WORLDWIDE ENGINEERING STANDARDS	Test Procedure	GMW17373

Automatic Vehicle Hold System Performance

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 performance of a vehicle equipped with an automatic vehicle hold (AVH) system. This standard may be used for development or validation of requirements within the GM Vehicle Technical Specification (VTS) and for regional regulations.

Four different technical conditions of automatic vehicle hold system is considered: automatic vehicle hold enable and driver exit functionality, electric parking brake (EPB) interface functionality, Full Speed Range Active Cruise Control (FSRACC) interface functionality and driver door and driver seat belt validity functionality.

1.2 Applicability. This standard is applicable for vehicles equipped with the AVH system.

1.3 Remarks. Not applicable.

2 References

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

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

GMW16424 (ID)

(ID) = This standard is limited to internal distribution within General Motors and shall not be distributed outside this company. Contact the GM Lead Engineer for further instructions.

2.3 Additional References.

- CG4061, Automatic Vehicle Hold Functional Checkout
- Electrical Subsystem Technical Specification (SSTS), Electronic Brake Command Module (EBCM)
- Vehicle Technical Specification (VTS)

3 Resources

3.1 Facilities. Test is to be conducted on a flat surface (such as the Vehicle Dynamics Test Area at the Milford Proving Ground and various grades (GMW16424: Hills with grades of 2.6% (1.5 degrees), 4.4% (2.5 degrees), 7.2% (4.1 degrees), 12% (6.9 degrees) and 20% (11.3 degrees)).

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 AVH enable telltale signal.

3.2.2 AVH active telltale signal.

3.2.3 EPB telltale signal.

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3.3 Test Vehicle/Test Piece. See Procedure section.

3.4 Test Time.

Calendar time:	2 days
Test time:	4 hours
Coordination time:	1 day

3.5 Test Required Information. Possible sources are:

- Electronic Brake Command Module (EBCM) Subsystem Technical Specification (SSTS).

3.6 Personnel/Skills. Chassis controls engineer certified to run braking tests.

4 Procedure

4.1 Preparation.

4.1.1 Build or verify the test vehicle with the automatic vehicle hold system. Record vehicle and brake system information in the test record (see Appendix A, Data Sheet A1). The vehicle to be tested must be in safe operating condition. Condition of tire, brake and suspension components should be inspected carefully. All vehicle safety equipment must be in proper operating condition.

4.1.2 Inflate tires to manufacturer's recommended pressure or per test engineer's instructions.

4.2 Conditions.

4.2.1 Environmental Conditions. Dry asphalt test surfaces are required.

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. Follow the instructions and record vehicle reactions according to CG4061.

5 Data

5.1 Calculations. Not applicable.

5.2 Interpretation of Results. Results of vehicle reactions from testing and any comments are recorded in CG4061.

5.3 Test Documentation. The vehicle information, test information and test results shall be published following GM corporate protocol using the Evaluation Report template and the approved engineering document management system/repository.

6 Safety

This standard may involve hazardous materials, operations, and equipment. This standard does not propose to address all the safety problems associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

In general, a risk assessment needs to be performed for every driving instruction prior to executing this standard. (**Note:** National law needs to be considered while performing a risk assessment.) The required rating of risk by exposure probability and possible violation will be done in a separate document. Every identified risk must be named inside the risk assessment for the relevant driving instruction in order to announce that risk to employees. Within the risk assessment, the vehicle equipment and different vehicle build stages have to be considered. After performing a risk assessment, non-acceptable risk needs to be mitigated by appropriate countermeasures. Here technical measures are preferred because these are independent from attendant circumstances. In case technical measures are not appropriate, organizational and/or personal measures will apply. This includes training, wearing of Personal Protection Equipment, or arrangement of idle time.

6.1 Safety Precautions.

6.1.1 Instrumentation and other test equipment must be securely mounted in accordance with proving grounds traffic safety guidelines for mounting and usage of in-vehicle instrumentation.

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