

DTC	P0134	OXYGEN SENSOR CIRCUIT NO ACTIVITY DETECTED (BANK 1 SENSOR 1)
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CIRCUIT DESCRIPTION

Refer to DTC P0130 on page [05–96](#).

DTC No.	DTC Detecting Condition	Trouble Area
P0134	<p>After engine is warmed up, if heated oxygen sensor (bank 1, sensor 1) output does not indicate RICH (greater than 0.45 V) when conditions (a), (b), (c) and (d) continue at least 65 sec.:</p> <p>(a) Engine speed: 1,400 rpm or more (b) Vehicle speed: 24.8 mph (40 km/h) or more (c) Throttle valve is not fully closed (d) 180 sec. or more after starting engine (e) Engine coolant temperature is more than 40 °C (104°F) (1 trip detection logic)</p>	<ul style="list-style-type: none"> • Open or short in heated oxygen sensor (bank 1 sensor 1) circuit • Heated oxygen sensor (bank 1 sensor 1) • Heated oxygen sensor heater (bank 1 sensor 1) • EFI relay • Air induction system • Fuel pressure • PCV hose connection • PCV valve and hose • Injector • Gas leakage in exhaust system • ECM

HINT:

After confirming DTCs "P0134", use the hand–held tester or the OBD II scan tool to confirm the output voltage of the heated oxygen sensor (bank 1 sensor 1) from the "DIAGNOSIS / ENHANCED OBD II / DATA LIST / ALL". If the output voltage of the heated oxygen sensor is always less than 0.1 V, the heated oxygen sensor circuit may be open or short.

MONITOR DESCRIPTION

The ECM uses the heated oxygen sensor to optimize the air/fuel mixture in closed–loop fuel control. This control helps decrease exhaust emissions by providing the catalyst with a nearly stoichiometric mixture. The sensor detects the oxygen level in the exhaust gas and the ECM uses this data to control the air–fuel ratio. The sensor output voltage ranges from 0 V to 1 V. If the signal voltage is less than 0.4 V, the air–fuel ratio is LEAN. If the signal voltage is more than 0.5 V, the air–fuel ratio is RICH. If the conditions for closed–loop fuel control are met and after a specified time–period, the sensor's output signal never indicates RICH, the ECM will conclude that closed–loop fuel control is malfunctioning. The ECM will illuminate the MIL and a DTC is set.

MONITOR STRATEGY

Related DTCs	P0134	Excessive time to enter closed loop
Required sensors/components	Main sensors	Front heated oxygen sensor
	Related sensors	Crank position sensor, engine coolant temperature sensor, vehicle speed sensor
Frequency of operation	Once per drive cycles	
Duration	65 sec	
MIL operation	1 driving cycles	
Sequence of operation	None	

TYPICAL ENABLING CONDITION

Item	Specification	
	Minimum	Maximum
The monitor will run whenever the following DTCs are not present	See "List of Disable a Monitor" table (On page 05-24)	
Time after following conditions are met:	50 sec	–
Engine coolant temperature	40 °C	–
Engine speed	1400 rpm	–
Vehicle speed	40 km/h (25 mph)	130 km/h (81 mph)
Idle	OFF	
Time after engine start	180 sec	–

TYPICAL MALFUNCTION THRESHOLDS

Detection Criteria	Threshold
Front heated oxygen sensor voltage	less than 0.45 V

COMPONENT OPERATING RANGE

Parameter	Standard Value
In the normal condition, the front heated oxygen sensor voltage	0 to 1 V

WIRING DIAGRAM

Refer to DTC P0130 on page 05-96.

INSPECTION PROCEDURE

HINT:

Hand-held tester only:

Narrowing down the trouble area is possible by performing the "A/F CONTROL" ACTIVE TEST (heated oxygen sensor or other trouble areas can be distinguished).

(a) Perform ACTIVE TEST using the hand-held tester (A/F CONTROL).

HINT:

"A/F CONTROL" is ACTIVE TEST which changes the injection volume –12.5 % or +25 %.

- (1) Connect the hand-held tester to the DLC3 on the vehicle.
- (2) Turn the ignition switch ON.
- (3) Warm up the engine by running the engine at 2,500 rpm for approximately 3 minutes.
- (4) Select the item "DIAGNOSIS/ENHANCED OBD II/ACTIVE TEST/ A/F CONTROL".
- (5) Perform "A/F CONTROL" with the engine in an idle condition (press the right or left button).

