

NAVISTAR, INC.		
Material, Parts, and Process Specifications (MPAPS)		NUMBER: MPAPS S-FM-1.301-GS/PL
		Former Designation: ESP-FM-1.301-GS
TITLE: Tooth Lock Washers –Metric Series	CURRENT REV No.: 1506	DATE: June 2015
WRITTEN/EDITED BY: Materials Engineering	APPROVED BY: Materials Engineering	SUPERSEDES: ESP-FM-1.301-GS - August 2006
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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 Standardization: DIN 6797

It should be noted that the word "Lock" appearing in the names of the products in this standard is a generic term historically associated with their identification and is not intended to imply an indefinite permanency of fixity in attachments where they are used.

The inclusion of dimensional data is not intended to imply that all the washers described are stock production sizes.

Inch dimensioned standard washers may be found in MPAPS S-F-1.301-GS/PL

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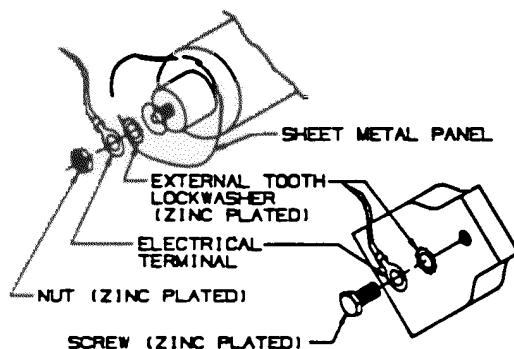
3.0 DESIGN CONSIDERATION: Tooth lock washers providing frictional resistance to loosening, are commonly available in two configurations.

Internal Tooth: Used where projection of teeth beyond screw head or nut is objectionable. Presents a finished appearance.

External Tooth: Commonly used in electrical connections and, in general, for applications involving machine screws in sizes smaller than 6 mm. They serve the following functions:

1. Provide a positive electrical ground path through the teeth on painted or coated and irregular mating surfaces.
2. Prevent the electrical terminal and wire from rotating during installation.

4.0 ASSEMBLY CONSIDERATION: Typical external tooth lock washer applications in electrical connections, depicting placement of the washer, are illustrated below.



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 equivalents.

Metric Series mm	Approximate Inch Series	Metric Series mm	Approximate Inch Series
3	#4, #5	12	1/2
4	#6, #8	* 14	9/16
5	#10	16	5/8
6	#12, 1/4	*18	-
8	5/16	20	3/4
10	3/8, 7/16		

*Non-Preferred

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