimal.
- (3) *Standard Lengths.* Standard length increments for set screws shall be as tabulated below.

Nominal Screw Length	Standard Length Increment
0.13 through 0.19*	0.03
0.19 through 0.50	0.06
0.50 through 1.00	0.13
1.00 through 2.00	0.25
2.00 through 6.00	0.50
Over 6.00	1.00

*A nominal screw length of 0.13 through 0.19 is applicable only to nominal sizes 0 (0.060 in.) through 3 (0.099 in.), inclusive.

- (4) *Face.* The plane of the face on the socket end of the screw shall be approximately normal to the axis of the screw, and shall be chamfered on screws longer than lengths listed in this Table, columns *B* and *B₁*. The chamfer angle *V* shall be between 30 deg and 45 deg. The chamfer shall extend slightly below the root diameter of the thread and the edge between flat and chamfer may be slightly rounded. For screws equal to or shorter than the lengths listed in this Table, columns *B* and *B₁*, or screws 0.250 in. diameter or greater, with a national coarse thread, including lengths longer than listed in this Table, columns *B* and *B₁*, chamfering shall be at the option of the manufacturer. If chamfered, the chamfer angle *V* shall not exceed 45 deg.
- (5) *Point Angles.* Point angles specified shall apply only to those portions of the angles that lie below the root diameter of the thread. The angles may vary in the threaded portions due to manufacturing processes.
W shall be 45 deg, +5 deg -0 deg, for screws of lengths equal to or longer than the lengths listed in this Table, columns *B* and *B₁*, and 30 deg minimum for shorter screws.
- (6) *Oval Point Radius Tolerance.* The tolerance shall be +0.015 in. for screw nominal sizes through 5 (0.125 in.) and +0.031 in. for screw nominal sizes 6 (0.138 in.) and larger.
- (7) *Cone Point Configuration.* The apex of the cone may be flatted or rounded to the extent of 10% of the basic diameter of the screw.
- (8) *Hexagon Sockets.* See Table 6 for hexagon socket dimensions and Mandatory Appendix I for gaging of hexagon sockets.
- (9) *Spline Sockets.* See Table 7 for spline socket dimensions and Mandatory Appendix I for gaging of spline sockets.
- (10) *Socket Depths.* The key engagement dimensions given in columns *T_H* and *T_S* of this Table shall apply only to nominal screw lengths equal to or longer than the lengths listed in this Table, columns *B* and *B₁*, respectively. For hexagon socket key engagement dimensions in screws of shorter nominal lengths than those listed in column *B* of this Table, see Table 5B. Spline sockets in screws shorter than those listed in column *B₁* of this Table, shall be as deep as practicable.
- (11) *Half Dog Point Runout.* The runout of the half dog point shall not exceed 3% of the nominal size and shall not exceed 0.010 FIM for nominal sizes up to and including $\frac{3}{4}$ in. diameter and 0.020 FIM for nominal sizes over $\frac{3}{4}$ in. diameter.
Runout is defined as the full indicator movement (FIM) obtained by holding on the thread major diameter near the half dog point, and rotating the screw 360 deg and indicating on the half dog point diameter.
- (12) Where both six and four splines are available, six splines will be supplied unless four splines are ordered.

Table 5A Dimensions of Hexagon and Spline Socket Set Screws (Cont'd)

- (13) *Tolerance on Length.* Tolerance on length of set screws shall be as tabulated below.

Nominal Screw Length	Tolerance on Length
Up to 0.63, incl.	±0.01
Over 0.63 to 2.00, incl.	±0.02
Over 2.00 to 6.00, incl.	±0.03
Over 6.00	±0.06

- (14) *Threads.* Threads shall be Unified external thread: Class 3A, UNC and UNF Series.

Thread lead deviation is controlled by standard thread gages within a thread length equal to 1.5 basic thread diameters. When using set screws longer than 1.5 basic diameters in length, the pitch diameter of the set screw may need to be reduced, or the tapped hole's pitch diameter may need to be increased to avoid interference during assembly.

For all thread diameters # 5 and smaller, thread acceptability will be based on System 21, ASME B1.3M.

For all thread diameters # 6 and larger, thread acceptability will be based on System 22, ASME B1.3M when the set screw thread length has a minimum of 7 pitch lengths.

For all set screws equal or shorter than 7 pitch lengths, thread acceptability will be based on System 21, ASME B1.3M. The chart below shows the lengths equal to 7 pitch lengths.

Threads/in.	7 Pitch Lengths	Threads/in.	7 Pitch Lengths
40	0.175	12	0.583
36	0.194	11	0.636
32	0.219	10	0.700
28	0.250	9	0.778
24	0.292	8	0.875
20	0.350	7	1.000
18	0.389	6	1.167
16	0.437	5	1.400
14	0.500	4½	1.556
13	0.538		

Class 3A threads do not provide a plating allowance. When set screws must be plated, they should be manufactured with an undersized pitch diameter to accommodate the plating. When plated products are required, it is recommended that they be procured from the manufacturer (see para. 1.10, Introductory Notes).

When standard socket set screws are plated, thread interference is likely to occur during assembly.

- (15) *Material*

(a) *Steel, Alloy.* Socket set screws shall be fabricated from alloy steel and shall conform in all respects to ASTM F 912.

(b) *Steel, Corrosion-Resistant.* Socket set screws shall be fabricated from austenitic corrosion-resistant steel and shall conform in all respects to ASTM F 880.

- (16) *Flat Point.* The plane of the end on the flat point shall be perpendicular to the axis of the thread within 2 deg obtained by holding the screw on the major thread diameter near the flat point, and inspecting on an optical comparator or comparable inspection equipment.

Table 5A Dimensions of Hexagon and Spline Socket Set Screws (Cont'd)

- (17) *Dimensional Conformance.* Socket set screws shall have the following designated characteristics inspected to ASME B18.18.2M to Inspection Level C:
- (a) threads
 - (b) minimum key engagement
 - (c) socket size (gaged)
 - (d) length
- (18) *Designation.* To promote uniformity and understanding in communications relating to products conforming to this Standard, it is recommended that Hexagon and Spline Socket Set Screws be designated in accordance with the following data, preferably in the sequence shown:
- (a) product name and point style
 - (b) designation of the standard
 - (c) nominal size (number, fractional or decimal equivalent)
 - (d) thread pitch
 - (e) nominal length (fractional or decimal equivalent)
 - (f) material
 - (g) protective finish, if required
- EXAMPLES:
- Hexagon Socket Set Screw, Cup Point, ASME B18.3, $\frac{1}{4}$ -20 \times $\frac{1}{4}$, Alloy Steel
- Spline Socket Set Screw, Flat Point, ASME B18.3, 0.112-40 \times 0.125, Alloy Steel, Zinc Plated. (For plated products, see para. 1.7, Introductory Notes.)
- Hexagon Socket Set Screw, Cup Point, ASME B18.3, 6-32 \times 0.250, Corrosion-Resistant Steel
- For the recommended B18 part identifying numbering system (PIN), see ASME B18.24.1.

