ACCELERATOR PEDAL OR LEVER POSITION SENSOR 2 CIRCUIT - VOLTAGE ABOVE NORMAL OR HORTED TO HIGH SOURCE

DESCRIPTION
The accelerator position sensor is a hall-effect sensor attached to the accelerator pedal. The accelerator position sensor varies the signal voltage to the electronic control module (ECM) as the accelerator pedal is depressed and released. Low signal voltage is received by the ECM when the accelerator pedal is at 0 percent. A high signal voltage is received by the ECM when the accelerator pedal is at 100 percent. The accelerator pedal position circuit contains an accelerator pedal position 5 volt supply, accelerator pedal position return, and accelerator pedal position signal.

The accelerator pedal contains two position sensors. These position sensors are used to measure the throttle position. Both position sensors receive a 5 volt supply from the ECM. A corresponding signal voltage based on the position of the accelerator pedal is then received from the ECM. The signal voltage for accelerator position 1 is twice as much as the signal voltage from the accelerator position 2. When the ECM senses a signal voltage lower than the normal operating range of the sensor, this fault code is set.

**Note:** The sensor connection pin numbers shown in the diagram above are OEM specific and those provided are for example only. Refer to the OEM diagram for correct pinouts.

SHOP TALK
Verify the electronic control module (ECM) calibration is correct. If necessary, recalibrate the ECM. Newer engines use two throttle position sensors to determine the throttle position. Older throttle pedals used a single throttle position sensor and an idle validation switch. If Fault Codes...
132 and 1241 are active when the accelerator pedal is in the idle position, and Fault Code 132 goes inactive, and Fault Code 1239 goes active when the throttle is depressed, the incorrect throttle pedal has been installed in the vehicle. A throttle pedal with two acceleration position sensors should be installed. If troubleshooting an intermittent accelerator problem, the accelerator pedal position sensor 2 signal voltage can be monitored with diagnostic tool, while flexing the harness to locate the intermittent connection. Possible causes of this fault include:

- Accelerator pedal position 2 signal circuit shorted to battery or 5 volt supply
- Open accelerator pedal return circuit in the harness or connections
- Accelerator supply shorted to battery
- Failed accelerator pedal position sensor

**Note:** The three wires in the accelerator position sensor circuit must be twisted together.

**COMPONENT LOCATION**

The accelerator pedal position sensor is located on the accelerator pedal. Refer to the original equipment manufacturer (OEM) troubleshooting and repair manual.

**TROUBLESHOOTING STEPS**

**Step 1A)** Turn key switch ON and connect diagnostic tool. Check for active fault codes using the diagnostic tool to read the fault codes.

**Fault Code 1695 active?**

<table>
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<tr>
<th>Yes - No repair. Check Fault Code 1695</th>
<th>No - Go to 2A</th>
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**Step 2A)** Turn key switch OFF. Disconnect the accelerator pedal position sensor from the OEM harness. Inspect the OEM harness and accelerator pedal position sensor connector pins for the following:

- Loose connector
- Corroded, bent or broken pins
- Pushed back or expanded pins
- Moisture in or on the connector
- Missing or damaged connector seals
- Dirt or debris in or on the connector pins
- Connector shell broken
- Wire insulation damage
- Damaged connector locking tab
Dirty or damaged pins?

| Yes - A damaged connection has been detected in the sensor connector or harness connector. Clean the connector and pins. Repair the damaged harness, connector or pins, if possible. Go to 4A | No - Go to 2B |

Step 2B) Turn key switch OFF and disconnect the accelerator pedal position sensor from the OEM harness. Turn key switch ON and check the accelerator pedal supply voltage. Measure the voltage from the accelerator pedal position sensor 5-volt SUPPLY pin to the accelerator pedal position sensor RETURN pin at the sensor connector of the OEM harness.

4.75 to 5.25 VDC?

| Yes - Go to 2C | No - Go to 3A |

Step 2C) Turn keyswitch OFF and disconnect the accelerator pedal position sensor from the OEM harness. Turn key switch ON and connect diagnostic tool. Check for the appropriate ECM response after 30 seconds using the diagnostic tool to read the fault codes.

Fault Code 1241 active and Fault Code 1239 inactive?

| Yes - Go to 2D | No - Go to 3A |

Step 2D) Turn key switch OFF and connect the accelerator pedal to the OEM harness. Turn key switch ON and connect diagnostic tool. Check for the appropriate ECM response after 30 seconds using the diagnostic tool to read the fault codes.

Fault Code 1239 active?

| Yes - A damaged accelerator pedal has been detected. Contact the appropriate OEM or dealership for repair instructions. Replace the accelerator pedal. Refer to the OEM service manual. Go to 4A | No - The removal and installation of the connector corrected the fault. Go to 4A |
Step 3A) Turn key switch OFF and disconnect the OEM harness from the ECM connector. Inspect the OEM harness and ECM connector pins for the following:
- Loose connector
- Corroded pins
- Bent or broken pins
- Moisture in or on the connector
- Missing or damaged connector seals
- Dirt or debris in or on the connector pins
- Connector shell broken
- Wire insulation damage
- Damaged connector locking tab

Dirty or damaged pins?

| Yes - A damaged connection has been detected in the ECM connector or OEM harness connector. | No - Go to 3B |
| Clean the connector and pins. Repair the damaged harness, connector or pins, if possible. | Go to 4A |

Step 3B) Turn key switch OFF and disconnect the OEM harness from the ECM connector. Disconnect the accelerator pedal position sensor from the OEM harness. Check for an open circuit. Measure the resistance between the OEM harness ECM connector accelerator pedal RETURN pin and the OEM harness accelerator pedal RETURN pin.

Less than 10 ohms?

| Yes - Go to 3C | No - An open RETURN circuit has been detected in the OEM harness. Repair or replace the OEM harness. |
| Go to 4A | Go to 4A |

Step 3C) Turn key switch OFF and disconnect the OEM harness from the ECM connector. Disconnect the accelerator pedal position sensor from the OEM harness. Check for a pin-to-pin short circuit. Measure the resistance between the accelerator pedal SIGNAL pin in the OEM harness ECM connector and all other pins in the OEM connector.
**Greater than 100k ohms?**

| Yes - Go to 3D | No - Repair or replace the OEM harness. Go to 5A |

**Step 3D)** Connect all components. Turn key switch ON and connect diagnostic tool. Check for the appropriate circuit response after 30 seconds using the diagnostic tool to read the fault codes.

**Fault Code 1239 inactive?**

| Yes - The removal and installation of the connector corrected the fault. Go to 4A | No - Call for authorization to replace the ECM. Go to 4A |

**Step 4A)** Connect all components and connect diagnostic tool. Disable the fault code. Start the engine and let it idle for 1 minute using the diagnostic tool to verify that the fault code is inactive.

**Fault Code 1239 inactive?**

| Yes - Go to 4B | No - Return to the troubleshooting steps or contact your local Cummins® Authorized Repair Location if all the steps have been completed and checked again. Go to 1A |

**Step 4B)** Connect all components. Turn key switch ON and connect diagnostic tool. Clear the inactive fault codes using the diagnostic tool.

**All fault codes cleared?**

| Yes - Repair is complete. | No - Take appropriate troubleshooting steps. |