



Durability Event: Global Twist Course Facilities

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. This specification is intended to provide the definition and layout of a common GM twist course facility. This test facility will be used by all global GM test sites for durability testing and as the basis for laboratory and analytical activities.

1.2 Applicability. The Twist Course facility in this specification is intended for use in passenger car and truck testing and is available at the following GM test sites:

- Cruz Alta Proving Ground – Brazil.
- Dudenhofen Proving Ground – Germany.
- Guandge Proving Ground – China.
- Lang Lang Proving Ground – Australia.
- Milford Proving Ground – USA.

This global test procedure is intended to document the test facility requirements and driving instructions necessary to properly execute this durability event. Regional test procedures exist in order to implement this global procedure at the various GM proving grounds. Each regional test procedure includes the driving instructions for the specific access roads to and from the test facility, references to local signs and landmarks, and any other region-specific information necessary to implement this GMW durability event.

The Truck Eight Inch Twist Course and Truck Fifteen Inch Twist Ditch facilities are intended for light duty truck testing. These facilities are available at those GM proving grounds that test light duty trucks (Cruz Alta and Milford).

1.3 Remarks. This specification provides a GM worldwide engineering standard to insure uniformity of torsional inputs experienced by GM products being tested at various global test sites.

2 References

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

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

GMW15444 GMW15445

2.3 Additional References. (See Appendix A – Note).

2.3.1 Cruz Alta. DR.CA.1308, DR.CA.1309, DR.CA.1401

2.3.2 Dudenhofen. DR.DH.Twist

2.3.3 Guandge. DR.GD.TW

2.3.4 Lang Lang. DR.LL.7TC

2.3.5 Milford. DR.MF.TW, DR.MF.FI, DR.MF.EI, DL.MF.4E, DL.MF.4F, DL.MF.4X, DL.MF.EX

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3 Resources

3.1 Facilities. Refer to the following figures for the specifications of the Twist Course facilities:

- Figure A1 Twist Course Dimensions.
- Figure A2 Truck Eight Inch Twist Course Dimensions.
- Figure A3 Truck Fifteen Inch Twist Ditches Dimensions.

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. Refer to the appropriate proving ground driving instruction document.

3.3 Test Vehicle/Test Piece. Not applicable.

3.4 Test Time. 2 minutes to 8 minutes per twist course (proving ground dependent).

3.5 Test Required Information. Not applicable.

3.6 Personnel/Skills. Refer to the appropriate proving ground driving instruction document.

4 Procedure

4.1 Preparation. Periodic inspections of the twist course facilities are needed to insure appropriate torsional inputs. The twist ditches should be free of ice and accumulated snow.

4.2 Conditions.

4.2.1 Environmental Conditions. This driving module is intended to be executed during dry, wet, and/or snow-covered weather conditions. If any portions of the module, due to inclement weather conditions, are beyond the tractive capability of the vehicle or unsafe, the module should be postponed.

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. The Twist Course is to be driven at 10 km/h (5 mph). Refer to Figure A1 for details on twist ditches.

The Truck Eight Inch Twist Course and Truck Fifteen Inch Twist Ditches are to be driven at walking speed and the transfer case is to be in four wheel drive.

5 Data

5.1 Calculations. Refer to the appropriate durability test standard.

5.2 Interpretation of Results. Refer to the appropriate durability test standard.

5.3 Test Documentation. Refer to the appropriate durability test standard.

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.

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