Table 5B Hexagon Key Engagements for Short Length Set Screws

Nominal Size (Basic Screw Diameter)	Nominal Hexagon Socket Size, <i>J</i>	Nominal Screw Lengths, <i>L</i>	Minimum Key Engagement, T_H			
			Cup [Note (1)] and Flat Points	118 deg Cone and Oval Points	Half Dog Point	
0 (0.0600)	...	0.028	0.06	0.030	0.028	Note (2)
			0.09	0.040	0.040 [Note (3)]	0.028
1 (0.0730)	...	0.035	0.06	0.030	0.029	Note (2)
			0.09	0.040	0.040 [Note (3)]	0.040
2 (0.0860)	...	0.035	0.06	0.030	0.029	Note (2)
			0.09	0.040	0.040	0.035
3 (0.0990)	...	0.050	0.09	0.040	0.039	Note (2)
			0.13	0.055	0.040 [Note (3)]	0.045
4 (0.1120)	...	0.050	0.09	0.045	0.039	Note (2)
			0.13	0.060	0.045	0.045
5 (0.1250)	1/16	0.062	0.09	0.040	0.039	Note (2)
			0.13	0.060	0.045	0.045
6 (0.1380)	1/16	0.062	0.09	0.040	0.039	Note (2)
			0.13	0.060	0.045	0.045
			0.16	0.070	0.065	0.065
8 (0.1640)	5/64	0.078	0.13	0.060	0.050	0.045
			0.16	0.070	0.060	0.060
			0.19	Note (4)	0.065	0.065
10 (0.1900)	3/32	0.094	0.13	0.060	0.042	0.042
			0.19	Note (4)	0.060	0.060
1/4 (0.2500)	1/8	0.125	0.19	0.090	0.065	0.055
			0.25	Note (4)	0.110	0.090
5/16 (0.3125)	5/32	0.156	0.25	0.125	0.099	0.090
			0.31	Note (4)	0.140	0.105
3/8 (0.3750)	3/16	0.188	0.25	0.110	0.090	0.075
			0.31	0.140	0.115	0.105
			0.38	Note (4)	0.165	0.155
7/16 (0.4375)	7/32	0.219	0.38	0.160	0.125	0.125
			0.44	Note (4)	0.160	0.160
1/2 (0.5000)	1/4	0.250	0.38	0.175	0.130	0.130
			0.44	0.215	0.155	0.155
			0.50	Note (4)	0.195	0.195
5/8 (0.6250)	5/16	0.312	0.50	0.205	0.145	0.145
3/4 (0.7500)	3/8	0.375	0.63	0.255	0.190	0.190
			0.75	Note (4)	0.325	0.295
7/8 (0.8750)	1/2	0.500	0.75	0.330	0.255	0.255
			0.87	Note (4)	0.419	0.330
1 (1.0000)	9/16	0.562	0.75	0.280	0.175	0.175
			0.87	0.380	0.280	0.280
			1.00	Note (4)	0.380	0.380

Table 5B Hexagon Key Engagements for Short Length Set Screws (Cont'd)

GENERAL NOTES:

- (a) CAUTION: The use of short-length set screws listed in this Table can result in failure of the socket, key, or mating threads during tightening because key engagement and thread length are less than optimum. Therefore, it is strongly recommended that screws of lengths equal to or greater than the lengths specified in columns *B* and *B*₁ of Table 5A be used wherever possible.
- (b) See Table 5A, and the illustrations and notes thereto, for additional dimensions and specifications.

NOTES:

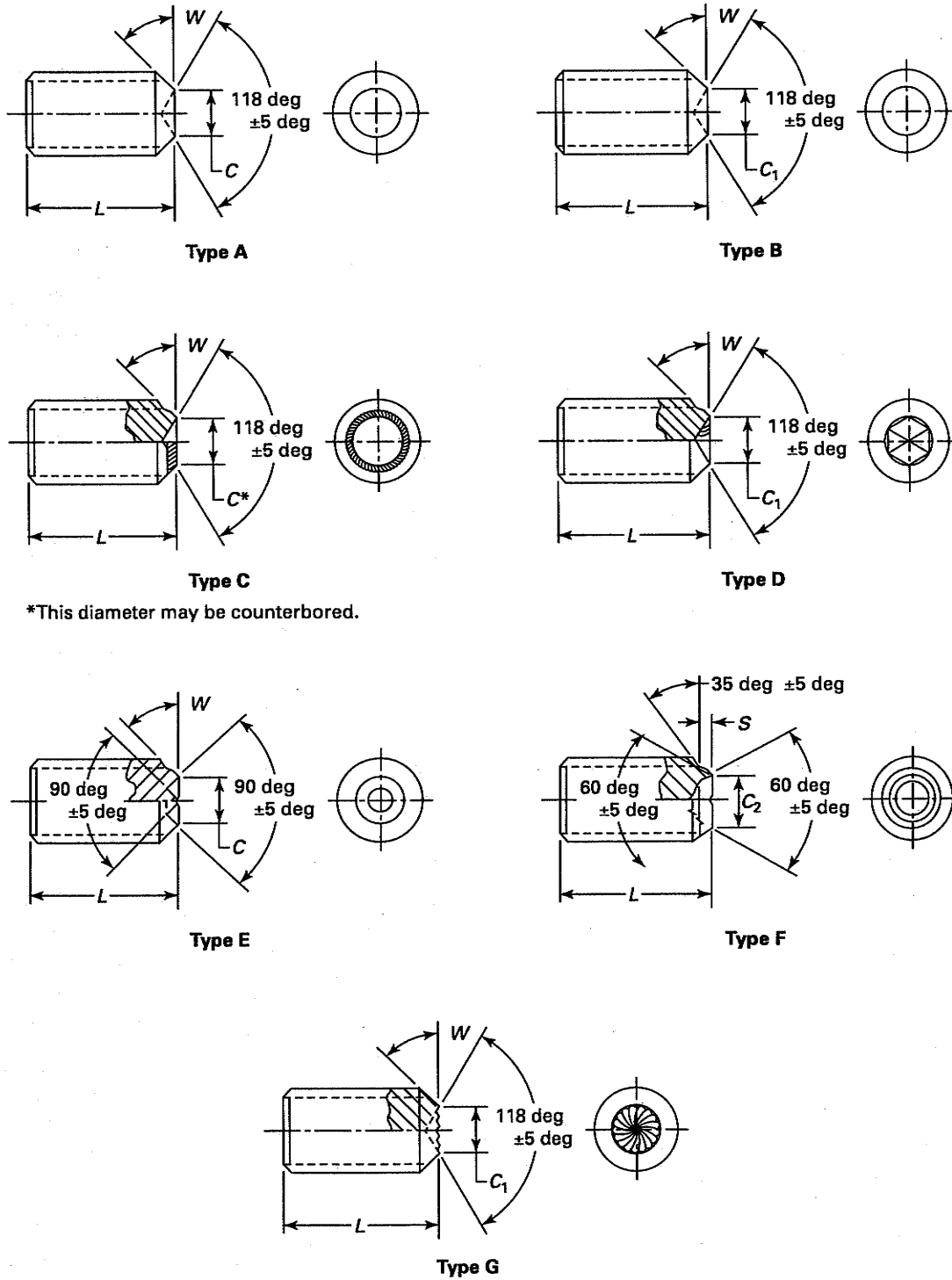
- (1) Cup angle may be 118 deg or 130 deg, +5 deg, depending upon screw length and manufacturing process.
- (2) These sizes are impractical to manufacture because of point configuration and short length.
- (3) Cone point angle for these lengths shall be 90 deg; see column *Y* of Table 5A.
- (4) These screws are covered in Table 5A.

