

#### DTC P0134

##### CIRCUIT DESCRIPTION

Heated oxygen sensors (HO2S) are used for fuel control and post catalyst monitoring. Each HO2S compares the oxygen content of the surrounding air with the oxygen content in the exhaust stream. The HO2S must reach operating temperature to provide an accurate voltage signal. Heating elements inside the HO2S minimize the time required for the sensors to reach operating temperature. The powertrain control module (PCM) supplies the HO2S with a reference, or bias, voltage of about **450 mV**. When the engine is first started the PCM operates in open loop, ignoring the HO2S voltage signal. Once the HO2S reaches operating temperature and closed loop is achieved, the HO2S generates a voltage within a range of **0-1,000 mV** that fluctuates above and below bias voltage. High HO2S voltage indicates a rich exhaust stream; low HO2S voltage indicates a lean exhaust stream. If the PCM detects that the HO2S voltage remains within the bias voltage range, DTC P0134 sets for HO2S bank 1 sensor 1, or DTC P0154 sets for HO2S bank 2 sensor 1.

##### DTC DESCRIPTORS

This diagnostic procedure supports the following DTCs:

- DTC P0134 HO2S Circuit Insufficient Activity Bank 1 Sensor 1
- DTC P0154 HO2S Circuit Insufficient Activity Bank 2 Sensor 1

##### CONDITIONS FOR RUNNING THE DTC

- DTCs P0068, P0101, P0102, P0103, P0106, P0107, P0108, P0112, P0113, P0116, P0117, P0118, P0120, P0128, P0200, P0220, P0442, P0446, P0452, P0453, P0455, P0496, P1125, P1258, P1516, P2101, P2108, P2135, U0107 are not set.
- The Engine Run Time parameter is more than **300 seconds**.
- The **Fuel Tank** Level Remaining parameter is more than **10 percent**.
- The Ignition 1 Signal parameter is between **10-18 volts**.
- This diagnostic runs continuously once the above conditions are met.

##### CONDITIONS FOR SETTING THE DTC

The PCM detects that the affected HO2S voltage parameter is between **350-550 mV** for **60 seconds**.

##### 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.
- The **control module** commands the Loop Status open.

##### CONDITIONS FOR CLEARING THE MIL/DTC

- The **control module** turns OFF the malfunction indicator lamp (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

Step	Action	Value(s)	Yes	No
1	Did you perform the Diagnostic System Check – Vehicle?	—	Go to Step 2	Go to <a href="#">Diagnostic System Check - Vehicle</a> in Vehicle DTC Information
2	<p><b>Important</b></p> <p>Whenever the heated oxygen sensor (HO2S) heaters are commanded ON with a scan tool, they will continue to be pulsed ON once per second until the ignition is turned OFF for 30 seconds.</p> <ol style="list-style-type: none"> <li>Turn ON the ignition, with the engine OFF.</li> <li>Command the HO2S heaters ON with a scan tool.</li> <li>Wait 15 seconds to allow the HO2S heater current to stabilize.</li> <li>Observe the affected HO2S heater current parameter with a scan tool.</li> </ol> <p>Is the HO2S heater current parameter within the specified range?</p>	0.25–3.125 A	Go to Step 3	Go to DTC <a href="#">P0135</a> , <a href="#">P0136</a> , <a href="#">P0137</a> , or <a href="#">P0138</a> in Vehicle DTC Information
3	<ol style="list-style-type: none"> <li>Start the engine.</li> <li>Allow the engine to reach operating temperature. Refer to <a href="#">Scan</a> Tool Data List .</li> <li>Operate the engine at 1,500 RPM for 30 seconds.</li> <li>Observe the affected HO2S voltage parameter with a scan tool.</li> </ol> <p>Is the HO2S voltage parameter varying above and below the specified range?</p>	300–600 mV	Go to Step 4	Go to Step 5
4	<ol style="list-style-type: none"> <li>Observe the Freeze Frame/Failure Records for this DTC.</li> <li>Turn OFF the ignition for 30 seconds.</li> <li>Start the engine.</li> <li>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.</li> </ol> <p>Did the DTC fail this ignition?</p>	—	Go to Step 5	Go to <a href="#">Electrical</a> Conditions
5	<ol style="list-style-type: none"> <li>Turn OFF the ignition.</li> <li>Disconnect the affected HO2S.</li> <li>Turn ON the ignition, with the engine OFF.</li> <li>Observe the HO2S voltage parameter with a scan tool.</li> </ol> <p>Is the HO2S voltage parameter more than the specified value?</p>	800 mV	Go to Step 7	Go to Step 6
6	<p>Measure the voltage from the high signal circuit of the HO2S harness connector on the engine harness side to a good ground with a DMM.</p> <p>Is the voltage more than the specified value?</p>	0.2 V	Go to Step 8	Go to Step 9
7	<p><b>Important</b></p> <p>The sensor may be damaged if the circuit is shorted to a voltage source.</p> <p>Test the HO2S high signal circuit for a short to voltage.</p> <p>Did you find and correct the condition?</p>	—	Go to Step 17	Go to Step 14

Step	Action	Value(s)	Yes	No
8	Measure the voltage from the low signal circuit of the HO2S harness connector on the engine harness side to a good ground with a DMM.  Is the voltage more than the specified value?	2 V	Go to Step 12	Go to Step 10
9	Test the HO2S high signal circuit for an open or high resistance.  Did you find and correct the condition?	—	Go to Step 17	Go to Step 14
10	1. Connect a 3-amp fused jumper wire between the high signal circuit of the HO2S harness connector on the engine harness side and the low signal circuit of the HO2S harness connector on the engine harness side. 2. Observe the HO2S voltage parameter with a scan tool.  Is the HO2S voltage parameter less than the specified value?	100 mV	Go to Step 13	Go to Step 11
11	Test the HO2S low signal circuit for an open or high resistance.  Did you find and correct the condition?	—	Go to Step 17	Go to Step 14
12	Test the HO2S low signal circuit for a short to voltage.  Did you find and correct the condition?	—	Go to Step 17	Go to Step 14
13	Test for shorted terminals and for poor connections at the HO2S.  Did you find and correct the condition?	—	Go to Step 17	Go to Step 15
14	Test for shorted terminals and for poor connections at the powertrain control module (PCM).  Did you find and correct the condition?	—	Go to Step 17	Go to Step 16
15	Replace the affected HO2S.  Did you complete the replacement?	—	Go to Step 17	—
16	Replace the PCM.  Did you complete the replacement?	—	Go to Step 17	—
17	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.  Did the DTC fail this ignition?	—	Go to Step 2	Go to Step 18
18	Observe the Capture Info with a scan tool.  Are there any DTCs that have not been diagnosed?	—	Go to <a href="#">Diagnostic Trouble Code (DTC) List - Vehicle in Vehicle DTC Information</a>	System OK

#### Steps 8-18

The number below refers to the step number on the diagnostic table.

- If the voltage is varying above and below the specified value, the condition is not present.

