



Standard Parts

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SPRING NUTS

Multi-Thread Wide Range "U" Nuts

GENERAL SPECIFICATIONS

GENERAL: The metric wide range U-shape multi-thread spring nuts covered in this standard are intended for applications where it is desired to use spring nuts in conjunction with bolts, machine screws or screw and washer assemblies. Nuts conforming to this standard are suitable for use with mating fasteners conforming to 9.8 or lower property classes.

PREFERRED PARTS POLICY: Preferred parts are so designated to reduce variety of parts and assure maximum availability, interchangeability and cost savings.

Nominal sizes: All sizes listed
Throat style: Short
Finish: Phosphate coated (PHC)

IDENTIFICATION: Spring nuts shall be permanently and legibly marked with manufacturer's identification on the upper surface of the top leg adjacent to the fold. The marking shall have a minimum height of 1.6 mm.

CONTOURS: Contours of features such as upper leg in area of extruded barrel, the barrel, retaining extrusion, cutoff, and carrying tab shall be optional with the manufacturer, provided the specified dimensions are maintained and nuts will meet all of the performance requirements.

EXTRUDED BARREL: The axis of the extruded barrel shall be located centrally on the width of the upper leg within a tolerance of plus or minus 0.25 mm.

FINISHES: Nuts shall be supplied in accordance with the Case Materials Specification:

Zinc on Steel (ZN) - MS 201
Phosphate Coating (PHC) - MS 91
Rust Proof (RUS) - Phosphate coating with two subsequent coats of zinc chromate primer paint (or paint standard with manufacturer) to meet 72 hour salt spray requirements
(AL) - Phosphate coating with two subsequent coats of aluminum paint to meet 72 hour salt spray requirements

THREADS: Threads in the extruded barrel shall be produced only by the roll forming process and shall conform to ISO Class 6H internal metric screw threads. However, the minor diameter may exceed the specified maximum limit providing the nut will meet the proof strength requirements.

MATERIAL: Nuts shall be fabricated from 1050-1065 steel per Case Materials Specification and heat treated to meet the performance requirements of this standard. Nuts shall have a hardness of Rockwell C45 to 50. (For stock thicknesses less than 1 mm, it is recommended the hardness be checked using the appropriate superficial Rockwell scale and converted to Rockwell C.)

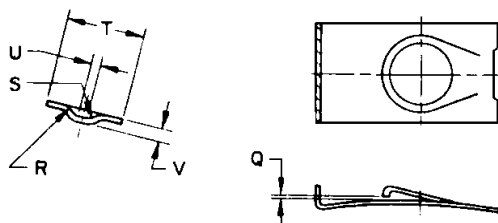
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RETAINING EXTRUSION: The nut retaining extrusion in the bottom leg shall conform to the dimensions shown in the illustration and Table 1 below, and otherwise be such as to enable the nuts to meet the performance requirements. The critical edges of the extrusion shall be free from burrs which could cause interference as spring nut is assembled onto panel. The size, configuration and location of the hole through the retaining extrusion shall be such that a bolt or screw of respective size when installed normal to the plane of the lower leg into the nut, assembled on a test plate as described in the performance requirements below, will not interfere with the sides of the hole.



Retaining Extrusion Detail

TABLE 1
Dimensions of Retaining Extrusion (mm)

Nominal Nut Size	Q	R		S	T	U		V
	Cap Opening	Radius		Radius	Width	Flat Width		Bend Depth
	max.	max.	min.	±0.5	±0.2	max.	min.	±0.5
M4	0.5	2	1	0.8	7	1	0	2
M5	0.5	2	1	0.8	7.8	1	0	2
M6	0.7	2	1	0.8	9.4	1	0	2.3
M8	0.7	2.8	1.8	1	10.8	1	0	2.5
M10	1.4	3.6	2.5	1.3	14.2	1.3	0.3	3.3

RELIEF OF EMBRITTLEMENT: Plated or coated steel nuts which are subject to hydrogen embrittlement shall be suitably treated subsequent to the plating or coating operation to relieve such embrittlement.

PERFORMANCE REQUIREMENTS:

Preassembly and Retention Test: Spring nuts shall preassemble onto test panels of thicknesses equal to the two extremes of the panel ranges specified, having minimum diameter holes located at the maximum edge distance. The retaining extrusion shall snap into the hole and, when nuts are so assembled, a pull force of 13N minimum, applied parallel to the axis of nut, shall be required to remove the nut from the panel.

