**DTC P0231, P0232, or P023F (Chassis Control Module)**

[**Diagnostic Instructions**](https://gsi.ext.gm.com/gsi/showDoc.do?laborOpCode=&docSyskey=3220675&cellId=201571&pubObjSyskey=7091742&from=sm&pubCellSyskey=6208386#d60401e3)

* Perform the [Diagnostic System Check - Vehicle](https://gsi.ext.gm.com/gsi/cellHandler.do?cellId=72794&refDoc=3220675&from=sm) prior to using this diagnostic procedure.
* Review [Strategy Based Diagnosis](https://gsi.ext.gm.com/gsi/cellHandler.do?cellId=161235&refDoc=3220675&from=sm) for an overview of the diagnostic approach.
* [Diagnostic Procedure Instructions](https://gsi.ext.gm.com/gsi/cellHandler.do?cellId=161236&refDoc=3220675&from=sm) provides an overview of each diagnostic category.

[**DTC Descriptors**](https://gsi.ext.gm.com/gsi/showDoc.do?laborOpCode=&docSyskey=3220675&cellId=201571&pubObjSyskey=7091742&from=sm&pubCellSyskey=6208386#d60401e32)

**DTC P0231**

Fuel Pump Control Circuit Low Voltage

**DTC P0232**

Fuel Pump Control Circuit High Voltage

**DTC P023F**

Fuel Pump Control Circuit

[**Diagnostic Fault Information**](https://gsi.ext.gm.com/gsi/showDoc.do?laborOpCode=&docSyskey=3220675&cellId=201571&pubObjSyskey=7091742&from=sm&pubCellSyskey=6208386#d60401e58)

| **Circuit** | **Short to Ground** | **Open/High Resistance** | **Short to Voltage** | **Signal Performance** |
| --- | --- | --- | --- | --- |
| Control | P0231 | P023F | P0232 | P023F, P2635 |
| Low Reference | — | P023F | — | P023F, P2635 |

[**Circuit/System Description**](https://gsi.ext.gm.com/gsi/showDoc.do?laborOpCode=&docSyskey=3220675&cellId=201571&pubObjSyskey=7091742&from=sm&pubCellSyskey=6208386#d60401e152)

The engine control module (ECM) supplies voltage to the chassis control module when the ECM detects that the ignition is on. The voltage from the ECM to the chassis control module remains active for 2 seconds, unless the engine is in crank or run. While this voltage is being received, the chassis control module supplies a varying voltage to the fuel tank pump module in order to maintain the desired fuel line pressure.

[**Conditions for Running the DTC**](https://gsi.ext.gm.com/gsi/showDoc.do?laborOpCode=&docSyskey=3220675&cellId=201571&pubObjSyskey=7091742&from=sm&pubCellSyskey=6208386#d60401e161)

**P0231, P023F**

The ignition voltage is between 9–18 V.

**P0232**

The control enable voltage signal supplied for the ECM to the chassis control module is inactive for 4 seconds after engine has been shut off.

[**Conditions for Setting the DTC**](https://gsi.ext.gm.com/gsi/showDoc.do?laborOpCode=&docSyskey=3220675&cellId=201571&pubObjSyskey=7091742&from=sm&pubCellSyskey=6208386#d60401e186)

The Chassis Control Module detects a fault on the fuel pump voltage circuit that is less than 11 V or greater than 18 V.

[**Action Taken When the DTC Sets**](https://gsi.ext.gm.com/gsi/showDoc.do?laborOpCode=&docSyskey=3220675&cellId=201571&pubObjSyskey=7091742&from=sm&pubCellSyskey=6208386#d60401e195)

DTCs P0231, P0232, and P023F are Type A DTCs.

[**Conditions for Clearing the DTC**](https://gsi.ext.gm.com/gsi/showDoc.do?laborOpCode=&docSyskey=3220675&cellId=201571&pubObjSyskey=7091742&from=sm&pubCellSyskey=6208386#d60401e204)

DTCs P0231, P0232, and P023F are Type A DTCs.

[**Diagnostic Aids**](https://gsi.ext.gm.com/gsi/showDoc.do?laborOpCode=&docSyskey=3220675&cellId=201571&pubObjSyskey=7091742&from=sm&pubCellSyskey=6208386#d60401e213)

Using the Failure Records data may help locate an intermittent condition. If you cannot duplicate the DTC, the information in the Failure Records can help determine how many miles since the DTC set. The Fail Counter and Pass Counter can help determine how many ignition cycles that the diagnostic test reported a pass and/or a fail.

