

NAVISTAR, INC.		
Material, Parts, and Process Specifications (MPAPS)		NUMBER: MPAPS S-JM-15.101-GS/PL
		Former Designation: ESP-JM-15.101-GS
TITLE: Cup Plugs - Metric Series (Noun Code - 6400)	CURRENT REV No.: 1506	DATE: June 2015
WRITTEN/EDITED BY: Materials Engineering	APPROVED BY: Materials Engineering	SUPERSEDES: ESP-JM-15.101-GS - April 2002
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<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.

This standard may differ in some respects with certain segments of national standards. In recognition of these differences, the sizes and tolerance ranges used were established in an effort to enable the use of commercially available items, dimensionally interchangeable worldwide.

This specification contains the essentials of the following standards:

German Institute of Standardization: DIN 443

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.

3.0 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 equivalents.

Dimensions in millimeters:

Metric Series mm	Approximate Inch Series
8	5/16
10	3/8
12	1/2
14	9/16
16	5/8
18	11/16
20	3/4
22	7/8
25	1
28	1-1/8
32	1-1/4
36	1-7/16, 1-1/2
40	1-9/16
45	1-3/4
50	2
56	2-1/4
63	2-1/2

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4.0 COLOR CODING: Not recommended, particularly with cup plugs, 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.

5.0 METHOD OF DESIGNATION: Metric cup plugs will be designated on purchase orders by nominal size, word description, material, finish and part number as shown in the following examples:

10 mm, Tapered Cup Plug, STL, PHC, Part Number

16 mm, Tapered Cup Plug, SST, PLN, Part Number

6.0 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 shown
Material: Carbon steel (STL)
Finish: Plain (PLN)

7.0 MATERIAL: Carbon steel per MPAPS A-0, Part II, Code 0-100.

8.0 NON-PREFERRED MATERIAL: Austenitic stainless steel (SST), standard with manufacturer (limited availability).

9.0 ASSEMBLY CONSIDERATIONS: Inasmuch as the end performance of these plugs is directly affected by the adequacy of the holes into which they assemble and their proper insertion into same, the following data is included to provide the guidance in these areas.

The recommended hole diameter limits specified will provide optimum assembly and performance to suit special conditions. However, deviations from these recommendations may be desirable to provide optimum assembly and performance to suit special conditions.

To assure good sealing and plug retention, holes should be not more than 0.08 mm out of round and the surface roughness on walls over the sealing area should not exceed 2.5 μ m AA. Satisfactory sealing may be achieved on somewhat rougher surfaces but plug retention capabilities will be reduced.

To facilitate assembly and prevent scoring of plugs at insertion, it is recommended that entering edge of hole be relieved with as large a tangential radius as the wall thickness will permit. An alternative, although not preferred, is a countersink of 30° maximum included angle; to a minimum diameter 0.3 mm to 0.4 mm larger than the plug in its free state. The depth of the relief will be such as to permit open end of plugs to be inserted 0.25 mm minimum beyond the point of tangency or intersection of countersink on wall of hole.

10.0 FINISH: Plain (PLN) or phosphate coated (PHC) standard with manufacturer.

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