WORLDWIDE ENGINEERING STANDARDS	Test Procedure	GMW17726

EBCM Grade Park Assist 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) Grade Park Assist. Grade Park Assist will hold driver created brake pedal pressure and apply the Electronic Parking Brake (EPB) when the vehicle is shifted into Park on steep road grades. The purpose of holding driving induced brake pedal pressure and applying the EPB is to decrease load on Park pawl.

1.2 Applicability. This standard is applicable for vehicles equipped with the EBCM Grade Park Assist.

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.

CG4727 EBCM Grade Park Assist Performance

3 Resources

3.1 Facilities. Test is to be conducted on incline and decline 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.

3.2.1 Brake pressure sensors at each corner of the vehicle.

3.2.2 Data acquisition system (DAS) capable of measuring brake corner pressure sensors and collecting data from vehicle serial data bus such as Transmission Shift Lever Position and EPB Status.

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

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3.4 Test Time.

Calendar time:	1 day
Instrumentation time:	1 day
Test time:	4 hours
Coordination time:	1 day

3.5 Test Required Information. Calibration values described in CG4727.

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 Grade Park Assist. 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. Dry test hill surfaces are required where driver can control vehicle speed and verify status of Grade Park Assist.

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 CG4727.

5 Data

5.1 Calculations. Not applicable.

5.2 Interpretation of Results. Results of vehicle reactions from testing and any comments are recorded in CG4727.

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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