NAVISTAR, INC.

Material, Parts, and Process Specifications (MPAPS)	NUMBER: MPAPS S-BM-5.101-GS/PL Former Designation: ESP-BM-5.101-GS	
TITLE: General Purpose Studs – Metric Series (Noun Code 8720)	CURRENT REV No.: 1506	DATE: June 2015
WRITTEN/EDITED BY: Materials Engineering	APPROVED BY: Materials Engineering	SUPERSEDES: ESP-BM-5.101-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.**

1.0 GENERAL: This specification contains the essentials of the following standards:

International Organization for Standardization: ISO R225, R898/I, and R965/II
British Standards Institute: BS 4439

The general purpose studs in this standard encompass two types: Equal Threads - Both Ends, and Continuous Threads. These studs are not intended for use where interference fit and sealing are required.

General information for metric hex head bolts shown in MPAPS S-BM-1.101-GS/PL will also apply for these general purpose studs.

2.0 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.

Material: Steel, Class 8.8
Finish: Plain (PLN) and Phosphate Coated (PHC)

Nominal sizes and Length Incrementation:

Lengths (millimeters)	Nominal Sizes							
	M5	M6	M8	M10	M12	M16	M20	M24
20	X							
25	X	X						
30	X	X	X					
35	X	X	X					
40	X	X	X	X				
45	X	X	X	X				
50	X	X	X	X				
55		X	X	X				
60		X	X	X	X			
65			X	X	X			
70			X	X	X			
75			X	X	X	X		
80			X	X	X	X		
90				X	X	X		
100				X	X	X	X	
110					X	X	X	
120					X	X	X	X
130						X	X	X
140						X	X	X
150						X	X	X
160						X	X	X
170							X	X
180							X	X
190							X	X
200							X	X

Lengths above the heavy line thru the 10 mm size are preferred for the continuous thread stud

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3.0 STRAIGHTNESS: Studs will be straight within 0.075 within 25 mm of length.

4.0 ENDS OF STUDS: The ends of studs will be finished with a straight chamfer with a 90° included angle to a depth slightly exceeding the depth of thread.

5.0 BODY DIAMETER: The nominal diameter of the unthreaded shank will be equal to the maximum major diameter of the threaded ends and subject to the following tolerances:

Nominal Diameter	Tolerance
Up to 6 mm, incl	+0 -0.12
Over 6 to 10 mm, incl	+0 -0.15
Over 10 to 18 mm, incl	+0 -0.18
Over 18 to 24 mm, incl	+0 -0.21

6.0 THREADS: Thread form, diameters, and associated pitches are in accordance with ISO Recommendations for coarse pitch series. Threads will be made to the tolerances of the medium class of fit (6g) for plain and unplated studs as shown in ISO 965/11, General Purpose Metric Screw Threads.

The thread length of 1.5 times the diameter for equal threads - both ends were selected because of popular usage in the inch series.

7.0 METHOD OF DESIGNATION: Studs will be designated on purchase orders by size, length, word description, material, finish, and part number as shown in the following examples:

M5 x 20, Continuous Thread Stud, Class 8.8, Plain, Part Number

M16 x 100, Equal Thread - Both End Stud, Class 8.8, Plain, Part Number

8.0 MATERIAL: Steel, Class 8.8 per MPAPS F-31, Part I.

9.0 FINISH: In accordance with the Corporate Engineering Material Specification and class listed below: Plain (PLN)

Zinc Trivalent, Class 6A (ZN6A) – MPAPS G-20, Class 6A.
Phosphate Coated (PHC) – MPAPS G-1, Class B2.

10.0 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.

11.0 WORKMANSHIP: Studs must be free of burrs or any other defects which might affect their serviceability.

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