



# Service Bulletin

File in Section: -

Bulletin No.: PI0961B

Date: December, 2013

## PRELIMINARY INFORMATION

**Subject:** SERVICE HIGH VOLTAGE CHARGING SYSTEM Message Displayed on Driver Information Center (DIC), Hybrid/EV Charging System Disabled, DTCs Set, Revised HV Battery Surge Tank Coolant Fill Level

**Models:** 2011-2014 Chevrolet Volt

This PI has been revised to update the Subject, the HV battery surge tank coolant fill level information and the associated coolant fill level graphic. Please discard PI0961A.

### Condition/Concern

Some customers may comment that the **SERVICE HIGH VOLTAGE CHARGING SYSTEM** message is displayed in the Driver Information Center (DIC). They may also comment that they cannot complete a plug-in hybrid battery charging event. This is the result of the charging system being disabled under these conditions.

Upon investigation the Technician may observe on a scan tool one or more of the following DTCs set:

**Notice:** Depending on the Model Year of the vehicle: If any of these following DTCs are set, refer to the latest version of #PIC5920A: Vehicle Will Not Charge And Hybrid Loss Of Isolation With DTC P0AA6 And/Or P1F0E, P0DAA in SI

- **DTC P1FFB:** Hybrid/EV Battery Pack Coolant Level Sensor Circuit
- **DTC P1FFC:** Hybrid/EV Battery Pack Coolant Level Sensor Circuit Low Voltage
- **DTC P1FFD:** Hybrid/EV Battery Pack Coolant Level Sensor Circuit High Voltage
- **DTC P1FFE:** Hybrid/EV Battery Pack Coolant Level Low

**Warning:** If the coolant level in the high voltage (HV) battery surge tank is low, the Rechargeable Energy Storage System (RESS) MUST be pressure tested as outlined in this diagnostic, in the section titled: Pressure Test Procedure. The Technician MUST measure and record in mm the level of the coolant below the SEAM (use the seam as the reference point) of the tank on the repair order (R.O.) PRIOR to any repair.

- **DTC P1FFF:** System Isolation / Coolant Level Sensor Fault - Hybrid/EV Battery Charging System Disabled

This Condition/Concern may be caused by:

- A failed drive motor battery coolant level sensor.
- Incomplete solder joints within (internal, cannot be seen) the drive motor battery coolant level sensor resulting in intermittent sensor operation.
- Hybrid/EV Battery Pack Coolant Level Low.
- Internal breaks in the coolant sensor wiring jumper harness, resulting in intermittent conditions or failure.

### Diagnostic Aids

Testing has shown that a drive motor battery coolant level of 1.5 inches (38 mm) or more below the seam of the drive motor battery surge tank will set a: **DTC P1FFE: Hybrid/EV Battery Pack Coolant Level Low**

- ⇒ If DTC P1FFE sets when the drive motor battery coolant level is 1.5 inches (38 mm) or more below the seam, this indicates that the drive motor battery coolant level sensor is operating properly.

## Recommendation/Instructions

**Danger:** Before working on any high voltage system, be sure to wear the following Personal Protection Equipment:

- Safety glasses with appropriate side shields when within 50 feet of the vehicle, either indoors or outdoors.
- Certified and up-to-date Class “0” Insulation gloves rated at 1000V with leather protectors.
  - Visually and functionally inspect the gloves before use.
  - Wear the Insulation gloves at all times when working with the high voltage battery assembly, whether the system is energized or not.

**Failure to follow the procedure exactly as written may result in serious injury or death.**

**Danger:** BEFORE conducting ANY repair to this high voltage cooling system, it is necessary to determine/verify whether any high-voltage system faults exist. If any high-voltage faults exist, follow published DTC diagnostics/repair procedures PRIOR to performing any cooling system repairs. Failure to correct High Voltage Faults before working on the high voltage cooling system could result in personal injury or death.

