

Fuel System

1. Verify the customer concern by operating the system.
2. Visually inspect for obvious signs of mechanical or electrical damage.
3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. If the concern is not visually evident, refer to the Symptom Chart.

Condition(s):

P1233, P1235, —Fuel Pump Primary Circuit Failure

Possible Source(s):

- Damaged relay.
- Damaged harness.
- Connector loose or corroded.
- Connector pins(s) bent or tracking between connections.
- Damaged ground.
- 'Popped' inertia switch.

Action(s) to take:

- GO to <<Pinpoint Test A>>.

B1201, P0460, —Fuel Sender Circuit Failure

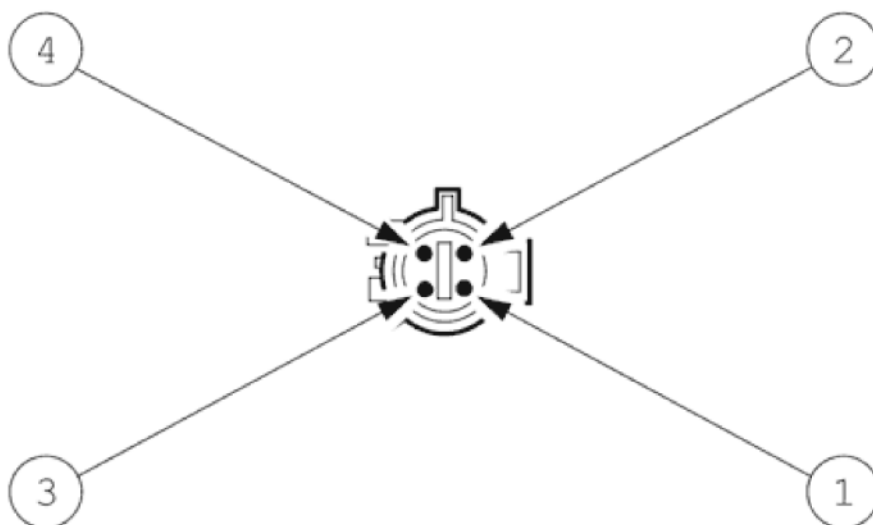
Possible Source(s):

- Worn or damaged sensor tracks.
- Damaged Harness.
- Connector loose or corroded.
- Connector pin(s) bent or tracking between connections.
- Fuel level sensor to instrument cluster circuits intermittent short or open circuit or high resistance.
- Fuel level sensor failure.
- Instrument cluster fault (incorrect fuel level data).

Action(s) to take:

- GO to <<Pinpoint Test B>>.

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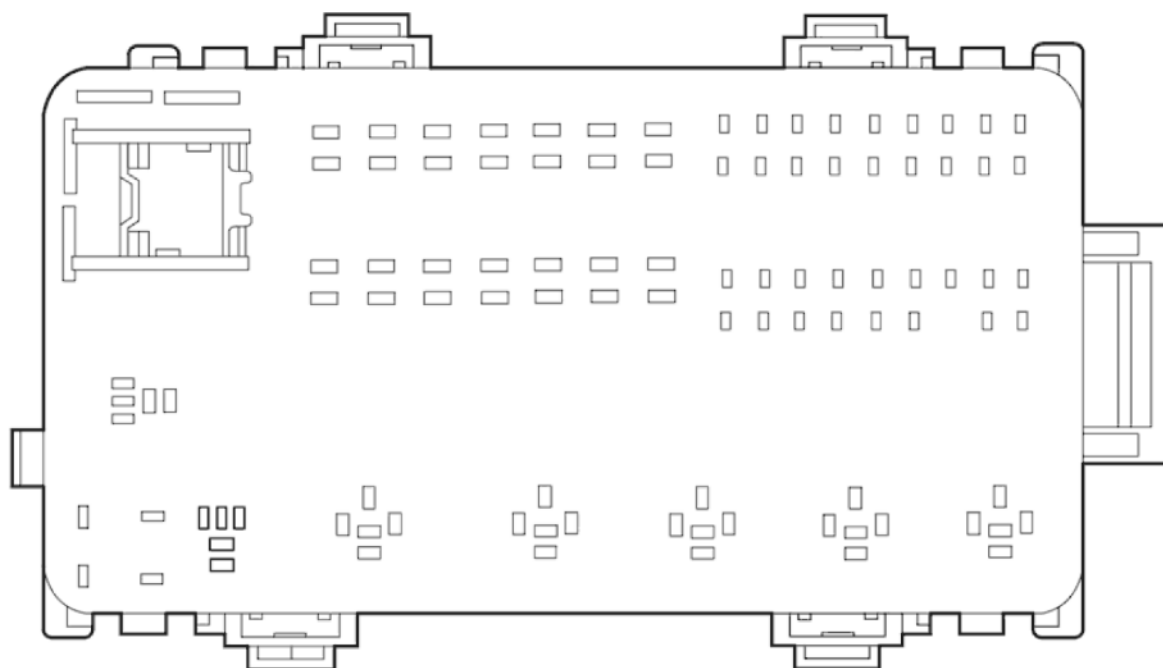


