



Fuel Pump Module Fuel Indication Test Procedures

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 document contains guidance toward the writing and execution of supplier Fuel Pump Module (FPM) performance test procedures. This document is only to be used in conjunction with GMW14081 to provide a complete set of technical requirements for the Fuel Pump Module.

1.2 Applicability. This document applies to all hardware described in GMW14081.

2 References

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

2.1 External Standards/Specifications.

EN590

2.2 GM Standards/Specifications.

GMW14081

2.3 Additional References.

- CG2021 Fuel Pump and Sender Module Validation Cross Reference Index (VCRI)
- GMPT-1-002
- GMPT-4-008
- GMPT-4-015
- GMPT-5-025

3 Resources

3.1 Facilities. This procedure is facility independent but does require a suitable lab area capable of safely handling the test fuels specified by GMW14081. Reference schematics and procedural information are provided as guidance for test execution. A supplier test procedure for each test shall be provided to GM Validation for final approval.

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. Recommended equipment is listed in 3.2.1 through 3.2.5 and further detail is given in suggested test schematics throughout the procedure:

3.2.1 Fuel rated vessel capable of heating/cooling test fuel.

3.2.2 Voltmeter.

3.2.3 Thermocouple.

3.2.4 Power Supply.

3.2.5 Data Acquisition.

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3.3 Test Vehicle/Test Piece. Sample size shall be at the discretion of the fuel pump module Product Development Team (PDT) based upon examination of hardware design, processes, and related variation (potential bandwidth and quantities). Samples sizes shall be documented in the VCRI (CG2021) and shall be approved by GM Validation.

3.4 Test Time. Varies per procedure.

3.5 Test Required Information. See specific procedures.

3.6 Personnel/Skills. Not applicable.

4 Procedure

4.1 Preparation. Not applicable.

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.

- Gasoline FPMs shall be tested using GMPT-4-008, E25, except as noted.
- Diesel FPMs shall be tested using GMPT-5-025, EN590, except as noted.

4.3 Instructions.

4.3.1 Wiper Movement.

4.3.1.1 Place FPM in a vessel capable of holding fuel and regulating fuel temperature.

4.3.1.2 Add GMPT-4-015 to a test vessel such that Fuel Level Sensor (FLS) is at full stop.

4.3.1.3 Warm fuel to required temperature and maintain for required duration per GMW14081 3.2.1.91.

4.3.1.4 Remove fuel at a maximum rate of 5 mm/minute and record height vs. resistance. Ensure no binding.

4.3.1.5 Using a shim block place the float at empty stop and record resistance value.

4.3.1.6 Apply force parallel to the wiper pivot (see Figure 1) such that the float is displaced by 5 mm and record resistance value.

4.3.1.7 Repeat 4.3.1.5 and 4.3.1.6 at 15%, 45% and Full Stop.

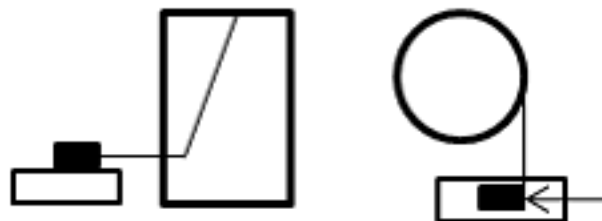


Figure 1: Force Parallel to Wiper Pivot

4.3.2 Sweep Signal Quality.

4.3.2.1 Place FPM (without float) on a level surface.

4.3.2.2 Mechanically sweep the FLS from Empty Stop to Full Stop and back to Empty Stop at a rate of 0.5 Hz (see Figure 2).

4.3.2.3 Record resistance values at a data sampling rate of 4 kHz.

4.3.2.4 Place FPM in a vessel capable of holding fuel and regulating fuel temperature.

4.3.2.5 Add fuel per GMW14081 3.2.1.92 to a test vessel such that the resistor card is completely submerged.

- Ensure an equal number of samples at each polarity.

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