Table 5C Dimensions of Optional Cup Points

Nominal Size (Basic Screw Diameter)	Point Diameter, C_1		Point Diameter, C_2		Point Length, S	
	Max.	Min.	Max.	Min.	Max.	Min.
0 (0.0600)	0.032	0.027	0.027	0.022	0.007	0.004
1 (0.0730)	0.038	0.033	0.035	0.030	0.008	0.005
2 (0.0860)	0.043	0.038	0.043	0.038	0.010	0.007
3 (0.0990)	0.050	0.045	0.051	0.046	0.011	0.007
4 (0.1120)	0.056	0.051	0.059	0.054	0.013	0.008
5 (0.1250)	0.062	0.056	0.068	0.063	0.014	0.009
6 (0.1380)	0.069	0.062	0.074	0.068	0.017	0.012
8 (0.1640)	0.082	0.074	0.090	0.084	0.021	0.016
10 (0.1900)	0.095	0.086	0.101	0.095	0.024	0.019
$\frac{1}{4}$ (0.2500)	0.125	0.114	0.156	0.150	0.027	0.022
$\frac{5}{16}$ (0.3125)	0.156	0.144	0.190	0.185	0.038	0.033
$\frac{3}{8}$ (0.3750)	0.187	0.174	0.241	0.236	0.041	0.036
$\frac{7}{16}$ (0.4375)	0.218	0.204	0.286	0.281	0.047	0.042
$\frac{1}{2}$ (0.5000)	0.250	0.235	0.333	0.328	0.054	0.049
$\frac{5}{8}$ (0.6250)	0.312	0.295	0.425	0.420	0.067	0.062
$\frac{3}{4}$ (0.7500)	0.375	0.357	0.523	0.518	0.081	0.076
$\frac{7}{8}$ (0.8750)	0.437	0.418	...	...	...	...
1 (1.0000)	0.500	0.480	...	...	...	...
$1\frac{1}{8}$ (1.1250)	0.562	0.542	...	...	...	...
$1\frac{1}{4}$ (1.2500)	0.625	0.605	...	...	...	...
$1\frac{3}{8}$ (1.3750)	0.687	0.667	...	...	...	...
$1\frac{1}{2}$ (1.5000)	0.750	0.730	...	...	...	...
$1\frac{3}{4}$ (1.7500)	0.875	0.855	...	...	...	...
2 (2.0000)	1.000	0.980	...	...	...	...

GENERAL NOTES:

- (a) Type A point shown in Fig. 1 is the cup point dimensioned in Table 5A. Types B, C, D, E, F, and G are typical variations of the cup point, which are supplied by some manufacturers.
- (b) For dimensions not shown above, refer to Table 5A.



*This diameter may be counterbored.

Fig. 1 Optional Types of Cup Points

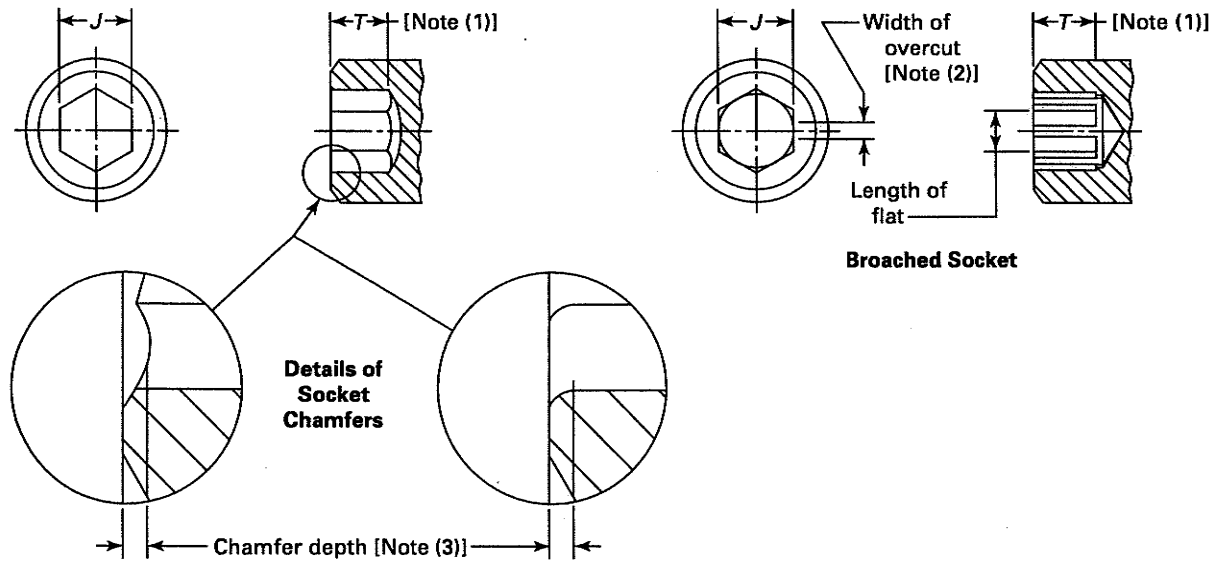


Table 6 Dimensions of Hexagon Sockets

Nominal Socket Size	Socket Width Across Flats, J		Nominal Socket Size	Socket Width Across Flats, J		Nominal Socket Size	Socket Width Across Flats, J	
	Max.	Min.		Max.	Min.		Max.	Min.
... 0.028	0.0285	0.0280	$\frac{3}{16}$ 0.188	0.1900	0.1875	$\frac{7}{8}$ 0.875	0.8850	0.8750
... 0.035	0.0355	0.0350	$\frac{7}{32}$ 0.219	0.2217	0.2187	1 1.000	1.0200	1.0000
... 0.050	0.0510	0.0500	$\frac{1}{4}$ 0.250	0.2530	0.2500	$1\frac{1}{4}$ 1.250	1.2750	1.2500
$\frac{1}{16}$ 0.062	0.0635	0.0625	$\frac{5}{16}$ 0.312	0.3160	0.3125	$1\frac{1}{2}$ 1.500	1.5300	1.5000
$\frac{5}{64}$ 0.078	0.0791	0.0781	$\frac{3}{8}$ 0.375	0.3790	0.3750	$1\frac{3}{4}$ 1.750	1.7850	1.7500
$\frac{3}{32}$ 0.094	0.0952	0.0937	$\frac{7}{16}$ 0.438	0.4420	0.4375	2 2.000	2.0400	2.0000
$\frac{7}{64}$ 0.109	0.1111	0.1094	$\frac{1}{2}$ 0.500	0.5050	0.5000	$2\frac{1}{4}$ 2.250	2.2950	2.2500
$\frac{1}{8}$ 0.125	0.1270	0.1250	$\frac{9}{16}$ 0.562	0.5680	0.5625	$2\frac{3}{4}$ 2.750	2.8050	2.7500
$\frac{9}{64}$ 0.141	0.1426	0.1406	$\frac{5}{8}$ 0.625	0.6310	0.6250	3 3.000	3.0600	3.0000
$\frac{5}{32}$ 0.156	0.1587	0.1562	$\frac{3}{4}$ 0.750	0.7570	0.7500	...	...	...