Result:

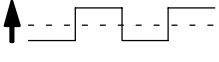

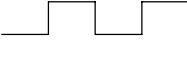

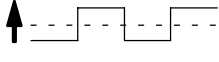

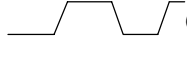

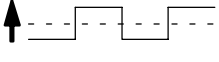


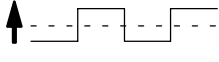

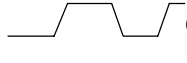
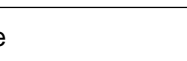
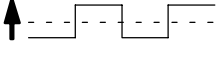


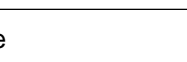
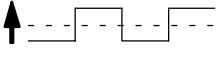


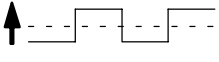


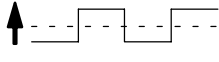


Heated oxygen sensor reacts in accordance with increase and decrease of injection volume:

+25 % → rich output: More than 0.5 V

–12.5 % → lean output: Less than 0.4 V

NOTICE:

There is a delay of few seconds in the sensor 1 (front sensor) output, and there is about 20 seconds delay at maximum in the sensor 2 (rear sensor).

	Output voltage of heated oxygen sensor (sensor 1: front sensor)	Output voltage of heated oxygen sensor (sensor 2: rear sensor)	Mainly suspect trouble area
Case 1	Injection volume +25 %  -12.5 %  Output voltage More than 0.5 V  Less than 0.4V  OK	Injection volume +25 %  -12.5 %  Output voltage More than 0.5 V  Less than 0.4V  OK	—
Case 2	Injection volume +25 %  -12.5 %  Output voltage No reaction  NG	Injection volume +25 %  -12.5 %  Output voltage More than 0.5 V  Less than 0.4V  OK	Sensor 1: front sensor (sensor 1, heater, sensor 1 circuit)
Case 3	Injection volume +25 %  -12.5 %  Output voltage More than 0.5 V  Less than 0.4V  OK	Injection volume +25 %  -12.5 %  Output voltage No reaction  NG	Sensor 2: rear sensor (sensor 2, heater, sensor 2 circuit)
Case 4	Injection volume +25 %  -12.5 %  Output voltage No reaction  NG	Injection volume +25 %  -12.5 %  Output voltage No reaction  NG	Extremely rich or lean actual air-fuel ratio (Injector, fuel pressure, gas leakage in exhaust system, etc.)

The following A/F CONTROL procedure enables the technician to check and graph the voltage outputs of both the heated oxygen sensors.

For displaying the graph indication, enter "ACTIVE TEST / A/F CONTROL / USER DATA", then select "O2S B1S1 and O2S B1S2" by pressing "YES" button and push "ENTER" button before pressing "F4" button.

HINT:

- If different DTCs related to different systems that have terminal E2 as the ground terminal are output simultaneously, terminal E2 may be open.
- Read freeze frame data using the hand-held tester or the OBD II scan tool. Freeze frame data records the engine conditions when a malfunction is detected. When troubleshooting, it is useful for determining whether the vehicle was running or stopped, the engine was warmed up or not, the air-fuel ratio was lean or rich, etc. at the time of the malfunction.
- A high heated oxygen sensor (sensor 1) voltage (0.5 V or more) could be caused by a rich air fuel mixture. Check for conditions that would cause the engine to run rich.
- A low heated oxygen sensor (sensor 1) voltage (0.4 V or less) could be caused by a lean air fuel mixture. Check for conditions that would cause the engine to run lean.

1 CHECK OTHER DTCS OUTPUT(IN ADDITION TO DTC P0134)

- (a) Connect the hand-held tester or the OBD II scan tool to the DLC3.
- (b) Turn the ignition switch ON and push the hand-held tester or the OBD II scan tool main switch ON.
- (c) Select the item "DIAGNOSIS / OBD/MOBD / DTC INFO / CURRENT CODES".
- (d) Read the DTCS using the hand-held tester or the OBD II scan tool.

Result:

Display (DTC output)	Proceed to
Only "P0134" is output	A
"P0134" and other DTCS are output	B

HINT:

If any other codes besides "P0134" is output, perform the troubleshooting for those DTCS first.

B

GO TO RELEVANT DTC CHART
(See page 05-34)

A**2 READ VALUE OF HAND-HELD TESTER OR OBD II SCAN TOOL(OUTPUT VOLTAGE OF HEATED OXYGEN SENSOR)**

- (a) Connect the hand-held tester or the OBD II scan tool to the DLC3.
- (b) Turn the ignition switch ON and push the hand-held tester or the OBD II scan tool main switch ON.
- (c) Select the item "DIAGNOSIS / ENHANCED OBD II / DATA LIST / ALL / O2S B1S1".
- (d) Warm up the engine above 75°C (169°F).
- (e) Read the output voltage of the heated oxygen sensor when the engine speed is suddenly increased.

