GM	WORLDWIDE ENGINEERING STANDARDS	Test Procedure	GMW16816

Corrosion Resistance and Performance of Parts and Feeding Systems used in Gasoline Fuel Powered Vehicles

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 object of this test procedure is to cover basic requirements for performance and corrosion resistance of parts, components, assemblies and vehicles feeding systems, which have a contact with gasoline fuel.

1.2 Applicability. Power system components using gasoline as fuel.

2 References

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

2.1 External Standards/Specifications.

ASTM D1384

2.2 GM Standards/Specifications.

GMW14914

3 Resources

3.1 Facilities. General Motors Cruz Alta Proving Ground, Indaiatuba, Brazil.

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 Thermometer (0 °C to 100 °C).

3.2.2 Glassware.

3.2.3 Glass tube with porous end.

3.2.4 Glass connections (“T”, “L”, “U” shapes, etc.)

3.2.5 Heating coil and glass reservoirs.

3.2.6 Water condenser.

3.2.7 Rubber stopper.

3.2.8 Manometers (0 kgf/cm^2 to 7 kgf/cm^2).

3.2.9 Steam bath.

3.2.10 Silicon hoses.

3.2.11 Clamps.

3.2.12 Electrical power supply.

3.2.13 Electronic signal generator.

3.2.14 Flowmeter (0 mL/minute to 200 mL/minute).

3.3 Test Vehicle/Test Piece. Not applicable.

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3.4 Test Time. See 4.3 for test times.

3.5 Test Required Information. Not applicable.

3.6 Personnel/Skills. Test technician familiar with test facilities and equipment.

4 Procedure

4.1 Preparation. Not applicable.

4.2 Conditions.

4.2.1 Environmental Conditions.

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 Test Fuel – Gasoline. The gasoline of test must have the same quantity of pollutants and chemical aggressiveness found in the field.

4.3.1.1 Fuel Composition. See GMW14914, Table A1 – GMSA (South America).

4.3.2 Corrosion Resistance of Vehicles Fuel Feeding System Parts.

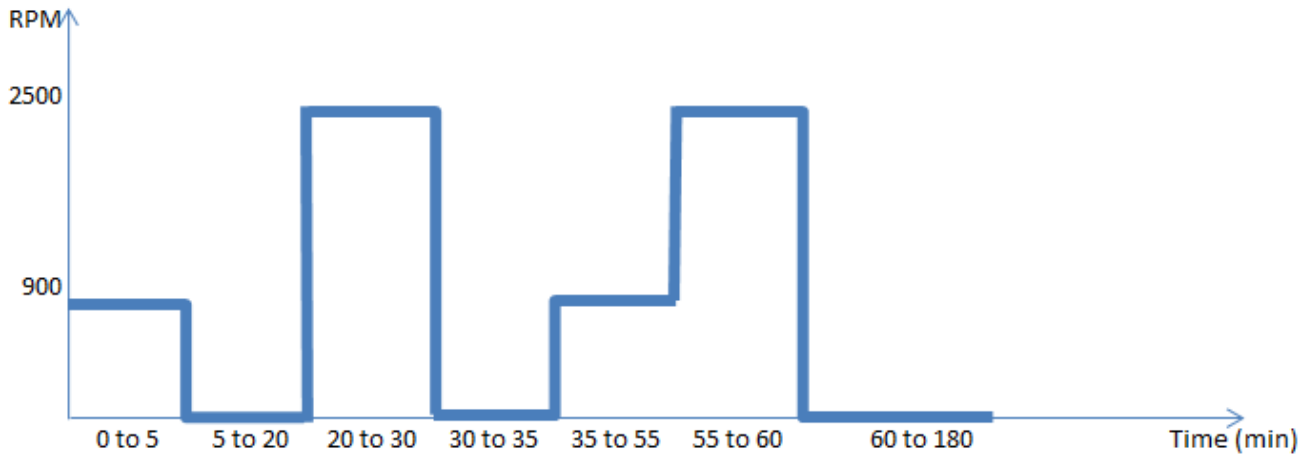
4.3.2.1 Static Test to Evaluate the Corrosion Resistance of Vehicles Fuel Feeding System Parts. All parts of fuel feeding system must stand plunged into the gasoline of test, for 15 days minimum, and aeration, at 55 °C ± 3 °C, according to device described in ASTM D1384, and must not exhibit corrosion products.

4.3.2.2 Dynamic Test to Evaluate the Corrosion Resistance of Vehicles Fuel Feeding System Parts. A simplified assembly with representative parts of the fuel feeding system must run for 700 h minimum, according normal operation conditions (flow, pressure, etc.,) at 55 °C ± 3 °C.

The minimum period of 700 h of running test, must correspond to the 18 h (maximum) daily running period. Normally run 9 h daily. The gasoline fuel of test must be changed every 72 h and 96 h, respectively, in the 168 h of week during all test. This test must simulate the “low usage” condition.

The following graphics show a “low usage” cycle (period of 3 h), that must be repeated during the whole test period.

The variations of 0 rpm, 900 rpm, and 2500 rpm, should only be used for testing fuel injectors. See Figure 1.



min = minutes

Figure 1: Variations for Testing Fuel Injectors

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