

NAVISTAR, INC.		
Material, Parts, and Process Specification (MPAPS)		NUMBER: MPAPS P-9542
		Former Designation: TMS-9542
TITLE: Quality Requirements For Manual, Automated Manual, Dual Clutch and Automatic Transmissions		CURRENT REV. No.: 1801
		DATE: Jan. 2018
WRITTEN/EDITED BY: W. Cook / A. Mirza	APPROVED BY: R. Goluch	SUPERSEDES: Rev. 1506 – June 2015
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>		

1.0 APPLICATION

This specification covers quality control requirements for purchased transmission assemblies provided as completed units to Navistar Assembly Plants.

2.0 SCOPE

This specification covers the transmission noise requirements, the quality plan, quality control, source approval, supplier's reports, and shipping and identification requirements.

2.1 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.

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:

ISO 9001/TS 16949 – Quality Management Systems-- Requirements
 CFR Title 29, Part 1910 – Occupational Health and Safety Standards
 NAVISTAR ISQ-001-QM – Integrated Supplier Quality Requirements
 NAVISTAR EDS-A16 – Key Control Characteristics (KCC)
 NAVISTAR MPAPS B-50 – Restricted Chemical Substances
 NAVISTAR D-13 – Supplier Packing and Shipping Standard.
 CFR Title 40, Part 205 (SAE J366) - Transportation Equipment Noise Emission Controls
 NAVISTAR MPAPS P-9543 – Engineering Test Report Requirements
 SAE J617 - Engine Flywheel Housing and Mating Transmission Housing Flanges
 SAE J1463 - Pull-Type Clutch Transmission Installation Dimensions

4.0 GENERAL REQUIREMENTS

4.1 Noise Requirement - All Transmissions

4.1.1 Drive-by-Noise

The noise level contribution of the transmission measured during a drive-by test, or equivalent approved laboratory test, conducted as per CFR Title 40, Part 205.54 (SAE J366), shall not exceed 72 dBA. In order to verify compliance with this requirement, the transmission shall be tested in all possible drive-by gear ratios and the transmission contributed noise level of each gear ratio shall be measured and recorded. The average contributed noise level, plus two standard deviations, shall not exceed 72.0 dBA for each of the gear ratios measured during the drive-by test. If a small statistical sample is tested, the average transmission contributed noise level measured in each of the possible

This document is restricted and may not be sent outside Navistar, Inc. or reproduced without permission from Corporate Technical Standards. Suppliers are required to assume all patent liability. ©2018 by Navistar, Inc.

JANUARY 2018

NUMBER: MPAPS P-9542	Quality Requirements For Manual, Automated Manual, Dual Clutch, and Automatic Transmissions	REVISION: 1801
--------------------------------	--	--------------------------

drive-by gear ratios shall not exceed 70.0 dBA. The supplier shall submit a report (see Supplier's Report, Section A.1) detailing the drive-by noise level measurements, or equivalent approved laboratory simulation measurements, to the Vehicle Acoustical Group at Navistar as a part of the qualification procedure for each transmission model.

4.1.2 Cab Interior Noise

The contribution of an isolated transmission gear shift lever to the interior cab noise, as measured at a point 6 inches to the right of the driver's right ear (approximately 2 feet from the knob), shall not exceed 49 dBA when the vehicle is stationary, with engine at idle, transmission in neutral and the clutch engaged. The contributed noise level of the transmission gearshift lever to the interior cab noise in any operating condition in any gear ratio shall not exceed 62 dBA. A test to evaluate the gearshift lever contribution to interior cab noise will be developed and the test procedures agreed to between the Vehicle Acoustics Group at Navistar and the transmission supplier. The test shall be run by Navistar once a vehicle is available.

5.0 QUALITY

All transmissions shall be supplied in a clean and dry condition. All transmission assembly or test fluids/oils that may remain or leave a residue inside the transmission must be compatible with Navistar factory fill oils/fluids. Splines shall be free of dirt, paint, rust, pits, gouges, nicks, and scratches.

