



Vent Expulsion 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. The purpose of this specification is to evaluate lubricant leakage through the Axle or Rear Drive Module (RDM) vent.

1.2 Applicability. This specification applies to passenger cars and light trucks.

1.3 Remarks. This test procedure is intended to evaluate the Axle or RDM for fluid expulsion during simulated vehicle conditions of speed, attitude, temperature, and fluid expansion. Rollover requirements apply to RDM only.

2 References

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

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

9986285 GMW14264

2.3 Additional References.

- Component Technical Specification (CTS)
- CG4395
- Global Document Management (GDM) System (<https://documents.naeng.gm.com/gdm3>)
- GM1829 Analysis/Development/Validation Plan and Report (ADVP&R)
- Statement of Requirements (SOR)
- Subsystem Technical Specification (SSTS) (for Axle or RDM)
- Validation Cross Reference Index (VCRI)

3 Resources

3.1 Facilities. This test requires a lab/test cell for component testing. The test cell must be capable of inducing cold and hot thermal conditions on the test piece.

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.

3.2.1 The lab must be equipped with a dynamometer capable of applying the maximum possible input speed (rpm) to the test unit (see program specific Statement of Requirements (SOR), Appendix C Subsystem Technical Specification (SSTS)), as well as a means of measuring and recording the input and output shaft speeds.

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3.2.2 Articulating Table capable of 360 degree rotation to check roll over requirement as specified in RDM/Electronic Limited Slip Differential (eLSD) SOR Appendix C SSTS.

3.2.3 Fixtures or adapters capable of sealing off input and output shafts (as required), while allowing for speed (rpm) measurements.

3.3 Test Vehicle/Test Piece.

3.3.1 The test unit must be equipped with a means of monitoring and recording oil sump temperature.

3.3.2 The test unit must be of the highest numerical ratio available for that model in order to test the worst case condition.

3.4 Test Time.

Calendar time: 2 days

Test hours: 8 hours

Coordination hours: 4 hours

3.5 Test Required Information.

- SOR
- SSTS
- GM1829 Analysis/Development/Validation Plan and Report (ADVP&R)
- Validation Cross Reference Index (VCRI)

3.5.1 Record the following on CG4395 (available from Global Document Management (GDM) System):

- Maximum possible vehicle speed (Vmax): _____ km/h (mph)
 - Maximum possible pinion speed (propshaft speed) at Vmax: _____ rpm
 - Rotations per Kilometer (RPK) (smallest available tire): _____ RPK
 - Maximum possible wheel speed (ring gear speed) at Vmax: _____ rpm
 - Wheel speed (ring gear speed) at 162 km/h (100 mph): _____ rpm
 - Oil temperature range of test unit: – _____ °C to + _____ °C
 - Pinion inclination angle (relative to vehicle or cradle), reference SSTS: _____ degrees
- Note:** Trucks and passenger cars typically have different pinion angles.
- Highest numerical ratio available for the program: _____ : 1 ratio
 - Vent tube routing position (math data) to approximate in-vehicle routing

3.6 Personnel/Skills. Test technician should be proficient in proper selection and operation of the equipment listed in 3.2.

4 Procedure

4.1 Preparation.

4.1.1 Fill the axle carrier with the specified part number, type, and quantity of lubricant as stated by the test engineer (see SSTS, e.g., Gear Oil: Synthetic Lubricant; Type: 75W90; GM Part Number: 9986285; Volume: 0.46 L).

4.1.2 Check the axle lubricant level and ensure it is set to the appropriate level.

4.2 Conditions.

4.2.1 Environmental Conditions. Not applicable.

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 Roll Over Vent Expulsion Testing. Record results on CG4395 (available from GDM).

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