VUJ0002070

Fuel Pump Harness Connector

Pin Number	Circuit Function	Circuit Color
1	Right-hand fuel level sensor signal supply	White/red
2	Fuel pump voltage supply	Green/orange
3	Right-hand fuel level sensor voltage supply	Brown/red
4	Fuel pump GROUND supply	Brown/red

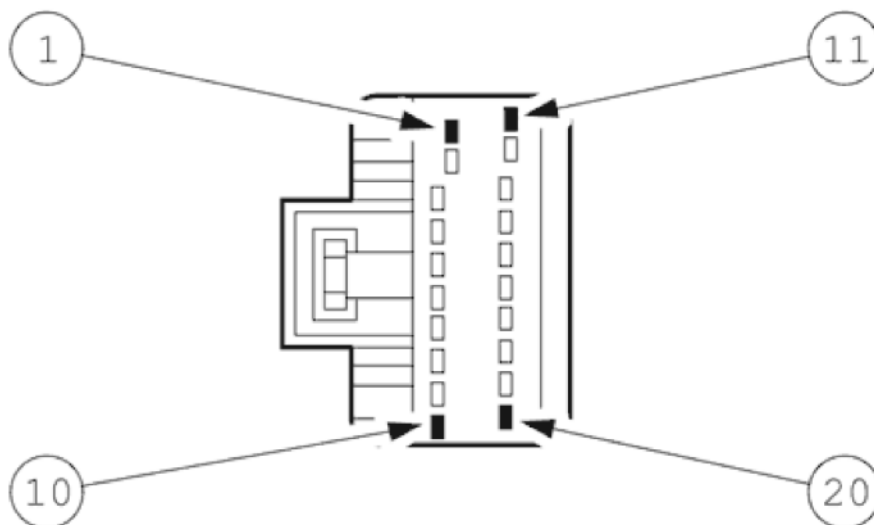
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VUJ0002071

Fuel Pump Diode Connector

Pin Number	Circuit Function	Circuit Color
1	Fuel pump relay voltage supply	Red
2	Fuel pump diode voltage supply	Green/white

