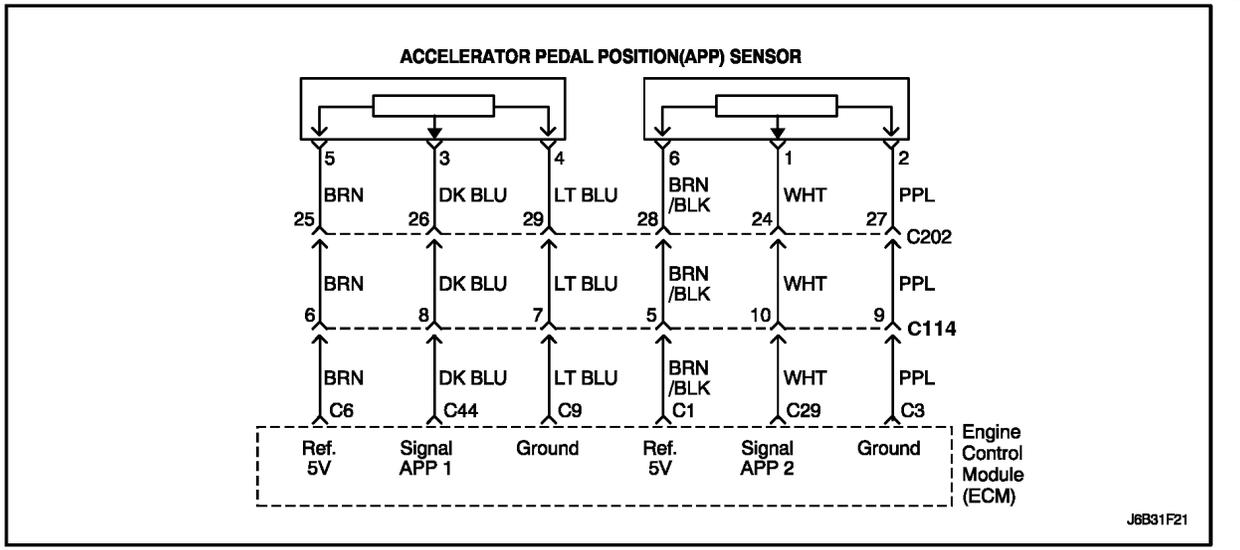


POWERTRAIN MANAGEMENT

DTC P2122: Accelerator Pedal Position (APP) Sensor 1 Circuit Low Voltage

Wiring Diagram



Circuit Description

The accelerator pedal assembly contains two Accelerator Pedal Position (APP) sensors. The APP sensors are mounted in the pedal assembly and are not serviceable. The APP sensors provide a signal voltage that changes relative to the position of the accelerator pedal. The Engine Control Module (ECM) supplies a separate **5 volt** reference and low reference circuit for each of the APP sensors.

The APP sensor 1 signal voltage increases as the pedal is depressed, from approximately **1 V** at rest to above **4 V** when fully depressed. The APP sensor 2 signal voltage increases as the pedal is depressed, from approximately **0.5 V** at rest to more than **2 V** with the accelerator pedal fully depressed.

Conditions for Setting the DTC

- Ignition ON.
- APP sensor voltage is less than **5 V**.

Action Taken When the DTC Sets

- The Malfunction Indicator Lamp (MIL) will illuminate.
- The ECM will record operating conditions at the time the diagnostic fail. This information will be stored in the Freeze Frame and Failure Records buffers.
- A history DTC is stored.

Conditions for Clearing the MIL/DTC

- The MIL will turn OFF after four consecutive validation cycle in which the diagnostic runs without a fault.
- A history DTC will clear after 40 consecutive warm up cycles without a fault.
- The DTC(s) can be cleared by using the scan tool.

Diagnostic Aids

For an intermittent condition, refer to [Intermittents].

Test Description

Number(s) below refer to the step number(s) on the Diagnostic Table.

1. This step tests the internal circuits of the APP sensor 1 throughout its range of motion. If this DTC sets when slowly moving the pedal from the rest position to Wide Open Throttle (WOT), replace the APP assembly for an internal fault.
2. The ECM produces a measurable steady-state amperage that provides the **5 volt** reference to the APP sensor 1. If the amperage on the **5 volt** reference circuit is less than **80 mA**, there is a condition with the **5 volt** reference circuit or the ECM.
3. This step tests for high resistance in the low reference circuit of the APP sensor 1. The ECM must be completely powered down to obtain an accurate resistance reading. It may take up to **30 minutes** for the ECM to power down after the ignition key is removed. Removal of the ECM/Transmission Control Module (TCM) fuse allows the ECM to power down completely.

