

NAVISTAR, INC.		
Material, Parts, and Process Specifications (MPAPS)		NUMBER: MPAPS S-E-1.101-GS/PL
		Former Designation: ESP-E-1.101-GS
TITLE: Hex Nuts – English Series- Not Recommended (Noun Code 5780)	CURRENT REV No.: 1506	DATE: June 2015
WRITTEN/EDITED BY: Materials Engineering	APPROVED BY: Materials Engineering	SUPERSEDES: ESP-E-1.101-GS - May 2008
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, PP, NPP, NR.		

1.0 GENERAL: This specification conforms with American National Standard B-18.2.2. Sizes from 1/4 thru 1-1/2 inch in the coarse thread series and from 1/4 thru 1 inch in the fine thread series are unified dimensionally with British and Canadian Standards with the exception that International has retained 1-14 UNS as standard.

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- 3.0 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 in volume buying.

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

Threads: Coarse
 Sizes: 1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4, 1, 1-1/4 and 1-1/2
 Material and Finish: Type 5 Zinc Trivalent (ZN8A)
 Type 8 Phosphate Coating (PHC)

- 4.0 SERVICE PARTS SUBSTITUTION POLICY:** In the event that engineering does not indicate a "Do not substitute" in engineering specifications, the following substitutions may be implemented in service. This policy is the result of a proposal circulated April 20, 1981 and subsequently approved by engineering departments worldwide.

Hex Nuts. Jam. Thick and Slotted

<u>To be Replaced</u>	<u>Service Replacement</u>
Type 5 material with Plain (PLN)	Type 5 material with Zinc Trivalent (ZN8A) finish or type 8 material with phosphate coating (PHC) if type 5 (ZN8A) is not set up for service.
Type 5 material with Phosphate Coating (PHC)	Type 8 material with phosphate coating (PHC)
Type 8 material with Plain (PLN) Finish	Type 8 material with phosphate coating (PHC)

- 5.0 TOPS AND BEARING SURFACES OF NUTS:** Nuts in sizes 5/8 inch nominal size and smaller will be double chamfered. Larger size nuts will be double chamfered or have washer faced bearing surface and chamfered top.

The diameter of chamfer circle on double chamfered nuts and diameter of washer face will be within the limits of the maximum width across flats and 95 percent of the minimum width across flats.

The tops of washer faced nuts will be flat and the diameter of chamfer circle will be equal to the maximum width across flats within a tolerance of minus 15 percent. The length of chamfer at hex corners will be from 5 to 15 percent of the basic thread diameter. The surface of chamfer may be slightly convex or rounded.

Bearing surfaces will be flat and perpendicular to the axis of the threaded hole within the FIR (Full Indicator Reading) limits specified for the respective nut type and strength level.

- 6.0 WIDTH ACROSS FLATS:** Maximum width across flats will not be exceeded. No transverse section through the nut between 25 and 75 percent of the actual nut thickness as measured from the bearing surface will be less than the minimum width across flats.

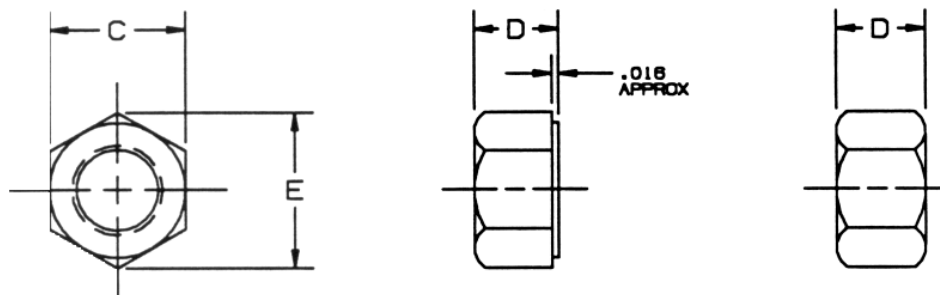
- 7.0 CORNER FILL:** A rounding or lack of fill at junction of hex corners with chamfer will be permissible provided the width across corners is within specified limits at and beyond a distance equal to 17.5 percent of the basic thread diameter from the chamfered faces.

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- 8.0 CONCENTRICITY OF TAPPED HOLE:** Axis of tapped hole will be concentric with axis of nut body within a tolerance equal to 3 percent (6 percent FIR) of the maximum width across flats.
- 9.0 COUNTERSINK:** Tapped holes will be countersunk on the bearing face or faces. The maximum countersink diameter will be the thread basic (nominal) major diameter plus .030 inch for 3/8 inch nominal size nuts and smaller, and 1.08 times the basic major diameter for nuts larger than 3/8 inch. No part of the threaded portion will project beyond the bearing surface.
- 10.0 SLOTS:** Slots will be normal to nut flats. Contour of bottom of slots will be at manufacturer's option. Requirements for gaging slots are given in ANSI B-18.2.2, Appendix II.
- 11.0 THREADS:** Threads will be Unified Series, Class 2B, in accordance with American National Standard B1.1.
- 12.0 IDENTIFICATION:** Type 8 hex nuts will be marked for type identification in accordance with MPAPS F -31, Part II.
- 13.0 MATERIAL:** Steel nuts, Types 5 or 8, per MPAPS F-31, Part II. Brass (BRS) C36000 or equivalent, hard temper per CEMS C-3. Stainless Steel Type 18-8 (SST-304 as designated on part number page) per MPAPS A-37. Type 18-8 is a non-magnetic general purpose stainless with excellent corrosion resistance. Stainless Steel Type 410 (SST-410) is a magnetic general purpose stainless with good corrosion resistance and excellent strength properties. SST-410 will be supplied in the annealed condition; if higher strength is needed, a new drawing will be created. Both 18-8 and 410 Stainless Steel will be *passivated per specification [MPAPS A-37](#).
- 14.0 FINISH:** As designated by part number, nuts will be furnished plain, plated or coated in accordance with MPAPS and class listed below.
- Zinc Trivalent, Class 8A (ZN8A) on steel – MPAPS G-20, Class 8A.
Phosphate Coating (PHC) – MPAPS G-1, Class B-2.
- 15.0 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.
- 16.0 SURFACE DISCONTINUITIES:** Surface discontinuities will be determined by methods shown in MPAPS F-31. Part II.
- 17.0 HEX NUTS:**



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