



Service Bulletin

File in Section: -

Bulletin No.: PI1250

Date: October, 2014

PRELIMINARY INFORMATION

Subject: Vehicle Health Management (VHM) Program Launch

Models: 2015 Chevrolet Equinox
2015 GMC Terrain
Equipped with 6 CYL Engine, 3.6L, SIDI, DOHC, VVT, E85 MAX, ALUM — RPO LFX
Vehicles Enrolled in OnStar® Vehicle Diagnostics — United States and Canada Only

Attention: The Vehicle Health Management (VHM) system was developed using Genuine GM components. Due to the wide variation and availability of non-GM components, it is possible that using non-GM components may set false Service Message Notifications. To maintain the VHM system performance, it is recommended to service these systems using Genuine GM components.

VHM System Description

VHM Overview

The 2015 Chevrolet Equinox and GMC Terrain vehicles equipped with the V6, 3.6L engine — RPO LFX and enrolled in OnStar® Vehicle Diagnostics, will feature the new VHM System. The VHM system monitors the Engine Cranking system and the Fuel Delivery system and if either one of these monitored systems triggers a performance issue, a Service Message Notification is sent to the customer and to the U.S. Customer Assistance Center (CAC), or in Canada the Customer Care Centre (CCC) in order to help prevent them from experiencing a vehicle No Start condition.

The Engine Cranking system and the Fuel Delivery system components that are monitored are explained as follows:

- **Engine Cranking System:** Consisting of Battery and Starter and their performance.
- **Fuel Delivery System:** Consisting of the Fuel Tank Fuel Pump Module and the Fuel Pressure Sensor, located in the fuel feed pipe and their performance.

Important: It is important to understand that some VHM Service Message Notifications may be generated without any apparent symptoms being noticed by the customer.

Service Message Identifier

Currently, there are nine different repair actions covered under VHM. The individual repairs are identified using a Service Message Identifier, which can be used as a key word when searching SI. They are constructed by using the involved service manual section, to create a three letter acronym that is combined with three numerals for a total length of 6 characters. For example: 12 volt battery is covered under the "Starting and Charging" section, resulting in SAC for the first three positions with three numerals for the last three positions. The first battery Service Message Identifier is called out as SAC001.

Important: VHM Service Messages are not stored On-Vehicle and cannot be retrieved from the vehicle with a scan tool by using the normal DTC check. For this initial VHM program launch, Service Messages are only included in the communications as outlined in the Subsection titled: Communication Process for Customer and Dealer. Although some other on board system DTCs may also be set, it is critical that the Service Technician uses the Service Message Identifier when diagnosing. This is accomplished by identifying and following the appropriate Service Message Identifier diagnostic procedure in the Section titled: Service Message Identifiers and Diagnostic Procedures

Warranty

Due to the unique nature of the VHM System, special Bulletin Only Labor Operations have been set up to be used in conjunction with the repair of the identified Service Messages. The Service Personnel and Warranty Personnel **MUST** use these Bulletin Only Labor Operations for **ANY** repair related to these Service Messages. Refer to the applicable Bulletin Only Labor Operation identified in the last Step of each Service Message Identifier and in the Section titled: Warranty Information at the end of this Bulletin.

Also, all parts replaced under this program will be requested back through the Warranty Parts Center (WPC). Ensure that all components are appropriately marked and tracked for return.

Communication Process for Customer and Dealer

When a VHM Service Message is triggered, a Notification is generated and the U.S. Customer Assistance Center, or in Canada the Customer Care Centre will contact the vehicle Customer to set up an appointment with their preferred service provider. CAC or CCC then contacts the preferred service provider to assist with the service appointment and communication of the VHM Service Message to ensure proper serviceability. Duplicate notification information is also sent to both the customer and the preferred service provider by email.