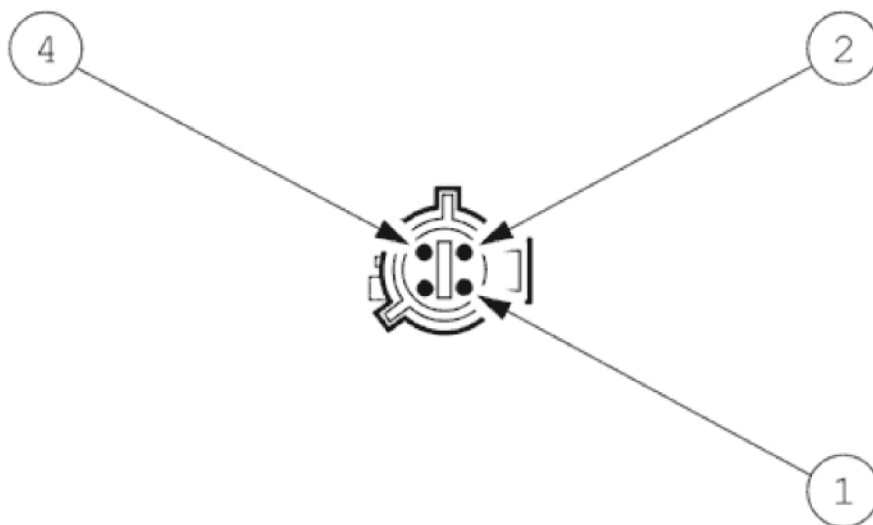


VUJ0002073

Rear Electronic Module Harness Connector

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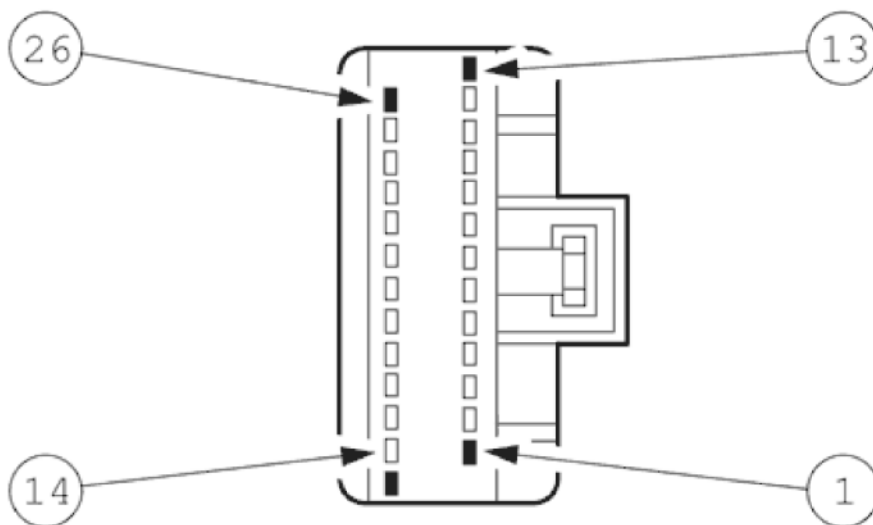
Pin Number	Circuit Function	Circuit Color
1	Voltage supply from the fuel pump relay	Green/orange
2	Rear electronic module GROUND supply	Brown
11	Fuel pump voltage supply	Green/orange
12	Fuel pump GROUND supply	Brown/red



VUJ0002075

Left-hand Side Fuel Level Sensor Harness Connector

Pin Number	Circuit Function	Circuit Color
1	Left-hand fuel level sensor voltage supply	Brown/blue
3	Left-hand fuel level sensor signal supply	White/blue



VUJ0002074

Rear Electronic Module Harness Connector

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Pin Number	Circuit Function	Circuit Color
23	Fuel sensors voltage supply	Brown/red

A : P1233, P1235—Fuel Pump Primary Circuit Failure

A1 : AUDIBLE CHECK OF THE FUEL PUMP RELAY

1. LOCATE the fuel pump relay at the rear power distribution box.
2. Audibly CHECK the fuel pump relay for a clicking noise, while an assistant switches the ignition switch to the RUN position.

•Is the fuel pump relay clicking?

-> Yes

Goto <<A2>>

-> No

Goto <<A4>>

A2 : CHECK THE POSITIVE SUPPLY TO THE FUEL PUMP

1. Switch the ignition to the OFF position.
2. Disconnect the fuel pump electrical connector FP4.
3. Switch the ignition to the RUN position.
4. Measure the pulse width modulation voltage between the fuel pump electrical connector FP4 pin 1, (GO) and ground.

•Is there a 1 second, 12 volts voltage signal after the ignition is switched on?

-> Yes

Goto <<A3>>

-> No

Goto <<A9>>

A3 : CHECK THE GROUND SUPPLY TO THE FUEL PUMP

1. Switch the ignition to the OFF position.
2. Measure the resistance between the fuel pump electrical connector FP4 pin 3, (BR) and ground.

•Is the resistance less than 0.5 Ohms?

-> Yes

INSTALL a new fuel pump. CLEAR DTC. TEST the system for normal operation.

-> No

Goto <<A11>>

A4 : CHECK THE POSITIVE SUPPLY TO THE FUEL PUMP RELAY

1. REMOVE the fuel pump relay at the rear power distribution box.

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2. Switch the ignition to the RUN position.
3. Measure the voltage at the fuel pump relay electrical connector pin 1.

•Is the voltage less than 10.5 Volts?

-> Yes

Goto <<A5>>

-> No

Goto <<A13>>

A5 : CHECK THE POSITIVE SUPPLY TO THE FUEL PUMP DIODE

1. Switch the ignition to the OFF position.
2. REMOVE the fuel pump diode at the rear distribution box.
3. Switch the ignition to the RUN position.
4. Measure the voltage between the fuel pump diode electrical connector CA61 pin G2, (GW) and GROUND.

•Is the voltage less than 10.5 Volts?

-> Yes

Goto <<A6>>

-> No

INSTALL a new fuel pump diode. CLEAR DTC. TEST the system for normal operation.

