



Air Induction System and Exhaust System Isolator - Dynamic Stiffness 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 of induction or exhaust mounts, see GMW14738.

1.2 Applicability. This test procedure is appropriate for use with all induction and exhaust elastomeric mounts, see GMW14738.

1.3 Remarks. Mount dynamic stiffness is a key component in isolating noise and vibration of the induction and exhaust systems from the vehicle interior, see GMW14738.

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.

Subsystem Technical Specification (SSTS)

3 Resources

3.1 Facilities. See GMW14738.

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. Induction or exhaust mount (component). See GMW14738.

3.4 Test Time.

Calendar time: 1 day

Test time: 2 hours

Coordination time: 2 hours

3.5 Test Required Information. See GMW14738.

3.6 Personnel/Skills. See GMW14738.

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4 Procedure

4.1 Preparation. See GMW14738.

4.2 Conditions. Conditions shall be as stated on the Elastomer Test Request Form, see GMW14738.

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 Air Induction System. The following test conditions apply for Air Induction Subsystem Isolators unless otherwise noted:

- Stroke: 0.1 mm peak to peak.
- Preload: -13 N.
- Frequency Range: 20 Hz to 400 Hz.
- Frequency Resolution: 10 Hz.
- Direction: Axial (and Translational as required).

Other conditions of interest can be used, see GMW14738.

4.2.2.2 Exhaust System. The following test conditions apply for Exhaust Subsystem Isolators unless otherwise noted:

- Stroke: 0.1 mm peak to peak. ^{Note}
- Preload: +50 N (cars); +80 N (trucks).
- Frequency Range: 20 Hz to 400 Hz.
- Frequency Resolution: 10 Hz.
- Direction: Vertical (fore/aft and/or lateral if mount is encapsulated design).

Other conditions of interest can be used, see GMW14738.

Note: If 0.1 mm stroke causes instability in the test, a larger stroke may be used; 0.5 mm peak to peak is suggested.

4.3 Instructions.

See GMW14738.

5 Data

5.1 Calculations. The result of this test is a plot of dynamic stiffness versus frequency for each orthogonal direction of interest, see GMW14738.

5.2 Interpretation of Results. The results from 5.1 should satisfy the SSTS requirement.

5.3 Test Documentation. 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.

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