Notice:

- **In the United States, if a customer contacts your dealership about a VHM Service Message Notification by the Customer Assistance Center (CAC) and the Service Message Notification information is not clear, call the Dealer Business Center (DBC) Aftersales, Monday – Friday, 8 am – 9 pm EST at: 888-414-6322, prompt 3, with the involved VIN, and ask to speak to a Dealer Business Center agent. They will be able to provide the Service Message Notification information in order for the Service Department Personnel to proceed in the appropriate diagnostic direction.**
- **In Canada, if a customer contacts your dealership about a VHM Service Message Notification by the Customer Care Centre (CCC) and the Service Message Notification information is not clear, call the Customer Care Centre Monday – Friday 8 am – 11 pm EST at the CCC Dealer Line: 800-561-4515 with the involved VIN, and ask to speak to a Vehicle Health Management Specialist. They will be able to provide the VHM Service Message Notification information in order for the Service Department Personnel to proceed in the appropriate diagnostic direction.**

Service Message Identifiers and Diagnostic Procedures

Review the Service Message Identifier in the Notification provided by the Customer or by the Customer Assistance Center (in Canada, the Customer Care Centre) and begin diagnosis and repair by referring to the appropriate Service Message Identifier in this Diagnostic Procedures section.

Service Message Identifier SAC001

Predicted Starting and Charging — Battery — Low Cranking Capacity Due to Shorted Cell

1. This Service Message **DOES NOT** require any diagnosis.
2. Replace the battery. **DO NOT use the EL-50313 Midtronics GR8 Battery Tester/Charger.** Refer to Battery Replacement in SI.
3. No other action is required as the VHM system will automatically clear the Service Message once the battery is replaced and the vehicle is operated over a number of ignition cycles. Other on board DTCs may have set if the vehicle experienced a low voltage condition.

Use the scan tool to clear **ALL** DTCs prior to releasing the vehicle to the Customer.

Notice: The battery warranty code is not required when using this Bulletin Only Labor Operation.

4. Submit the correct Bulletin Only Labor Operation for this repair: **4080568***.

Service Message Identifier SAC002

Predicted Starting and Charging — Low Cranking Capability Due to High Resistance

Notice: The Service Technician MUST complete every Step of this diagnostic.

1. Verify that both battery cable connections are clean and tight. Refer to Battery Inspection/Test in SI.
2. Ignition **OFF**, measure the battery voltage at the C1 battery terminals. The voltage should be between 12.0–15.0 V
 - ⇒ If not within the specified range, refer to Battery Charging in SI.
 - ⇒ If within the specified range, Go to Step 3.
3. Test for less than 0.5 V between the positive battery cable and terminal A X2 at the M64 starter motor as the ignition is placed to the **CRANK** position.
 - ⇒ If greater than the specified value, replace the positive battery cable.
 - ⇒ If less than the specified value, Go to Step 4.
4. Test for less than 0.5 V between the negative battery cable and the M64 starter motor case as the ignition switch is placed to the **CRANK** position.
 - ⇒ If greater than the specified value, replace the negative battery cable. Refer to Battery Negative Cable Replacement (LFX) in SI.
 - ⇒ If less than the specified value, replace the battery. **DO NOT use the EL-50313 Midtronics GR8 Battery Tester/Charger.** Refer to Battery Replacement in SI.

5. No other action is required as the VHM system will automatically clear the Service Message once the battery is serviced properly and the vehicle is operated over a number of ignition cycles. Other on board DTCs may have set if the vehicle experienced a low voltage condition.

Use the scan tool to clear **ALL** DTCs prior to releasing the vehicle to the Customer.

6. Submit the correct Bulletin Only Labor Operation for this repair: **4080578***.

Service Message Identifier SAC003

Predicted Starting and Charging — Battery — Low Cranking Capability Due to Low State of Charge

Notice: Normal operation of the vehicle **MAY** have recharged the battery.

1. Follow the instructions in SI for Battery Inspection/Test and Battery Charging using the EL-50313 Midtronics GR8 Battery Tester/Charger.
2. Perform the Battery Electrical Drain/Parasitic Load Test in order to verify the cause of the low battery, such as aftermarket equipment, customer driving habits, etc. Refer to SI.
3. No other action is required as the VHM system will automatically clear the Service Message once the battery is charged properly and the vehicle is operated over a number of ignition cycles. Other on board DTCs may have set if the vehicle experienced a low voltage condition.

