GM WORLDWIDE ENGINEERING STANDARDS	Test Procedure	GMW14151

Laboratory Evaluation of Power Adjustable Pedal Sounds

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. This procedure describes a laboratory method for evaluating the noise of a power adjustable pedal system when mounted on a fixture.

1.2 Applicability. Passenger vehicles and on-road vehicles equipped with power adjustable pedals.

1.3 Remarks. The noise of a power adjustable pedal system during pedal adjustment travel is evaluated using the Zwicker loudness method.

Each of the two (2) modes of operation (front-to-back, back-to-front) is evaluated independently and then the results from each mode are compared together. For power accessory systems that have multiple modes of operation, an attribute indicating good quality is consistency among the modes. Therefore, it is important that the sound of each mode be nearly the same.

This method does not evaluate all the sound quality issues that may occur during power adjustable pedal operation such as grating sounds, sandy/gravelly sounds, etc., any of which can make an adjustable pedal, with acceptable loudness, unacceptable for use in the vehicle.

This method does not evaluate the structure-borne sound that can result when the power adjustable pedal system is mounted to a vehicle. It is assumed that a power adjustable pedal system that has poor sound quality in a laboratory situation will also have poor sound quality when mounted on the vehicle. Identification of airborne noise problems using a laboratory test is an efficient use of resources because it does not require a full vehicle.

2 References

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

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

GMW14155

2.3 Additional References. None.

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.

3.1.3 Test Room. Details given in GMW14155.

3.1.4 Test Fixture. The fixture shall consist of a base and framework to support, using vibration isolators, the adjustable pedal assembly, in a manner that simulates the way the assembly is mounted in a vehicle.

© Copyright 2016 General Motors Company All Rights Reserved

Documents Document Sharing Hub

Copyright General Motors Company
Provided by IHS Markit under license with General Motors Company
Reproduction, distribution or publication of these standards is expressly prohib
Licensee=/, User=,
Not for Resale,
Full document details: GM GMW14151 2016

3.2 Equipment. Details given in GMW14155.

3.3 Test Vehicle/Test Piece. Power adjustable pedal subsystem.

3.4 Test Time.

Calendar time:	1 to 2 days
Test time:	1 to 2 hours
Coordination time:	1 to 2 hours

3.5 Test Required Information. Unless otherwise specified the voltage setting for the DC power supply shall be 14.0 V ± 0.5 V.

3.6 Personnel/Skills. Details given in GMW14155.

4 Procedure

4.1 Preparation.

4.1.1 General preparation given in GMW14155.

4.1.2 Mount the adjustable pedal subsystem on the test fixture or prepare it for free-free suspension.

4.1.3 Position the fixture or suspend the adjustable pedal system in body position in the center of the test room.

4.1.4 Connect the electrical power to the adjustable pedal subsystem using an appropriate cable and control switch. The power supply and controls must be located outside the test room. Adjust to the voltage specified in the requirement.

4.1.5 Mount the microphone and preamp on the microphone stand.

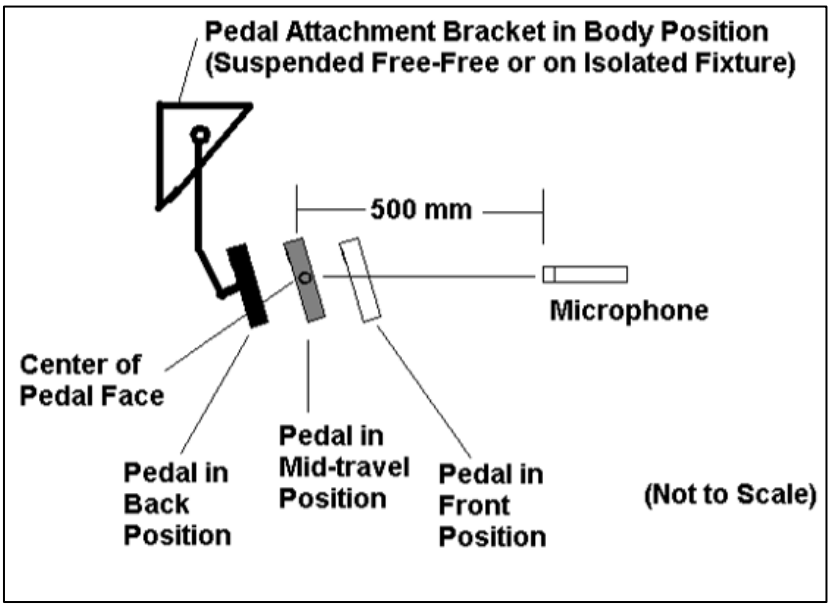
4.1.6 Connect the preamp to the microphone power supply via an extension cable.

4.1.7 Connect the power supply (AC output) to the Sound Recording System. The Sound Recording System and controls must be located outside the test room if they make noise that will interfere with the test.

4.1.8 Calibrate the microphone, power supply and digital recording system as described in GMW14155.

4.1.9 Position the microphone as shown in Figure 1. The microphone shall be positioned on the centerline of the pedal assembly (in line with the direction of adjustment). The distance from the mid-travel position of the brake pedal to the microphone is 500 mm. The tolerance for all microphone position distances is ± 20 mm.

Figure 1: Microphone Location for Power Adjustable Pedal Sound Quality Evaluation



© Copyright 2016 General Motors Company All Rights Reserved

Documents
Document Sharing Hub
Copyright General Motors Company
Provided by IHS Markit under license with General Motors Company
Reproduction, distribution or publication of these standards is expressly prohib
Licensee=/, User=,
Not for Resale,
Full document details: GM GMW14151 2016