GENERAL NOTES:

- (a) Sockets up to and including 1 in. nominal size shall be checked in accordance with the hexagon socket gages and gaging specified in Mandatory Appendix I. Suitability of larger sockets shall be determined by means of direct measurement for various technical and economic reasons.
- (b) Dimensions of sockets apply before plating. When plated, see para. 2.1, Sockets, for gaging. (For plated products, see para. 1.7, Introductory Notes.)
- (c) Broach petals at the bottom of the socket are permissible.
- (d) For additional requirements, refer to section 2, General Data, of this Standard.

NOTES:

- (1) Applicable socket depths are specified in the dimensional tables and notes for the respective screw types.
- (2) For broached sockets, the maximum acceptable undercut shall be a size causing an average 20% flat length reduction in the maximum dimension across flat hexagon for socket sizes up to and including 1 in., and 30% for larger sockets. The maximum undercut on any one of the six flats shall not exceed a 40% reduction in flat length for any size socket.
- (3) Where hexagon sockets are chamfered, the depth of chamfer shall not exceed 10% of the nominal socket size for sizes up to and including $\frac{1}{16}$ in., and 7.5% for larger sizes. For chamfered sockets, it is permissible for the NOT GO socket gage to enter to the depth of chamfer as specified in Mandatory Appendix I.

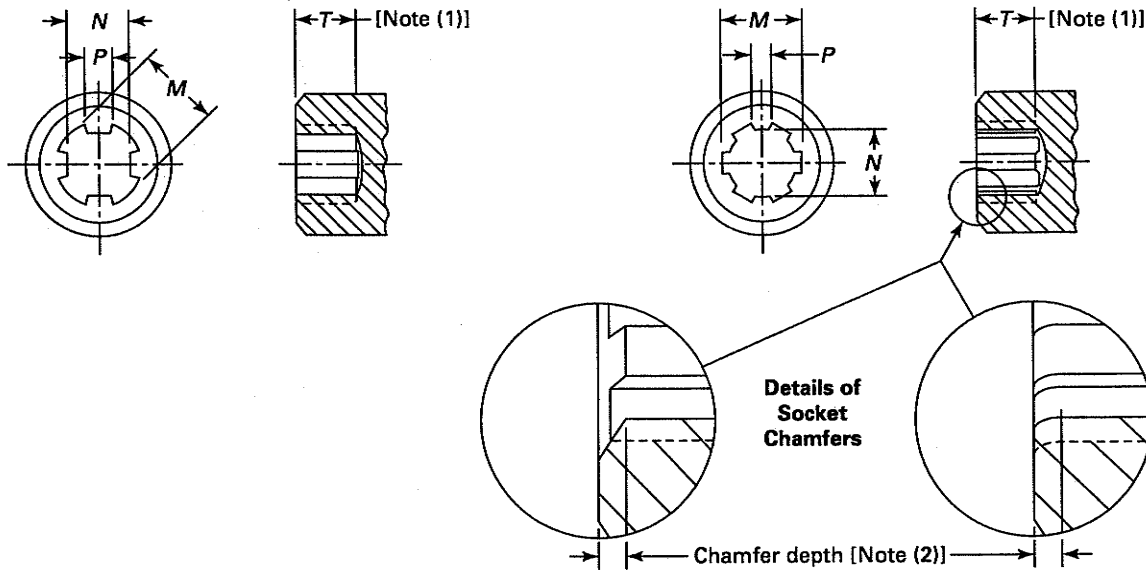


Table 7 Dimensions of Spline Sockets

Nominal Socket and Key Size	Number of Teeth	Socket, Major Diameter, <i>M</i>		Socket, Minor Diameter, <i>N</i>		Width of Tool, <i>P</i>	
		Max.	Min.	Max.	Min.	Max.	Min.
0.033	4	0.035	0.034	0.0275	0.0260	0.0120	0.0115
0.048 [Note (3)]	4	0.050	0.049	0.0395	0.038	0.017	0.016
0.048	6	0.050	0.049	0.041	0.040	0.011	0.010
0.060	6	0.062	0.061	0.051	0.050	0.014	0.013
0.069 [Note (3)]	4	0.071	0.070	0.0545	0.053	0.021	0.020
0.072	6	0.074	0.073	0.064	0.063	0.016	0.015
0.076 [Note (3)]	4	0.079	0.078	0.0575	0.056	0.023	0.022
0.096	6	0.098	0.097	0.082	0.080	0.022	0.021
0.111	6	0.115	0.113	0.098	0.096	0.025	0.023
0.133	6	0.137	0.135	0.118	0.116	0.030	0.028
0.145	6	0.149	0.147	0.128	0.126	0.032	0.030
0.168	6	0.173	0.171	0.150	0.147	0.036	0.033
0.183	6	0.188	0.186	0.163	0.161	0.039	0.037
0.216	6	0.221	0.219	0.190	0.188	0.050	0.048
0.251	6	0.256	0.254	0.221	0.219	0.060	0.058
0.291	6	0.298	0.296	0.254	0.252	0.068	0.066
0.372	6	0.380	0.377	0.319	0.316	0.092	0.089
0.454	6	0.463	0.460	0.386	0.383	0.112	0.109
0.595	6	0.604	0.601	0.509	0.506	0.138	0.134
0.620	6	0.631	0.627	0.535	0.531	0.149	0.145
0.698	6	0.709	0.705	0.604	0.600	0.168	0.164
0.790	6	0.801	0.797	0.685	0.681	0.189	0.185

GENERAL NOTES:

- (a) For additional requirements, refer to section 2, General Data, of this Standard.
- (b) Broach petals at the bottom of the socket are permissible.

NOTES:

- (1) Applicable socket depths are specified in the dimensional tables and notes for the respective screw types.
- (2) Where spline sockets are chamfered, the depth of chamfer shall not exceed 10% of the nominal socket size for sizes up to and including 0.060 in., and 7.5% for larger sizes. For chamfered sockets, it is permissible for the NOT GO socket gage to enter to the depth of chamfered as specified in Mandatory Appendix I.
- (3) Where both six and four splines are available, six splines will be supplied unless four splines are ordered.