5.1 Quality Control Plan

A Quality Control Plan for this product will be established by mutual agreement between Navistar and the supplier. The following items, where applicable,* will be included in the control plan as dimensional features for management by statistical process control.**

Applicability table for Eaton AMT, DCT, Eaton Manual, and Tremec Manual

5.1.1.1	AMT, DCT, Eaton Manual, and Tremec Manual
5.1.1.2	AMT, DCT, Eaton Manual, and Tremec Manual
5.1.1.3	AMT and Manual
5.1.1.4	AMT and Manual
5.1.1.5	AMT and Manual
5.1.1.6	AMT and Manual
5.1.1.7	AMT's, Eaton Manuals, and DCT's
5.1.1.8	AMT and Manual
5.1.1.9	AMT, Eaton Manuals, and DCT's
5.1.1.10	AMT and Manual
5.1.1.11	AMT and Manual

5.1.1 Manual and Automated Manual Transmissions

Navistar releases transmissions with an Attribute Based Release (ABR) release system. For manual and automated manual transmissions, there are up to 11 ABR features that make up one full complete transmission depending on the supplier to be delivered to Navistar. Not all ABR features have controlled

This document is restricted and may not be sent outside Navistar, Inc. or reproduced without permission from Corporate Technical Standards. Suppliers are required to assume all patent liability. ©2018 by Navistar, Inc.

JANUARY 2018

NUMBER: MPAPS P-9542	Quality Requirements For Manual, Automated Manual, Dual Clutch, and Automatic Transmissions	REVISION: 1801
--------------------------------	--	--------------------------

dimensioned features on them. A prime example of this is the Reverse Switch category – there are only two possibilities, does the supplier install the switch, which is supplier controlled, or not install the switch. Dimensions of the switch itself are controlled by supplier. These ABR features exist solely for the benefit of Navistar assembly plants and customers who can order options provided by the transmission supplier. A full list of possible ABR features, as well as the Key Critical Characteristics (KCC) within those ABR features is detailed herein.

5.1.1.1 Base Transmission

Each base transmission released is part of a family. A family can consist of any number of transmission feature codes. The definition of a family shall be transmissions that share the same basic design and external dimensions. A drawing will be generated for each family, detailing the ABR categories applicable to the family. There are no KCCs on this ABR category. However, any changes to the Base Transmission from the supplier affecting “form, fit, or function” such as transmission size impacts or transmission mount changes must be approved by Navistar through the SREA Process. The specific distance from front of case to PTO bolt pattern (433 mm for Tremec/446.4 mm for Eaton) must be maintained for all product.

5.1.1.2 Shift Controls

Applicable to manual transmissions only. Some suppliers have the ability to have the shifter tower in a forward, or center/standard position. Some transmission families may also have full lower stub levers installed by the transmission supplier and shipped to Navistar plants in that configuration. Whether the shift tower is shipped to our factory installed on the transmission or shipped in separately, the shift tower will have a released Navistar print that controls the shift lever length and bend points. The mating surface of the transmission to the shift bar housing is a supplier controlled mating surface. There are no KCCs for this ABR category. A subsection of this ABR will be applicable to AMT’s and DCT’s only. Controls – CAN Communication Rate will define the baud rate (250k vs. 500k) at which the J1939 network communicates at.

5.1.1.3 Output Shaft Speed Sensor

This ABR category defines the number and type of Output Shaft Speed Sensors to be installed by the transmission supplier prior to delivery to Navistar. The sensor itself is controlled by the transmission supplier. There are no KCCs for this ABR category. However, any changes to the Output Shaft Speed Sensor from the supplier affecting “form, fit, or function” must be approved by Navistar through the SREA Process.

5.1.1.4 Reverse Switch

This ABR category defines if a Reverse Switch is installed by the transmission supplier prior to delivery to Navistar. The switch itself is controlled by the transmission supplier. There are no KCCs for this ABR category. However, any changes to the Reverse Switch from the supplier affecting “form, fit, or function” must be approved by Navistar through the SREA Process.

5.1.1.5 Neutral Start Switch

This ABR category defines if a Neutral Start Switch is installed by the transmission supplier prior to delivery to Navistar. The switch itself is controlled by the transmission supplier. There are no KCCs for this ABR category. However, any changes to the Neutral Start Switch from the supplier affecting “form, fit, or function” must be approved by Navistar through the SREA Process.

This document is restricted and may not be sent outside Navistar, Inc. or reproduced without permission from Corporate Technical Standards. Suppliers are required to assume all patent liability. ©2018 by Navistar, Inc.

JANUARY 2018