SAE International™ SURFACE VEHICLE STANDARD

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Superseding J891 MAY1998

Spring Nuts

1. ***Scope***—Included herein are complete general and dimensional specifications for metric and inch types of spring nuts recognized as SAE standard. These nuts are intended for general use where the engagement of a single thread on the mating screw is considered adequate for the application.

It should be noted that spring nuts having other configurations, dimensions, provisions for ground, etc., are available and manufacturers should be consulted.

2. ***References***

2.1 Applicable Publications—The following publications form a part of this specification to the extent specified herein.

2.1.1 ASME PUBLICATIONS—Available from ASME, 22 Law Drive, Box 2300, Fairfield, NJ 07007-2300. Website: www.asme.org

ASME B18.6.3—Machine Screws and Machine Screw Nuts
ASME B18.6.4—Thread Forming and Cutting Tapping Screws and Metallic Drive Screws—Inch
ASME B18.6.5M—Metric Thread Forming and Thread Cutting Tapping Screws
ASME B18.6.7M—Metric Machine Screws

2.1.2 ASTM PUBLICATION—Available from ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959. Website: www.astm.org

ASTM B 117—Standard Practice for Operating Salt Spray (Fog) Apparatus

3. ***General Specifications***

3.1 Dimensional Tolerances—Dimensions and tolerances are given in both metric and inch units as designated. In many cases, the metric units have been rounded to reflect metric modules rather than being true soft conversions of the corresponding inch dimensions. Tolerances on dimensions in Tables 1 to 9 and Figures 1 to 16 shall be ±0.25 mm (±0.010 in) unless otherwise specified.

3.2 Boss Detail—The detail of boss shall be such as to assemble readily and function satisfactorily with the specified screw and meet the performance requirements of this specification except as indicated otherwise.

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Both the type "P" and "T" bosses are designed to function with all spaced threaded tapping screws in sizes 3.5 x 1.27 through 6.3 x 1.81 or (#6-20 through 1/4-14) with the exception of the type "T" boss of the 6.3 (1/4). The boss has been designed to perform satisfactorily with either a type AB or B tapping screw.

The sides of the Type P boss (see Figure 1) shall be formed to provide an opening conforming to the helix of the mating thread. The opening shall be round and equal to, or slightly larger than, the minor diameter of the mating thread.

The prongs of the Type T boss (see Figure 2) shall be formed to provide a circular opening conforming to the helix of the mating thread and, at the opening, the prongs shall be normal to the axis of the mating thread. The round portion of the opening shall be equal to, or slightly larger than, the minor diameter of the mating thread.

The size and formation of the helical opening (see Table 1) shall be such as to permit ready assembly of the specified screw or gage when inserted from the base of the boss at 90 degrees to the plane of the nut, or component thereof which contains the boss. For machine screw threads, basic GO thread plug gages shall be used to check assembly. For Type AB and Type B pitch tapping screw threads, special gages conforming to the maximum limits of the screws may be used in place of the specified screws to check assembly.

3.3 Retaining Extrusion Detail—The size and configuration of the extrusion in the lower leg of "J" shape and "U" shape spring nuts shall be such that nuts will meet the performance requirements of this specification. The size and relative location of the hole and extrusion to the boss shall be such that when nut is assembled onto a test panel having minimum hole size, located at maximum edge distance, the extrusion will snap into the hole and permit the specified screw of maximum size (or special threaded plug gage, see Figure 3) to be assembled into the boss normal to the base of bass with interference at the extrusion or the sides of either hole. The screw or gage is to be entered into the boss until the head of the screw or shoulder on gage lightly contacts the bottom of the lower leg. The extrusion shall have a uniform shape and blend evenly from the specified height at point X into the upper surface of the lower leg at points Y and Y' as shown. The critical edges of the extrusion shall be free from burrs that would cause interference as spring nut is assembled to panel.

3.4 Material—Spring steel; SAE 1050 or higher carbon; suitably processed to meet the performance requirements of this specification.

3.5 Hardness—Hardness shall be as specified in Table 3.

3.6 Finish—Spring nuts are normally supplied with corrosion-resistant finish as specified by the purchaser. Nuts subjected to corrosion preventive treatment that might induce hydrogen embrittlement shall be baked or otherwise treated to obviate such embrittlement.

3.7 Workmanship—Spring nuts shall be free from cracks, burrs, splits, loose scale, or any other defects that might affect their serviceability.

3.8 Performance—Spring nuts shall perform in accordance with the requirements specified in Table 2 except as indicated otherwise.

3.9 Assembly Detail—The recommended design data pertaining to assembly of "J" shape and "U" shape spring nuts for guidance of users is presented in Tables 4 and 5. The proper method of assembling these corrosion-resistant nuts to panels is described as follows:

"J" shape nuts are assembled to panel by placing nut against the edge of the panel as shown opposite and rocking onto panel in the direction indicated by the arrow. See Figure 4A.

"U" shape nuts are assembled to panel by placing nut over edge of the panel as shown opposite and pushing onto the panel in the direction indicated by the arrow. See Figure 4B.

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4. ***Tests and Test Fixtures for Evaluating Spring Nut Performance***—Spring nuts shall be subjected to the following tests to determine conformance with the performance requirements specified in Table 2 except as indicated otherwise.

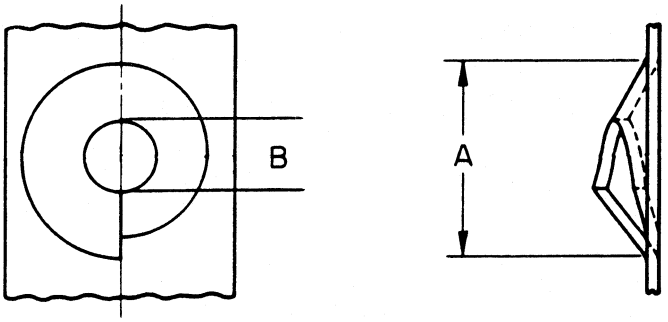

FIGURE 1—TYPE P BOSS

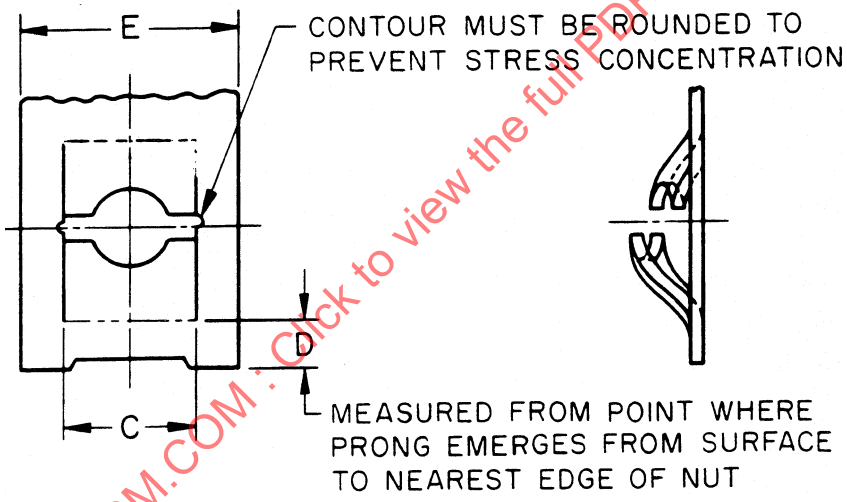

FIGURE 2—TYPE T BOSS

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TABLE 1—DETAIL OF BOSSES

Screw Thread Type	Screw Nominal Size mm	Screw Nominal Size in	Type P Boss A Base Dia Ref mm	Type P Boss A Base Dia Ref in	Type P Boss B Hole Dia mm	Type P Boss B Hole Dia in	Type P Boss E Min Blank Width mm	Type P Boss E Min Blank Width in
Machine	M3.5 x 0.6	6-32	6.6	0.26	2.6	0.104	8.6	0.340
Machine	M4 x 0.7	8-32	5.8	0.23	3.3	0.130	10.3	0.406
Machine	M5 x 0.8	10-24	7.1	0.28	3.6	0.143	12.7	0.500
Machine		1/4-20	9.4	0.37	4.9	0.193	14.3	0.562
Tapping	3.5	#6	6.4	0.25	2.7	0.105	8.6	0.340
Tapping	4.2	#8	7.1	0.28	3.1	0.123	10.3	0.406
Tapping	4.8	#10	7.1	0.28	3.6	0.142	12.7	0.500
Tapping	6.3	1/4 #14	9.6	0.38	4.9	0.193	14.3	0.562

