GM WORLDWIDE ENGINEERING STANDARDS	Test Procedure	GMW16161

Automatic Transmission Range Selector Lever Compliance, Ultimate Strength and Durability

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. Provide a standard test method to test deflection, ultimate strength and durability of the transmission range select lever.

1.2 Applicability. This test procedure is appropriate for use with all automatic transmissions.

1.3 Remarks. Lever deflection, ultimate strength and durability are important factors in the complete shift system performance.

2 References

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

2.1 External Standards/Specifications.

SAE J403

2.2 GM Standards/Specifications.

GMW15607

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.

3.2.1 The equipment for lever compliance must be capable of applying and holding loads at 225 N and 890 N. Equipment must be capable to measure point deflection in increments of 0.01 mm.

3.2.2 The equipment for durability must be capable of cycling the lever with a load of 90 N in the plus and minus directions and 350 N in one (1) direction.

3.3 Test Vehicle/Test Piece. Transmission range select lever.

3.4 Test Time.

Calendar time:	30 d
Test time:	26 d

Documents Document Sharing Hub

Copyright General Motors
Provided by IHS Markit under license with General Motors

Full document details: GMW GMW16161 2019

3.5 Test Required Information.

3.5.1 Lever Compliance Information.

- Deflection at 225 N load.
- Deflection and observations of test piece after 225 N load.
- Pictures of all tests and lever.

3.5.2 Lever Ultimate Strength Information.

- Force vs. deflection at 890 N load.
- Deflection and observations of test piece after 890 N load.
- Pictures of all tests and lever.

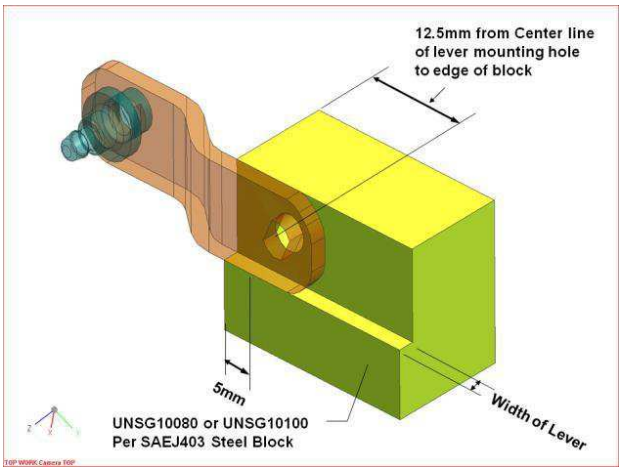
3.5.3 Durability Information.

- Crack analysis at manual shaft interface.
- Pin perpendicularity before and after test.
- Picture of test setup and levers before and after test.

3.6 Personnel/Skills. Test technician familiarized with Section 3 equipment and facilities.

4 Procedure

4.1 Preparation. Lever shall be through bolted at the center of mounting hole and supported from the manual shaft end of the lever to 12.5 mm from the centerline of the manual shaft mounting hole by a steel test block. See Figure 1.



Note: Unified Numbering System (UNS) is an alloy designation system.

Figure 1: Fixture Dimensions4.2 Conditions.

4.1.1 Test block fixture shall be secured to load application equipment. Heat treat block to withstand multiple tests.

Note: Block may be large enough to use different lever designs. However, the block should follow the shape of the lever from the edge of the block for a minimum of 5 mm to avoid point loading. See Figure 1.

4.1.2 The through bolt and nut shall be of similar size and shape to the mounting shaft. The test piece will be secured to the production intent torque.

4.2.1 Environmental Conditions. Ambient temperature.

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.

Documents
Document Sharing Hub
Copyright General Motors
Provided by IHS Markit under license with General Motors
Full document details: GMW GMW16161 2019