



Service Bulletin

PRELIMINARY INFORMATION

Subject: Vehicle Will Not Charge And Hybrid Loss Of Isolation With DTC P0AA6 And/Or P1F0E P0DAA

Models: 2011-2014 Chevrolet Volt
2014 Cadillac ELR
2014 Opel Ampera

This PI was superseded to update Recommendation/Instructions and Warranty Information. Please discard PIC5920D.

The following diagnosis might be helpful if the vehicle exhibits the symptom(s) described in this PI.

Condition/Concern

Some customers may comment that their vehicle will not charge. Customers may also comment that a Check Engine Lamp is illuminated. Technicians may find a current code P0AA6 And/Or a P1F0E set on 2011-2013 Volt or a P0DAA on 2014 Volt or Cadillac ELR in the HPCM2. When diagnosing these DTC'S, potential causes to consider when evaluating the vehicle are:

1. A loss of isolation due to a Hybrid/EV Battery Heater
2. Hybrid Battery Contactor Assembly function failure
3. A loss of Hybrid/EV Battery Pack coolant (external or internal to the Hybrid/EV Battery Pack)
4. A loss of high voltage isolation within the battery cells or battery sections themselves
5. Hybrid battery cooling system not filled entirely with GM approved 50/50 coolant.

Recommendation/Instructions

Locate the Isolation Test Resistance that is located in the HPCM 2 data list under HPCM 2 / Data List / Hybrid/EV powertrain control module 2 and record the test resistance on the repair order.

Inspect Hybrid/EV Battery Pack coolant level. If coolant level is low or there is evidence of a coolant leak, refer to the Hybrid/EV Battery Cooling System Diagnostic in Service Information

Important: All P0AA6 failures must include an inspection of the Hybrid/EV Battery Pack drain plug, located on the battery tray, regardless of fluid level at the Hybrid/EV Battery Pack coolant reservoir. If any moisture is found during the drain plug inspection, contact the GM Technical Assistance Center (TAC).

Test the Hybrid/EV Battery Pack coolant concentration using the J-26568 Refractometer. Ensure freeze point is between -10 and -40 degrees F. In the absence of a J-26568 Refractometer, dealer may use a Hydrometer. If outside that window, flush and refill with GM approved 50/50 coolant (GM Part Number: 12378390 in Canada use P/N 10953456)

If the coolant level in cooling system is at the proper level, there is no moisture in the battery during the drain plug inspection, and the coolant freeze protection is between -10 and -40 degrees F. Update the HPCM 2 and BECM (Battery Energy Control Module) with the latest Calibrations in TIS-2-Web. After installing the current calibration in each module, cycle the ignition two times waiting 2 minute in between each ignition cycle and then check the Isolation Test resistance (in the HPCM 2/ Data List/ Hybrid/EV powertrain control module 2) and make sure the test resistance now reads 3000K ohms. If the isolation resistance now reads 3000k ohms, no further Attention is needed.

Important: If you have any moisture that is found in the battery during the drain plug inspection or the Isolation test resistance will not go to 3000K ohms after the HPCM2 and the BECM have been updated, please record the following information below and contact the Technical Assistance Center (TAC) for further direction.

- 1) Record the Hybrid/EV Battery Pack coolant concentration using the J-26568 Refractometer.

| | |
|--------------------------------------------|--------------|
| Hybrid Coolant Freeze Point Reading | Value |
| Take manually with J-26568 Refractometer | F |

2) Record any codes in the vehicle

3) Put the vehicle in Service Mode (Press the start/stop button for 10 second without depressing the brake pedal) and record the following information using GDS

| Module | DATA PARAMETER | Value |
|-------------------------------|----------------------------------------------------------------|-------|
| Drive Motor 1 | Hybrid/EV Powertrain Control Module High Voltage Circuit | V |
| Drive Motor 1 | Drive Motor 1 Control Module Negative Supply Isolation Voltage | V |
| Drive Motor 1 | Drive Motor 1 Control Module Positive Supply Isolation Voltage | V |
| Drive Motor 2 | Hybrid/EV Powertrain Control Module High Voltage Circuit | V |
| Drive Motor 2 | Drive Motor 2 Control Module Negative Supply Isolation Voltage | V |
| Drive Motor 2 | Drive Motor 2 Control Module Positive Supply Isolation Voltage | V |
| Battery Energy Control Module | Hybrid/EV Battery Pack Terminal 1 Voltage | V |
| HPCM2 (voltage data list) | Hybrid/EV Battery Pack Capacity | |
| HPCM2 | Isolation Test Resistance | Kohm |

4) With the vehicle in the Ignition Off Position, record the following information using GDS. (You will need to hold your foot on the brake pedal or turn on parking lights to ensure the data bus remains awake to communicate with the vehicle in the Off Position.)

| Module | Data Parameter | Value |
|--------|-------------------------------------------|-------|
| HPCM2 | High Voltage System Isolation Test Status | units |
| HPCM2 | Isolation Test Resistance | units |

Danger: Always perform the High Voltage Disabling procedure prior to servicing any High Voltage component or connection. Personal Protection Equipment (PPE) and proper procedures must be followed.

The High Voltage Disabling procedure includes the following steps:

- Identify how to disable high voltage.
- Identify how to test for the presence of high voltage.
- Identify condition under which high voltage is always present and personal protection equipment (PPE) and proper procedures must be followed.
Before working on any high voltage system, be sure to wear the following Personal Protection Equipment:
- Safety glasses with appropriate side shields when within 15 meters (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 with leather protectors at all times when working with the high voltage battery assembly, whether the system is energized or not.

Failure to follow the procedures may result in serious injury or death.

With vehicle OFF, 12 volt battery disconnected, and Manual Service Disconnect (MSD) removed, measure and record voltage across MSD base high voltage terminals, at top of Hybrid/EV Battery Pack. Measure and record voltage from each MSD base high voltage terminal with reference to vehicle chassis ground. In each case allow the volt meter voltage reading to settle for 2 minutes before recording value.

| Description Of Reading | Value |
|----------------------------------------------------|-------|
| Measurement between both terminals | V |
| Measurement between Right side terminal and ground | V |
| Measurement between Left side terminal and ground | V |

Gather all measurements recorded while evaluating P0AA6 and contact the GM Technical Assistance Center for inclusion into the TAC case.

Warranty Information

For 2011- 2014 Volt/Ampera And 2014 Cadillac ELR

| Labor Operation | Description | Labor Time |
|----------------------------------------------------------------------------------------------------------------------|-----------------------------------|------------|
| 2880268* | Reprogram the HPCM2 and the BECM. | 0.6 hr |
| * This is a unique labor operation for bulletin use only. This number will not be published in the Labor Time Guide. | | |

Please follow this diagnostic or repair process thoroughly and complete each step. If the condition exhibited is resolved without completing every step, the remaining steps do not need to be performed.

GM bulletins are intended for use by professional technicians, NOT a "do-it-yourselfer". They are written to inform these technicians of conditions that may occur on some vehicles, or to provide information that could assist in the proper service of a vehicle. Properly trained technicians have the equipment, tools, safety instructions, and know-how to do a job properly and safely. If a condition is described, DO NOT assume that the bulletin applies to your vehicle, or that your vehicle will have that condition. See your GM dealer for information on whether your vehicle may benefit from the information.



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