NAVISTAR, INC.			
Material, Parts, and Process Specifications (MPAPS)		*NUMBER:* **MPAPS S-J-6.101-GS/PL**	
		Former Designation: **ESP-J-6.101-GS**	
TITLE: **Spring Pins -- slotted spring pins and coiled spring pins - English Series (Noun Code 6200)**		*CURRENT REV No.:* **1803**	*DATE:* **Mar. 2018**
WRITTEN/EDITED BY: **A. Bourdon**	*APPROVED BY:* **R. Goluch**	*SUPERSEDES:* **1506 – June 2015**	

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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.

1.0 GENERAL: This specification covers performance, dimensions, physical properties and method of testing both slotted and coiled spring pins. It conforms essentially with SAE J496 covering "Spring Type Straight Pins."

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3.0 TYPES AND SERIES: Spring pins are available in two Types and three Series.

Slotted - Heavy Series (Non-Preferred)
For high static shear loads in higher strength materials.

Coiled - Heavy Series
For high static shear loads in higher strength materials.

Medium Series
For medium static shear loads with higher shock and vibration loads.

Light Series (Non-Preferred)
Recommended only for low shear loading in soft or brittle materials.

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4.0 LENGTH: The tolerance on length for coiled type spring pins will ±.010 inch for sizes up to and including 5/16 inch; and ±.015 inch for sizes larger than 5/16 inch.

The tolerance on length for slotted type spring pins will be in accordance with the following tabulation:

Length Range	3/16 to 1 inclusive	Over 1 to 2 inclusive	Over 2 to 3 inclusive	Over 3 to 4 inclusive	Over 4 inches
Tolerance On Length	±.015	±.020	±.025	±0.30	±.035

5.0 MATERIAL AND HARDNESS: Hardness will be tested in the following manner: For slotted pins the readings will be taken near the center of a longitudinal flat ground on the pin at right angles to the slot. Coiled pins will be ground or cut in half along the longitudinal axis and the hardness readings will be taken on the inside surface of the outer half coil. Table following designates materials and the proper Rockwell scale to be used for the various wall thickness ranges.

Wall Thickness Range		Over .001 to .010	Over .010 to .025	Over .025 to .050	Over .050 to .094
Rockwell Scale		Dph * Tukon	15N	A	C
Pin Type	Material	Hardness Reading			
Slotted	SAE-1070-1095 Steel	458-562	83.6-87	73.6-78	46-53
	AISI 420 Corrosion Resistant Steel	413-545	82 -86.6	72 -77	43-52
Coiled	SAE-1070-1095 Steel	393-515	80.4-85.5	70.4-75.9	40-50
	AISI 420 Corrosion Resistant Steel	393-515	80.4-85.5	70.4-75.9	40-50
	AISI 302 Nickel Stainless Steel	-	-	-	-

*Diamond pyramidal hardness

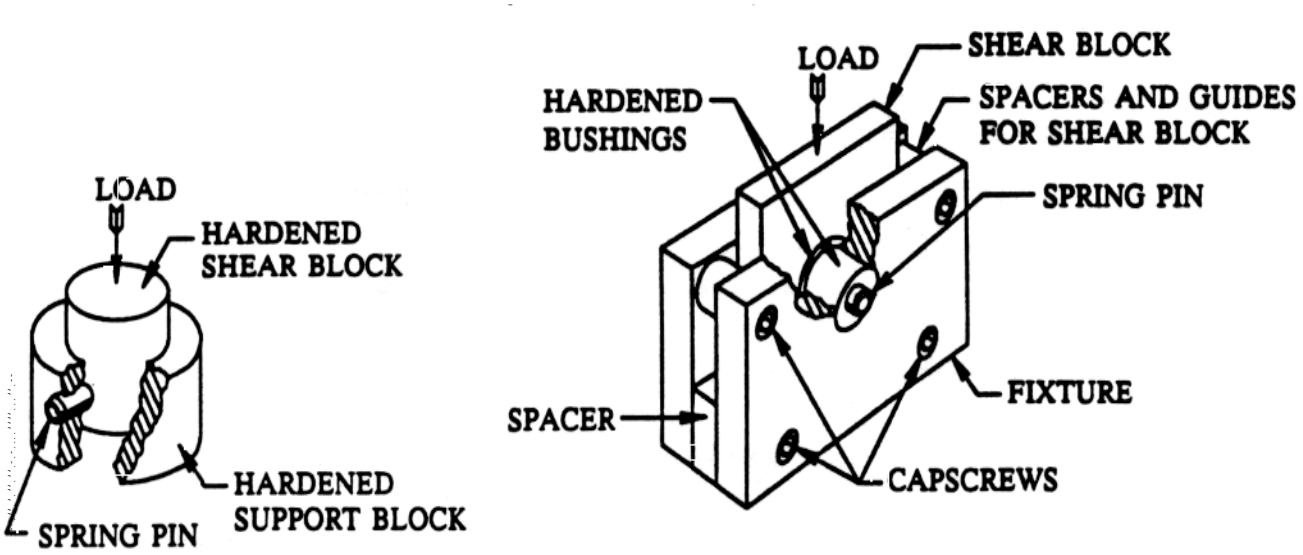
6.0 PERFORMANCE: Spring pins will assemble and disassemble with light to moderate force when used with the recommended hole sizes without significant deformation to either pins or holes. Assembled pins will withstand the minimum double shear loads as specified in the dimensional tables.

Spring pins will withstand the minimum double shear loads specified in the dimensional tables when tested in accordance with the following procedure.

The shear test will be performed in a fixture in which the pin support members and the member for applying the load will have holes of a diameter conforming to the recommended hole size for the pins being tested and will have a Rockwell hardness of C58 or equivalent. The clearance between the supporting members and the loading member will not exceed .005 inch and the shear plane will be at least one diameter away from each end of the pin. Pins will be located so that the slot is approximately at right angles to the line of application of the load. The speed of load application will not exceed 1/2 inch per minute. Pins too short to be tested in double shear will be tested by shearing two pins simultaneously in single shear. Spring pins which have been tested for shear strength will show a ductile shear without longitudinal cracks. Typical spring pin shear test fixtures are illustrated below.

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TYPICAL SPRING PIN SHEAR TEST FIXTURES

7.0 FINISHES: As designated by part number, pins will be furnished plain, plated or coated in accordance with MPAPS and class listed below:

Zinc Trivalent (ZN6A) on steel – MPAPS G-20, Class 6A.
Phosphate (PHC) Coating – MPAPS G-1, Class Z-1.

Where electroplating of carbon steel parts is such that it might induce hydrogen embrittlement, spring pins will be baked or treated in such a manner as to be free of such embrittlement.

8.0 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.

9.0 POLICY FOR SELECTING PARTS FOR NEW DESIGN:

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

Types: Coiled - Heavy and Medium Series
Material: 1070 - 1095 carbon steel
Finishes: Plain
Sizes and Lengths: See table

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