GM	WORLDWIDE ENGINEERING STANDARDS	Test Procedure	GMW17727

EBCM Hill Descent Control 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 verify the performance and functional operation of the Electronic Brake Command Module (EBCM) Hill Descent Control (HDC). Hill Descent Control will actively build brake pressure using the Electronic Stability Control (ESC) module in order to maintain a driver controlled set speed while descending steep hills at low speed without the driver needing to touch the brake pedal. This allows the driver to focus more of their attention on steering and avoiding obstacles instead of on braking the vehicle.

1.2 Applicability. This standard is applicable for vehicles equipped with EBCM Hill Descent Control.

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.

None

2.3 Additional References.

CG4728 EBCM Hill Descent Control Performance

3 Resources

3.1 Facilities. Test is to be conducted on inclining and declining road grades, such as those located at the Milford Proving Ground (MPG), or any other applicable test facility.

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. Production representative vehicle with up to date EBCM software and calibration. Required vehicle serial data bus signals are provided in CG4728.

3.3 Test Vehicle/Test Piece. Refer to Section 4.

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3.4 Test Time.

Calendar time:	1 day
Instrumentation time:	Not applicable
Test time:	8 hours
Coordination time:	1 day

3.5 Test Required Information. Calibration values described in CG4728.

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

4 Procedure

4.1 Preparation.

4.1.1 Build, instrument and verify the test vehicle with functioning EBCM Hill Descent Control. 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.

4.2 Conditions.

4.2.1 Environmental Conditions. Test hill surfaces are required where driver can safely control vehicle descent in order to verify functionality and performance of Hill Descent Control.

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 CG4728.

5 Data

5.1 Calculations. Not applicable.

5.2 Interpretation of Results. Results of vehicle reactions from testing and any comments are recorded in CG4728.

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.

6.1.2 All running lights and vehicle safety features must be operational according to proving grounds rules for running lights and power windows. Exterior lights must not be obscured by styling add-ons, covers or camouflage packages. The horn may be disabled because of steer angle transducer installation.

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