Use the scan tool to clear **ALL** DTCs prior to releasing the vehicle to the Customer.

4. Submit the correct Bulletin Only Labor Operation for this repair: **4080588***.

Service Message Identifier SAC004

Predicted Starting and Charging — Low Cranking Capability Due to High Resistance in Starter System

Notice: The Service Technician **MUST** complete every Step of this diagnostic.

1. Verify that both battery cable connections are clean and tight. Refer to Battery Inspection/Test in SI.
2. Turn **OFF** the ignition. Measure the battery voltage at the C1 battery terminals. The voltage should be between 12.0–15.0 V
 - ⇒ If not within the specified range, refer to Battery Charging in SI.
 - ⇒ If within the specified range, Go to Step 3.
3. Test for less than 0.5 V between the positive battery cable and terminal A X2 at the M64 starter motor as the ignition is placed to the **CRANK** position.
 - ⇒ If greater than the specified value, replace the positive battery cable.
 - ⇒ If less than the specified value, Go to Step 4.
4. Test for less than 0.5 V between the negative battery cable and the M64 starter motor case as the ignition switch is placed to the **CRANK** position.
 - ⇒ If greater than the specified value, replace the negative battery cable. Refer to Battery Negative Cable Replacement in SI.
 - ⇒ If less than specified value replace the Starter. Refer to Starter Replacement in SI.
5. No other action is required as the VHM system will automatically clear the Service Message once the starting system is serviced properly and the vehicle is operated over a number of ignition cycles. Other on board DTCs may have set if the vehicle experienced a low voltage condition.

Use the scan tool to clear **ALL** DTCs prior to releasing the vehicle to the Customer.

6. Submit the correct Bulletin Only Labor Operation for this repair: **4080598***.

Service Message Identifier SAC005

Predicted Starting and Charging — System Performance — Low Cranking Capability Due to High Resistance in Battery or Short in Starter

Notice: Complete every Step of this diagnostic.

1. Verify that both battery cable connections are clean and tight. Refer to Battery Inspection/Test in SI.
2. Turn **OFF** the ignition. Measure the battery voltage at the C1 battery terminals. The voltage should be between 12.0–15.0 V.
 - ⇒ If not within the specified range, refer to Battery Charging in SI.
 - ⇒ If within the specified range, Go to Step 3.
3. Test for less than 0.5 V between the positive battery cable and terminal A X2 at the M64 starter motor as the ignition is placed to the **CRANK** position.
 - ⇒ If greater than the specified value, replace the positive battery cable.
 - ⇒ If less than the specified value, Go to Step 4.

4. Test for less than 0.5 V between the negative battery cable and the M64 starter motor case as the ignition switch is placed to the **CRANK** position.
 - ⇒ If greater than the specified value, replace the negative battery cable. Refer to Battery Negative Cable Replacement in SI.
 - ⇒ If less than specified value, Go to Step 5.
5. Perform a battery inspection/test using the EL-50313 Midtronics GR8 Battery Tester/Charger.
 - ⇒ If the battery fails the test, replace the Battery. Refer to Battery Replacement in SI.
 - ⇒ If the battery passes the test, replace the starter. Refer to Starter Replacement in SI.
6. No other action is required as the VHM system will automatically clear the Service Message once the battery and/or starting system is serviced properly and the vehicle is operated over a number of ignition cycles. Other on board DTCs may have set if the vehicle experienced a low voltage condition.

Use the scan tool to clear **ALL** DTCs prior to releasing the vehicle to the Customer.
7. Submit the correct Bulletin Only Labor Operation for this repair: **4080608***.

Service Message Identifier ECF001

Predicted Fuel Pump System – Fuel Tank Fuel Pump Module

1. Remove the fuel tank. Refer to Fuel Tank Replacement in SI.
2. Replace the Fuel Tank Fuel Pump Module. Refer to Fuel Tank Fuel Pump Module Replacement in SI.
3. Install the fuel tank.
4. No other action is required as the VHM system will automatically clear the Service Message once the fuel tank fuel pump module is replaced and the vehicle is operated over a number of ignition cycles. Other on board DTCs may have set.