HINT:

Quickly accelerate the engine to 4,000 rpm 3 times by using the accelerator pedal.

Standard:

Heated oxygen sensor outputs a RICH signal (0.45 V or more) at least once.

OK

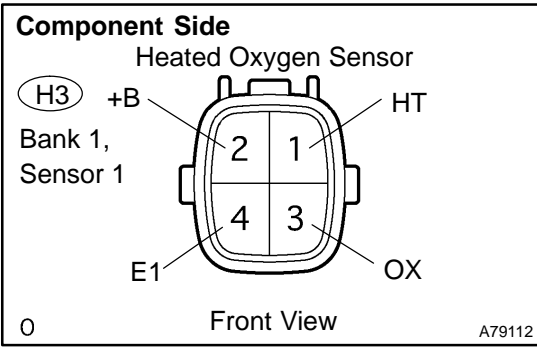
Go to step 12

NG**3 CHECK CONNECTION OF PCV HOSE****NG**

REPAIR OR REPLACE PCV HOSE

OK

4 INSPECT HEATED OXYGEN SENSOR(HEATER RESISTANCE)



- (a) Disconnect the H3 heated oxygen sensor connector.
- (b) Measure the resistance between the terminals of the heated oxygen sensor connector.

Standard:

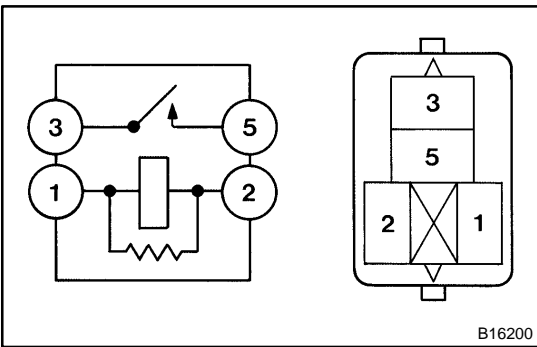
Tester Connection	Specified Condition
HT (H3-1) - +B (H3-2)	11 to 16 Ω at 20 °C (68 °F)
HT (H3-1) - E1 (H3-4)	10 kΩ or higher

- (c) Reconnect the heated oxygen sensor connector.

NG → **REPLACE HEATED OXYGEN SENSOR**

OK

5 INSPECT EFI RELAY



- (a) Remove the EFI relay from the engine room R/B.
- (b) Inspect the EFI relay.

Standard:

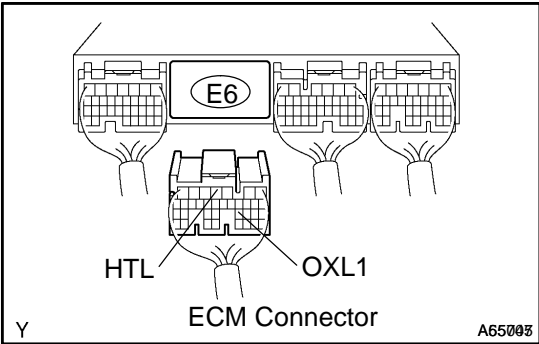
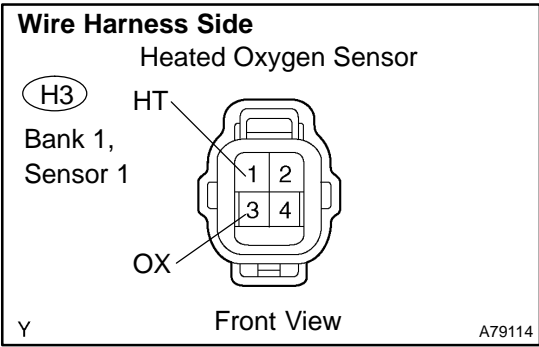
Tester Connection	Specified Condition
1 - 2	Continuity
3 - 5	No continuity
	Continuity (Apply battery voltage to terminals 1 and 2)

- (c) Reinstall the EFI relay.

NG → **REPLACE EFI RELAY**

OK

6 CHECK HARNESS AND CONNECTOR(HEATED OXYGEN SENSOR - ECM)



- (a) Disconnect the H3 heated oxygen sensor connector.
- (b) Disconnect the E6 ECM connector.
- (c) Measure the resistance between the wire harness side connectors.