Troubleshooting

Step 1-6

Step	Action	Value (s)	Yes	No
1	Perform an On-Board Diagnostic (OBD II) System Check. Is the system check complete?	—	Go to Step 2	Go to [On-Board Diagnostic (OBD II) System Check]
2	1. Turn the ignition ON, with the engine OFF. 2. Observe the Accelerator Pedal Position (APP) sensor 1 voltage parameter with a scan tool. Is the voltage less than the specified value?	0.49 V	Go to Step 5	Go to Step 3
3	1. Observe the DTC information with a scan tool. 2. Slowly depress the accelerator pedal to Wide Open Throttle (WOT), then slowly return the accelerator pedal to the closed position. 3. Repeat this action several times. Did the DTC fail this ignition?	—	Go to Step 13	Go to Step 4
4	1. Observe the Freeze Frame/Failure Records for this DTC. 2. Turn the ignition OFF for 30 seconds. 3. Start the engine. 4. Operate the vehicle within the Conditions for Setting the DTC. You may also operate the vehicle within the conditions that you observed from the Freeze Frame/Failure Records. Did the DTC fail this ignition?	—	Go to Step 5	Go to [Diagnostic Aids]
5	1. Turn the engine OFF. 2. Disconnect the APP sensor harness connector. 3. Turn the ignition ON, with the engine OFF. 4. Set-up a DMM to test amperage on the 400 mA scale. 5. Measure the amperage from the 5 volt reference circuit of APP sensor 1 to the low reference circuit of APP sensor 1, with a DMM. Is the amperage more than the specified value?	80 mV	Go to Step 6	Go to Step 9
6	1. Turn the ignition OFF. 2. Connect a 3 A fused jumper wire between the 5 volt reference circuit of the APP sensor 1 and the signal circuit of the APP sensor 1. 3. Turn the ignition ON, with the engine OFF. 4. Observe the APP sensor 1 voltage parameter with a scan tool. Is the voltage within the specified range?	4.8 – 5.2 V	Go to Step 7	Go to Step 10

Step 7-16

7	<ol style="list-style-type: none"> 1. Turn the ignition OFF. 2. Remove the ECM/TCM fuse from the engine fuse block. 3. Measure the resistance from the low reference circuit of the APP sensor 1 to a good ground, with a DMM. <p>Is the resistance less than the specified value?</p>	10 Ω	Go to Step 11	Go to Step 8
8	<ol style="list-style-type: none"> 1. Disconnect the ECM. 2. Test the low reference circuit of the APP sensor 1 for an open or high resistance. <p>Did you find and correct the condition?</p>	—	Go to Step 15	Go to Step 12
9	<ol style="list-style-type: none"> 1. Test the 5 volt reference circuit of the APP sensor 1 for the following conditions: <ul style="list-style-type: none"> — A short to ground — High resistance — An open circuit 2. Repair as necessary. <p>Did you find and correct the condition?</p>	—	Go to Step 15	Go to Step 12
10	<ol style="list-style-type: none"> 1. Test the signal circuit of the APP sensor 1 for the following conditions: <ul style="list-style-type: none"> — A short to ground — High resistance — An open circuit 2. Repair as necessary. <p>Did you find and correct the condition?</p>	—	Go to Step 15	Go to Step 12
11	<p>Test for an intermittent and for a poor connection at the APP assembly.</p> <p>Did you find and correct the condition?</p>	—	Go to Step 15	Go to Step 13
12	<p>Test for an intermittent and for a poor connection at the ECM.</p> <p>Did you find and correct the condition?</p>	—	Go to Step 15	Go to Step 14
13	<p>Replace the APP assembly.</p> <p>Did you complete the replacement?</p>	—	Go to Step 15	—
14	<p>Replace the ECM.</p> <p>Did you complete the replacement?</p>	—	Go to Step 15	—
15	<ol style="list-style-type: none"> 1. Clear the DTCs with a scan tool. 2. Turn the ignition OFF for 30 seconds. 3. Start the engine. 4. Operate the vehicle within the Conditions for Setting the DTC. You may also operate the vehicle within the conditions that you observed from the Freeze Frame/Failure Records. <p>Did the DTC fail this ignition?</p>	—	Go to Step 2	Go to Step 16
16	<p>Check if any additional DTCs are set.</p> <p>Are there any DTCs that have not been diagnosed?</p>	—	Go to applicable DTC table	System OK