Proof Load Test: The spring nut shall be prepared for testing by removing the lower leg and bend portion at rear. The actual barrel height "K" shall be measured and recorded. The upper portion of nut along with special bushings shall be assembled onto the test bolt, as depicted in the illustration on the following page, then installed into a suitable tension test fixture. The bushings shall be made from SAE 1095 steel, hardened and tempered to a hardness of Rockwell C59 to 62, and shall conform to the dimensions shown in Table 2. The test bolt shall have threads conforming to Class 6g tolerances for external metric screw threads and shall be of 9.8 steel or higher property class.

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PERFORMANCE REQUIREMENTS: (Continued) Following application and removal of the respective tension load specified in Table 2, the threaded barrel portion of nut shall exhibit no indication of thread stripping or rupture and the bolt shall be capable of being removed from the nut barrel with the fingers. The height of barrel shall be remeasured and any reduction reflecting permanent set of the base of barrel shall not exceed the maximum limitation given in Table 2.

The nut shall be reinstalled on the test bolt and subjected to the respective proof load specified in Table 2, then released. There shall be no evidence of cracks in the barrel or upper leg of nut. The threaded portion of barrel shall withstand this proof load without thread stripping, excessive plastic deformation or rupture, and the bolt shall be removable from nut with the fingers. (Occasionally, it may be necessary to manually wrench the bolt to initiate motion, and such practice shall be considered permissible only if the bolt can be removed with fingers following an initial loosening of not more than one-half turn of the bolt.) Additional distortion occurring in the upper leg and the base of barrel shall be permissible.

Typical Proof Load Test Fixture

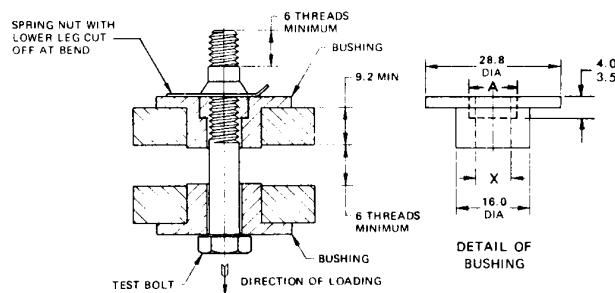


TABLE 2

Dimensions in millimetres.

Nominal Size	Test Tension Load kN	Allowable Permanent Set	Test Proof Load kN	A		X	
				Test Bushing Counterbore Diameter		Test Bushing Hole Diameter	
		max.		min.	max.	min.	max.
M4	5.70	0.25	7.90	8.0	8.3	5.0	5.3
M5	9.30	0.35	12.78	8.7	9.1	6.0	6.3
M6	13.06	0.45	18.09	9.9	10.2	7.0	7.3
M8	23.80	0.50	32.94	11.5	11.8	8.5	9.0
M10	37.70	0.70	52.20	14.7	15.0	10.5	11.0

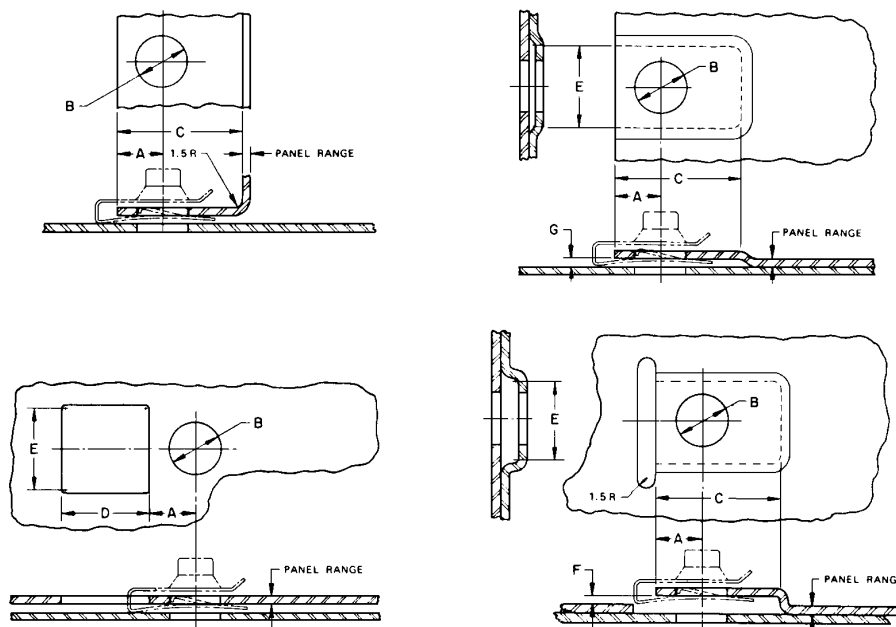
WORKMANSHIP: Nuts shall be free from cracks, splits, burrs, loose scale and any defects that might affect their serviceability.