If the above Condition/Concern is encountered, perform the following actions:

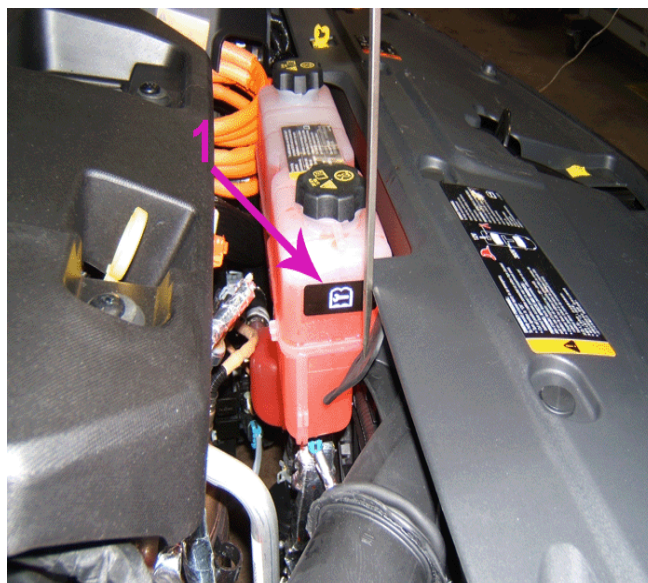
0.1. Perform the Diagnostic System Check - Vehicle.

⇒ If DTC P1FFB, P1FFC, P1FFD or P1FFE are set, Go to Step 2.

0.2. Turn the Vehicle Power **OFF**.

0.3. Remove **ALL** keyless entry transmitters from the vehicle and secure them in a location outside and away from the vehicle.

0.4. Raise and support the hood with the prop rod.



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0.5. Visually inspect the coolant level in the HV battery surge tank and verify that the coolant level is **at the top of the label (1)** on the side of the surge tank.

### Notice:

If there is a loss of coolant, it is critical that the Technician follows the Pressure Test Procedure as outlined in this Diagnostic Procedure.

When performing the Drive Motor Battery Cooling System Draining and Filling procedure, the Vac-N-Fill procedure **MUST** be followed in order to purge all air from the system.

If there is a loss of coolant, the Technician should measure and record in mm the level of the coolant below the **SEAM** (use the seam as the reference point) of the tank **PRIOR** to repair on the repair order (R.O.).

- ⇒ If the HV battery surge tank coolant level is **not at the top of the label (1)** on the side of the surge tank, Go to the section titled: **Pressure Test Procedure** in this Diagnostic.
- ⇒ If the HV battery surge tank coolant level is **at the top of the label (1)** on the side of the surge tank, Go to Step 6.

0.6. Remove the front compartment front sight shield. Refer to Front Compartment Front Sight Shield Replacement in SI.

- 0.7. Remove the anti-tamper coolant cap bracket and the coolant cap. Refer to Coolant Cap Bracket Replacement in SI.
- 0.8. Disconnect the drive motor battery coolant level sensor jumper harness.
- 0.9. Test the drive motor battery coolant level sensor jumper harness for intermittent conditions and poor connections. Refer to Testing for Intermittent Conditions and Poor Connections in SI.

**Notice: Manipulate the harness when testing for intermittent conditions.**

- ⇒ If the drive motor battery coolant level sensor jumper harness has intermittent conditions or poor connections, replace the jumper harness with P/N 13586114.
  - ⇒ If the drive motor battery coolant level sensor jumper harness does not have intermittent conditions or poor connections, Go to Step 10.
- 0.10. Remove the drive motor battery coolant level sensor. Refer to Drive Motor Battery Coolant Level Sensor Replacement in SI.
  - 0.11. Replace the drive motor battery coolant level sensor with a new drive motor battery coolant level sensor, P/N 22922224. Refer to Drive Motor Battery Coolant Level Sensor Replacement in SI.

