



Driveline Mounts - Dynamic Stiffness and Loss Angle Evaluation Procedure

1 Introduction

Note: Nothing in this standard supercedes applicable laws and regulations.

Note: In the event of conflict between the English and domestic language, the English language shall take precedence.

1.1 Purpose. The purpose of this procedure is to define the process of determining the dynamic stiffness and loss angle characteristics of elastomeric driveline mounts, see GMW14738.

1.2 Applicability. This test procedure is appropriate for use with all elastomeric driveline isolators. As new technologies evolve, additional requirements may be added.

1.3 Remarks. Mount dynamic stiffness and loss angle characteristics are key components in isolating noise and vibration of the road and powertrain from the vehicle interior.

2 References

Note: Only the latest approved standards are applicable unless otherwise specified.

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

GMW14738

2.3 Additional References.

- Component Technical Specification (CTS)
- Subsystem Technical Specification (SSTS)

3 Resources

3.1 Facilities.

3.1.1 Calibration. The test facilities and equipment shall be in good working order and shall have a valid calibration label.

3.1.2 Alternatives. Alternative test facilities and equipment may also be used. However, all measuring variables as specified in this standard shall be determined correctly with respect to their physical definition.

3.2 Equipment. See GMW14738.

3.3 Test Vehicle/Test Piece. Driveline mount.

3.4 Test Time. Test time varies and is influenced by equipment, fixture availability, test conditions and number of samples. Calendar time is intended to allow for fixture development.

Calendar time: 2 to 3 days

Test time: 4 to 8 hours

Coordination time: 1 to 2 hours

GM Confidential

© Copyright 2017 General Motors Company All Rights Reserved

March 2017

Page 1 of 5

3.5 Test Required Information. The following specific information is required for Driveline Mounts to facilitate fixture development, test setup and data organization.

3.5.1 Number of Test Pieces.

3.5.2 In-Vehicle Location and Orientation.

3.5.3 Test Direction.

3.5.4 Mean Load (Preload) and Direction (N) (-Compression/+Tension).

3.5.5 Peak-to-peak Test Displacement(s) (mm)

3.5.6 Test Frequency or Range (Hz)

3.5.7 Test Frequency Step (Hz)

3.5.8 Desired Report Format.

3.5.9 Desired Plots. The required information shall be submitted on the regionally approved test request form. For an example, see Appendix A, Table A1.

3.6 Personnel/Skills. See GMW14738.

4 Procedure

4.1 Preparation. See GMW14738.

Note: The mass of the fixture located on the stationary platen shall be minimized to reduce errors due to mass-inertia accelerations. The fixture located on the moving platen shall be rigid to eliminate any possibility of structural resonance near operating frequencies. More specific guidance for the development of appropriate test fixtures is included in GMW14738.

4.2 Conditions.

4.2.1 Environmental Conditions. See GMW14738.

4.2.2 Test Conditions. Deviations from the requirements of this standard shall have been agreed upon. Such requirements shall be specified on component drawings, test certificates, reports, etc.

4.2.2.1 Driveline Mounts. Recommended test conditions for Driveline Mounts are documented in Appendix B, Table B1 and Table B2.

4.3 Instructions. See GMW14738.

Note: If static and dynamic rates are to be tested, perform the static testing first.

5 Data

5.1 Calculations. See GMW14738.

5.2 Interpretation of Results. Results should be reviewed to ensure that they are characteristic of the part design. Unexpected variation in rate, damping or phase angle could indicate errors associated with test fixtures or procedure.

The results from 5.1 should satisfy the SSTs/ CTS requirement.

5.3 Test Documentation. The result of this test is a plot of dynamic stiffness and loss angle (damping) versus frequency for each test condition, see GMW14738.

6 Safety

This Engineering Standard may involve safety requirements for hazardous materials, the method of operations and equipment. This standard does not propose to address all the safety issues associated with its use. It is the responsibility of the user of this standard to ensure compliance with all appropriate safety and health practices. This would include any specific training that may be required. The safety and health standards include site specific rules and procedures, company rules and procedures, and Government Standards. Contact shall be made with the appropriate site Safety and Health personnel for further direction and guidance in these matters.

GM Confidential

© Copyright 2017 General Motors Company All Rights Reserved

March 2017

Page 2 of 5

AVA Documents
Document Sharing Hub