NAVISTAR, INC.			
Material, Parts, and Process Specifications (MPAPS)		*NUMBER:* **MPAPS S-M-1.101-GS/PL**	
		Former Designation: **ESP-M-1.101-GS**	
TITLE: **Automotive Pipe Fittings - English Series (Noun Code 3300)**		*CURRENT REV No.:* **1506**	*DATE:* **June 2015**
WRITTEN/EDITED BY: **Materials Engineering**	*APPROVED BY:* **Materials Engineering**	*SUPERSEDES:* **ESP-M-1.101-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, PP, NPP.**

1.0 GENERAL: This standard conforms essentially with the SAE J530 Standard for Automotive Pipe Fittings and includes those types of pipe fittings which are commonly used in the automotive and other mass production industries.

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3.0 DIMENSIONS AND TOLERANCES: Unless otherwise specified, maximum and minimum across flats dimensions will be within the commercial tolerance of bar or extruded stock from which the fittings are produced. The minimum across corner dimensions of external hexagons will be 1.092 times the nominal width across flats, but will not result in a side flat width less than .43 times the nominal width across flats. The minimum across corner dimensions of external squares will be 1.25 times the nominal width across flats, but will not result in a side flat width less than .75 times the nominal width across flats.

Tolerances on all dimensions not otherwise limited will be ±.010 inch.

4.0 PASSAGES: Where passages in straight fittings are machined from opposite ends, the affect at the meeting point will not exceed .015 inch. The cross sectional area at the junction of passages in angle fittings will not be less than that of the smallest passage.

5.0 WALL THICKNESS: Unless otherwise designated, the wall thickness at any point on fittings will not be less than the thickness established by specified dimensions, tolerances, and eccentricities for inner and outer surfaces.

Nominal Pipe Thread	Wall Thickness, min *		Nominal Pipe Thread	Wall Thickness, min *	
Size, in	in	mm	Size, in	in	mm
1/16	.04	1.0	1/2	.08	2.0
1/8	.04	1.0	3/4	.08	2.0
1/4	.05	1.3	1	.08	2.0
3/8	.06	1.5			

* Applies to reduction to one plane only on extruded shapes.

6.0 SEALANT COATING: All fittings that have external pipe threads will be furnished with a pre-applied sealant coating on the pipe threads that meets the requirements of CEMS D-31.

7.0 THREAD: The pipe threads will conform with the Dryseal American Standard Taper Pipe Thread (NPTF). If specified the pipe thread may be shortened in conformity with the SAE Short Dryseal Taper Pipe Thread (PTF - SAE Short). Specifications for pipe threads are given in detail in the SAE J476 Standard.

8.0 MATERIAL: As designated by part number, these pipe fittings may be made from cast iron, malleable iron, steel, stainless steel, brass or aluminum alloy, by casting, forging, milling from the bar or upsetting from a grade of material free from defects which will affect their serviceability.

Carbon steel fittings which are fabricated from multiple components are optional with extruded or forged fittings. Fabricated fittings must be bonded together to be able to withstand a melting point of not less than 1900ºF.

Steel (STL) - SAE 1212 or equivalent per MPAPS A-0, Part I.
Brass (BRS) -CEMS C-3, Grades C36000 (Half Hard), C34500, C35000, or C37700.

Malleable Iron (MI) - ASTM-A197 or equivalent.
Cast Iron - Gray Iron, Grade 25-S per CEMS E-6.

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9.0 FINISH: As designated by part number, parts will be furnished plain, plated or coated in accordance with MPAPS and class listed below:

Plain (PLN)
Zinc Trivalent (ZN6A) – MPAPS G-20, Class 6A.

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 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 in volume buying.

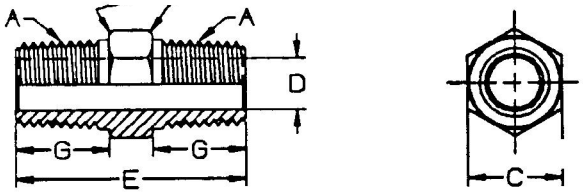
For new design, parts shall be selected from "Approved" part list only.