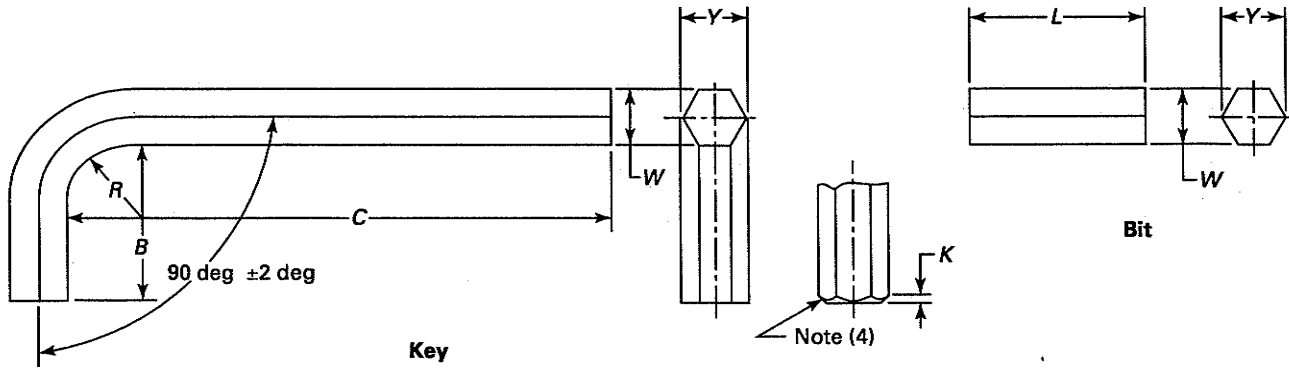


Table 8 Dimensions of Hexagon Keys and Bits

Nominal Key or Bit and Socket Size	Hexagon Width Across Flats, W		Hexagon Width Across Corners, Y [Note (2)]		Length, B		Length, C				Minimum Radius of Bend, R	Length of Bit, ±0.062, L [Note (3)]	Maximum Chamfer, K [Note (4)]	
	Max.	Min.	Max.	Min.	Max.	Min.	Short Series		Long Series					
							Max.	Min.	Max.	Min.				
...	0.028	0.0280	0.0275	0.0314	0.0300	0.312	0.125	1.312	1.125	2.688	2.500	0.062	...	0.003
...	0.035	0.0350	0.0345	0.0393	0.0378	0.438	0.250	1.312	1.125	2.766	2.578	0.062	...	0.004
...	0.050	0.0500	0.0490	0.0560	0.0540	0.625	0.438	1.750	1.562	2.938	2.750	0.062	...	0.006
1/16	0.062	0.0625	0.0615	0.0701	0.0680	0.656	0.469	1.844	1.656	3.094	2.906	0.062	...	0.008
5/64	0.078	0.0781	0.0771	0.0880	0.0859	0.703	0.516	1.969	1.781	3.281	3.094	0.078	...	0.008
3/32	0.094	0.0937	0.0927	0.1058	0.1035	0.750	0.562	2.094	1.906	3.469	3.281	0.094	...	0.009
7/64	0.109	0.1094	0.1079	0.1238	0.1210	0.797	0.609	2.219	2.031	3.656	3.469	0.109	...	0.014
1/8	0.125	0.1250	0.1235	0.1418	0.1390	0.844	0.656	2.344	2.156	3.844	3.656	0.125	...	0.015
9/64	0.141	0.1406	0.1391	0.1593	0.1566	0.891	0.703	2.469	2.281	4.031	3.844	0.141	...	0.016
3/32	0.156	0.1562	0.1547	0.1774	0.1745	0.938	0.750	2.594	2.406	4.219	4.031	0.156	...	0.016
3/16	0.188	0.1875	0.1860	0.2135	0.2105	1.031	0.844	2.844	2.656	4.594	4.406	0.188	...	0.022
7/32	0.219	0.2187	0.2172	0.2490	0.2460	1.125	0.938	3.094	2.906	4.969	4.781	0.219	...	0.024
1/4	0.250	0.2500	0.2485	0.2845	0.2815	1.219	1.031	3.344	3.156	5.344	5.156	0.250	...	0.030
5/16	0.312	0.3125	0.3110	0.3570	0.3531	1.344	1.156	3.844	3.656	6.094	5.906	0.312	...	0.032
3/8	0.375	0.3750	0.3735	0.4285	0.4238	1.469	1.281	4.344	4.156	6.844	6.656	0.375	...	0.044
7/16	0.438	0.4375	0.4355	0.5005	0.4944	1.594	1.406	4.844	4.656	7.594	7.406	0.438	...	0.047
1/2	0.500	0.5000	0.4975	0.5715	0.5650	1.719	1.531	5.344	5.156	8.344	8.156	0.500	...	0.050
9/16	0.562	0.5625	0.5600	0.6420	0.6356	1.844	1.656	5.844	5.656	9.094	8.906	0.562	...	0.053
5/8	0.625	0.6250	0.6225	0.7146	0.7080	1.969	1.781	6.344	6.156	9.844	9.656	0.625	...	0.055
3/4	0.750	0.7500	0.7470	0.8580	0.8512	2.219	2.031	7.344	7.156	11.344	11.156	0.750	...	0.070
7/8	0.875	0.8750	0.8720	1.0020	0.9931	2.469	2.281	8.344	8.156	12.844	12.656	0.875	...	0.076
1	1.000	1.0000	0.9970	1.1470	1.1350	2.719	2.531	9.344	9.156	14.344	14.156	1.000	...	0.081
1 1/4	1.250	1.2500	1.2430	1.4337	1.4138	3.250	2.750	11.500	11.000	...	...	1.250	3.750	0.092
1 1/2	1.500	1.5000	1.4930	1.7204	1.6981	3.750	3.250	13.500	13.000	...	...	1.500	4.500	0.104
1 3/4	1.750	1.7500	1.7430	2.0072	1.9825	4.250	3.750	15.500	15.000	...	...	1.750	5.250	0.115
2	2.000	2.0000	1.9930	2.2939	2.2668	4.750	4.250	17.500	17.000	...	...	2.000	6.000	0.126
2 1/4	2.250	2.2500	2.2430	2.5807	2.5511	5.250	4.750	19.500	19.000	...	...	2.250	6.750	0.137
2 3/4	2.750	2.7500	2.7420	3.1541	3.1187	6.250	5.750	23.500	23.000	...	...	2.750	8.250	0.159
3	3.000	3.0000	2.9920	3.4409	3.4030	6.750	6.250	25.500	25.000	...	...	3.000	9.000	0.171

GENERAL NOTE: For additional requirements, refer to Notes (4) through (6).

Table 8 Dimensions of Hexagon Keys and Bits (Cont'd)

NOTES:

- (1) Hexagon Keys are furnished as Short Arm Series or Long Arm Series.
- (2) Any truncation or rounding of hexagon corners within the specified across-corner dimensions shall be evident on all corners.
- (3) For nominal socket sizes above 1 in., it is recommended that bits be used in conjunction with standard hexagon wrenches or power drives. When the application makes the use of keys necessary, the keys should conform to the dimensions listed. Bits 1 in. and smaller are available, but the lengths have not been standardized.
- (4) Each end shall be square with the axis of each arm within 4 deg and edges may be sharp or chamfered at the option of the manufacturer. The chamfer shall not exceed the values listed.
- (5) *Material (Steel Alloy)*. Hexagon keys and bits shall be fabricated from an alloy steel having two or more of the following alloying elements: chromium, nickel, molybdenum, or vanadium, in sufficient quantity to ensure that the specified minimum hardness of 48 HRC at the surface for nominal sizes up to and including $\frac{3}{8}$ in., and 45 HRC for nominal sizes over $\frac{3}{8}$ in., is met when hexagon keys and bits are hardened by quenching from the austenitizing temperature and tempered.
- (6) For plated hexagon keys and bits, all dimensions are before plating. Because of the high hardness of these products, it is recommended that they not be electroplated.
- (7) For applicability of keys and bits to various socket screw types and sizes, see Nonmandatory Appendix B, Table B-1.
- (8) *Designation*. To promote uniformity and understanding in communications relating to products conforming to this Standard, it is recommended that Hexagon Keys or Bits be designated in accordance with the following data, preferably in the sequence shown:
 - (a) product name
 - (b) designation of the standard
 - (c) nominal key or bit size
 - (d) series
 - (e) protective finish, if required

