

DTC P0107

Circuit Description

VIN K

The manifold absolute pressure (MAP) sensor responds to changes in intake manifold pressure which gives an indication of the engine load. The MAP sensor has a 5-volt reference circuit, a low reference circuit, and a signal circuit. The powertrain control module (PCM) supplies 5 volts to the MAP sensor on the 5-volt reference circuit and provides a ground on the low reference circuit. The MAP sensor provides a signal to the PCM on the MAP sensor signal circuit which is relative to the pressure changes in the manifold. With low MAP, such as during idle or deceleration, the PCM should detect a low MAP sensor signal voltage. With high MAP, such as ignition ON, engine OFF, or wide open throttle (WOT), the PCM should detect a high MAP sensor signal voltage. This MAP sensor will indicate pressure between 10-104 kPa. The MAP sensor is also used in order to calculate the barometric pressure (BARO) when the ignition switch is turned ON, with the engine OFF. The BARO reading may also be updated whenever the engine is operated at WOT. The PCM monitors the MAP sensor signal for voltage outside of the normal range. If the PCM detects a MAP sensor signal voltage that is excessively low, DTC P0107 sets.

VIN 1

The MAP sensor responds to changes in intake manifold pressure which gives an indication of the engine load. The MAP sensor has a 5-volt reference circuit, a low reference circuit, and a signal circuit. The PCM supplies 5 volts to the MAP sensor on the 5-volt reference circuit and provides a ground on the low reference circuit. The MAP sensor provides a signal to the PCM on the MAP Sensor signal circuit which is relative to the pressure changes in the manifold. With low MAP such as during idle or deceleration, the PCM should detect a low MAP sensor signal voltage. With high MAP such as WOT, the PCM should detect a high MAP sensor signal voltage. This MAP sensor will indicate pressure between 8-208 kPa. The MAP sensor is also used in order to calculate the BARO when the ignition switch is turned ON, with the engine OFF. The PCM monitors the MAP sensor signal for voltage outside of the normal range. If the PCM detects a MAP sensor signal voltage that is excessively low, DTC P0107 sets.

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC P0107 Manifold Absolute Pressure (MAP) Sensor Circuit Low Voltage

Conditions for Running the DTC

- The ignition is ON.
- DTCs P0121, P0122, P0123 are not set.
- The throttle angle is more than 0 percent when engine speed is less than 1,000 RPM.
OR
- The throttle angle is more than 10 percent when engine speed is more than 1,000 RPM.

Conditions for Setting the DTC

- The PCM detects that the MAP sensor signal voltage is less than 0.1 volt for more than 3 seconds.
- This diagnostic runs continuously once the above conditions have been met.

Action Taken When the DTC Sets

- The control module illuminates the malfunction indicator lamp (MIL) on the second consecutive ignition cycle that the diagnostic runs and fails.
- The control module records the operating conditions at the time the diagnostic fails. The first time the diagnostic fails, the control module stores this information in the Failure Records. If the diagnostic reports a failure on the second consecutive ignition cycle, the control module records the operating conditions at the time of the failure. The control module writes the operating conditions to the Freeze Frame and updates the Failure Records.

Conditions for Clearing the MIL/DTC

- The control module turns OFF the MIL after 3 consecutive ignition cycles that the diagnostic runs and does not fail.
- A current DTC, Last Test Failed, clears when the diagnostic runs and passes.
- A history DTC clears after 40 consecutive warm-up cycles, if no failures are reported by this or any other emission related diagnostic.
- Clear the MIL and the DTC with a scan tool.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

6. The measurement noted in this step will be used in subsequent steps if the measurement is not less than the specified value.
7. This step calculates the resistance in the 5-volt reference circuit.

