NAVISTAR, INC.			
Material, Parts, and Process Specifications (MPAPS)		*NUMBER:* **MPAPS S-JM-6.101-GS/PL**	
		Former Designation: **ESP-JM-6.101-GS**	
TITLE: **Spring Pins - Metric Series (Noun Code - 6200)**		*CURRENT REV No.:* **1506**	*DATE:* **June 2015**
WRITTEN/EDITED BY: **Materials Engineering**	*APPROVED BY:* **Materials Engineering**	*SUPERSEDES:* **ESP-JM-6.101-GS - August 2006**	

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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.

Change Notice: **Changed to New MPAPS format; Combined GS, GI, NPP.**

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 the ISO and national standards. In recognition of these possible differences, the sizes and tolerance ranges used were established in an effort to enable the use of commercially available items, dimensionally interchangeable worldwide.

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

Inch dimensioned standard pins may be found in MPAPS S-J-6.101-GS/PL.

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3.0 DESIGN CONSIDERATION: Spring pins provide a low-cost and effective method of assembly where the loads imposed on the fastener are principally in shear.

Design conditions which impose a vibration component in a direction parallel to the axis of the pin should be avoided. If the final assembly will be subjected to vibrations, testing of prototype assemblies is recommended.

The selection of a pin size, its length and its location should be based on a careful analysis of the shear loads. The shear plane of the pin should be located at a minimum distance of one diameter from the end of the pin to prevent any premature failure. In many assemblies, it is desirable that the pin fail before the shafts or couplings with which they are being used.

In soft metals, ultimate failure may depend more upon the strength of the hole material than upon shear strength of the spring pin. Under increased load, hole edges are deformed by compressive forces.

The effect of gap orientation on slotted spring pin shear strength is that random slot positioning is satisfactory for all but the most extreme slotted spring pin applications. For special applications maximum shear strength is assured by inserting the slotted spring pin so the gap is in line with the direction of the load.

Spring pins can usually be operated satisfactorily in excess of the permissible operating temperatures of the members in which they are inserted. However, for special applications the following values may be taken as safe limits before the physical properties of the spring pins are substantially altered.

Carbon Steel ..... 260ºC.
Type 420 Corrosion Resistant Steel 371ºC

4.0 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)	Inch Series Approximate
2	1/16, 3/32
3	1/8
4	5/32
5	3/16
6	1/4
8	5/16
10	3/8, 7/16
12	1/2

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5.0 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 causes a loss of color identity.

6.0 METHOD OF DESIGNATION: Spring pins will be designated on purchase orders by size, length, word description, finish, material, and part number as follows:

8 x 10 mm, Slotted Spring Pin, Heavy, Plain, HTS, Part Number
10 x 24 mm. Coiled Spring Pin, Heavy, Plain. HTS, Part Number

7.0 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.

Types: Coiled, Heavy Series
Material: Carbon Spring Steel (HTS)
Finish: Plain (PLN)
Nominal Sizes and
Length Incrementation:

Dimensions in millimeters:

Standard Lengths	Nominal Pin Size								
	2	3	4	5	6	8	10	12	16*
4	x								
6	x								
8	x	x							
10	x	x	x						
12	x	x	x	x					
14	x	x	x	x	x				
16	x	x	x	x	x				
18	x	x	x	x	x	x			
20	x	x	x	x	x	x			
22	x	x	x	x	x	x	x		
24	x	x	x	x	x	x	x		
26	x	x	x	x	x	x	x	x	
28	x	x	x	x	x	x	x	x	
30		x	x	x	x	x	x	x	
32		x	x	x	x	x	x	x	
36		x	x	x	x	x	x	x	
40		x	x	x	x	x	x	x	x
45			x	x	x	x	x	x	x
50			x	x	x	x	x	x	x
55				x	x	x	x	x	x
60				x	x	x	x	x	x
65					x	x	x	x	x
70					x	x	x	x	x
75					x	x	x	x	x
80						x	x	x	x
85						x	x	x	x
90						x	x	x	x
95						x	x	x	x
100						x	x	x	x

*** Coiled Springs Only**

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