EXAMPLES:

- Hexagon Key, ASME B18.3, $\frac{1}{8}$ Short Arm Series
Hexagon Key, ASME B18.3, $\frac{1}{8}$ Long Arm Series, Nickel Plated. [See Note (6).]
Hexagon Key Bit, ASME B18.3, $1\frac{1}{2}$ Hex

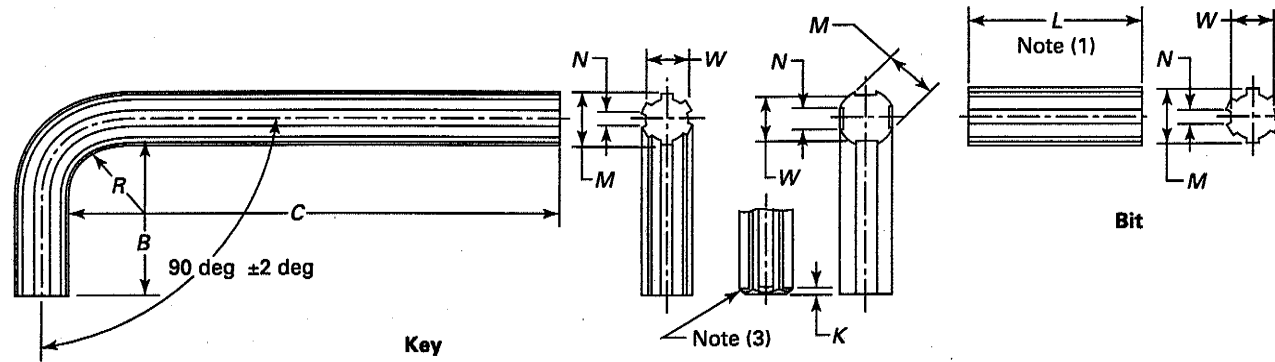


Table 9 Dimensions of Spline Keys and Bits

Nominal Key or Bit and Socket Size	Major Diameter, <i>M</i>		Minor Diameter, <i>W</i>		Number of Spline	Width of Space, <i>N</i>		Length, <i>B</i>		Length, <i>C</i>				Minimum Radius of Bend, <i>R</i>	Maximum Chamfer, <i>K</i> [Note (3)]
	Max.	Min.	Max.	Min.		Max.	Min.	Short Series		Long Series		Max.	Min.		
								Max.	Min.	Max.	Min.				
0.033	0.0330	0.0320	0.0250	0.0240	4	0.0140	0.0130	0.312	0.125	1.312	1.125	...	...	0.062	0.003
0.048	0.0480	0.0470	0.0370	0.0360	4	0.0190	0.0180	0.438	0.250	1.312	1.125	...	...	0.062	0.004
0.048	0.0480	0.0470	0.0390	0.0380	6	0.0130	0.0120	0.438	0.250	1.312	1.125	...	...	0.062	0.004
0.060	0.0600	0.0590	0.0490	0.0480	6	0.0160	0.0150	0.625	0.438	1.750	1.562	...	...	0.062	0.006
0.069	0.0690	0.0680	0.0510	0.0500	4	0.0260	0.0250	0.656	0.469	1.844	1.656	...	...	0.062	0.007
0.072	0.0720	0.0710	0.0620	0.0610	6	0.0190	0.0180	0.656	0.469	1.844	1.656	...	...	0.062	0.008
0.076	0.0760	0.0750	0.0530	0.0520	4	0.0280	0.0270	0.656	0.469	1.844	1.656	...	...	0.062	0.008
0.096	0.0960	0.0950	0.0790	0.0775	6	0.0240	0.0230	0.703	0.516	1.969	1.781	...	...	0.078	0.008
0.111	0.1110	0.1100	0.0940	0.0925	6	0.0280	0.0270	0.750	0.562	2.094	1.906	...	...	0.094	0.009
0.133	0.1330	0.1310	0.1140	0.1120	6	0.0340	0.0320	0.797	0.609	2.219	2.031	3.656	3.469	0.125	0.014
0.145	0.1450	0.1435	0.1240	0.1225	6	0.0355	0.0340	0.844	0.656	2.344	2.156	3.844	3.656	0.125	0.015
0.168	0.1680	0.1660	0.1440	0.1420	6	0.0410	0.0390	0.891	0.703	2.469	2.281	4.031	3.844	0.156	0.016
0.183	0.1830	0.1815	0.1580	0.1565	6	0.0440	0.0425	0.938	0.750	2.594	2.406	4.219	4.031	0.156	0.016
0.216	0.2160	0.2145	0.1840	0.1825	6	0.0550	0.0535	1.031	0.844	2.844	2.657	4.594	4.406	0.188	0.022
0.251	0.2510	0.2495	0.2140	0.2125	6	0.0655	0.0640	1.125	0.938	3.094	2.906	4.969	4.781	0.219	0.024
0.291	0.2910	0.2895	0.2460	0.2445	6	0.0775	0.0760	1.219	1.031	3.344	3.156	5.344	5.156	0.250	0.030
0.372	0.3720	0.3705	0.3100	0.3085	6	0.0975	0.0960	1.344	1.156	3.844	3.656	6.094	5.906	0.312	0.032
0.454	0.4540	0.4525	0.3770	0.3755	6	0.1185	0.1170	1.469	1.281	4.344	4.156	6.844	6.656	0.375	0.044
0.595	0.5950	0.5935	0.5000	0.4975	6	0.1460	0.1445	1.719	1.531	5.344	5.156	8.344	8.156	0.500	0.050
0.620	0.6200	0.6175	0.5240	0.5215	6	0.1615	0.1590	1.844	1.656	5.844	5.656	9.094	8.906	0.500	0.053
0.698	0.6980	0.6955	0.5930	0.5905	6	0.1805	0.1780	1.844	1.656	5.844	5.656	...	...	0.562	0.055
0.790	0.7900	0.7875	0.6740	0.6715	6	0.1975	0.1950	1.969	1.781	6.344	6.156	...	...	0.625	0.070

Table 9 Dimensions of Spline Keys and Bits (Cont'd)

GENERAL NOTE: For additional requirements, refer to Notes (3) through (5) below.

NOTES:

- (1) Bits are available, but lengths have not been standardized.
- (2) Spline Keys are furnished as Short Arm Series or Long Arm Series.
- (3) Each end shall be square with the axis of each arm within 4 deg, and edges may be sharp or chamfered at the option of the manufacturer. The chamfer shall not exceed the values listed.
- (4) *Material (Steel Alloy)*. The spline keys shall be fabricated from an alloy steel having two or more of the following alloying elements: chromium, nickel, molybdenum, or vanadium, in sufficient quantity to ensure that the specified minimum hardness of 48 HRC at the surface for nominal sizes up to and including 0.372 in., and 45 HRC for nominal sizes over 0.372 in., is met when spline keys are hardened by quenching from the austenitizing temperature and tempered.
- (5) For plated keys, all dimensions are before plating. Because of the high hardness of these products, it is recommended that they not be electroplated.
- (6) For applicability of keys to various socket screw types and sizes, see Nonmandatory Appendix B, Table B-2.
- (7) *Designation*. To promote uniformity and understanding in communications relating to products conforming to this Standard, it is recommended that Spline Keys be designated in accordance with the following data, preferably in the sequence shown:
 - (a) product name
 - (b) designation of the standard
 - (c) nominal key size
 - (d) series
 - (e) protective finish, if required

EXAMPLES:

Spline Key, ASME B18.3, 0.111 Short Arm Series

Spline Key, ASME B18.3, 0.372 Long Arm Series, Nickel Plated. [See Note (5).]

