# Global Durability Test Instructions and Definitions

## 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 set of instructions and definitions to be used in the durability tests and road load data acquisition (RLDA).

**1.2 Applicability.** This procedure is applicable to passenger vehicles and two wheel drive (2WD) and four wheel drive (4WD) trucks.

**1.3 Remarks.** This specification relates to durability driving instructions that were developed to reproduce various aspects of customer usage for passenger cars and light duty trucks. This standard gives common definitions for terms and provides some general driver information related to guidelines, responsibilities, and instrumentation. Global durability driving instructions were created to effectively use proving ground road systems and test facilities.

## 2 References

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

**2.1 External Standards/Specifications.**

None

**2.2 GM Standards/Specifications.**

GMW15445

## 3 Resources

**3.1 Facilities.**

- Arjeplog Cold Weather Test Site – Sweden.
- Cheong Na Proving Ground – Korea.
- Cruz Alta Proving Ground – Brazil.
- Desert Proving Ground Yuma – USA.
- Dudenhofen Proving Ground – Germany.
- Guangde Proving Ground – China.
- Hei He Cold Weather Test Site – China.
- Kapuskasing Cold Weather Development Centre – Canada.
- Lang Lang Proving Ground – Australia.
- Milford Proving Ground – USA.
- Millbrook Proving Ground – England.

**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.

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**3.2 Equipment.** The global durability driving instructions are intended to be performed utilizing a device or method of accurate speed indication up to the maximum speed the vehicle can reach. A vehicle speed calibration sheet fixed to the windshield may also be necessary for accurate speed indication. This device should be provided to the driver for the accurate execution of the events. Additionally, some type of acceleration/deceleration rate indicator should also be provided to the driver.

A driver guidance device may be used to indicate the driving maneuvers at the correct positions and conditions.

**3.3 Test Vehicle/Test Piece.** Not applicable.

**3.4 Test Time.** Not applicable.

**3.5 Test Required Information.** Not applicable.

**3.6 Personnel/Skills.** This standard is intended for the instruction of durability test drivers.

## 4 Procedure

**4.1 Preparation.** Not applicable.

**4.2 Conditions.**

**4.2.1 Environmental Conditions.** In most cases RLDA testing is **NOT** to be performed in wet conditions due to issues with the transducers and reduced available traction.

**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.**

**4.3.1 Driving Instructions.**

**4.3.1.1 Start/Stop Locations.** Refer to the appropriate global durability procedures. If used, the driver guidance display indicates the start and stop locations.

**Note: All miscellaneous mileage should be driven at posted speeds and consist of light accelerations/decelerations, minimizing any conflicts with existing durability traffic.**

**4.3.1.2 Completion of Driving Instructions.** If a driver is in the process of running a durability driving instruction, the entire procedure should be completed prior to returning to the building area.

Other modifications are permitted with supervisor approval only.

**4.3.1.3 Consecutive Cycles of Events.** It may be necessary to limit the number of consecutive cycles allowed for a given driving instruction so as not to overheat components such as shocks, brakes, mounts, etc. Sequencing of events with similar test content like aggressive braking events without appropriate cooling must be avoided.

**4.3.1.4 Driving Instruction Deviations.** Deviations from driving instructions are permitted only by **Special Instructions** from test responsible personnel.

**4.3.2 Driver Instructions.**

**4.3.2.1 Driver Responsibilities.** The driver is to provide the first indication that the vehicle requires attention. During the execution of the driving instruction, the driver is to observe vehicle behavior and inform the responsible individuals through written comment whenever a malfunction occurs or unusual behavior is experienced. The driver should, in essence, play the role of the customer. The driver should be informed of this responsibility and should be instructed to keep accurate, thorough records on the vehicle. The driver is an important source of vehicle performance information for the test analyst with whom they should actively communicate.

The proper execution of a test is highly dependent on close driver adherence to the driving instructions. Accurate correlation with field experience can only be achieved by means of tailored combinations of vehicle speed, road surface and driving maneuvers.

Driver participation in test development by observing and commenting on any aspects of the test procedure that could be improved is encouraged.

General vehicle interior housekeeping is each test driver's responsibility throughout the duration of the test. Remove and deposit waste material in appropriate trash containers at the end of each shift.



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**4.3.2.2 Instructions that Specify a Landmark.** The word **at** is frequently used to describe the location of a maneuver. Unless otherwise stated, the following guidelines hold: **Accelerate at** means to begin the acceleration at the given landmark. **Brake at** means to begin the brake application at the given landmark. **Stop at** means to complete the brake application and stop by the given landmark.

**4.3.2.3 Vehicle Speed.** Vehicle inputs depend greatly on vehicle speed during the execution of the events. The intent is to perform the instructions with a speed tolerance of ± 3 km/h (± 2 mph). RLDA requires potholes to be performed within ± 1.6 km/h (± 1 mph) tolerance.

**4.3.2.4 Turn Signal Usage.** Use turn signals when making turns and lane changes.

**4.3.2.5 Headlight Usage.** For road courtesy, headlights may be turned off and parking lights turned on at night during engine idles and ignition stops greater than 5 s duration on the stop pads. Turn headlights on before leaving the stop pads.

**4.3.3 General Instructions.**

**4.3.3.1 Manual Transmission Shift Speed Guidelines.** Shift speeds for a manual transmission are to be determined by test responsible personnel using test procedures or other written guidelines. If used, the driver guidance display indicates the shift speed.

**4.3.3.2 Maximum Vehicle Speed.** The maximum vehicle speed for a test vehicle may be determined by test responsible personnel.

**4.3.3.3 Tire Pressure.** Check and adjust tire pressures as necessary.

**4.3.3.4 Vehicle Ballast.** Refer to GMW15445 Vehicle Ballast for definitions of ballast conditions and terms.

Vehicle mass is to be adjusted when indicated on the driver check-off sheet. All ballast must be secured.

Refer to the appropriate durability test standard for information related to the distribution of vehicle ballast by driving instruction.

**4.3.3.5 Driving Instrumentation.** The durability driving instructions are intended to be executed using an accurate vehicle speed and acceleration/deceleration rate indicator. Refer to 3.2 for more information.

On some grades or tracks, a target speed and landmark are given as part of the instruction to assist drivers without instrumentation. Refer to 4.3.2.2 for more information.

If the test vehicle is equipped with a driver guidance device, the driver shall follow the displayed instructions during the test. Deviations are allowed if driving safety is affected. The deviations shall be recorded in the driver report sheet.

**4.3.3.6 Tire Changes.** Tire changes for the purpose of replacing damaged, worn, or deflated tires incurred during the durability test are to be performed by qualified personnel assigned to tire replacement duties. Air pressure, wheel nut torques, and tire serial numbers are to be recorded prior to and after replacement is made. The removed tire is to be tagged and treated as test material for test user's disposition.

**Note:** For serviceable tire/wheel assemblies, if the tire is damaged beyond repair or worn out, replace the tire only.

## 5 Data

**5.1 Calculations.** Not applicable.

**5.2 Interpretation of Results.** Not applicable.

**5.3 Test Documentation.** Not applicable.

## 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.

## 7 Notes

**7.1 Glossary.** The following will serve as definitions of terms used throughout the driving instructions:



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