**Notice:**

**Always use GM Pre-mixed DEXCOOL® GM Part No. 12378390 (in Canada P/N 10953456) which is a 50/50 mixture of DEXCOOL® and deionized water. This will eliminate the possibility of the introduction of non-deionized water that is used in some aftermarket premixed coolants. DO NOT use 100 percent DEXCOOL® and add ordinary tap water or distilled water. Doing so may cause unwanted DTCs. .**

**After a leak repair or when performing the Vac-N-Fill procedure, always use MORE coolant than is necessary, as this will eliminate air from being drawn into the cooling system. Then the Technician MUST perform this procedure — Drive Motor Battery Cooling System Draining and Filling — Removing Excess Coolant From System in SI.**

**Filling of the Hybrid/EV Battery Pack cooling system due to replacement of any drive motor battery cooling system parts requires the actuation of the Hybrid/EV Battery Pack Coolant Pump Bleed Procedure using the GDS tool.**

- 0.12. Fill the drive motor battery cooling system using GM Pre-mixed DEXCOOL® which is a 50/50 mixture of DEXCOOL® and deionized water. Refer to Drive Motor Battery Cooling System Draining and Filling — Vac-N-Fill Procedure in SI.
- 0.13. Upon completion of the Hybrid/EV battery pack coolant pump bleed procedure, **adjust** the surge tank coolant level to the **top of the label (1)**, by performing this procedure, — Drive Motor Battery Cooling System Draining and Filling — Removing Excess Coolant From System in SI.
- 0.14. Install the coolant cap and the anti-tamper coolant cap bracket. Refer to Coolant Cap Bracket Replacement in SI.
- 0.15. Install the front compartment front sight shield. Refer to Front Compartment Front Sight Shield Replacement in SI.
- 0.16. Retrieve all of the keyless entry transmitters for the vehicle.
- 0.17. Turn the Vehicle Power **ON**.
- 0.18. Clear **any** DTCs that may be present with a scan tool.
- 0.19. **Perform the Diagnostic Repair Verification. Refer to SI.**
- 0.20. Secure the prop rod. Lower and secure the hood.

## **Pressure Test Procedure**

- 0.1. Remove the anti-tamper coolant cap bracket and the coolant cap.
- 0.2. Place a floor jack under the vehicle, and then raise the left front of the vehicle. Refer to Lifting and Jacking in SI.
- 0.3. Use the *EN-24460-A* Cooling System Pressure Tester with the *GE-46143* Radiator Cap and Surge Tank Test Adapter in order to apply pressure of **5 psi (34.4 kPa)** to the cooling system.  
**You MUST allow the vehicle to rest during this pressure test time period for a minimum of 5 minutes.**
- 0.4. Raise the vehicle on the hoist. Refer to Lifting and Jacking in SI.
- 0.5. Perform the following:
  - 0.5.1. Remove the high voltage battery (HV) protective aluminum foil patch located on the right rear of the battery tray.
  - 0.5.2. Using a plastic trim tool or an equivalent, remove the butyl tape patch.
  - 0.5.3. Remove the rubber inspection plug from the Hybrid/EV Battery Pack housing.

0.6. Insert a rolled up paper towel into the inspection plug area and twist and turn it in order to determine if there is any coolant present.

⇒ If any coolant is present, then you **MUST CALL TAC**.

⇒ If coolant is not present, then Go to Step 6.1.

0.6.1.

Install the rubber inspection plug into the Hybrid/EV Battery Pack housing.

0.6.2.

Install the butyl tape patch or new butyl tape if the substance is weather worn.

0.6.3.

Install the protective aluminum foil patch.

## Parts Information

Part Number	Description
22922224	Drive Motor Battery Coolant Level Sensor
13586114	Drive Motor Battery Coolant Level Sensor Jumper Harness

## Warranty Information

For vehicles repaired under warranty, use:

Labor Operation	Description	Labor Time
5021400	Drive Motor Battery Coolant Level Sensor Replacement	Use Published Labor Operation Time
5430940	Harness Replacement	Use Published Labor Operation Time
4480098*	Hybrid HV Battery Cooling System Pressure Test	0.6 hr

Coverage Code: V  
Chevrolet Volt Battery Components  
U.S. Voltec Battery Warranty - 8 Years/100,000 Miles  
Canadian Voltec Battery Warranty - 8 Years/160,000 km  
\*This is a unique labor operation for bulletin use only. It will not be published in the Labor Time Guide.