A6 : CHECK THE POSITIVE SUPPLY TO FUSE 4 AT THE PRIMARY JUNCTION BOX

1. Measure the voltage at the positive supply side of fuse 4 at the primary junction box.

•Is the voltage less than 10.5 Volts?

-> Yes

TEST the voltage supply to the primary junction box from ignition switch.

-> No

Goto <<A7>>

A7 : CHECK THE VOLTAGE SUPPLY BETWEEN THE INPUT SIDE OF INERTIA SWITCH AND OUTPUT SIDE OF FUSE 4 AT THE PRIMARY JUNCTION BOX

1. Switch the ignition to the OFF position.
2. Measure the resistance between fuse 4 at the primary junction box and the fuel shut-off inertia switch electrical connector CA4 pin X2, (GO).

•Is the resistance less than 0.5 Ohms?

-> Yes

Goto <<A8>>

-> No

REPAIR the inertia fuel shut-off switch supply circuit. CLEAR DTC. TEST the system for normal operation.

A8 : CHECK THE CONTINUITY BETWEEN THE OUTPUT SIDE OF INERTIA SWITCH AND THE POSITIVE SUPPLY TO FUEL PUMP DIODE

1. Measure the resistance between the inertia fuel shut-off switch electrical connector CA4 pin X3, (GW) the fuel pump diode electrical connector CA61 pin G2, (GW).

•Is the resistance less than 0.5 Ohms?

-> **Yes**

INSTALL a new fuel inertia shut-off switch.

-> **No**

REPAIR the circuit between the inertia fuel shut-off switch electrical connector CA4 pin X3, (GW) and the fuel pump diode electrical connector CA61 pin G2, (GW). CLEAR DTC. TEST the system for normal operation.

A9 : CHECK THE SWITCHABLE VOLTAGE SUPPLY TO THE FUEL PUMP RELAY

1. Switch the ignition to the OFF position.
2. REMOVE the fuel pump relay at the rear power distribution box.
3. Switch the ignition to the RUN position.
4. Measure the voltage at the fuel pump relay electrical connector pin 3 (R).

•Is the voltage less than 10.5 Volts?

-> **Yes**

Goto <<A10>>

-> **No**

Goto <<A14>>

A10 : CHECK THE FUEL PUMP RELAY SWITCHABLE VOLTAGE SUPPLY FUSE

1. Measure the voltage at the fuel pump relay switchable voltage supply fuse.

•Is the voltage less than 10.5 Volts?

-> **Yes**

TEST the rear power distribution box power supply. CLEAR DTC. TEST the system for normal operation.

-> **No**

REPAIR the circuit between the rear power distribution box electrical connector CA61 pin X34, (R) and the fuel pump relay electrical connector pin 3, (R). CLEAR DTC. TEST the system for normal operation.

A11 : CHECK THE CONTINUITY BETWEEN THE FUEL PUMP GROUND SUPPLY AND THE REAR ELECTRONIC MODULE

1. Measure the resistance between the fuel pump electrical connector FP4 pin 3, (BR) and the rear electronic module CA101 pin 12, (BR).

•Is the resistance less than 0.5 Ohms?

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-> **Yes**
Goto <<A12>>

-> **No**
REPAIR the circuit between the fuel pump electrical connector FP4 pin 3, (BR) and rear electronic module electrical connector CA101 pin 12, (BR). CLEAR DTC. TEST the system for normal operation.

A12 : CHECK THE CONTINUITY BETWEEN THE REAR ELECTRONIC MODULE AND GROUND

1. Measure the resistance between the rear electronic module electrical connector CA101 pin 02, (B) and GROUND CA156, (B).

•Is the resistance less than 0.5 Ohms?

-> **Yes**
Goto <<A16>>

-> **No**
REPAIR the circuit between the rear electronic module CA101 pin 02, (B) and GROUND CA156, (B). CLEAR DTC. TEST the system for normal operation.

A13 : CHECK THE GROUND SUPPLY TO THE FUEL PUMP RELAY

1. Switch the ignition to the OFF position.
2. Measure the resistance between the fuel pump relay pin 2 (B) and GROUND CA116 (B).

•Is the resistance less than 0.5 Ohms?

-> **Yes**
INSTALL a new fuel pump relay. CLEAR DTC. TEST the system for normal operation.

-> **No**
REPAIR the circuit between the fuel pump relay pin 2 (B) and GROUND CA116 (B). CLEAR DTC. TEST the system for normal operation.