MANDATORY APPENDIX I

GAGES AND GAGING FOR HEXAGON AND SPLINE SOCKETS

I-1 GENERAL

The gages specified herein are intended for use in determining the acceptability of sockets up to and including the 1 in. nominal hexagon socket size and the 0.790 in. nominal spline socket size. Suitability of hexagon sockets of nominal sizes larger than 1 in. shall be determined by direct measurement for various technical and economic reasons. For dimensions of gages for sockets and spline sockets, see Tables I-1 and I-2.

I-2 GAGING OF HEXAGON SOCKETS

Hexagon sockets in screws shall allow the GO member of the gage to enter freely to the minimum key engagement depths specified in the dimensional tables for the respective screw types.

For hexagon sockets that are not chamfered, the NOT GO gage member shall not enter any of the three across-flat dimensions of the socket for nominal socket sizes of $\frac{1}{8}$ in. and larger, and the hexagonal NOT GO gage member shall not enter the socket for nominal socket sizes smaller than $\frac{1}{8}$ in.

For chamfered hexagon sockets, the NOT GO gage member shall be permitted to enter only to a depth equivalent to 10% of the nominal socket size for nominal socket sizes up to and including $\frac{1}{16}$ in., and to 7.5% of the nominal socket sizes for larger sockets.

I-3 GAGING OF SPLINE SOCKETS

Spline sockets in screws shall allow the GO member of the gage to enter freely to the minimum key engagement depths specified in the dimensional tables for the respective screw types.

For spline sockets that are not chamfered, the NOT GO gage member shall not enter the socket.

For chamfered spline sockets, the NOT GO gage member shall be permitted to enter only to a depth equivalent to 10% of the nominal socket size for nominal socket sizes up to and including 0.060 in., and to 7.5% of the nominal socket size for larger sockets.

I-4 GAGES

Gages shall be made from any grade of steel, through-hardened and tempered to 60 HRC minimum.

The form of hexagonal and spline gage members shall be within the tolerance zone specified. See ASME Y14.5M, Engineering Drawing and Related Documentation Practices, Dimensioning and Tolerancing.

The surface roughness on hexagon and spline flats shall be 8 μ in. (arithmetical average) maximum. See ASME B46.1, Surface Texture.

The gage handles shall conform to ASME B47.1, Gage Blanks.

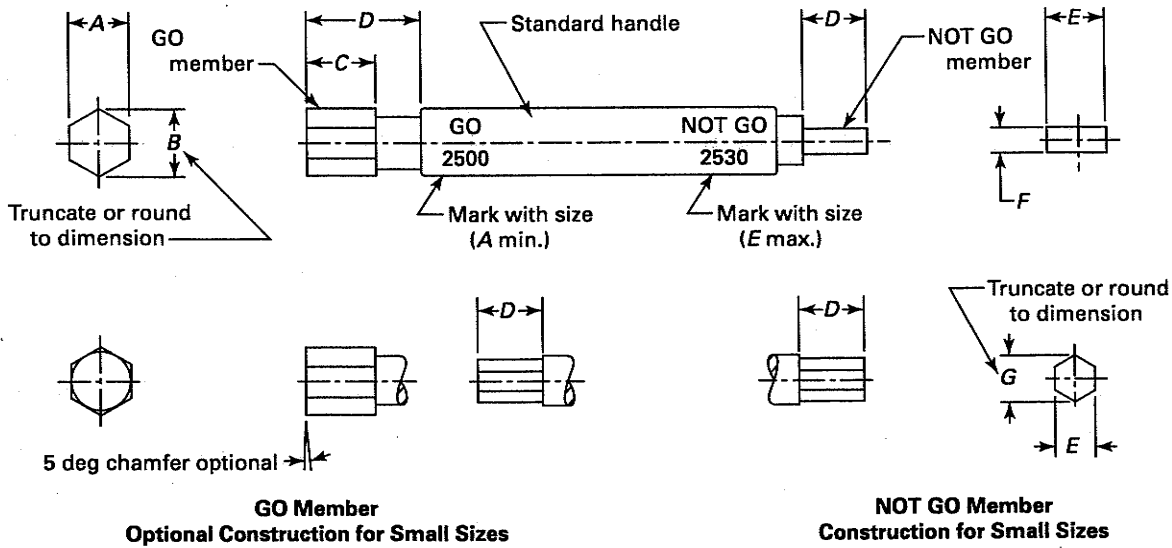


Table I-1 Dimensions of Gages for Hexagon Sockets

Nominal Socket Size	GO Gage Width Across Flats, A		GO Gage Width Across Corners, B		Minimum GO Gage Length, C	Minimum Usable Gage Length, D	NOT GO Gage Width, E		NOT GO Gage Thickness, F		NOT GO Gage Width Across Corners, G		
	Max.	Min.	Max.	Min.			Max.	Min.	Max.	Min.	Max.	Min.	
...	0.028	0.0281	0.0280	0.0316	0.0314	0.062	0.062	0.0285	0.0284	...	...	0.0308	0.0303
...	0.035	0.0351	0.0350	0.0395	0.0393	0.093	0.093	0.0355	0.0354	...	...	0.0386	0.0381
...	0.050	0.0501	0.0500	0.0562	0.0560	0.187	0.187	0.0510	0.0509	...	...	0.0550	0.0545
1/16	0.062	0.0626	0.0625	0.0703	0.0701	0.187	0.187	0.0635	0.0634	...	...	0.0688	0.0683
5/64	0.078	0.0782	0.0781	0.0882	0.0880	0.187	0.187	0.0791	0.0790	...	...	0.0862	0.0857
3/32	0.094	0.0939	0.0937	0.1060	0.1058	0.250	0.250	0.0952	0.0950	...	...	0.1036	0.1031
7/64	0.109	0.1096	0.1094	0.1240	0.1238	0.250	0.250	0.1111	0.1109	...	...	0.1212	0.1207
1/8	0.125	0.1252	0.1250	0.1420	0.1418	0.250	0.250	0.1270	0.1268	0.057	0.055	...	...
9/64	0.141	0.1408	0.1406	0.1595	0.1593	0.250	0.250	0.1426	0.1424	0.064	0.062	...	...
5/32	0.156	0.1564	0.1562	0.1776	0.1774	0.250	0.250	0.1587	0.1585	0.071	0.069	...	...
3/16	0.188	0.1877	0.1875	0.2137	0.2135	0.250	0.375	0.1900	0.1898	0.088	0.086	...	...
7/32	0.219	0.2189	0.2187	0.2492	0.2490	0.250	0.437	0.2217	0.2215	0.102	0.100	...	...
1/4	0.250	0.2502	0.2500	0.2848	0.2845	0.312	0.500	0.2530	0.2528	0.117	0.115	...	...
5/16	0.312	0.3127	0.3125	0.3573	0.3570	0.312	0.625	0.3160	0.3158	0.150	0.148	...	...
3/8	0.375	0.3752	0.3750	0.4288	0.4285	0.500	0.750	0.3790	0.3788	0.180	0.178	...	...
7/16	0.438	0.4377	0.4375	0.5008	0.5005	0.500	0.875	0.4420	0.4418	0.211	0.209	...	...
1/2	0.500	0.5002	0.5000	0.5718	0.5715	0.500	1.000	0.5050	0.5048	0.241	0.239	...	...
9/16	0.562	0.5627	0.5625	0.6424	0.6420	0.750	1.125	0.5680	0.5678	0.269	0.267	...	...
5/8	0.625	0.6252	0.6250	0.7150	0.7146	0.750	1.250	0.6310	0.6308	0.302	0.300	...	...
3/4	0.750	0.7502	0.7500	0.8585	0.8580	0.750	1.500	0.7570	0.7568	0.364	0.362	...	...
7/8	0.875	0.8752	0.8750	1.0025	1.0020	0.875	1.750	0.8850	0.8848	0.423	0.421	...	...
1	1.000	1.0002	1.0000	1.1475	1.1470	1.000	2.000	1.0200	1.0198	0.489	0.487	...	...

