

NAVISTAR, INC.		
Material, Parts, and Process Specifications (MPAPS)		NUMBER: MPAPS S-FM-2.101-GS/PL
		Former Designation: ESP-FM-2.101-GS
TITLE: Spacers – Metric Series (Noun Code 8090)	CURRENT REV No.: 1506	DATE: June 2015
WRITTEN/EDITED BY: Materials Engineering	APPROVED BY: Materials Engineering	SUPERSEDES: ESP-FM-2.101-GS - September 2000
PRINTED COPIES OF THIS DOCUMENT MUST BE VERIFIED FOR CURRENT REVISION		
<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, PP.		

1.0 GENERAL: This standard consists of pipe spacers which will be square cut and made from standard weight, extra strong, and double extra strong common black pipe, and tubing which will be made from commercial grade, mechanical steel tubing.

To be classified as a spacer, a length of pipe or tubing must be more than .328 in (8.33 mm) but less than 6 in (152.4 mm). Spacers must not have specific surface finishes or coatings, nor must they have special restrictive tolerances other than that which is indicated in the tolerance section below.

Since there are no National or International standards on this product, the specifications are based on present user requirements. All dimensions are shown in inch and in direct metric conversions.

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.

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4.0 POLICY FOR SELECTING PARTS FOR NEW DESIGN: Because of the differentiation of even modules in the inch and the metric systems of measurement, it is not feasible to offer a stringent preferred dimensional policy; instead, the dimensions are shown in order of design requirement and in numerical progression.

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

5.0 TOLERANCES: Spacers will conform to the following:

Nominal Size	TOLERANCES								
	Pipe		Tube		Pipe	Tube	Pipe	Tube	Tube
	Outside Diameter C				Thickness (T)		Length B		Max ID Weld Flash
	in	mm	in	mm	in mm	in mm		in	mm
Up to 1-1/2 in (38.1 mm)	+ .015 - .031	+ 0.38 - 0.79	± .005	± 0.13	- 12%	± 12%	± .016 in ± 0.41 mm	.010	0.25
Over 1-1/2 in (38.1 mm)	± 1%		+ .010 - .005	+ 0.25 - 0.13					

6.0 METHOD OF MANUFACTURE: Spacers will be square cut with parallel ends within .016 in (0.41 mm).

7.0 MATERIAL:

Pipe: Welded or seamless steel pipe per CEMS A-18

Tube: 1010 thru 1020 Steel (STL). Spacers will be square cut from one of the following grades shown in CEMS A-10, Mechanical Steel Tubing.

- Part I, Electric Resistance Welded Tubing
Grade H-10 or Permissible Alternate
- Part II, Cold Drawn Butt Welded Tubing
Grade MD or Permissible Alternate
- Part III, Seamless Tubing
Grade CD

8.0 MECHANICAL PROPERTIES:

	Pipe	Tube
Min Yield	35,000 Psi (241 MPa)	32,000 Psi (221 MPa)
Min Tensile	58,000 Psi (400 MPa)	45,000 Psi (310 MPa)

9.0 FINISH: Plain.

10.0 WORKMANSHIP: Spacers must be free from loose scale, sharp edges, and all other defects which might affect their serviceability.

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