Material:	Brass (BRS)
Finish:	Plain (PLN)
Process of Manufacture:	Extruded

12.0 WORKMANSHIP: Fittings will be free from all hanging burrs, loose scale and slivers which might become dislodged in usage and all other defects which might affect serviceability.

13.0 AUTOMOTIVE PIPE NIPPLES (Noun Code - 5760):

CHAMFER



13.1 Part List:

13.1.1 Approved:

Dimensions in inches:

A	C	G	D	E	PART NUMBERS
Dryseal Taper Thread	Hexagon Width	Shoulder Length	Drill Diameter	Length	Brass Plain
1/8 -27	.438	.38	.22	.97	443976
1/4 -18	.562	.56	.31	1.38	443978
3/8 -18	.688	.56	.44	1.41	443980
1/2 -14	.875	.75	.56	1.81	443982

A	C	G	D	E	PART NUMBERS
Dryseal Taper Thread	Hexagon Width	Shoulder Length	Drill Diameter Max	Length	Steel Plain
1/8 -27	.438	.38	.22	.97	444285

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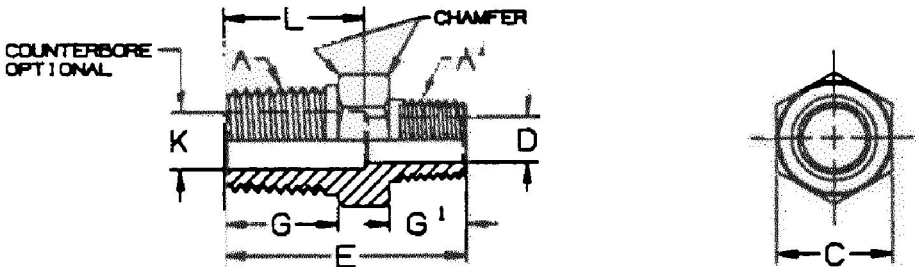
14.0 AUTOMOTIVE PIPE REDUCER NIPPLES (Noun Code - 5760):



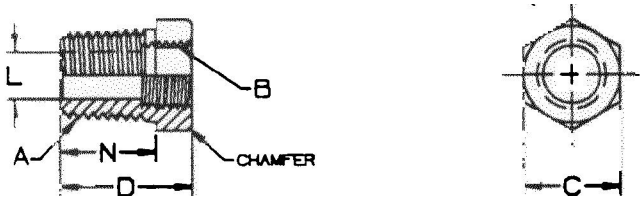
14.1 Part List:

14.1.1 Approved:

Dimension in inches:

A	A[1]	C	G	G[1]	D	E	K	L	PART NUMBERS
Dryseal Taper Thread		Hexagon Width	Shoulder Length		Drill Diameter	Length	Counter bore Dia	Counter bore Length	Brass Plain
1/4-18	1/8 –27	.562	.56	.38	.22	1.19	.28	.69	443986
3/8-18	1/4 –18	.688	.56	.56	.31	1.41	.41	.69	443990
1/2-14	3/8 –18	.875	.75	.56	.44	1.62	.53	.91	443992

15.0 AUTOMOTIVE PIPE REDUCER BUSHINGS (Noun Code - 0030):



15.1 Part List:

15.1.1 Approved:

Dimension in inches:

A	B	C	N	L	Length	PART NUMBERS
Dryseal Taper Thread		Hexagon Width	Shoulder Length	*Hole Diameter Min		Brass Plain
1/4-18	1/8 -27	.562	.56	.217	.75	444024
3/8-18	1/8 -27	.688	.56	.217	.75	444026
3/8-18	1/4 -18	.750	.56	.309	.75	444028
1/2-14	1/4 -18	.875	.75	.309	1.00	444032
1/2-14	3/8 -18	.875	.75	.435	1.00	444034
3/4-14	1/2 -14	1.125	.75	.559	1.00	24466R1

*At manufacturer's option, hole may conform to tap drill diameter or may be reduced beyond tap drill depth but in no case will it be smaller than L diameter specified.

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