TABLE 1—DETAIL OF BOSSES (CONTINUED)

Screw Thread Type	Screw Nominal Size mm	Screw Nominal Size in	Type T Boss C Width of Shear Basic mm	Boss D Boss C Width of Shear Basic in	Type T Boss D[(1)] End of Slit to Edge Min mm	Type T Boss D[(1)] End of Slit to Edge Min in	Type T Boss E Min Blank Width mm	Type T Boss E Min Blank Width in
Machine	M3.5 x 0.6	6-32	4.0	0.157	1.3	0.050	8.0	0.312
Machine	M4 x 0.7	8-32	4.7	0.184	1.3	0.050	10.3	0.406
Machine	M5 x 0.8	10-24	5.3	0.210	1.3	0.050	9.5	0.375
Machine		1/4-20	6.9	0.270	2.3	0.090	12.7	0.500
Tapping	3.5	#6	4.0	0.157	1.3	0.050	8.0	0.312
Tapping	4.2	#8	4.7	0.184	1.5	0.060	10.3	0.406
Tapping	4.8	#10	5.3	0.210	2.0	0.080	12.7	0.500
Tapping	6.3	1/4 #14	6.9	0.270	2.3	0.090	14.3	0.562

1. The tabulated values are applicable to standard spring nuts only. This factor shall be sufficient to meet the performance requirements for torque, tensile strength, and vibration as set forth in Table 2.

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TABLE 2—PERFORMANCE REQUIREMENTS FOR SPRING NUTS

Screw Thread Type	Screw Nominal Size mm	Screw Nominal Size in	Recommended Installation Torque-Max N·m	Recommended Installation Torque-Max lb-in	Clamp-Load at Recommended Installation Torque-Min kN	Clamp-Load at Recommended Installation Torque-Min lb	Destructive Torque Min N·m	Destructive Torque Min lb-in
Machine	M3.5 x 0.6	6-32	0.6	6	0.36	80	1.0	8
Machine	M4 x 0.7	8-32	1.0	8	0.44	100	1.2	10
Machine	M5 x 0.8	10-24	1.6	14	0.62	140	2.0	17
Machine		1/4-20	4.0	35	1.47	330	5.0	45
Tapping	3.5	#6	1.4	12	1.06	240	2.0	17
Types	4.2	#8	2.2	20	1.78	400	2.8	25
AB & B	4.8	#10	4.0	35	2.45	550	4.9	44
	6.3	#14-1/4	7.0	60	3.34	750	9.0	80

TABLE 2—PERFORMANCE REQUIREMENTS FOR SPRING NUTS (CONTINUED)

Screw Thread Type	Screw nominal Size mm	Screw Nominal Size in	Ultimate Tensile Strength Min Type P kN	Ultimate Tensile Strength Min Type P lb	Ultimate Tensile Strength Min Type T kN	Ultimate Tensile Strength Min Type T lb
Machine	M3.5 x 0.6	6-32	0.69	155	0.69	156
Machine	M4 x 0.7	8-32	0.89	200	0.84	189
Machine	M5 x 0.8	10-24	1.40	315	1.22	274
Machine		1/4-20	2.54	570	2.45	550
Tapping	3.5 x 1.3	#6-25	2.22	500	1.89	425
Types	4.2 x 1.4	#8-18	2.76	620	2.38	534
AB & B	4.8 x 1.6	#10-16	4.45	1000	2.99	672
	6.3 x 1.8	1/4-14	5.03	1130	5.15	1158

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TABLE 3—FASTENER HARDNESS

Material Thickness mm	Material Thickness in	Rockwell Scale	Dial Reading	Conversion to Rockwell C Scale	Conversion to Vickers
up to 0.41	up to 0.016	15 N	80.4 to 85.5	40 to 50	390 to 515
0.43 to 0.61	0.017 to 0.024	30 N	59.5 to 68.5	40 to 50	390 to 515
0.64 to 0.99	0.025 to 0.039	45 N	43.1 to 55.0	40 to 50	390 to 515
1.02 and over	0.040 and over	C	40 to 50	40 to 50	390 to 515

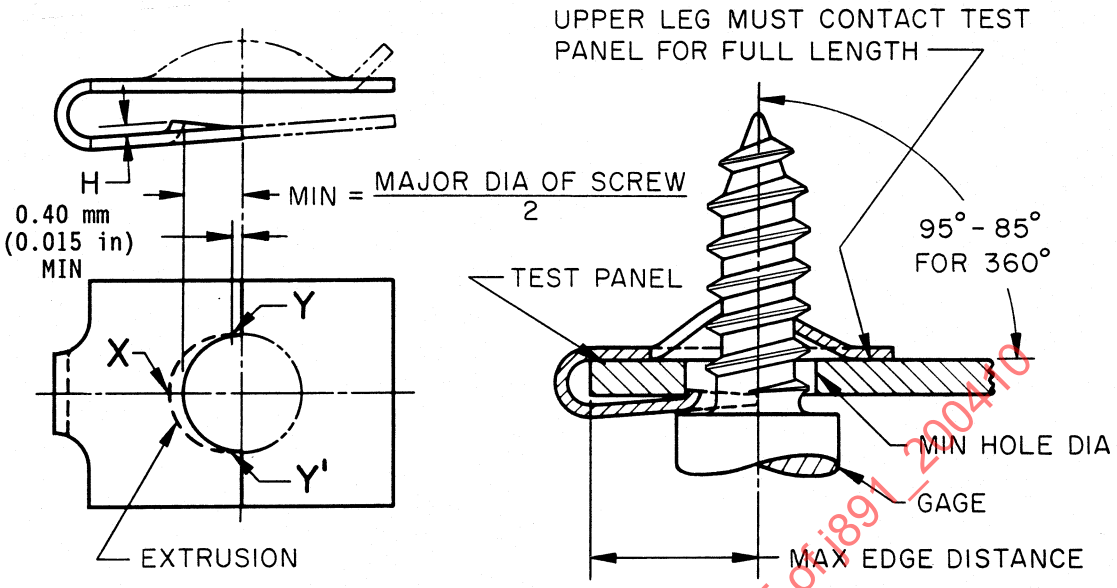

FIGURE 3—OPTIONAL EXTRUSION AND GAGING DETAIL

4.1 Test Plates and Screws for Tests—To assure uniformity of test results, the test plates and screws used for the tests shall conform to the following specifications.

Test plates shall have boundary dimensions and hole sizes as depicted in Figure 5. The thickness of test plates shall be equal to the mean of the specified panel range within a tolerance of ±0.03 mm (±0.001 in). The holes in test plates shall be located at the maximum edge distance specified for the particular spring nut within a tolerance of ±0.03 mm (±0.001 in). Test plates and panels shall have a minimum hardness of Rockwell C 50-54 (HV 515-580).

The screws used for test purposes shall conform to the specifications in ASME B18.6.3, B18.6.4, B18.6.5M and 18.6.7M for the respective sizes and types. They shall be Hexagon Head style and a length that is compatible with the test fixture, with a 72 h salt spray corrosion resistant phosphate finish (ASTM B 117).

4.2 Torque Tests—Spring nut samples shall be assembled with a test screw onto a test plate and tightened to the recommended installation torque. For wide-range design spring nuts, this test shall be performed with a device capable of measuring the clamp load developed and, when assembly is tightened to the recommended installation torque, the clamp load obtained shall not be less than the value tabulated.

Upon disassembly, the boss shall return to a position that will accept reentry of the test screw.

The spring nut, when reassembled and tightened on the test plate, shall not strip the threads on the screw nor fail the nut boss at less than the ultimate torque specified.

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4.3 Tensile Tests—When the spring nut on a test plate is assembled to suitable back-up plates at the recommended installation torque and pulled in a tensile testing machine, the spring nut shall meet the ultimate strengths specified.

The ultimate strength shall be considered reached when the boss or the thread on the screw is destroyed. In performing tensile test, care should be taken to assure there is no interference between the screw and the holes in the plates. A typical tensile test fixture is illustrated in Figure 6.

4.4 Preassembly and Retention Test—The "J" shape and "U" shape spring nuts shall preassemble onto test panels of thickness equal to the two extremes of the panel ranges specified, having minimum holes, located at the maximum edge distance. The extrusion in the lower leg shall snap into the hole and when nuts are so assembled, a pull force of 13.3 N (3 lb) minimum applied parallel to the upper leg in line with the axis of the nut shall be required to remove the nut from the panel.

