



Power Transfer Unit (PTU) Long Cycle Fatigue

1 Scope

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 the performance of the Power Transfer Unit (PTU) under an operating load.

1.2 Foreword. This procedure was developed to be able to begin testing the PTU before a full vehicle level duty cycle is available.

1.3 Applicability. This specification is for Power Transfer Units used in both All Wheel Drive cars and All Wheel Drive light trucks.

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

3 Resources

3.1 Facilities. The tests shall be performed in the designated testing environment at each GM regional site. The environment specified in the Vehicle Technical Specification (VTS) must be used for validation purposes. The ambient temperature shall be between 18 °C and 25 °C.

3.2 Equipment. The test equipment shall be capable of accurately applying the loading conditions described in this document. The equipment must be able to apply these inputs at vehicle-specific levels (forces, etc.) and frequencies specified separately by GM for each vehicle program or PTU. All measurement equipment must be capable of accurately making the measurements specified.

3.3 Test Vehicle/Test Piece. A test PTU is required and must be specified by test requester. The PTU should be qualified to represent model year design content. Any prototype, development addition or modification should be noted on the test request and report.

3.4 Test Time.

Calendar time: 14 days

Test hours: 300 hours

Coordination hours: 8 hours

3.5 Test Required Information. Not applicable.

3.6 Personnel/Skills. Not applicable.

4 Procedure

4.1 Preparation. Not applicable.

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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 Break-In.

4.3.1.1 Ramp the input speed of the PTU up to 460 rpm in 1 minute.

4.3.1.2 Once up to operating speed, increase the PTU input torque to 270 Nm over 30 seconds.

4.3.1.3 Continue running at 460 rpm and 270 Nm for 20 minutes.

4.3.2 Test Cycle.

4.3.2.1 Continue operating at 460 rpm. Increase the PTU input torque from the break-in torque of 270 Nm to the predetermined operating torque with a 1 minute ramp.

4.3.2.2 The PTU sump temperature should be monitored throughout the test with a normal temperature range of 90 °C to 110 °C, unless otherwise noted. If necessary, external cooling fans or a fluid cooler should be used to keep the fluid temperature in this range.

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. Not applicable.

7.2 Acronyms, Abbreviations, and Symbols.

PTU Power Transfer Unit

VTs Vehicle Technical Specification

8 Coding System

This standard shall be referenced in other documents, drawings, etc., as follows:

Test to GMW16714

9 Release and Revisions

This standard was originated in October 2011. It was first approved by the Driveline GSSLT in March 2012. It was first published in March 2012.

Issue	Publication Date	Description (Organization)
1	MAR 2012	Initial publication.

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