



Floor Shift System, Carbonated Beverage Spill Test

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 standard is to determine the robustness of the automatic shifter assembly, including shift knob assembly, with and without the console, to function properly with controlled amounts of contamination, such as carbonated beverage spills.

1.2 Applicability. The test applies to all passenger cars and light duty trucks with console/floor mechanical driven automatic shift systems and electronic lever automatic shift systems. The component level test is intended for mechanical corporate common core mechanisms or mechanical shifters without a knob or other close out as a development test.

1.3 Remarks. The test applies controlled amounts of carbonated beverage application to the automatic shifter assembly, including shift knob assembly, as installed in the console assembly in the vehicle, system test, and as a standalone shifter only, component test.

2 References

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

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

GMW14264

3 Resources

3.1 Facilities. Physical test laboratory in which the shifter and console assembly can be mounted and secured to a bed plate or T-slot table, and the shifter can be cycled by hand.

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 Carbonated beverage, such as "Coke" with a sugar content of 10 g/100 ml to 12 g/100 ml.

3.2.2 Bed plate or T-slot table.

3.2.3 Spring scale or equivalent, 0 N to 100 N range.

3.2.4 Ohmmeter or equivalent.

3.2.5 Funnel to fit over shift handle tube that has 2 mm diametric clearance (component level test only).

3.2.6 Enclosure that can be placed over the test samples with a heater capable of 85 °C ± 3 °C.

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March 2018

Page 1 of 5

3.3 Test Vehicle/Test Piece. Eight (8) shifter assemblies with vehicle integration components, i.e., console, trim plate, slider, boot, etc. not attached to the transmission.

Note: Vehicle integration components not required for component level test.

Note: If the shifter has a boot, the Designing Engineer needs to verify correct boot formation before performing the test.

3.4 Test Time.

Calendar time:	3 d to 5 d
Test time:	48 h to 72 h
Coordination time:	8 h

3.5 Test Required Information. Not applicable.

3.6 Personnel/Skills. Basic laboratory skills and familiarity with GM test procedure and report requirements.

4 Procedure

4.1 Preparation. Measure performance requirements (pretest) on all eight (8) shifters and knob assemblies and enter on Data Sheet A1 in Appendix A.

4.1.1 If applicable, for system tests only, the slider cannot fold or bunch affecting shift efforts.

4.1.2 All Park/Reverse/Neutral/Drive/Low (PRNDL) detent positions shall be fully attained including the activation of all positioning micro-switches. All micro-switches shall function normally. Measure on/off continuity.

4.1.3 Brake-Transmission-Shift-Interlock (BTSI) system shall function normally. Verify operation and measure inductance or resistance.

4.1.4 If applicable, for system tests only, verify indicator is operational and illuminates normally.

4.1.5 If applicable, for system tests only, verify all console/bezel switches are functional and operational.

4.2 Conditions.

4.2.1 Environmental Conditions. Laboratory ambient conditions.

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.

4.3 Instructions.

4.3.1 Place four (4) of the shifters in Park and four (4) in Drive.

4.3.2 System (Vehicle Integration) Test.

4.3.2.1 On two (2) of the mechanical shifters and knob assemblies in Park and two (2) of the mechanical shifters and knob assemblies in Drive, or, two (2) of the electronic lever shifters and knob assemblies in the monostable position, pour 355 mL (12 oz) of carbonated beverage (on each shifter) to cover the shifter bezel and lever, close-out, i.e., slider/fish scales/boot, etc. evenly distributed and covering the entire bezel, i.e., side-to-side and fore/aft, and close-out surface starting at the front and moving to the rear.

4.3.2.2 On the remaining two (2) of the mechanical shifters and knob assemblies in Park and two (2) of the mechanical shifters and knob assemblies in Drive, or, two (2) of the electronic lever shifters and knob assemblies in the monostable position, pour 355 mL (12 oz) of carbonated beverage (on each shifter) to cover the shifter bezel and lever, close-out, i.e., slider/fish scales/boot, etc. evenly distributed and covering the entire bezel, i.e., side-to-side and fore/aft, and close-out surface starting at the front and moving to the rear, while shifting from Park to Low and Drive to Park, respectively, for 5 cycles at a rate of 3 s to 5 s per cycle.

4.3.3 Component (Mechanical Shifter Lever) Test. Not applicable to electronic shift lever assemblies.

4.3.3.1 On two (2) of the shifters in Park and two (2) of the shifters in Drive, position funnel on shift handle tube at a point 30 mm above the top shifter housing and pour 60 mL (2 oz) of carbonated beverage, on each shifter, thru the funnel.

4.3.3.2 On two (2) of the shifters in Park and two (2) of the shifters in Drive, position funnel on shift handle tube at a point 30 mm above the top shifter housing and pour 60 mL (2 oz) of carbonated beverage, on each shifter, thru the funnel. Immediately after fluid application, shift from Park to Low and Drive to Park, respectively, for

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March 2018

Page 2 of 5