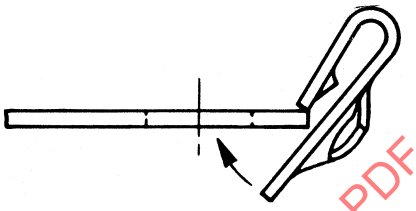

FIGURE 4A—J SHAPE NUTS

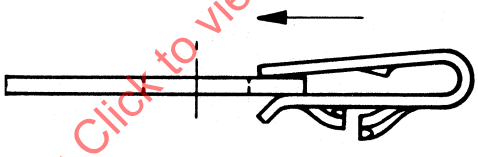

FIGURE 4B—U SHAPE NUTS

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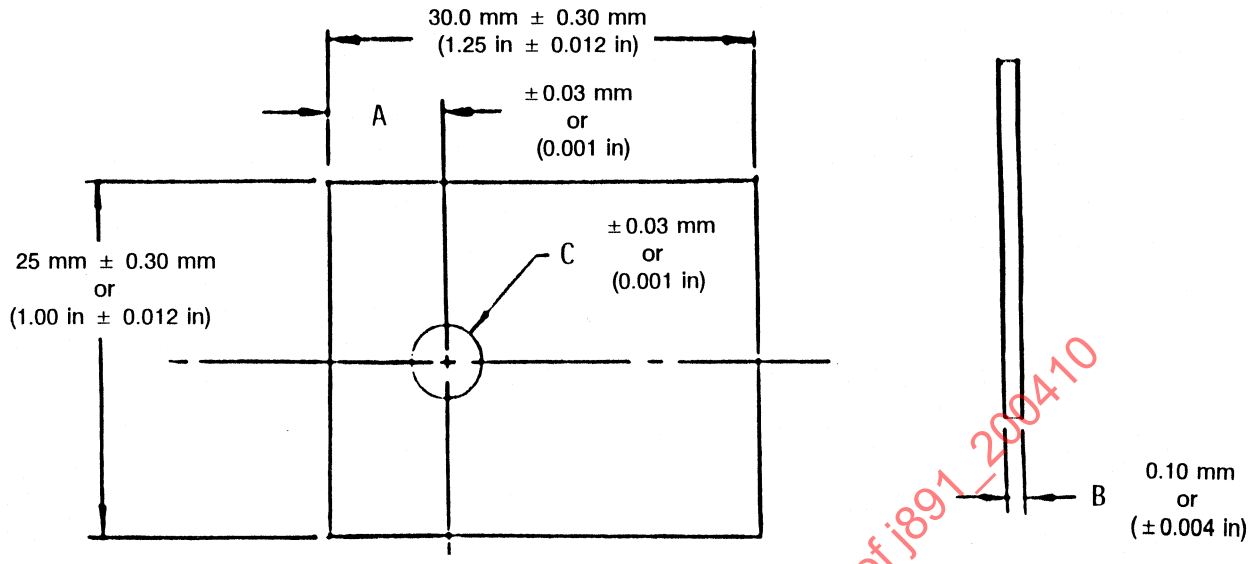

Machine and Tapping Screws Size mm	Machine and Tapping Screws Size in	A Edge to Center	B Plate Thickness	C Hole Dia mm	C Hole Dia in
3.5	#6	Equals Maximum	Equals Mean	6.35	0.250
4.2	#8	Edge Distance	of Panel Range	7.14	0.281
4.8	#10	Specified in	Specified in	7.92	0.312
6.3	#14-1/4	Assembly Data	Dimensional	9.52	0.375
		or on Part Drawing	Tables		

FIGURE 5—TEST PLATES

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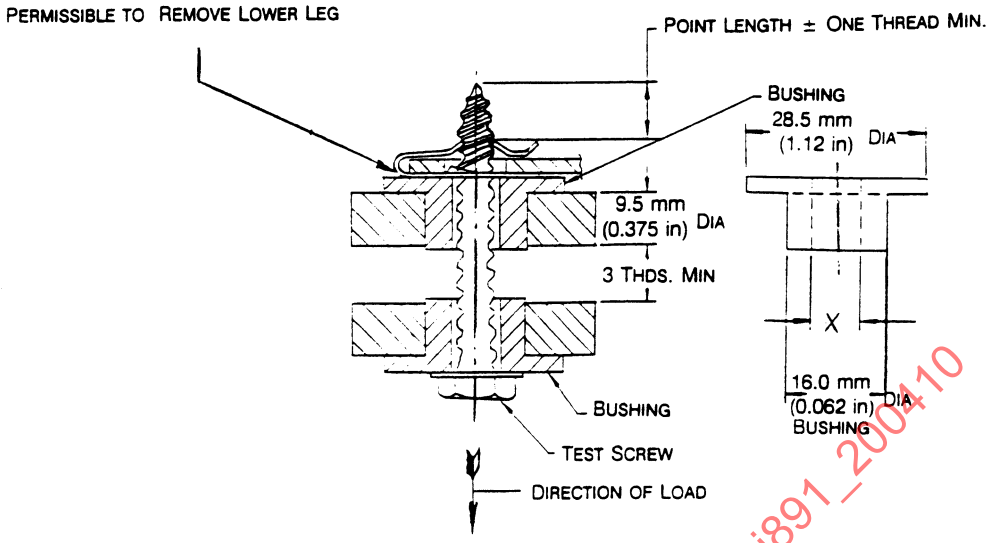

Tapping Screw Size mm	Machine and Tapping Screw Size in	X mm	X in
3.5	#6	4.0-4.5	0.157-0.177
4.2	#8	4.7-5.2	0.186-0.204
4.8	#10	5.3-5.8	0.208-0.228
6.3	1/4	6.8-7.3	0.268-0.287

FIGURE 6—TYPICAL TENSILE TEST FIXTURE

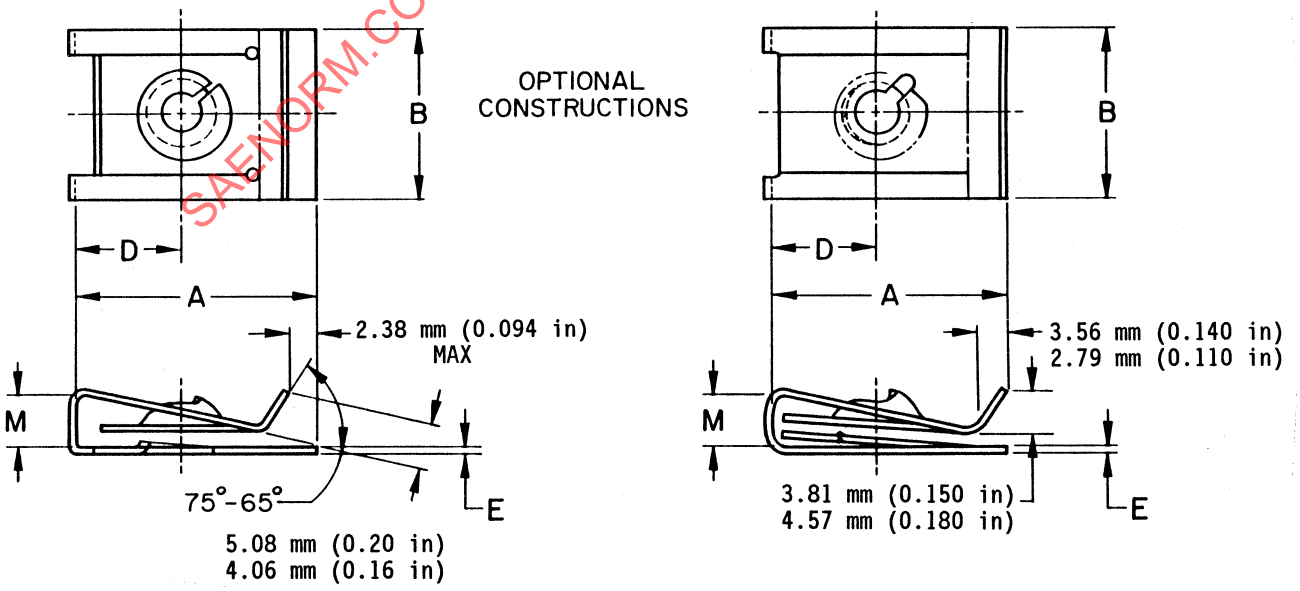

FIGURE 7—U SHAPE SHORT THREAD STYLE AND LONG THROAT STYLE

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TABLE 4—DIMENSIONS OF U SHAPE WIDE-RANGE DESIGN SPRING NUTS WITH OR WITHOUT RETAINING EXTRUSION (FIGURE 7)

