



Full Size Cab Chassis Truck General Durability Test

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. To provide a common global durability and reliability performance evaluation of a full size cab chassis truck in a severe customer environment.

1.2 Applicability. Full Size Cab Chassis trucks.

This test procedure is to be used to validate the Vehicle Technical Specification (VTS) requirement entitled Long-Term Requirement. See Section 3.2.3.2.4.2 of the VTS Template for additional information.

1.3 Remarks. The base test is to be run by Two Wheel Drive (2WD) cab chassis trucks. For Four Wheel Drive (4WD) cab chassis trucks, the additional 4WD content is to be run along with the base test content.

1.3.1 This durability test standard is intended to provide a wide spectrum of vehicle inputs in order to cause interface issues to occur. Some selected inputs are representative of 241 350 km (150 000 mi) of operation of a greater than average severity customer. Other inputs represent a much lower severity, but are included to help identify performance and durability issues throughout the target life of the vehicle.

1.3.2 In addition, this test subjects a vehicle to an environment that simulates various global environmental conditions capable of promoting vehicle corrosion. Specifically, this base test provides the equivalent of five years exposure to a general corrosion environment associated with Global Regional Corrosion Classifications – Class 1 and Class 2 (refer to GMW15272 Corrosion Performance Specification). The test includes an option to run 10 years of integrated corrosion when used to support corrosion validation (refer to GMW8738 Proving Ground Corrosion Road Test Specification). If the number of required corrosion test properties has been met, then there is also an option to delete corrosion.

1.3.3 Due to the abbreviated nature of this test, the less damaging and often time-consuming inputs are greatly reduced or eliminated.

1.3.4 While GMW16164 is intended to cover global road systems, the test does not encompass all known customer usage treatments. Some of the limitations are due to accelerated usage and some are due to the constraints of the proving ground test facilities. Additionally, the database for defining the worldwide vehicle operating environment is evolving and periodic content changes to this standard are expected.

1.3.5 If more rigorous exposure to unique customer usage treatments is desired, other specialized testing should be considered as part of the vehicle test plan. Some considerations should be given to the following:

- GMW15016 Cold Weather Exposure Test
- GMW15730 Hot Weather Exposure Test

Other aspects of vehicle usage that are not sufficiently addressed in this test and should be considered during the development process include:

- Appropriate temperature aging (thermal cycling) of components – brakes, engine controls, transmission, hoses, seals, etc.
- Chemical degradation – aging, acid rain, bird droppings, ultraviolet radiation, dust exposure, etc.
- Seat and seat restraint usage – normal wear and tear of interior passenger and cargo areas
- Curb impacts, scuffing, or pushaways (primarily parking related)
- Non-maintenance of vehicle (lubricants, cleaning, etc.)

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- Maintenance based on time periods (as opposed to mileage)
- Non-specified fluids and lubricants (lower grade materials)
- Vehicle stuck in snow, ice, sand, mud, or deep water
- Tire chain operation (proper and improper)
- Accessory operations (windows, wipers, air conditioning, heater, etc.)

1.3.6 Results of this test should be regarded as highly probable to occur in the hands of some customers inasmuch as the event contains vehicle treatments based on measured customer vehicle operation. This procedure specifies vehicle operation designed to match data collected on groups of randomly selected customers' vehicles. The intent of the test is to subject the vehicle to the treatment of a greater-than-average severity customer for each of the measured test inputs.

2 References

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

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

GMW3238	GMW15444	GMW15555	GMW16180
GMW3241	GMW15445	GMW15677	GMW16627
GMW3423	GMW15527	GMW15706	GMW16933
GMW8738 (ID)	GMW15550	GMW15708	GMW17168
GMW14264	GMW15552	GMW15715	
GMW15216	GMW15553	GMW15728	
GMW15272	GMW15554	GMW15744	

(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.