Step	Action	Values	Yes	No
Schematic Reference: Engine Controls Schematics				
Connector End View Reference: Engine Controls Connector End Views or Powertrain Control Module Connector End Views				

1	Did you perform the Diagnostic System Check - Vehicle?	--	Go to Step 2	Go to Diagnostic System Check - Vehicle in Vehicle DTC Information
2	<ol style="list-style-type: none"> 1. Start the engine. 2. Monitor the Diagnostic Trouble Code (DTC) Information with the scan tool. <p>Is DTC P0641 also set?</p>	--	Go to DTC P0641	Go to Step 3
3	<p>Observe the MAP sensor parameter with the scan tool.</p> <p>Is the voltage less than the specified value?</p>	0.1 V	Go to Step 5	Go to Step 4
4	<ol style="list-style-type: none"> 1. Observe the Freeze Frame/Failure Records for this DTC. 2. Turn OFF the ignition for 30 seconds. 3. Start the engine. 4. Operate the vehicle within the Conditions for Running 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 5	Go to Intermittent Conditions
5	<p>Test for an intermittent and for a poor connection at the manifold absolute pressure (MAP) sensor. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	--	Go to Step 15	Go to Step 6
6	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Disconnect the MAP sensor electrical connector. 3. Turn ON the ignition, with the engine OFF. 4. Measure the voltage from the 5-volt reference circuit of the MAP sensor to a good ground with a DMM. Note the measurement as Supply Voltage. <p>Is the voltage more than the specified value?</p>	4.8 V	Go to Step 7	Go to Step 9
7	<ol style="list-style-type: none"> 1. Connect a test lamp and a DMM in series between the 5-volt reference circuit and the low reference circuit of the MAP sensor at the harness connector. 2. Measure the amperage with the DMM. Note the measurement as Amperage. 3. Remove the DMM from the circuit. 4. Connect the test lamp between the 5-volt reference circuit and the low reference circuit of the MAP sensor, at the harness connector. 5. Measure the voltage from the 5-volt reference circuit at the test lamp to a good ground, with the DMM. Note the measurement as Load Voltage Drop. <p>Important: Before any calculations are performed, ensure that all measurements are converted to like units, for example, volts/amps or millivolts/milliamps.</p> <ol style="list-style-type: none"> 6. Subtract the Load Voltage Drop from the Supply Voltage. Note the result as Supply Voltage Drop. 7. Divide the Supply Voltage Drop by the Amperage. <p>Is the result more than the specified value?</p>	5 ohms	Go to Step 10	Go to Step 8
8	<ol style="list-style-type: none"> 1. Connect a 3-amp fused jumper wire between the 5-volt reference circuit of the MAP sensor and the signal circuit of the MAP sensor. 2. Observe the MAP sensor parameter with the scan tool. <p>Is the voltage more than the specified value?</p>	4.75 V	Go to Step 13	Go to Step 11
9	<p>Test the 5-volt reference circuit between the powertrain control module (PCM) and the MAP sensor for an open. Refer to Circuit Testing and Wiring Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	--	Go to Step 15	Go to Step 12

10	<p>Test the 5-volt reference circuit between the PCM and the MAP sensor for high resistance. Refer to Circuit Testing and Wiring Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	--	Go to Step 15	Go to Step 12
11	<p>Test the MAP sensor signal circuit between the PCM and the MAP sensor for the a short to ground or an open.</p> <p>Refer to Circuit Testing and Wiring Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	--	Go to Step 15	Go to Step 12
12	<p>Test for an intermittent and for a poor connection at the PCM. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	--	Go to Step 15	Go to Step 14
13	<p>Replace the MAP sensor. Refer to Manifold Absolute Pressure Sensor Replacement .</p> <p>Did you complete the replacement?</p>	--	Go to Step 15	--
14	<p>Replace the PCM. Refer to Control Module References in Computer/Integrating Systems for replacement, setup, and programming.</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 OFF the ignition for 30 seconds. 3. Start the engine. 4. Operate the vehicle within the Conditions for Running 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>Observe the Capture Info with a scan tool.</p> <p>Are there any DTCs that have not been diagnosed?</p>	--	Go to Diagnostic Trouble Code (DTC) List - Vehicle in Vehicle DTC Information	System OK