Use the scan tool to clear **ALL** DTCs prior to releasing the vehicle to the Customer.
5. Submit the correct Bulletin Only Labor Operation for this repair: **4080618***.

Service Message Identifier ECF002

Predicted Fuel Pump System — Fuel Tank Fuel Pump — System High Resistance

1. Inspect the wiring, terminals and connectors of the Body Harness to Fuel Tank Harness X350, ground G401 and the K111 Fuel Pump Driver Control Module for intermittent conditions and poor connections. Refer to Testing for Intermittent Conditions and Poor Connections in SI.
 - ⇒ If intermittent conditions and poor connections are found, repair as necessary. Refer to Wiring Repairs, Repairing Connector Terminals and Connector Repairs in SI.
 - ⇒ If intermittent conditions and poor connections are not found, Go to Step 2.
2. Remove the fuel tank. Refer to Fuel Tank Replacement in SI.

Notice: This Step MUST be performed.

3. Inspect the wiring, terminals and connector running to the fuel tank fuel pump module for intermittent conditions and poor connections. Refer to Testing for Intermittent Conditions and Poor Connections in SI.
 - ⇒ If intermittent conditions and/or poor connections are found, repair as necessary. Refer to Wiring Repairs, Repairing Connector Terminals and Connector Repairs in SI.

Then, Go to Step 4.
 - ⇒ If intermittent conditions and/or poor connections are not found, Go to Step 4.
4. Replace the fuel tank fuel pump module. Refer to Fuel Tank Fuel Pump Module Replacement in SI.
5. Install the fuel tank.
6. No other action is required as the VHM system will automatically clear the Service Message once the fuel system is serviced properly and the vehicle is operated over a number of ignition cycles. Other on board DTCs may have set.

Use the scan tool to clear **ALL** DTCs prior to releasing the vehicle to the Customer.
7. Submit the correct Bulletin Only Labor Operation for this repair: **4080628***.

Service Message Identifier ECF003

Predicted Fuel Pump System — Fuel Tank Fuel Pump and Pressure Sensor System Performance

1. Turn **OFF** the ignition.

Notice: If the engine coolant temperature is above 150°F (60°C), high fuel pressure readings may result due to hot soak fuel boiling. With the engine OFF, the fuel pressure may increase beyond the pressure relief regulator valve's setting point of 690 kPa (100 PSI) ± 5 percent.

2. Install the CH-37287-1A Fuel Pressure Gauge Adapter and the CH-48027 Digital Fuel Pressure Gauge. Refer to Fuel Pressure Gauge Installation and Removal in SI.
3. Turn **ON** the ignition, with the engine **OFF**.

4. Command the Fuel Pump Enable **ON** several times, in order to obtain the highest possible fuel pressure.
5. Verify that the CH-48027 fuel pressure is between 50–100 psi (345–690 kPa) with the fuel pump running.
 - ⇒ If the CH-48027 fuel pressure is within the specified range, Go to Step 6.
 - ⇒ If the CH-48027 fuel pressure is not within the specified range, refer to Fuel System Diagnosis in SI.

Notice: The fuel pressure sensor is located on the fuel feed pipe.

6. Verify that the CH-48027 fuel pressure and the Fuel Pressure Sensor parameter agree or are within a range of +/- 5 psi (34 kPa). If the CH-48027 fuel pressure and the Fuel Pressure Sensor parameter are not within the specified range, perform the following:
 - 6.1. Inspect the fuel system pipes and hoses for damage, such as kinks or pinches.
 - 6.2. Inspect the wiring, terminals and connectors of the Body Harness to Fuel Tank Harness X350, ground G401, the B47 Fuel Pressure Sensor X112 and the K111 Fuel Pump Driver Control Module for intermittent conditions and poor connections. Refer to Testing for Intermittent Conditions and Poor Connections in SI.
 - ⇒ If any fuel system pipes or hoses exhibit damage, repair as necessary.
 - ⇒ If intermittent conditions and/or poor connections are found, repair as necessary. Refer to Wiring Repairs, Repairing Connector Terminals and Connector Repairs in SI.
 - ⇒ If no fuel system pipe or hose damage is observed and intermittent conditions and/or poor connections are not found, replace the Fuel Pressure Sensor. Refer to Fuel Pressure Sensor Replacement - Fuel Feed Pipe in SI.
7. No other action is required as the VHM system will automatically clear the Service Message once the fuel system is serviced properly and the vehicle is operated over a number of ignition cycles. Other on board DTCs may have set.

