



Automatic Transmission Column and Console Shift System Effort

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 measure shift system driver effort on either console or column shift vehicles.

1.2 Applicability. This test applies to all passenger cars, multipurpose passenger vehicles and light duty trucks with automatic transmission shift systems.

1.3 Remarks. This procedure provides a consistent method to measure transmission shift effort on a 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.

None

2.3 Additional References.

Program Specific Automatic Transmission Subsystem Technical Specification (SSTS)

3 Resources

3.1 Facilities. Physical test laboratory that can accommodate a vehicle.

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. Equipment specified is used by GM test laboratories. Substitution of other comparable equipment is permitted.

3.2.1 Minimum 50 N force gage with a hold feature, or equivalent load cell.

3.2.2 Force vs. time data capture system, e.g., X-Y plotter, if a load cell is used.

3.2.3 Means of holding the selector handle button or selector pawl actuator rod depressed. See 4.1.

3.3 Test Vehicle/Test Piece. Vehicle with desired automatic transmission and properly routed cable and properly installed floor shifter.

3.4 Test Time.

Calendar time: 1 d

Test time: 3 h

Coordination time: 2 h

3.5 Test Required Information. Not applicable.

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

4 Procedure

4.1 Preparation. Depending on the type of shift system to be tested, see 4.3, prior to taking the measurements, a means of holding the selector handle button or selector pawl actuator rod depressed shall be devised to allow the selector to move throughout its positions without any external interference.

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 Console/Instrument Panel (IP) Mounted Shift Control (Shift Controls with a Release Button on the Handle). With the handle button/gate pawl actuator rod held depressed, measure customer loads at the shift handle. Customer loads are measured at the Load Application Point (LAP), which is defined as a point 15 mm below the upper most point on the handle for console and IP mounted shift controls.

4.3.2 Column Mounted Shift Control (Shift Controls in Which the Lever is Lifted to Release it From the Gates). Measure customer loads at the LAP, which is defined as a point 25 mm from the end of the shift lever. To measure effort between two (2) positions with a gate between them, i.e., Park to Reverse, Drive to Low, Neutral to Reverse, Reverse to Park, lift the lever over the gate and position the lever just past the edge of the gate prior to attaching the force gage or load cell. This can usually be accomplished with minimal force on the lever due to lash in the system.

4.3.3 Measurement of Park to Reverse Effort. Park to Reverse measurements are taken with the vehicle on level ground and the park pawl engaged. Check that one (1) or more wheels are not in a dip, hole, etc. With the transmission in Park, rock the vehicle back and forth to ensure that the park pawl is engaged and the vehicle will not roll. If the pawl was not initially engaged, a click may be heard from the transmission and the vehicle will cease to roll any further.

5 Data

5.1 Calculations. Not applicable.

5.2 Interpretation of Results. Reference the Program Specific Automatic Transmission Subsystem Technical Specification (SSTS) for target values of customer effort. All deviations shall be reviewed by the Global Subsystem leadership team (GSSLT) for determination of acceptability.

5.3 Test Documentation. Reference Data Sheet A1 in Appendix A. Record peak efforts to shift through each gear position (in both directions), or provide force vs. time data, if using a load cell.

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.

7 Notes

7.1 Glossary. Not applicable.

7.2 Acronyms, Abbreviations, and Symbols.

GSSLT	Global Subsystem Leadership Team
IP	Instrument Panel
LAP	Load Application Point
SSTS	Subsystem Technical Specification

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