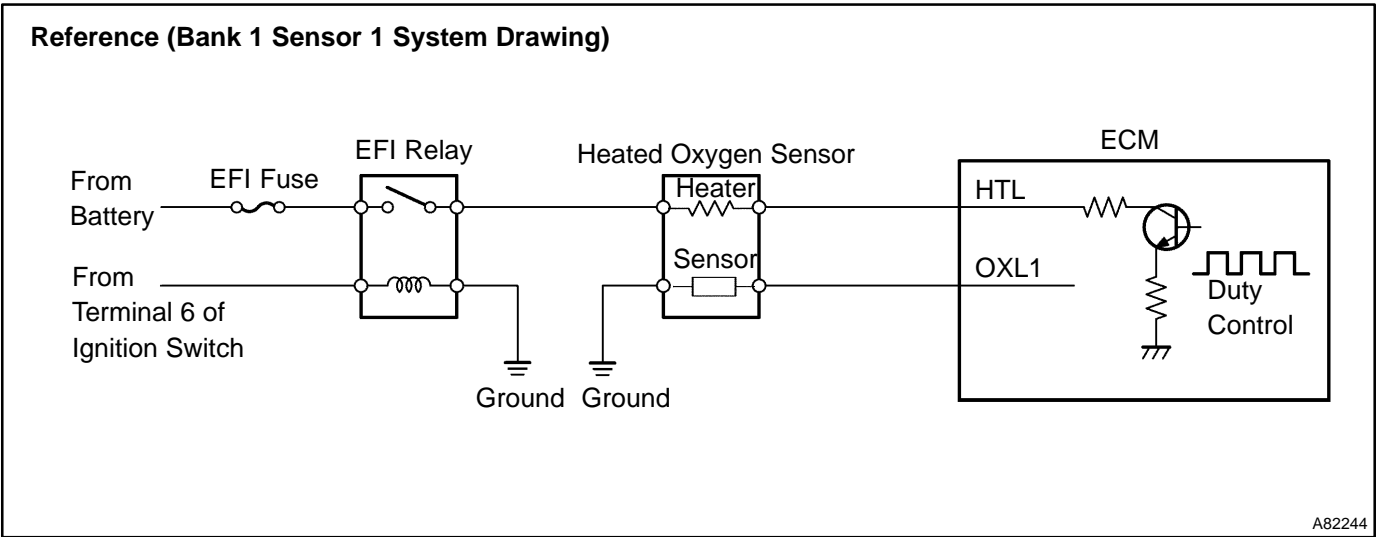
Standard (Check for open):

Tester Connection	Specified Condition
HT (H3-1) - HTL (E6-4)	Below 1 Ω
OX (H3-3) - OXL1 (E6-23)	

Standard (Check for short):

Tester Connection	Specified Condition
HT (H3-1) or HTL (E6-4) - Body ground	10 kΩ or higher
OX (H3-3) or OXL1 (E6-23) - Body ground	

- (d) Reconnect the heated oxygen sensor connector.
- (e) Reconnect the ECM connector.



NG REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

7 CHECK WHETHER MISFIRE IS OCCURRED OR NOT BY MONITORING DTC AND DATA LIST

NG PERFORM TROUBLESHOOTING FOR MISFIRE (See page 05-139)

OK

8 CHECK AIR INDUCTION SYSTEM

- (a) Check the air induction system for vacuum leaks.

NG**REPAIR OR REPLACE AIR INDUCTION SYSTEM****OK****9 CHECK FUEL PRESSURE (See page 11-4)**

- (a) Check the fuel pressure (high or low pressure).

NG**REPAIR OR REPLACE FUEL SYSTEM****OK****10 INSPECT FUEL INJECTOR ASSY(INJECTION AND VOLUME) (See pae 11-7)****NG****REPLACE FUEL INJECTOR ASSY****OK****11 CHECK FOR EXHAUST GAS LEAKS****NG****REPAIR OR REPLACE EXHAUST GAS LEAKAGE POINT****OK****REPLACE HEATED OXYGEN SENSOR****12 PERFORM CONFIRMATION DRIVING PATTERN (See page 05-96)**

HINT:

Clear all DTCs prior to performing the confirmation driving pattern.

GO**13 READ OUTPUT DTC(DTC P0134 IS OUTPUT AGAIN)**

- (a) Connect the hand-held tester or the OBD II scan tool to the DLC3.
- (b) Turn the ignition switch ON and push the hand-held tester or the OBD II scan tool main switch ON.
- (c) Select the item "DIAGNOSIS / OBD/MOBD / DTC INFO / CURRENT CODES".
- (d) Read the DTCs using the hand-held tester or the OBD II scan tool.

Result:

Display (DTC output)	Proceed to
"P0134" is not output again	A
"P0134" is output again	B

B**REPLACE ECM (See page 10-17)****A**

14	CONFIRM IF VEHICLE HAS RUN OUT OF FUEL IN PAST
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NO	CHECK FOR INTERMITTENT PROBLEMS (See page 05-41)
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YES

DTC IS CAUSED BY RUNNING OUT OF FUEL