Use the scan tool to clear **ALL** DTCs prior to releasing the vehicle to the Customer.
8. Submit the correct Bulletin Only Labor Operation for this repair: **4080638***.

Service Message Identifier ECF004

Predicted Fuel Pressure Sensor — Fuel Feed Pipe Pressure Sensor System Performance

1. Turn **OFF** the ignition.

Notice: If the engine coolant temperature is above 150°F (60°C), high fuel pressure readings may result due to hot soak fuel boiling. With the engine **OFF**, the fuel pressure may increase beyond the pressure relief regulator valve's setting point of 690 kPa (100 PSI) ± 5 percent.

2. Install the CH-37287-1A Fuel Pressure Gauge Adapter and the CH-48027 Digital Fuel Pressure Gauge. Fuel Pressure Gauge Installation and Removal in SI.
3. Turn **ON** the ignition, with the engine **OFF**.
4. Command the Fuel Pump Enable **ON** several times, in order to obtain the highest possible fuel pressure.

Notice: The fuel pressure sensor is located on the fuel feed pipe.

5. Verify that the CH-48027 fuel pressure and the Fuel Pressure Sensor parameter agree or are within a range of +/- 5 psi (34 kPa). If the CH-48027 fuel pressure and the Fuel Pressure Sensor parameter are not within the specified range, inspect the wiring, terminals and connector of the B47 Fuel Pressure Sensor X112 for intermittent conditions and poor connections. Refer to Testing for Intermittent Conditions and Poor Connections in SI.
 - ⇒ If intermittent conditions and/or poor connections are found, repair as necessary. Refer to Wiring Repairs, Repairing Connector Terminals and Connector Repairs in SI.
 - ⇒ If intermittent conditions and/or poor connections are not found, replace the B47 Fuel Pressure Sensor. Refer to Fuel Pressure Sensor Replacement - Fuel Feed Pipe in SI.
6. No other action is required as the VHM system will automatically clear the Service Message once the fuel pressure sensor system is serviced properly and the vehicle is operated over a number of ignition cycles. Other on board DTCs may have set.

Use the scan tool to clear **ALL** DTCs prior to releasing the vehicle to the Customer.
7. Submit the correct Bulletin Only Labor Operation for this repair: **4080648***.

Warranty Information

For vehicles repaired under warranty, use:

Labor Operation	Description	Labor Time
4080568*	Service Message Identifier SAC001	0.3 hr
4080578*	Service Message Identifier SAC002	0.3 hr Add Time: 0-.5 hr
4080588*	Service Message Identifier SAC003	0.3 hr Add Time: 0-.5 hr
4080598*	Service Message Identifier SAC004	0.6 hr Add Time: 0-.5 hr
4080608*	Service Message Identifier SAC005	0.6 hr Add Time: 0-.5 hr
4080618*	Service Message Identifier ECF001	FWD 1.3 hrs AWD 2.1 hrs
4080628*	Service Message Identifier ECF002	FWD 1.3 hr Add Time: 0-.5 hr AWD 2.1 hr Add Time: 0-.5 hr
4080638*	Service Message Identifier ECF003	Fuel Tank Fuel Pump Module Replacement FWD 1.3 hrs Add Time: 0-.5 hr AWD 2.1 hrs Add Time: 0-.5 hr OR Fuel Pressure Sensor Replacement - Fuel Feed Pipe 0.3 hr Add Time: 0-.5 hr
4080648*	Service Message Identifier ECF004	0.5 hr Add Time: 0-.5 hr
*This is a unique Labor Operation for Bulletin use only. It will not be published in the Labor Time Guide.		

OnStar® is a Registered Trademark of OnStar, LLC.