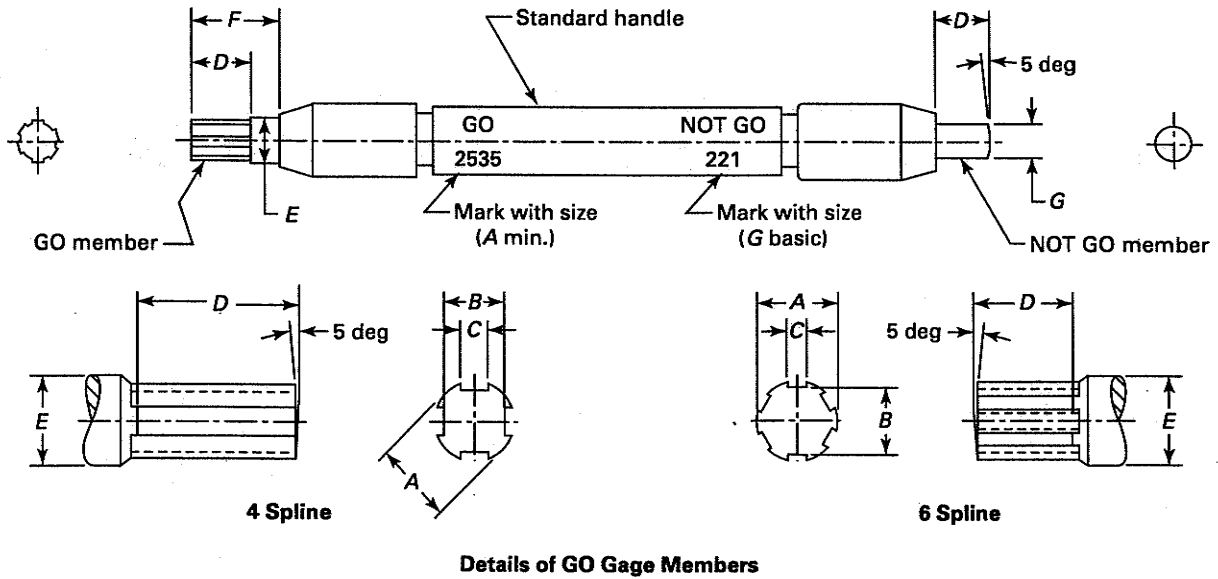


Table I-2 Dimensions of Gages for Spline Sockets

Nominal Socket Size	Number of Splines	GO Gage Major Diameter, A		GO Gage Minor Diameter, B		GO Gage Space Width, C		Minimum Gage Length, D	Shoulder Diameter, ±0.0020, E	Minimum Length, F	Basic NOT GO Gage Diameter, G [Note (1)]
		Max.	Min.	Max.	Min.	Max.	Min.				
0.033	4	0.0337	0.0335	0.0252	0.0250	0.0125	0.0123	0.0625	0.0350	0.093	0.0275
0.048	4	0.0487	0.0485	0.0372	0.0370	0.0175	0.0173	0.0625	0.0520	0.187	0.0395
0.048	6	0.0487	0.0485	0.0397	0.0395	0.0115	0.0113	0.0625	0.0520	0.187	0.0410
0.060	6	0.0607	0.0605	0.0497	0.0495	0.0145	0.0143	0.0625	0.0625	0.187	0.0510
0.069	4	0.0697	0.0695	0.0517	0.0515	0.0215	0.0213	0.0625	0.0700	0.187	0.0545
0.072	6	0.0727	0.0725	0.0627	0.0625	0.0165	0.0163	0.0625	0.0730	0.187	0.0640
0.076	4	0.0767	0.0765	0.0547	0.0545	0.0235	0.0233	0.0625	0.0770	0.187	0.0575
0.096	6	0.0967	0.0965	0.0797	0.0795	0.0225	0.0223	0.0938	0.0980	0.250	0.0820
0.111	6	0.1127	0.1125	0.0957	0.0955	0.0255	0.0253	0.0938	0.1130	0.250	0.0980
0.133	6	0.1347	0.1345	0.1157	0.1155	0.0305	0.0303	0.0938	0.1360	0.250	0.1180
0.145	6	0.1467	0.1465	0.1257	0.1255	0.0325	0.0323	0.1250	0.1470	0.250	0.1280
0.168	6	0.1707	0.1705	0.1467	0.1465	0.0365	0.0363	0.0938	0.1719	0.250	0.1500
0.183	6	0.1857	0.1855	0.1607	0.1605	0.0395	0.0393	0.1875	0.1875	0.375	0.1630
0.216	6	0.2187	0.2185	0.1877	0.1875	0.0505	0.0503	0.1875	0.2187	0.437	0.1900
0.251	6	0.2537	0.2535	0.2187	0.2185	0.0605	0.0603	0.2500	0.2570	0.500	0.2210
0.291	6	0.2957	0.2955	0.2517	0.2515	0.0685	0.0683	0.2500	0.2968	0.625	0.2540
0.372	6	0.3767	0.3765	0.3157	0.3155	0.0925	0.0923	0.3750	0.3770	0.750	0.3190
0.454	6	0.4597	0.4595	0.3827	0.3825	0.1125	0.1123	0.3750	0.4687	0.875	0.3860
0.595	6	0.6007	0.6005	0.5057	0.5055	0.1385	0.1383	0.5000	0.6094	1.000	0.5090
0.620	6	0.6267	0.6265	0.5307	0.5305	0.1495	0.1493	0.5000	0.6406	1.000	0.5350
0.698	6	0.7047	0.7045	0.5997	0.5995	0.1685	0.1683	0.5000	0.7187	1.125	0.6040
0.790	6	0.7967	0.7965	0.6807	0.6805	0.1895	0.1893	0.5625	0.7969	1.250	0.6850

NOTE:

(1) Class Y plus gage tolerances shall apply.