Tapping Screw Size[1] mm	Tapping Screw Size[1] in	Panel Thickness Range mm	Panel Thickness Range in	Style	A Leg Length +0.38 −0.76 mm	A Leg Length +0.015 −0.030 in	B Nut Width ±0.38	B Nut Width ±0.015	D Throat Depth mm	D Throat Depth in	E Stock Thickness mm	E Stock Thickness in	M Width at Fold mm	M Width at Fold in
3.5	#6	0.64	0.025	Short	19.56	0.770	13.58	0.535	8.64	0.34	0.46	0.018	3.81	0.150
3.5	#6	0.64	0.025	Short	19.56	0.770	13.58	0.535	9.14	0.36	0.46	0.018	3.81	0.150
3.5	#6	3.66	0.150	Long	25.4	1.000	13.58	0.535	14.48	0.57	0.68	0.027	4.04	0.190
3.5	#6	3.66	0.150	Long	25.4	1.000	13.58	0.535	15.24	0.60	0.68	0.027	4.04	0.190
3.5	#6	3.18	0.125	Short	19.56	0.770	13.58	0.535	8.64	0.34	0.46	0.018	6.60	0.260
3.5	#6	3.18	0.125	Short	19.56	0.770	13.58	0.535	9.14	0.36	0.46	0.018	6.60	0.260
3.5	#6	6.35	0.250	Long	25.4	1.000	13.58	0.535	14.48	0.57	0.68	0.027	7.11	0.280
3.5	#6	6.35	0.250	Long	25.4	1.000	13.58	0.535	15.24	0.60	0.68	0.027	7.11	0.280
4.2	#8	0.64	0.025	Short	19.56	0.770	13.58	0.535	8.64	0.34	0.58	0.023	3.81	0.150
4.2	#8	0.64	0.025	Short	19.56	0.770	13.58	0.535	9.14	0.36	0.58	0.023	3.81	0.150
4.2	#8	3.66	0.150	Long	25.4	1.000	13.58	0.535	14.48	0.57	0.76	0.030	4.04	0.190
4.2	#8	3.66	0.150	Long	25.4	1.000	13.58	0.535	15.24	0.60	0.76	0.030	4.04	0.190
4.2	#8	3.18	0.125	Short	19.56	0.770	13.58	0.535	8.64	0.34	0.58	0.023	6.60	0.260
4.2	#8	3.18	0.125	Short	19.56	0.770	13.58	0.535	9.14	0.36	0.58	0.023	6.60	0.260
4.2	#8	6.35	0.250	Long	25.4	1.000	13.58	0.535	14.48	0.57	0.76	0.030	7.11	0.280
4.2	#8	6.35	0.250	Long	25.4	1.000	13.58	0.535	15.24	0.60	0.76	0.030	7.11	0.280
4.8	#10	0.64	0.025	Short	19.56	0.770	16.12	0.635	8.64	0.34	0.71	0.028	3.81	0.150
4.8	#10	0.64	0.025	Short	19.56	0.770	16.12	0.635	9.14	0.36	0.71	0.028	3.81	0.150
4.8	#10	3.66	0.150	Long	25.4	1.000	16.12	0.635	14.48	0.57	0.88	0.035	4.04	0.190
4.8	#10	3.66	0.150	Long	25.4	1.000	16.12	0.635	15.24	0.60	0.88	0.035	4.04	0.190
4.8	#10	3.18	0.125	Short	19.56	0.770	16.12	0.635	8.64	0.34	0.71	0.028	6.60	0.260
4.8	#10	3.18	0.125	Short	19.56	0.770	16.12	0.635	9.14	0.36	0.71	0.028	6.60	0.260
4.8	#10	6.35	0.250	Long	25.4	1.000	16.12	0.635	14.48	0.57	0.88	0.035	7.11	0.280
4.8	#10	6.35	0.250	Long	25.4	1.000	16.12	0.635	15.24	0.60	0.88	0.035	7.11	0.280
6.3	1/4	0.64	0.025	Short	19.56	0.770	16.12	0.635	8.64	0.34	0.84	0.033	3.81	0.150
6.3	1/4	0.64	0.025	Short	19.56	0.770	16.12	0.635	9.14	0.36	0.84	0.033	3.81	0.150
6.3	1/4	3.66	0.150	Long	25.4	1.000	16.12	0.635	14.48	0.57	0.99	0.039	4.04	0.190
6.3	1/4	3.66	0.150	Long	25.4	1.000	16.12	0.635	15.24	0.60	0.99	0.039	4.04	0.190
6.3	1/4	3.18	0.125	Short	19.56	0.770	16.12	0.635	8.64	0.34	0.84	0.033	6.60	0.260
6.3	1/4	3.18	0.125	Short	19.56	0.770	16.12	0.635	9.14	0.36	0.84	0.033	6.60	0.260
6.3	1/4	6.35	0.250	Long	25.4	1.000	16.12	0.635	14.48	0.57	0.99	0.039	7.11	0.280
6.3	1/4	6.35	0.250	Long	25.4	1.000	16.12	0.635	15.24	0.60	0.99	0.039	7.11	0.280

1. See Boss Detail under General Specifications for applicability of types and sizes. Type P spring nuts of similar proportions are also available in respective machine screw sizes 3.5 mm (#6), 4.2 mm (#8), 4.8 mm (#10), and 6.3 mm (1/4 in), and manufacturers should be consulted for dimensions.

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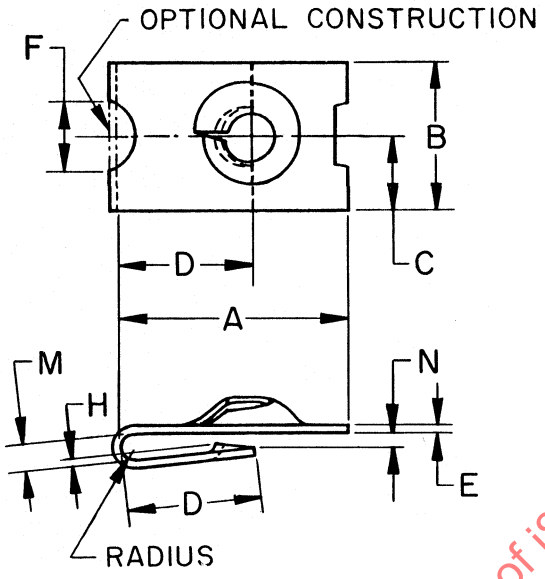

FIGURE 8—J SHAPE STYLE I—STANDARD, STYLE II—SHORT, AND STYLE III—LONG THROAT

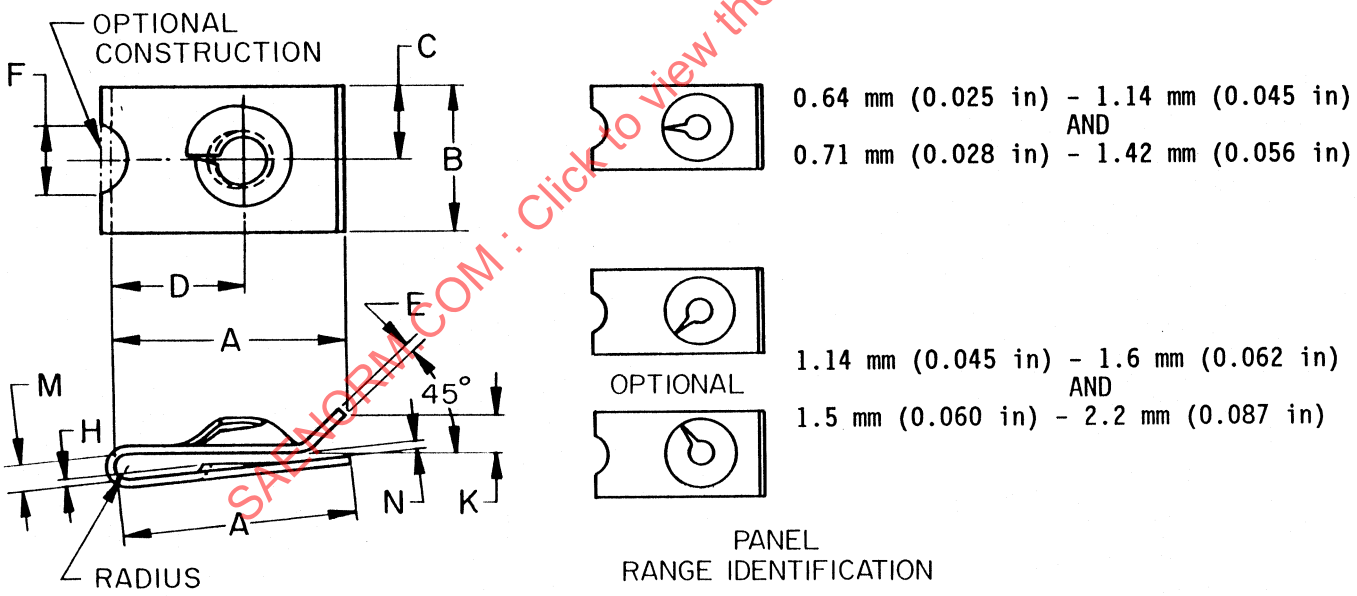

FIGURE 9—U SHAPE STYLE—STANDARD, STYLE II—SHORT, AND STYLE III—LONG THROAT

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TABLE 5—DIMENSIONS OF TYPE P, J SHAPE, AND U SHAPE REGULAR DESIGN SPRING NUTS (FIGURES 8 AND 9)