- VTS Template – Long Term Requirement

2.3.1 Milford.

DR.MF.AI	DR.MF.EI	DR.MF.OH	DR.MF.SS
DR.MF.AP	DR.MF.ET	DR.MF.PB	DR.MF.TB
DR.MF.AS	DR.MF.FI	DR.MF.PE	DR.MF.TD
DR.MF.AW	DR.MF.FR	DR.MF.PO	DR.MF.TE
DR.MF.AZ	DR.MF.GT	DR.MF.PR	DR.MF.TS
DR.MF.BB	DR.MF.HC	DR.MF.PX	DR.MF.TT
DR.MF.CS	DR.MF.IT	DR.MF.PY	DR.MF.TW
DR.MF.CY	DR.MF.JK	DR.MF.PZ	DR.MF.TZ
DR.MF.DG	DR.MF.MP	DR.MF.RH	DR.MF.VW
DR.MF.DP	DR.MF.MS	DR.MF.SD	
DR.MF.DW	DR.MF.MV	DR.MF.SL	
DR.MF.EG	DR.MF.NO	DR.MF.SP	

3 Resources

3.1 Facilities. Proving Grounds used by General Motors:

- Milford Proving Ground (USA)

3.1.1 Calibration. The test facilities and equipment shall be in good working order and shall have a valid calibration label.

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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 Some method of accurate speed indication should be provided to the driver for the accurate execution of the driving instructions.

3.2.2 Some type of acceleration/deceleration rate indicator should also be provided to the driver.

3.3 Test Vehicle/Test Piece. Test vehicle equipped as specified.

3.4 Test Time. Repair, inspection, routine maintenance, refueling, and downtime will increase the total test time.

Calendar time: 0 d

Test time: 1386 h

Coordination time: 0 h

3.5 Test Required Information. Not applicable.

3.6 Personnel/Skills. The driving instructions that comprise this test are intended to be performed by personnel specifically trained in the proper execution of the driving instructions. Refer to the appropriate proving ground driving instruction documents and related risk assessments.

Different driver license requirements, knowledge of test content, and mandatory health checks for involved personnel have to be considered.

4 Procedure

4.1 Preparation. Current maximum allowable vehicle speed to be supplied by test responsible personnel to ensure the vehicle is operated safely. If the vehicle is equipped with a manual transmission, the shift point speeds should also be determined and provided.

4.1.1 Measurement of adjustments and settings may be made as deemed necessary to document the condition of the vehicle. These measurements must be made without significantly affecting the adjustment or setting being considered. The intent of these measurements is to document the condition of the vehicle without changing the state of the original assembly.

4.1.2 Vehicles being operated on this test for any other purposes (e.g., design evaluation), should be prepared in a manner appropriate to that particular test intent.

4.2 Conditions.

4.2.1 Environmental Conditions. Most driving procedures can be performed in all types of weather; however, in situations where severe weather makes certain driving events unsafe they should be postponed until road conditions improve. Refer to each local proving ground driving instruction to determine if dry road conditions 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.

Test vehicles equipped with automatic rain sensors for windshield wipers should have the feature turned on throughout the duration of the test.

4.2.3 Ballast. Ballast definitions are explained in GMW15445 Vehicle Ballast for Cab Chassis trucks. The Ballast Calculation Data Sheet in Appendix H of GMW15445 should be used to determine the proper ballast mass.

4.3 Instructions. Perform the driving instructions listed Table A1: Specified Events – Cycles at Ballast (Appendix A).

4.3.1 Test Scheduling Guidelines.

4.3.1.1 Linear Test Content. In order to subject the vehicle to a reasonable simulation of customer usage in a linear manner of operation, distribute the event/ballast combinations as evenly as possible throughout each phase of this test.

4.3.1.2 Vehicle Break-in. The vehicle should not receive any “break-in” miles unless such are specifically required or recommended in the Owner’s Manual in such terms that more than 90% of the vehicle purchasers or users would be expected to follow the recommendation. The intention of this Durability Test is to subject the

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