

DTC	P0134	Oxygen Sensor Circuit No Activity Detected (Bank 1 Sensor 1)
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DTC	P0154	Oxygen Sensor Circuit No Activity Detected (Bank 2 Sensor 1)
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CIRCUIT DESCRIPTION

Refer to DTC P0031 on page [DI-49](#).

DTC No.	DTC Detecting Condition	Trouble Area
P0134 P0154	After the engine is warmed up, heated oxygen sensor (bank 1, sensor 1) output does not indicate RICH (more than 0.45 V) even once when the following conditions continue for 65 sec. or more: (a) Engine speed: 1,400 rpm or more (b) Vehicle speed: 25 to 81 mph (40 to 130 km/h) or more (c) Throttle valve does not fully closed (d) 180 sec. or more after starting engine (e) Engine coolant temperature more than 40°C (104°F)	• Open or short in heated oxygen sensor circuit • Heated oxygen sensor • Heated oxygen sensor heater • EFI or ECD relay • Air induction system • Fuel pressure • PCV hose connection • PCV valve and hose • Injector • Gas leakage on exhaust system • PCV piping • ECM

HINT:

- Bank 1 refers to bank that includes cylinder No. 1.
- Bank 2 refers to bank that does not includes cylinder No. 1.
- Sensor 1 refers to the sensor closer to the engine assembly.
- After confirming DTC P0134 and P0154, check the output voltage of the heated oxygen sensor in the "DIAGNOSIS / ENHANCE OBD II / DATA LIST / ALL" using the OBD II scan tool or the hand-held tester. If output voltage of the heated oxygen sensor is always less than 0.1 V, 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 0.55 V, the air-fuel ratio is RICH. If the conditions for the 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 the 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 (Bank 1)
	P0154	Excessive time to enter closed loop (Bank 2)
Required sensors/components	Main sensors/components	Front heated oxygen sensor
	Related sensors/components	Crank position sensor, Engine coolant temperature sensor, Vehicle speed sensor
Frequency of operation	Once per drive cycle	
Duration	65 sec.	
MIL operation	1 driving cycle	
Sequence of operation	None	

TYPICAL ENABLING CONDITIONS

Item	Specification	
	Minimum	Maximum
The monitor will run whenever the following DTCs are not present	See "List of disable a monitor" (on page DI-3)	
Both of the following conditions were met	A and B	
A. Time after following conditions met for 50 sec.	(a), (b), (c), (d), (e) and (f)	
(a) Engine coolant temperature	40°C (104°F)	–
(b) Engine speed	1,400 rpm	–
(c) Vehicle speed	40 km/h (25 mph)	–
(d) Idle	OFF	
(e) Time after engine start	180 sec.	–
(f) Fuel enrichment correction factor	1	63.998
B. Neither fail nor pass is determined yet in the present drive cycle		

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 P0031 on page [DI-49](#).

INSPECTION PROCEDURE

HINT:

Hand-held tester only:

The narrowing down the trouble area is possible by performing ACTIVE TEST of the following "A/F CONTROL" (Heated oxygen sensor or another can be distinguished).

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

HINT:

"A/F CONTROL" is the ACTIVE TEST which changes the injection volume to -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 with the engine speed at 2,500 rpm for approximately 90 seconds.
- (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:

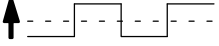
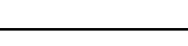
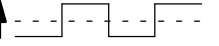
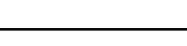
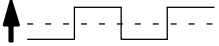
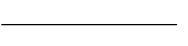
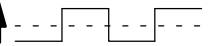
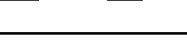
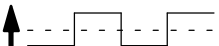
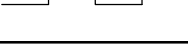
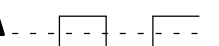
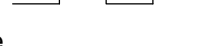
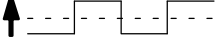
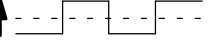
Heated oxygen sensor reacts in accordance with increase and decrease of injection volume

+25 % → rich output: More than 0.5 V

-12.5 % → lean output: Less than 0.4 V

NOTICE:

However, there is a few seconds delay in the sensor 1 (front sensor) output. And there is about 20 seconds delay 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 0.4 V  OK	Injection volume +25 % ↑  -12.5 % ↓  Output voltage More than 0.5 V  Less than 0.4 V  OK	—
Case 2	Injection volume +25 % ↑  -12.5 % ↓  Output voltage Almost no reaction  NG	Injection volume +25 % ↑  -12.5 % ↓  Output voltage More than 0.5 V  Less than 0.4 V  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 0.4 V  OK	Injection volume +25 % ↑  -12.5 % ↓  Output voltage Almost no reaction  NG	Sensor 2: rear sensor (sensor 2, heater, sensor 2 circuit)
Case 4	Injection volume +25 % ↑  -12.5 % ↓  Output voltage Almost no reaction  NG	Injection volume +25 % ↑  -12.5 % ↓  Output voltage Almost no reaction  NG	Extremely rich or lean of the 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 output of the heated oxygen sensors (sensor 1 and 2).