Tapping Screw Size[1] mm	Tapping Screw Size[1] in	Panel Thickness Range mm	Panel Thickness Range in	Style	A Leg Length J Shape mm ±0.5	A Leg Length J Shape in ±0.02	A Leg Length U Shape mm ±0.5	A Leg Length U Shape in ±0.02	B Nut Width mm	B Nut Width in	C Edge to Center mm	C Edge to Center in	D Throat Depth mm ±0.5	D Throat Depth in ±0.02
3.5	#6	0.64–1.14	0.025–0.045	I	13.5	0.53	15.0	0.59	8.6	0.34	4.3	0.17	8.4	0.33
3.5	#6	1.14–1.6	0.045–0.062	I	13.5	0.53	15.0	0.59	8.6	0.34	4.3	0.17	8.4	0.33
3.5	#6	0.64–1.14	0.025–0.045	II	11.9	0.47	13.5	0.53	8.6	0.34	4.3	0.17	6.9	0.27
3.5	#6	1.14–1.6	0.045–0.062	II	11.9	0.47	13.5	0.53	8.6	0.34	4.3	0.17	6.9	0.27
3.5	#6	0.64–1.14	0.025–0.045	III	17.8	0.70	19.3	0.76	8.6	0.34	4.3	0.17	13.2	0.52
3.5	#6	1.14–1.6	0.045–0.062	III	17.8	0.70	19.3	0.76	8.6	0.34	4.3	0.17	13.2	0.52
4.2	#8	0.64–1.14	0.025–0.045	I	15.5	0.61	17.0	0.67	10.2	0.40	5.1	0.20	9.9	0.39
4.2	#8	1.14–1.6	0.045–0.062	I	15.5	0.61	17.0	0.67	10.2	0.40	5.1	0.20	9.9	0.39
4.2	#8	0.64–1.14	0.025–0.045	II	13.0	0.51	14.5	0.57	10.2	0.40	5.1	0.20	7.1	0.26
4.2	#8	1.14–1.6	0.045–0.062	II	13.0	0.51	14.5	0.57	10.2	0.40	5.1	0.20	7.1	0.26
4.2	#8	0.64–1.14	0.025–0.045	III	20.6	0.81	22.4	0.88	10.2	0.40	5.1	0.20	14.7	0.58
4.2	#8	1.14–1.6	0.045–0.062	III	20.6	0.81	22.4	0.88	10.2	0.40	5.1	0.20	14.7	0.58
4.8	#10	0.64–1.14	0.025–0.045	I	16.3	0.64	17.8	0.70	11.4	0.50	5.7	0.25	9.9	0.39
4.8	#10	1.14–1.6	0.045–0.062	I	16.3	0.64	17.8	0.70	11.4	0.50	5.7	0.25	9.9	0.39
4.8	#10	0.64–1.14	0.025–0.045	II	15.5	0.61	16.3	0.64	11.4	0.50	5.7	0.25	8.4	0.33
4.8	#10	1.14–1.6	0.045–0.062	II	15.5	0.61	16.3	0.64	11.4	0.50	5.7	0.25	8.4	0.33
4.8	#10	0.64–1.14	0.025–0.045	III	21.1	0.83	22.6	0.87	11.4	0.50	5.7	0.25	14.7	0.58
4.8	#10	1.14–1.6	0.045–0.062	III	21.1	0.83	22.6	0.87	11.4	0.50	5.7	0.25	14.7	0.58
6.3	1/4	0.71–1.42	0.028–0.056	I	20.3	0.80	21.8	0.86	14.2	0.56	7.1	0.28	11.9	0.47
6.3	1/4	1.5–2.2	0.06–0.087	I	20.3	0.80	21.8	0.86	14.2	0.56	7.1	0.28	11.9	0.47
6.3	1/4	0.71–1.42	0.028–0.056	III	27.7	1.09	28.4	1.16	14.2	0.56	7.1	0.28	18.3	0.72
6.3	1/4	1.5–2.2	0.06–0.087	III	27.7	1.09	28.4	1.16	14.2	0.56	7.1	0.28	18.3	0.72

1. See Boss Detail under General Specifications for applicability of types and sizes. Type P spring nut of similar proportions are also available in respective machine screw sizes 3.5 mm (#6), 4.2 mm (#8), 4.8 mm (#10), and 6.3 mm (1/4 in), and manufacturers should be consulted for dimensions.

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TABLE 5—DIMENSIONS OF TYPE P, J SHAPE, AND U SHAPE REGULAR DESIGN SPRING NUTS (FIGURES 8 AND 9) (CONTINUED)

Tapping Screw Size[1] mm	Tapping Screw Size[1] in	Style	E Stock Thickness mm Min	E Stock Thickness in Min	E Stock Thickness mm Max	E Stock Thickness in Max	F Hole Dia[2] mm	F Hole Dia[2] in	H Height mm +0.25 −0.00	H Height in +0.01 −0.00	K Tang Height mm ±0.38	K Tang Height in ±0.015	M Width at Fold mm	M Width at Fold in	N Gap Opening Min J Shape mm	N Gap Opening Min J Shape in	N Gap Opening Max U Shape mm	N Gap Opening Max U Shape in
3.5	#6	I	0.47	0.019	0.54	0.021	5.5	0.22	0.64	0.025	2.0	0.08	1.5	0.06	0.50	0.02	0.50	0.02
3.5	#6	I	0.47	0.019	0.54	0.021	5.5	0.22	0.64	0.025	2.0	0.08	2.0	0.08	1.0	0.04	1.0	0.04
3.5	#6	II	0.47	0.019	0.54	0.021	5.5	0.22	0.64	0.025	2.0	0.08	1.5	0.06	0.50	0.02	0.50	0.02
3.5	#6	II	0.47	0.019	0.54	0.021	5.5	0.22	0.64	0.025	2.0	0.08	2.0	0.08	1.0	0.04	1.0	0.04
3.5	#6	III	0.47	0.019	0.54	0.021	5.5	0.22	0.64	0.025	2.0	0.08	1.5	0.06	0.50	0.02	0.50	0.02
3.5	#6	III	0.47	0.019	0.54	0.021	5.5	0.22	0.64	0.025	2.0	0.08	2.0	0.08	1.0	0.04	1.0	0.04
4.2	#8	I	0.60	0.024	0.67	0.026	5.5	0.22	0.64	0.025	2.3	0.09	1.5	0.06	0.50	0.02	0.50	0.02
4.2	#8	I	0.60	0.024	0.67	0.026	5.5	0.22	0.64	0.025	2.3	0.09	2.0	0.08	1.0	0.04	1.0	0.04
4.2	#8	II	0.60	0.024	0.67	0.026	5.5	0.22	0.64	0.025	2.3	0.09	1.5	0.06	0.50	0.02	0.50	0.02
4.2	#8	II	0.60	0.024	0.67	0.026	5.5	0.22	0.64	0.025	2.3	0.09	2.0	0.08	1.0	0.04	1.0	0.04
4.2	#8	III	0.60	0.024	0.67	0.026	5.5	0.22	0.64	0.025	2.3	0.09	1.5	0.06	0.50	0.02	0.50	0.02
4.2	#8	III	0.60	0.024	0.67	0.026	5.5	0.22	0.64	0.025	2.3	0.09	2.0	0.08	1.0	0.04	1.0	0.04
4.8	#10	I	0.70	0.028	0.82	0.032	5.5	0.22	0.64	0.025	2.3	0.09	1.5	0.06	0.50	0.02	0.50	0.02
4.8	#10	I	0.70	0.028	0.82	0.032	5.5	0.22	0.64	0.025	2.3	0.09	2.0	0.08	1.0	0.04	1.0	0.04
4.8	#10	II	0.70	0.028	0.82	0.032	5.5	0.22	0.64	0.025	2.3	0.09	1.5	0.06	0.50	0.02	0.50	0.02
4.8	#10	II	0.70	0.028	0.82	0.032	5.5	0.22	0.64	0.025	2.3	0.09	2.0	0.08	1.0	0.04	1.0	0.04
4.8	#10	III	0.70	0.028	0.82	0.032	5.5	0.22	0.64	0.025	2.3	0.09	1.5	0.06	0.50	0.02	0.50	0.02
4.8	#10	III	0.70	0.028	0.82	0.032	5.5	0.22	0.64	0.025	2.3	0.09	2.0	0.08	1.0	0.04	1.0	0.04
6.3	1/4	I	0.70	0.028	0.82	0.032	5.5	0.22	0.64	0.025	2.8	0.11	2.0	0.08	1.0	0.04	1.0	0.04
6.3	1/4	I	0.70	0.028	0.82	0.032	5.5	0.22	0.64	0.025	2.8	0.11	2.5	0.10	1.2	0.05	1.2	0.05
6.3	1/4	III	0.70	0.028	0.82	0.032	5.5	0.22	0.64	0.025	2.8	0.11	2.0	0.08	1.0	0.04	1.0	0.04
6.3	1/4	III	0.70	0.028	0.82	0.032	5.5	0.22	0.64	0.025	2.8	0.11	2.5	0.10	1.2	0.05	1.2	0.05

