

NAVISTAR, INC.		
Material, Parts, and Process Specifications (MPAPS)		NUMBER: MPAPS F-1042
		Former Designation: <i>TMS-1042</i>
TITLE: Mounting Bolts for Seat Belt Anchorage		CURRENT REV No.: 1408
		DATE: AUGUST 2014
WRITTEN/EDITED BY: Materials Engineering	APPROVED BY: Materials Engineering	SUPERSEDES: TMS-1042 - August 2013
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<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: New MPAPS format; editorial changes.		

1.0 APPLICATION

This specification shall be applied to mounting bolts used for attaching seat belt assemblies in vehicles covered by Federal Motor Vehicle Safety Standard (FMVSS) 209.

2.0 SCOPE

This specification covers identification, material, mechanical properties, heat treatment, plating, quality requirements, and also covers the quality control and certification procedures required to process the bolts.

2.1 Restricted Chemical Substances

Effective JANUARY 1, 2007, all product supplied to the requirements of this specification must comply with the requirements of MPAPS B-50.

3.0 REFERENCE DOCUMENTS

Unless otherwise specified, the latest issue of all referenced standards shall apply. The following Specifications, Standards, and Regulations are referenced in this specification.

Quality System Standard <i>ISO 9001</i> or <i>TS-16949</i>	SAE J1199
CFR Title 29, Part 1910	SAE J121
NAVISTAR Manufacturing Standard MS-D-13	SAE J123
CFR Title 571, Part 209 (FMVSS 209)	SAE J429
NAVISTAR MPAPS B-50	SAE J140
NAVISTAR MPAPS G-20	

4.0 GENERAL REQUIREMENTS

4.1 Design Practice

Metric M12x1.75 bolts shall be chosen over the 7/16-20 UNF, and ½-13 UNC inch fasteners for new design whenever possible.

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4.2 Fastener Identification

All mounting bolts used for attaching seat belt assemblies in vehicles covered by this specification shall be identified by a bolt manufacturer's identification symbol. The manufacturer's symbol should preferably be in the center of the head. The symbol must not exceed 0.4mm (0.016 inch) in height, nor be of length greater than 33% of the dimensions across flats.

4.3 Material and Hardenability

Material shall be any steel with minimum as-quenched Rockwell hardness of 40 HRC at the center of the cross-section, one diameter from the threaded end of the bolt, unless otherwise specified. Parts shall be oil quenched. Quenching media other than oil may be used upon agreement between the supplier and Navistar Inc.

4.4 Heat Treatment

Bolts shall be hardened, oil quenched, and tempered to the specified mechanical properties. The surface carbon content of the bolts shall be maintained at no higher than 0.1% over that of the base metal. Decarburization shall meet the limits for Class B per SAE J121.

4.4.1 Hardness: determined by testing procedure SAE J429

7/16-20 UNF and 1/2 -13 UNC bolts: Rockwell 28-34 HRC.

M12x1.75 bolts: Rockwell 33-39 HRC

4.4.2 Microstructure

The bolts shall have quenched microstructure of 90% minimum martensite.

4.5 Mechanical Properties

The mechanical properties of this specification have been established to provide a bolt which will be suitable for the attachment of two seat belt assemblies. Bolts shall have a minimum static strength of 40.0 kN (9,000 lbf) when tested with the load applied at 45° to the axis of the bolt as required in the FMVSS 209. In the event of a referee decision regarding the acceptance of a lot of these bolts, the minimum static load at 45° shall take precedence over other mechanical properties.

4.5.1 Static Load: The static load test required in Federal regulations shall be performed using the procedures and fixtures shown in SAE J140 to simulate the loading applied in service with each style of bolt.

4.5.2 Ultimate Tensile Strength: determined by 6° wedge test procedure per SAE J429:

7/16-20 UNF and 1/2 -13 UNC bolts: 917 MPa (133 ksi) minimum.

M12 x1.75 bolts: 1040 MPa (150 ksi) minimum.

Tensile Load Required, min of Two Typical Bolts

<u>Size</u>	<u>kN</u>	<u>Lbf</u>
7/16-20 UNF	70.4	15,800
1/2 -13 UNC	84.1	18,900
M12 x1.75	87.7	19,700

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