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ASSEMBLY CONSIDERATIONS: To assure proper function and satisfactory performance of spring nuts and to provide flexibility for possible subsequent substitutions in designs, it is essential that the panel hole sizes, edge to center dimensions, and any embossing or slotting of panels necessary to install the nut be designed in accordance with the recommendations set forth in the illustrations and table below.



Recommended Assembly Data

Dimensions in millimetres.

Nom. Thd Size	Throat Style	A Edge Distance		B Panel Hole Diameter		C Nut Length Clearance	D Slot Width		E Slot or Emboss Width (Flat)**	F Emboss Depth	G Emboss Depth
		max.	min.	max.	min.		max.	min.			
M4	Short Long	9 13	8 12	8.3	7.5	18 23	15	14	13	2.5	1
M5	Short Long	10.5 15.5	9.5 14.5	9.1	8.3	20.5 26.5	16	15	14	2.5	1.1
M6	Short Long	12.5 18.5	11.5 17.5	10.7	9.9	25 31.5	16.5	15.5	15	2.5	1.2
M8	Short Long	13.5 20	12.5 19	12.1	11.3	26.5 33.5	20	19	17.5	2.5	1.4
M10	Short Long	17.5 27.5	16.5 26.5	15.5	14.7	35 45	26	25	25	3	2

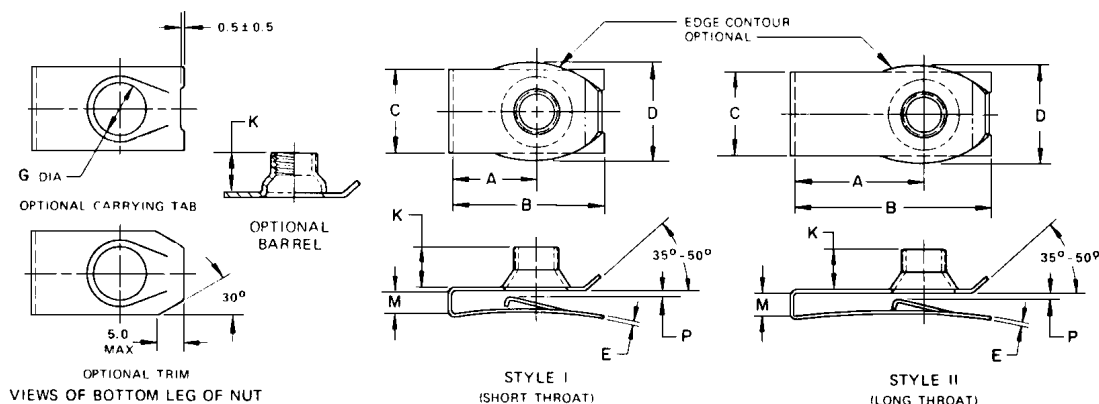
* Consideration should be given to tolerances of manufacturing practices used to emboss and punch these features when designing panels in which they are employed.

** Dimension measured between centers of corner radii.

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Dimensions in millimetres.

Dimensions in millimetres.																				
Nom. Size	Thd Pitch	Panel Thick-ness Range	Throat Style	A		B		C		D		E		G		K		M		P
				Throat Depth		Leg Length		Lower Leg Width		Upper Leg Width		Stock Thickness		Hole Diameter		Barrel Height		Width at Fold		Open- ing
				max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
M4	0.7	0.6 - 3.8	Short Long	10.5 14.5	9.5 13.5	17.5 21.5	16.5 20.5	11	10	13	12	0.7	0.6	6.4	6	6	5	4.5	4	0.4
M5	0.8	0.6 - 3.8	Short Long	12 17	11 16	20 25	19 24	12	11	14	13	0.8	0.7	6.9	6.8	6	5	4.5	4	0.4
M6	1	0.8 - 4	Short Long	14 20	13 19	24 30	23 29	13	12	15	14	0.9	0.8	7.9	7.8	6.5	5.5	5.2	4.2	0.6
M8	1.25	0.8 - 4	Short Long	15 21.5	14 20.5	25.5 32	24.5 31	14.7	13.7	17.5	16.5	1.1	1	9.4	9.3	9	7.5	5.2	4.2	0.6
M10	1.5	1.5 - 5.5	Short Long	19 29	18 28	33 43	32 42	18	17	25	23	1.45	1.35	11.7	11.6	10.5	9	6.7	5.7	1.3

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