1. See Boss Detail under General Specifications for applicability of types and sizes. Type P spring nut of similar proportions are also available in respective machine screw sizes 3.5 mm (#6), 4.2 mm (#8), 4.8 mm (#10), and 6.3 mm (1/4 in), and manufacturers should be consulted for dimensions.
2. Diameter of hole punched in blank before forming.

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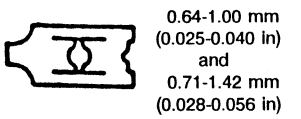

PANEL RANGE IDENTIFICATION FOR J SHAPE NUTS

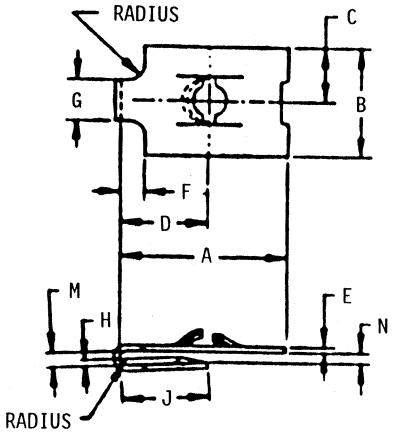

FIGURE 10A
STYLE I—STANDARD THROAT
AND STYLE III—LONG THROAT

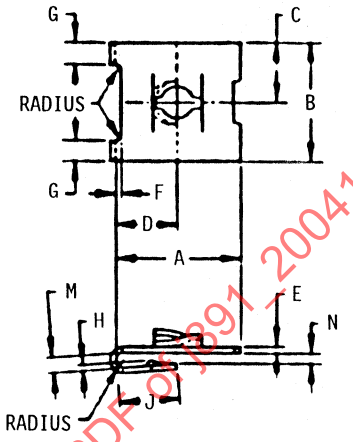

FIGURE 10B
STYLE II—SHORT THROAT

FIGURE 10—J SHAPE

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PANEL RANGE IDENTIFICATION FOR U SHAPE NUTS

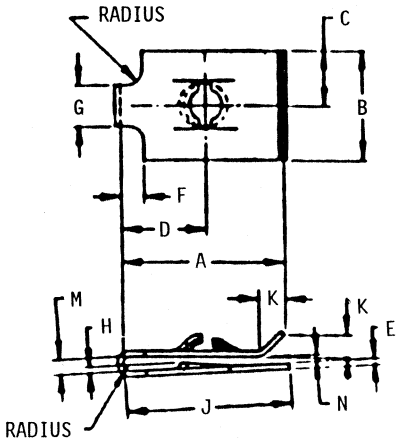

FIGURE 11A
STYLE I—STANDARD THROAT
AND STYLE III—LONG THROAT

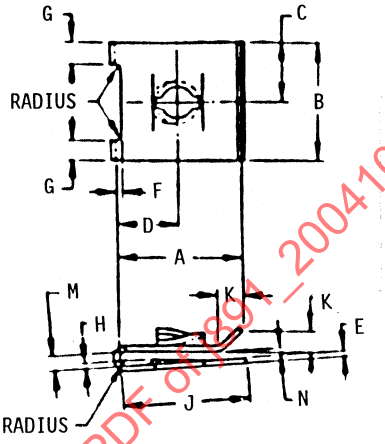

FIGURE 11B
STYLE II—SHORT THROAT

FIGURE 11—U SHAPE

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TABLE 6—DIMENSIONS OF TYPE T, J SHAPE, AND U SHAPE REGULAR DESIGN SPRING NUTS (FIGURES 10A TO 10B)

Tapping Screw Size[1] mm	Tapping Screw Size[1] in	Panel Thick-ness range mm	Panel Thick-ness range in	Style	A Leg Length mm ±0.5	A Leg Length in ±0.02	B Nut Width mm	B Nut Width in	C Edge to Center mm	C Edge to Center in	D Throat Depth mm ±0.5	D Throat Depth in ±0.02	E Stock Thick-ness mm Min	E Stock Thick-ness mm Max	E Stock Thick-ness in Min	E Stock Thick-ness in Max
3.5	#6	0.64–1.14	0.025–0.045	I	16.3	0.64	7.9	0.312	4.0	0.156	8.6	0.34	0.027	0.023	0.69	0.58
3.5	#6	1.14–1.6	0.045–0.062	I	16.3	0.64	7.9	0.312	4.0	0.156	8.6	0.34	0.027	0.023	0.69	0.58
3.5	#6	0.64–1.14	0.025–0.045	II	12.2	0.48	12.7	0.50	6.4	0.25	6.7	0.26	0.027	0.023	0.69	0.58
3.5	#6	1.14–1.6	0.045–0.062	II	12.2	0.48	12.7	0.50	6.4	0.25	6.7	0.26	0.027	0.023	0.69	0.58
3.5	#6	0.64–1.14	0.025–0.045	III	20.1	0.81	7.9	0.312	4.0	0.156	13.0	0.51	0.027	0.023	0.69	0.58
3.5	#6	1.14–1.6	0.045–0.062	III	20.1	0.81	7.9	0.312	4.0	0.156	13.0	0.51	0.027	0.023	0.69	0.58
4.2	#8	0.64–1.14	0.025–0.045	I	17.3	0.68	10.3	0.406	5.2	0.203	9.4	0.37	0.03	0.026	0.76	0.66
4.2	#8	1.14–1.6	0.045–0.062	I	17.3	0.68	10.3	0.406	5.2	0.203	9.4	0.37	0.03	0.026	0.76	0.66
4.2	#8	0.64–1.14	0.025–0.045	II	13.2	0.52	12.7	0.50	6.4	0.25	6.6	0.26	0.03	0.026	0.76	0.66
4.2	#8	1.14–1.6	0.045–0.062	II	13.2	0.52	12.7	0.50	6.4	0.25	6.6	0.26	0.03	0.026	0.76	0.66
4.2	#8	0.64–1.14	0.025–0.045	III	21.8	0.86	10.3	0.406	5.2	0.203	14.0	0.55	0.03	0.026	0.76	0.66
4.2	#8	1.14–1.6	0.045–0.062	III	21.8	0.86	10.3	0.406	5.2	0.203	14.0	0.55	0.03	0.026	0.76	0.66
4.8	#10	0.64–1.14	0.025–0.045	I	19.3	0.76	12.7	0.50	6.4	0.25	10.7	0.42	0.033	0.029	0.84	0.74
4.8	#10	1.14–1.6	0.045–0.062	I	19.3	0.76	12.7	0.50	6.4	0.25	10.7	0.42	0.033	0.029	0.84	0.74
4.8	#10	0.64–1.14	0.025–0.045	II	14.5	0.57	15.9	0.625	7.9	0.312	7.8	0.31	0.033	0.029	0.84	0.74
4.8	#10	1.14–1.6	0.045–0.062	II	14.5	0.57	15.9	0.625	7.9	0.312	7.8	0.31	0.033	0.029	0.84	0.74
4.8	#10	0.64–1.14	0.025–0.045	III	24.4	0.96	12.7	0.50	6.4	0.25	15.5	0.61	0.033	0.029	0.84	0.74
4.8	#10	1.14–1.6	0.045–0.062	III	24.4	0.96	12.7	0.50	6.4	0.25	15.5	0.61	0.033	0.029	0.84	0.74
6.3	1/4	0.71–1.5	0.028–0.06	I	23.4	0.92	14.3	0.562	7.1	0.281	12.6	0.50	0.042	0.035	1.07	0.89
6.3	1/4	1.5–2.2	0.06–0.087	I	23.4	0.92	14.3	0.562	7.1	0.281	12.6	0.50	0.042	0.035	1.07	0.89
6.3	1/4	0.7–1.5	0.028–0.06	III	29.5	1.16	14.3	0.562	7.1	0.281	18.9	0.75	0.039	0.035	0.99	0.89
6.3	1/4	1.5–2.2	0.06–0.087	III	29.5	1.16	14.3	0.562	7.1	0.281	18.9	0.75	0.039	0.035	0.99	0.89

1. See Boss Detail under General Specifications for applicability of types and sizes. Type T spring nuts of similar proportions are also available in respective machine screw sizes 3.5 mm (#6), 4.2 mm (#8), 4.8 mm (#10), and 6.3 mm (1/4 in), and manufacturers should be consulted for dimensions.