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 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	Are there any other codes (besides DTCs P0134 and P0154) being output?
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PREPARATION:

- Connect the hand-held tester or the OBD II scan tool to the DLC3.
- Turn the ignition switch ON and push the hand-held tester or OBD II scan tool main switch ON.
- When using hand-held tester, enter the following menus: DIAGNOSIS / ENHANCED OBD II / DTC INFO / CURRENT CODES.

CHECK:

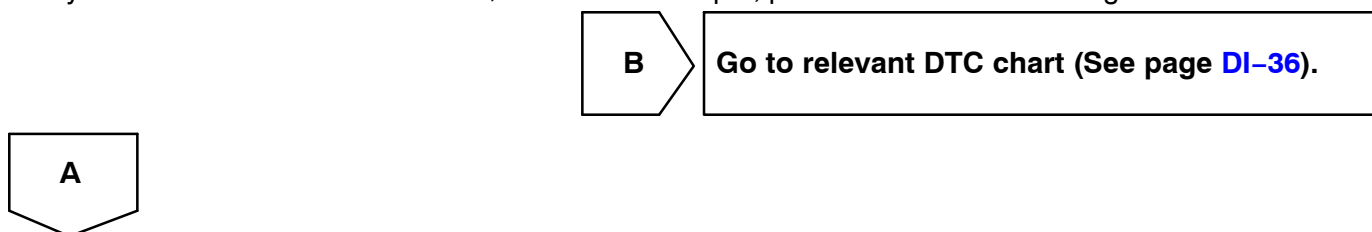
Read the DTC using the hand-held tester or the OBD II scan tool.

RESULT:

Display (DTC Output)	Proceed to
"P0134 and/or P0154"	A
"P0134 or P0154" and other DTCs	B

HINT:

If any other codes besides P0134 and/or P0154 are output, perform the troubleshooting for those codes first.



2	Connect OBD II scan tool or hand-held tester, and read value for voltage output of heated oxygen sensor (bank 1, 2 sensor 1).
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PREPARATION:

- (a) Connect the OBD II scan tool or the hand-held tester to the DLC3.
- (b) Warm up the engine to the normal operating temperature.
- (c) When using hand-held tester, enter the following menu: DIAGNOSIS / ENHANCED OBD II / DATA LIST / ALL / O2S B1 S1 or B2 S1.

CHECK:

Read the voltage output of the heated oxygen sensors when the engine speed is suddenly increased.

HINT:

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

OK:

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

OK

Go to step 12.

NG

3	Check connection of PCV piping.
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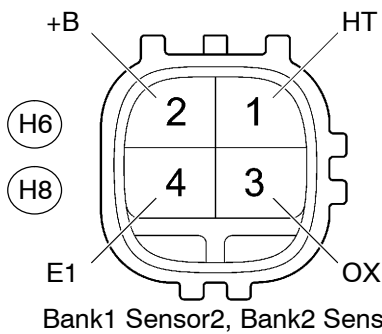
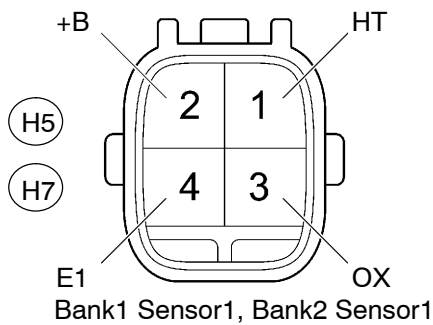
NG

Repair or replace PCV piping.

OK

4 Check resistance of heated oxygen sensor heater.

Components Side:



C

A20870

PREPARATION:

Disconnect the H5, H6, H7 or H8 heated oxygen sensor connector.

CHECK:

Measure resistance between terminals of the heated oxygen sensor.

OK:

Tester Connection	Specified Condition
HT (H5-1) - +B (H5-2)	11 to 16 Ω (20°C)
HT (H6-1) - +B (H6-2)	11 to 16 Ω (20°C)
HT (H7-1) - +B (H7-2)	11 to 16 Ω (20°C)
HT (H8-1) - +B (H8-2)	11 to 16 Ω (20°C)

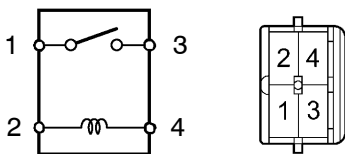
NG

Replace heated oxygen sensor.

OK

5 Check EFI or ECD relay.

EFI or ECD Relay



A21543

PREPARATION:

Remove the EFI or ECD relay from the engine room R/B.

CHECK:

Inspect the EFI or ECD relay.

