



Oil Temperature And Lubrication Test

1 Scope

Note: Nothing in this standard supersedes 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. Check of during hardware break-in behavior and the maximum temperatures of the drive train sub-systems.

1.2 Foreword. This standard was formerly known as GME R-4/7-1 and VET001.

1.3 Applicability. This standard is applicable for testing all FWD, AWD and RWD transmission.

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

2.3 Additional References. None.

3 Resources

The test facilities and equipment shall be operable and shall have a valid calibration level.

3.1 Facilities.

3.1.1 Circular track.

3.2 Equipment.

3.2.1 Sensors for temperature measurements at all necessary locations for all drive-train related parts (transmission oil, clutch, shift linkage, PTU, RDM and ambient temperature).

3.2.2 Attached tachometer and speedometer.

3.2.3 Writing material.

3.3 Test Vehicle/Test Piece.

3.3.1 New test components, assembled according to specification, measured and not run-in.

3.3.2 The engine type and the vehicle equipment shall correspond to the release.

3.4 Test Time.

Calendar time: 3 days

Technician/Mechanical hours 9 hours

Preparation/documentation hours: 3 hours

3.5 Test Required Information. Possible sources are:

- SOR
- VTS (Vehicle Technical Specifications)
- SSTS (Sub System Technical Specifications)
- ADV Plan
- VCRI
- Application engineer
- Development Groups
- Drawings

3.6 Personnel/Skills. Not applicable.

4 Procedure

4.1 Preparation.

4.1.1 Check engine performance (check v_{max}).

4.1.2 Install completely new transmission / transaxle / rear axle.

4.1.3 Ballast vehicle as follows:

Vehicle load, front: $m_f = m_{curb,f} + 2/3 (m_{max,f} - m_{curb,f})$

Vehicle load, rear: $m_r = m_{curb,r} + 2/3 (m_{max,r} - m_{curb,r})$

$m_{curb,f}$ = Curb mass, front axle (from data sheet)

$m_{curb,r}$ = Curb mass, rear axle (from data sheet)

$m_{max,f}$ = Max. axle load, front axle (from data sheet)

$m_{max,r}$ = Max. axle load, rear axle (from data sheet)

4.1.4 Adjust tire pressure according to loading condition for maximum speed and refuel vehicle.

4.1.5 Prepare data sheet.

- **4.1.6** Drive until transmission temperature reaches +50 °C.

GM Confidential

© Copyright 2011 General Motors Company All Rights Reserved

July 2011

Originating Department: GME Specification Center

Page 1 of 4

Documents

Document Sharing Hub



4.1.7 Activate temperature recording instruments and perform an operation check if recorder is running.

4.1.8 If necessary ensure the exclusive use of high speed track.

4.2 Conditions.

4.2.1 Environmental Conditions.

4.2.1.1 Do not test at ambient temperatures $< -5^{\circ}\text{C}$.

4.2.1.2 The test shall be performed in dry weather on a circular track.

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.

Note: If transmission oil temperature exceeds $+170^{\circ}\text{C}$ (or otherwise specified in SSTS/CTS) or engine temperature exceeds $+125^{\circ}\text{C}$ (or otherwise specified in SSTS/CTS) or rear axle transmission exceeds $+200^{\circ}\text{C}$ (or otherwise specified in SSTS/CTS), terminate test.

4.3.1 After entering the circular track, evaluate subjectively the gear noise between 50 km/h and v_{max} (distance ≤ 5 km).

4.3.2 Driving at full throttle v_{max} until end of fuel or 200 km max.

4.3.3 Check temperature after every 5 km and if overheating occurs, stop test.

4.3.4 After a distance of 200 km covered, evaluate drive train noise as described in paragraph 4.3.1.

4.3.5 After termination of the test disassemble test aggregates (transmission, rear axle transmission) and inspect per specification. Examine the lubricant in laboratory.

4.3.6 The test shall be performed at the highest gear, which can achieve top speed.

If top speed can be reached in a lower gear, perform test again in the concerning gear.

4.3.7 After end of test check condition of tires.

5 Data

5.1 Calculations. Record the following data (the Test Engineer may require additional data):

- Oil temperature
- Ambient temperature
- Other required temperatures
- Engine type / engine km.

5.2 Interpretation of Results.

5.2.1 The program shall be completed with up to 3 new aggregates each.

5.2.2 The test requirements are considered fulfilled, when all aggregates

- are functional and drivable
- reach noise and stress criteria defined in SSTS
- the measured temperatures are stable and do not exceed the permissible values. All results to be normalized to $+20^{\circ}\text{C}$.

5.3 Test Documentation.

5.3.1 Transmission Data. Record name and number of all parts removed or installed (gear, reduction and overall ratio, type of oil and quantity, type of tire - width / shoulder / rolling radius -), cell and transmission numbers, test hours on part and on transmission, together with reason part was eventual removed.

5.3.2 Comment. Report a detailed comment of the transmission performance and of individual components.

5.3.3 Rating. Record test rating of transmission as a whole (for evaluation criteria, see paragraph 5.2).

6 Safety

This Engineering Standard may involve safety requirements for hazardous materials, the method of operations and equipment. This standard does not propose to address all the safety issues associated with its use. It is the responsibility of the user of this standard to ensure compliance with all appropriate safety and health practices. This would include any specific training that may be required. The safety and health standards include site specific rules and procedures, corporate rules and procedures, and Government Standards. Contact shall be made with the appropriate site Safety and Health personnel for further direction and guidance in these matters.

7 Notes

7.1 Glossary. Not applicable.

7.2 Acronyms, Abbreviations, and Symbols. Not applicable.

8 Coding System

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

Test to GMW15640

GM Confidential

© Copyright 2011 General Motors Company All Rights Reserved

July 2011

Page 2 of 4

Documents

Document Sharing Hub