A14 : CHECK THE VOLTAGE OUTPUT AT THE FUEL PUMP RELAY

1. Switch the ignition to the OFF position.
2. INSTALL the fuel pump relay at the rear power distribution box.
3. Switch the ignition to the RUN position.
4. Measure the output voltage from the fuel pump relay electrical connector pin 5 at the rear electronic module electrical connector CA101 pin 01, (GO).

•Is the voltage greater than 10.5 Volts?

-> **Yes**
Goto <<A15>>

-> **No**
INSTALL a new fuel pump relay. CLEAR DTC. TEST the system for normal operation.

A15 : CHECK THE CONTINUITY BETWEEN THE REAR ELECTRONIC MODULE AND THE FUEL

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PUMP

1. Measure the resistance between the rear electronic module electrical connector CA101 pin 11, (GO) and fuel pump electrical connector FP4 pin 1, (GO).

• **Is the resistance less than 0.5 Ohms?**

-> **Yes**

INSTALL a new rear electronics module. CLEAR DTC. TEST the system for normal operation.

-> **No**

REPAIR the circuit between the rear electronic module electrical connector CA101 pin 11, (GO) and the fuel pump electrical connector FP4 pin 1, (GO). CLEAR DTC. TEST the system for normal operation.

A16 : CHECK THE CONTINUITY OF THE REAR ELECTRONIC MODULE SIGNAL SUPPLY CIRCUIT

1. Disconnect the engine control module (ECM) electrical connector FH1.

2. Disconnect the rear electronic module electrical connector CA103.

3. Measure the resistance between the ECM electrical connector FH1 pin 58, (WP) and the rear electronic module electrical connector CA103 pin 19, (WP).

• **Is the resistance less than 0.5 Ohms?**

-> **Yes**

REPAIR the circuit between the ECM electrical connector FH1 pin 58, (WP) and the rear electronic module electrical connector CA103 pin 19, (WP).

-> **No**

INSTALL a new rear electronics module. CLEAR DTC. TEST the system for normal operation.

B : B1201, P0460—Fuel Sender Circuit Failure

B1 : CHECK THE VOLTAGE SUPPLY TO THE FUEL LEVEL SENSORS

1. Switch the ignition to the RUN position.

2. Measure the voltage at the fuel level sensor electrical connector between:

• FP3 pin 4, (NR) and GROUND

• FP4 pin 4, (NR) and GROUND

• **Is the voltage greater than 10.5 Volts?**

-> **Yes**

Goto <<B2>>

-> **No**

Goto <<B4>>

B2 : CHECK THE GROUND SUPPLY TO THE FUEL LEVEL SENSORS

1. Switch the ignition to the OFF position.

2. Measure the resistance at the fuel level sensor electrical connector between:

• FP3 pin 2, (WU) and GROUND

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- FP4 pin 2, (WR) and GROUND
- **Is the resistance less than 0.5 Ohms?**
- > **Yes**
Goto <<B3>>
- > **No**
REPAIR the relevant circuit. CLEAR DTC. TEST system for normal operation.

B3 : CHECK THE RESISTANCE AT THE RIGHT-HAND SIDE FUEL LEVEL SENSOR

1. REMOVE the right-hand side fuel level sensor. For additional information, refer to <<310-01>>
2. Measure the resistance between the sensor electrical connectors FP4 pin 4 and FP4 pin 2.
 - **Is the resistance between 16 and 160 Ohms?**
 - > **Yes**
INSTALL a new left-hand side fuel level sensor. CLEAR DTC. TEST the system for normal operation.
 - > **No**
INSTALL a new right-hand side fuel level sensor. CLEAR DTC. TEST the system for normal operation.

B4 : CHECK THE CONTINUITY BETWEEN THE FUEL LEVEL SENSOR ELECTRICAL CONNECTOR FP3-4, FP4-4 AND CA103-23 AT THE REAR ELECTRONICS MODULE

1. Switch the ignition to the OFF position.
2. Measure the fuel level sensor positive supply circuit resistance between:
 - FP3 pin 4, (NU) and CA103 pin 23, (NR)
 - FP4 pin 4, (NR) and CA103 pin 23, (NR)
 - **Is the resistance less than 0.5 Ohms?**
 - > **Yes**
INSTALL a new rear electronic module. CLEAR DTC. TEST the system for normal operation.
 - > **No**
REPAIR the relevant circuit. CLEAR DTC. TEST the system for normal operation.