



Brake System Equipment and Controls Design Verification

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 test procedure is to determine if the brake system design meets the requirements for brake system equipment and brake system controls for either United States of America, Federal Motor Vehicle Safety Standard (FMVSS) 135 or FMVSS 105.

1.2 Applicability. This standard is applicable to all vehicles required to certify to FMVSS 135 or FMVSS 105.

1.3 Remarks. This procedure results in a checklist that may be used to document compliance to the applicable requirements in FMVSS 135 sections 5.1, 5.1.1, 5.1.2, 5.1.3 (a), 5.1.3 (b), 5.2, 5.3.1, 5.3.2, 5.4.3, and 5.4.4; or the FMVSS 105 sections 5.1, 5.2, 5.4.3, 5.5.2, and 6.2.4 (a).

2 References

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

2.1 External Standards/Specifications.

FMVSS 105 FMVSS 135

2.2 GM Standards/Specifications.

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.

3.2 Equipment. Not applicable

3.3 Test Vehicle/Test Piece. This is a design verification and does not require a physical vehicle or test piece.

3.4 Test Time. Time required for the analysis and engineering report is approximately 1 day to 2 days.

3.5 Test Required Information. Not applicable.

3.6 Personnel/Skills. The responsible GM design engineer, GM performance engineer, brake system supplier engineer, or other qualified engineer shall execute this procedure. A review by the program brake release engineer and validation analyst is suggested.

4 Procedure

4.1 Preparation. Not applicable.

4.2 Conditions.

4.2.1 Environmental Conditions. Not applicable.

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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 Changes to the brake system after model year regulatory validation may require a new analysis.

4.3 Instructions.

4.3.1 Complete Appendix A, Data Sheet A1. Refer to FMVSS 135 or FMVSS 105 documents for any needed clarification of the requirements. The appropriate FMVSS 135 and FMVSS 105 section numbers are listed on the data sheet.

5 Data

5.1 Calculations. Not applicable.

5.2 Interpretation of Results. The results may be used to document compliance to the applicable requirements in FMVSS 135 sections 5.1, 5.1.1, 5.1.2, 5.1.3(a), 5.1.3(b), 5.2, 5.3.1, 5.3.2, 5.4.3, and 5.4.4, or FMVSS 105 sections 5.1, 5.2, 5.4.3, 5.5.2, and 6.2.4(a).

5.3 Test Documentation. Publish the results in an engineering evaluation report stored in the GM Global Document Management (GDM) system.

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.

ABS	Anti-lock Braking System
DRE	Design Release Engineer
EV	Electric Vehicle
FMVSS	Federal Motor Vehicle Safety Standard
GDM	Global Document Management
GSSLT	Global Subsystem Leadership Team
RBS	Regenerative Braking System
RPO	Regular Production Option

8 Coding System

This standard shall be referenced in other documents, drawings, etc., as follows:

Test to GMW15109

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