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TABLE 6—DIMENSIONS OF TYPE T, J SHAPE, AND U SHAPE REGULAR DESIGN SPRING NUTS (FIGURES 10A TO 10B) (CONTINUED)

Tapping Screw Size[1] mm	Tapping Screw Size[1] in	Style	F Notch Depth mm ±0.5	F Notch Depth in ±002	G Width mm ±0.5	G Width in ±0.02	H Height mm ±0.13	H Height in ±0.005	J Leg Length mm ±0.5	J Leg Length in ±0.02	K Tang mm ±0.5	K Tang in ±0.02	N Gap Opening J Shape mm Min	N Gap Opening J Shape in Min	N Gap Opening U Shape mm Max	N Gap Opening U Shape in Max
3.5	#6	I	2.0	0.08	2.8	0.11	0.5	0.02	8.9	0.35	2.0	0.08	0.5	0.02	0.5	0.02
3.5	#6	I	2.0	0.08	2.8	0.11	0.5	0.02	8.9	0.35	2.0	0.08	1.0	0.04	1.0	0.04
3.5	#6	II	0.5	0.02	2.3	0.09	0.5	0.02	6.6	0.26	2.0	0.08	0.5	0.02	0.5	0.02
3.5	#6	II	0.5	0.02	2.3	0.09	0.5	0.02	6.6	0.26	2.0	0.08	1.0	0.04	1.0	0.04
3.5	#6	III	6.2	0.24	3.6	0.14	0.5	0.02	13.0	0.51	2.0	0.08	0.5	0.02	0.5	0.02
3.5	#6	III	6.2	0.24	3.6	0.14	0.5	0.02	13.0	0.51	2.0	0.08	1.0	0.04	1.0	0.04
4.2	#8	I	2.3	0.09	4.6	0.18	0.64	0.025	9.4	0.37	2.3	0.09	0.5	0.02	0.5	0.02
4.2	#8	I	2.3	0.09	4.6	0.18	0.64	0.025	9.4	0.37	2.3	0.09	1.0	0.04	1.0	0.04
4.2	#8	II	0.5	0.20	2.3	0.09	0.64	0.025	6.9	0.27	2.3	0.09	0.5	0.02	0.5	0.02
4.2	#8	II	0.5	0.20	2.3	0.09	0.64	0.025	6.9	0.27	2.3	0.09	1.0	0.04	1.0	0.04
4.2	#8	III	6.9	0.27	4.6	0.18	0.64	0.025	14.2	0.56	2.3	0.09	0.5	0.02	0.5	0.02
4.2	#8	III	6.9	0.27	4.6	0.18	0.64	0.025	14.2	0.56	2.3	0.09	1.0	0.04	1.0	0.04
4.8	#10	I	2.8	0.11	3.1	0.12	0.64	0.025	10.7	0.42	2.3	0.09	0.5	0.02	0.5	0.02
4.8	#10	I	2.8	0.11	3.1	0.12	0.64	0.025	10.7	0.42	2.3	0.09	1.0	0.04	1.0	0.04
4.8	#10	II	0.5	0.02	3.3	0.13	0.64	0.025	7.9	0.31	2.3	0.09	0.5	0.02	0.5	0.02
4.8	#10	II	0.5	0.02	3.3	0.13	0.64	0.025	7.9	0.31	2.3	0.09	1.0	0.04	1.0	0.04
4.8	#10	III	6.4	0.25	4.3	0.17	0.64	0.025	15.5	0.61	2.3	0.09	0.5	0.02	0.5	0.02
4.8	#10	III	6.4	0.25	4.3	0.17	0.64	0.025	15.5	0.61	2.3	0.09	1.0	0.04	1.0	0.04
6.3	1/4	I	1.5	0.06	4.6	0.18	0.76	0.03	12.5	0.49	2.8	0.11	1.0	0.04	1.0	0.04
6.3	1/4	I	1.5	0.06	4.6	0.18	0.76	0.03	12.5	0.49	2.8	0.11	1.2	0.05	1.2	0.05
6.3	1/4	III	7.9	0.31	6.4	0.25	0.76	0.03	19.0	0.75	2.8	0.11	1.0	0.04	1.0	0.04
6.3	1/4	III	7.9	0.31	6.4	0.25	0.76	0.03	19.0	0.75	2.8	0.11	1.2	0.05	1.2	0.05

1. See Boss Detail under General Specifications for applicability of types and sizes. Type T spring nuts of similar proportions are also available in respective machine screw 3.5 mm (#6), 4.2 mm (#8), 4.8 mm (#10), and 6.3 mm (1/4 in), and manufacturers should be consulted for dimensions.

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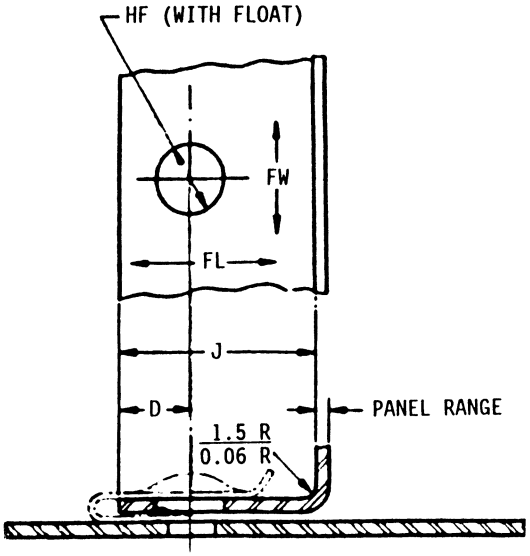