On vehicles equipped with a high pressure mechanical pump on Direct Fuel Injection engines, the vehicle may continue to run even though the pump in the fuel tank is not operating.

[**Reference Information**](https://gsi.ext.gm.com/gsi/showDoc.do?laborOpCode=&docSyskey=3220675&cellId=201571&pubObjSyskey=7091742&from=sm&pubCellSyskey=6208386#d60401e225)

**Schematic Reference**

[Engine Controls Schematics](https://gsi.ext.gm.com/gsi/cellHandler.do?cellId=175897&refDoc=3220675&from=sm)

**Connector End View Reference**

[Component Connector End Views](https://gsi.ext.gm.com/gsi/cellHandler.do?cellId=164814&refDoc=3220675&from=sm)

**Description and Operation**

[Fuel System Description](https://gsi.ext.gm.com/gsi/cellHandler.do?cellId=176269&refDoc=3220675&from=sm)

**Electrical Information Reference**

* [Circuit Testing](https://gsi.ext.gm.com/gsi/cellHandler.do?cellId=62194&refDoc=3220675&from=sm)
* [Connector Repairs](https://gsi.ext.gm.com/gsi/cellHandler.do?cellId=61973&refDoc=3220675&from=sm)
* [Testing for Intermittent Conditions and Poor Connections](https://gsi.ext.gm.com/gsi/cellHandler.do?cellId=62112&refDoc=3220675&from=sm)
* [Wiring Repairs](https://gsi.ext.gm.com/gsi/cellHandler.do?cellId=61965&refDoc=3220675&from=sm)

**DTC Type Reference**

[Powertrain Diagnostic Trouble Code (DTC) Type Definitions](https://gsi.ext.gm.com/gsi/cellHandler.do?cellId=161179&refDoc=3220675&from=sm)

**Scan Tool Reference**

[Control Module References](https://gsi.ext.gm.com/gsi/cellHandler.do?cellId=72864&refDoc=3220675&from=sm) for scan tool information

[**Circuit/System Testing**](https://gsi.ext.gm.com/gsi/showDoc.do?laborOpCode=&docSyskey=3220675&cellId=201571&pubObjSyskey=7091742&from=sm&pubCellSyskey=6208386#d60401e312)

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the A7 Fuel Pump and Level Sensor. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 Ω between the low reference circuit terminal 2 and ground.
   * **If 10 Ω or greater**
   * Ignition OFF, disconnect the harness connector at the K38 Chassis Control Module.
   * Test for less than 2 Ω in the low reference circuit end to end.
     + If 2 Ω or greater, repair the open/high resistance in the circuit.
     + If less than 2 Ω, replace the K38 Chassis Control Module.
   * **If less than 10 Ω**
3. Connect a test lamp between the control circuit terminal 1 and the low reference circuit terminal 2.
4. Ignition ON.
5. Verify the test lamp turns ON and OFF when commanding the fuel pump ON and OFF using the scan tool ECM fuel pump enable control function.
   * **If the test lamp is always OFF**
   * Ignition OFF, disconnect the harness connector at the K38 Chassis Control Module.
   * Test for infinite resistance between the control circuit and ground.
     + If less than infinite resistance, repair the short to ground on the circuit.
     + If infinite resistance
   * Test for less than 2 Ω in the control circuit end to end.
     + If 2 Ω or greater, repair the open/high resistance in the circuit.
     + If less than 2 Ω, replace the K38 Chassis Control Module.
   * **If the test lamp is always ON**
   * Ignition OFF, disconnect the harness connector at the K38 Chassis Control Module, ignition ON.
   * Test for less than 1 V between the control circuit and ground.
     + If 1 V or greater, repair the short to voltage on the circuit.
     + If less than 1 V, replace the K38 Chassis Control Module.
   * **If the test lamp turns ON and OFF**
6. Replace the A7 Fuel Pump and Level Sensor.

[**Repair Instructions**](https://gsi.ext.gm.com/gsi/showDoc.do?laborOpCode=&docSyskey=3220675&cellId=201571&pubObjSyskey=7091742&from=sm&pubCellSyskey=6208386#d60401e473)

Perform the [Diagnostic Repair Verification](https://gsi.ext.gm.com/gsi/cellHandler.do?cellId=143214&refDoc=3220675&from=sm) after completing the repair.

* [Fuel Tank Fuel Pump Module Replacement](https://gsi.ext.gm.com/gsi/cellHandler.do?cellId=185578&refDoc=3220675&from=sm)
* [Control Module References](https://gsi.ext.gm.com/gsi/cellHandler.do?cellId=72864&refDoc=3220675&from=sm) for chassis control module replacement, programming and setup

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