

NAVISTAR, INC.		
Material, Parts, and Process Specifications (MPAPS)	NUMBER: MPAPS S-EM-70.101-GS/PL	
	Former Designation: ESP-EM-70.101-GS	
TITLE: Multi-Thread Wide Range “U” Nuts – Metric Series (Noun Code 5780)	CURRENT REV No.: 1506	DATE: June 2015
WRITTEN/EDITED BY: Materials Engineering	APPROVED BY: Materials Engineering	SUPERSEDES: ESP-EM-70.101-GS - September 2000
PRINTED COPIES OF THIS DOCUMENT MUST BE VERIFIED FOR CURRENT REVISION		
<i>This specification may involve hazardous materials, equipment, and procedures. This specification does not purport to address all of the safety issues associated with its use. The user is responsible to consult appropriate safety and health practices and to determine the applicability of regulatory limits prior to use.</i>		
Change Notice: Changed to New MPAPS format; Combined GS, GI, PP.		

1.0 GENERAL: Implementation of this standard must be in accordance with the policies and procedures outlined in MPAPS S-A-0.101. There may also be supplemental group instructions in regard to use of metric standards that should be taken into account.

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.

2.0 RESTRICTED CHEMICAL SUBSTANCES: Effective January 1, 2007, all product supplied to the requirements of this specification must comply with the requirements of the MPAPS B-50 specification.

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4.0 DESIGN CONSIDERATION: In general, U shape nuts are preferred to J shape nuts for standardization purposes due to their superior retention capabilities and the complete support they provide around the hole in the panel.

Nuts conforming to this standard are suitable for use with mating metric fasteners having class 9.8 or lower strength levels. The proof strengths of these nuts are equivalent to the tensile strengths of class 9.8 male fasteners; however, proof strengths are somewhat lower than class 9 hex nuts. The maximum installation torques must be adjusted accordingly.

Multi-Thread Wide Range "U" Nuts are available in short and long throat styles, to cover variations in throat depth requirements. Nut styles will be selected to best suit the edge distances and panel thicknesses of the application. To assure proper function and performance of spring nuts, to provide flexibility for changing nut designs and to achieve simplification, it is essential that the panel hole sizes, edge to center distances and any embossing or punching features necessary be kept in conformance with the assembly considerations in section 20.0.

5.0 METRIC-INCH RELATED SIZES: During the inch to metric design transition period, the following chart of related sizes can be used for reference. This information is not to be considered as a recommendation for substitutions but only as a means of determining approximate dimensional equivalents.

Metric Series mm	Approximate Inch Series
4	#6, #8
5	#10
6	1/4
8	5/16
10	3/8, 7/16

6.0 THREADS: The ISO basic profile is essentially the same geometric configuration as the unified screw thread basic form. The threads will be coarse series, tolerance class 6H.

Threads in the extruded barrel will be produced only by the roll forming process and will 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.

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7.0 THREAD TOLERANCES: The medium ISO class of fit 6H(Int)/6g(Ext) is approximately the same as the 2A(Ext)/2B(Int) allowance in the U.S. unified thread series for comparable size. For example:

<u>Thread</u>	<u>Allowance</u>
M10 x 1.5 - 6H(Int)/6g(Ext)	0.032 mm (.00126 in)
3/8-16 UNC 2A(Ext)/2B(Int)	.0013 in (0.033 mm)

8.0 PROPERTY CLASS: The property class designation for steel nuts is equal to one-hundredth of the approximate proof load stress in megapascals (1 MPa = 1 N/mm²).

9.0 COLOR CODING: Not recommended, except in cases where adequate insurance is needed to prevent mixing of "metric parts" with look-alike "inch parts." The color blue is standard identifier used in some industries. This must be handled internally at individual plants where needed and is meant to be supplemental to the normal finish and easily deleted when the need for supplemental identification no longer exists. The supplemental blue color should not be used on finishes such as chromium bright which are specified for cosmetic purposes or phosphate coating which may cause a loss of color identity.

10.0 METHOD OF DESIGNATION: Nuts will be designated by size, word description, throat, finish, material, and part number as follows:

M10, Multi-Thread Wide Range "U" Nut, Short, PHC, HTS, Part Number

The absence of a specification for pitch indicates the coarse thread is required; e.g., a coarse thread of the dimensions M10 x 1.5 is designated as "M10."

11.0 POLICY FOR SELECTING PARTS FOR NEW DESIGN: Approved parts are so designated to reduce variety of parts and assure maximum availability, interchangeability and cost savings.

For new design, parts shall be selected from "Approved" part list only.

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

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

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

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

15.0 RETAINING EXTRUSION: The nut retaining extrusion in the bottom leg will conform to the dimensions shown in the illustration and Table below, and otherwise be such as to enable the nuts to meet the performance requirements. The critical edges of the extrusion will be free from burrs which could cause interference as spring nut is assembled on to panel. The size, configuration and location of the hole through the retaining extrusion will be such that a bolt or screw or respective

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