FIGURE 12A

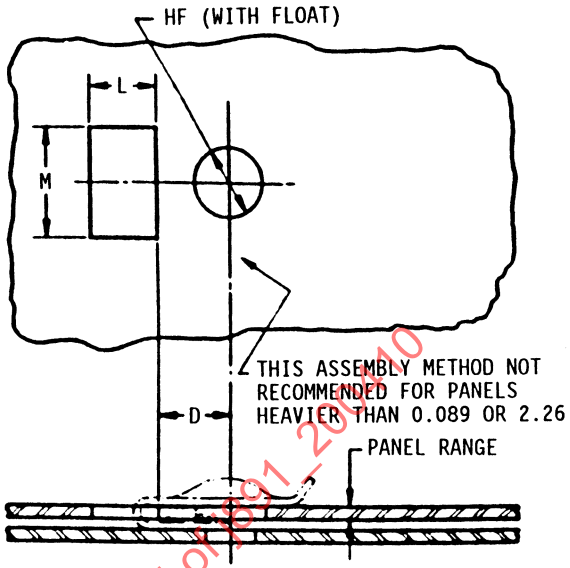

FIGURE 12B

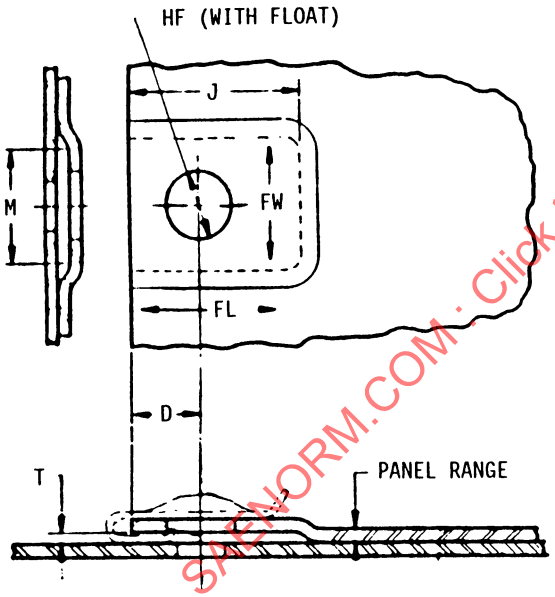

FIGURE 12C

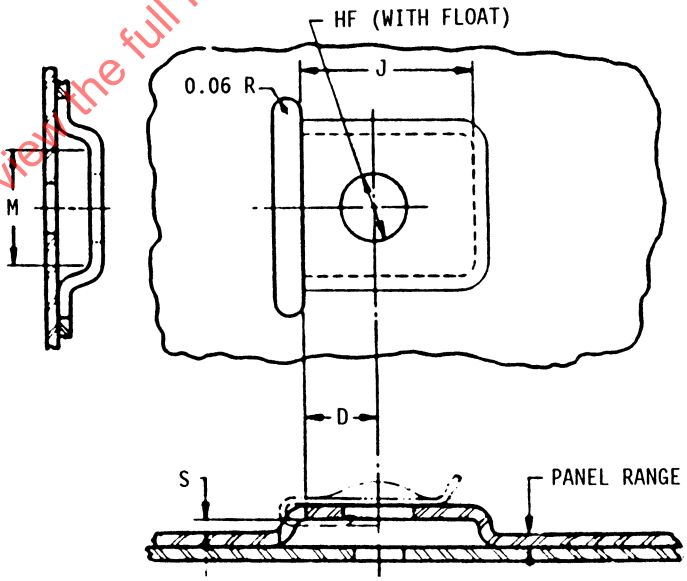

FIGURE 12D

FIGURE 12—RECOMMENDED ASSEMBLY FOR WIDE-RANGE DESIGN SPRING NUTS

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TABLE 7—RECOMMENDED ASSEMBLY DATA FOR WIDE-RANGE DESIGN SPRING NUTS(1) (FIGURES 12A TO 12D)

Tapping Screw Size mm	Tapping Screw Size in	Style	D mm ±0.5	D in ±0.02	HF Dia in ±0.13	HF Dia in ±0.005	J mm	J in	L Min mm	L Min in
3.5	#6	Short	6.4	0.25	6.4	0.25	19.8	0.78	6.4	0.25
3.5	#6	Long	12.2	0.48	6.4	0.25	25.6	1.01	6.4	0.25
4.2	#8	Short	6.4	0.25	7.1	0.28	19.8	0.78	8.6	0.34
4.2	#8	Long	12.2	0.48	7.1	0.28	25.6	1.01	8.6	0.34
4.8	#10	Short	6.4	0.25	7.9	0.31	19.8	0.78	10.9	0.43
4.8	#10	Long	12.2	0.48	7.9	0.31	25.6	1.01	10.9	0.43
6.3	1/4	Short	6.4	0.25	9.6	0.38	19.8	0.78	12.7	0.50
6.3	1/4	Long	12.2	0.48	9.6	0.38	25.6	1.01	12.7	0.50

1. These data are intended for design guidance only and are not to be considered a mandatory part of the document. The dimensions specified have been selected to accommodate the optional constructions of wide-range design spring nuts and both Type P and Type T regular design spring nuts, respectively, covered by the document. Tolerances on the nuts and tolerances entailed in the manufacturing processes used to emboss and punch the various assembly features were not considered in the derivation of these dimensions.

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TABLE 7—RECOMMENDED ASSEMBLY DATA FOR WIDE-RANGE DESIGN SPRING NUTS (FIGURES 12A TO 12D) (CONTINUED)(1)

Tapping Screw Size mm	Tapping Screw Size in	Style	M Flat mm	M Flat in	S Min mm	S Min in	T Min mm	T Min in
3.5	#6	Short	16.0	0.63	1.6	0.65	0.6	0.027
3.5	#6	Long	16.0	0.63	1.6	0.65	0.6	0.027
4.2	#8	Short	16.0	0.63	1.6	0.65	0.8	0.03
4.2	#8	Long	16.0	0.63	1.6	0.65	0.8	0.03
4.8	#10	Short	18.5	0.73	1.6	0.65	0.9	0.035
4.8	#10	Long	18.5	0.73	1.6	0.65	0.9	0.035
6.3	1/4	Short	18.5	0.73	1.6	0.65	1.0	0.04
6.3	1/4	Long	18.5	0.73	1.6	0.65	1.0	0.04

1. These data are intended for design guidance only and are not to be considered a mandatory part of the document. The dimensions specified have been selected to accommodate the optional constructions of wide-range design spring nuts and both Type P and Type T regular design spring nuts, respectively, covered by the document. Tolerances on the nuts and tolerances entailed in the manufacturing processes used to emboss and punch the various assembly features were not considered in the derivation of these dimensions.

TABLE 8—RECOMMENDED ASSEMBLY DATA FOR TYPES P AND T, J SHAPE, AND U SHAPE REGULAR DESIGN SPRING NUTS[1] (FIGURES 12A TO 12D)

Tapping Size mm	Tapping Size in	Style	D mm ±0.5	D in ±0.02	HF Dia mm ±0.13	HF Dia in ±0.005	J mm	J in	L Min mm	L Min in
3.5	#6	I	6.4	0.25	6.4	0.25	17.5	0.69	5.6	0.22
3.5	#6	II	4.3	0.17	6.4	0.25	13.4	0.53	5.6	0.22
3.5	#6	III	10.6	0.42	6.4	0.25	22.4	0.88	5.6	0.22
4.2	#8	I	7.1	0.23	7.1	0.28	18.5	0.73	6.4	0.25
4.2	#8	II	4.6	0.18	7.1	0.28	14.9	0.59	6.4	0.25
4.2	#8	III	11.6	0.46	7.1	0.28	23.4	0.92	6.4	0.25
4.8	#10	I	7.6	0.30	7.9	0.31	20.6	0.81	7.9	0.31
4.8	#10	II	5.1	0.20	7.9	0.31	15.7	0.62	7.9	0.31
4.8	#10	III	12.2	0.48	7.9	0.31	25.4	1.00	7.9	0.31
6.3	#14 or 1/4	I	0.6	0.38	9.6	0.38	23.8	0.94	11.2	0.44
6.3	#14 or 1/4	III	15.7	0.62	9.6	0.38	29.7	1.17	11.2	0.44

1. These data are intended for design guidance only and are not to be considered a mandatory part of the document. The dimensions specified have been selected to accommodate the optional constructions of wide-range design spring nuts and both Type P and Type T regular design spring nuts, respectively, covered by the document. Tolerances on the nuts and tolerances entailed in the manufacturing processes used to emboss and punch the various assembly features were not considered in the derivation of these dimensions.

TABLE 8—RECOMMENDED ASSEMBLY DATA FOR TYPES P AND T, J SHAPE, AND U SHAPE REGULAR DESIGN SPRING NUTS (FIGURES 12A TO 12D) (CONTINUED)[1]

Tapping Size mm	Tapping Size in	Style	M Flat mm	M Flat in	S mm Min	S in Min	T mm Min	T in Min
3.5	#6	I	11.8	0.44	1.5	0.06	0.8	0.03
3.5	#6	II	14.9	0.59	1.5	0.06	0.8	0.03
3.5	#6	III	11.8	0.44	1.5	0.06	0.8	0.03
4.2	#8	I	12.7	0.50	1.5	0.06	0.8	0.033
4.2	#8	II	14.9	0.59	1.6	0.065	0.8	0.033
4.2	#8	III	12.7	0.50	1.6	0.065	0.8	0.033
4.8	#10	I	14.9	0.59	1.6	0.065	0.9	0.036
4.8	#10	II	18.2	0.72	1.6	0.065	0.9	0.036
4.8	#10	III	14.9	0.59	1.8	0.07	0.9	0.036
6.3	#14 or 1/4	I	16.8	0.66	2.2	0.085	1.1	0.042
6.3	#14 or 1/4	III	16.8	0.66	2.2	0.085	1.1	0.042

1. These data are intended for design guidance only and are not to be considered a mandatory part of the document. The dimensions specified have been selected to accommodate the optional constructions of wide-range design spring nuts and both Type P and Type T regular design spring nuts, respectively, covered by the document. Tolerances on the nuts and tolerances entailed in the manufacturing processes used to emboss and punch the various assembly features were not considered in the derivation of these dimensions.

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