OK:

Terminal No.	Condition	Specified Condition
2 - 4	Constant	Continuity
1 - 3	Usually	No Continuity
	Apply B+ between terminals 2 and 4	Continuity

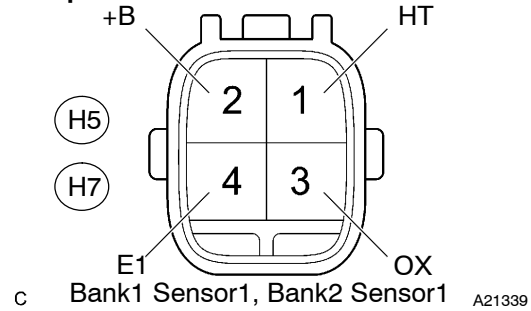
NG

Replace EFI or ECD relay.

OK

6 Check for open and short in harness and connector between ECM and heated oxygen sensor (bank 1, 2 sensor 1).

Components Side:



PREPARATION:

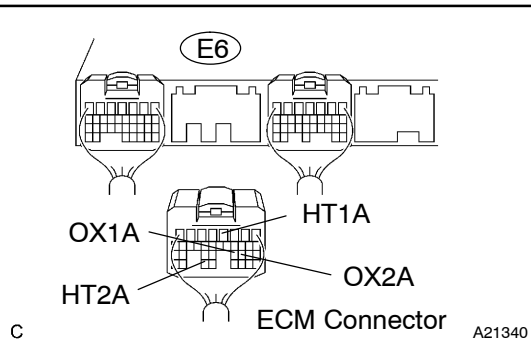
- (a) Disconnect the H5 or H7 heated oxygen sensor connector.
- (b) Disconnect the E6 ECM connector.

CHECK:

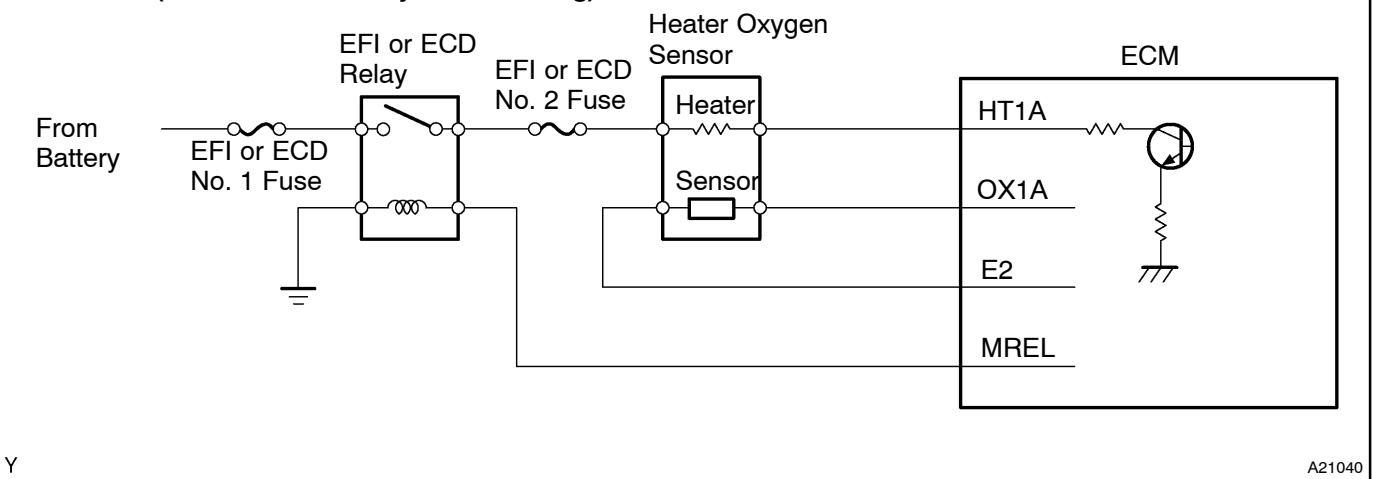
Measure the resistance between the wire harness side connectors.

OK:

Tester Connection	Specified Condition
OX (H5-3) - OX1A (E6-23)	Below 1 Ω
HT (H5-1) - HT1A (E6-4)	Below 1 Ω
OX (H7-3) - OX2A (E6-22)	Below 1 Ω
HT (H7-1) - HT2A (E6-33)	Below 1 Ω
OX (H5-3) or OX1A (E6-23) - Body ground	10 k Ω or higher
HT (H5-1) or HT1A (E6-4) - Body ground	10 k Ω or higher
OX (H7-3) or OX2A (E6-22) - Body ground	10 k Ω or higher
HT (H7-1) or HT2A (E6-33) - Body ground	10 k Ω or higher



Reference (Bank 1 Sensor 1 System Drawing)



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 [DI-167](#)).

OK

8 Check air induction system (See page [SF-1](#)).

CHECK:

Check the air induction system for vacuum leaks.

NG

Repair or replace air induction system.

OK

9 Check fuel pressure (See page [SF-7](#)).

CHECK:

Check the fuel pressure (high or low pressure).

NG

Check and repair fuel pump, pressure regulator,
fuel pipe line and filter (See page [SF-1](#)).

OK

10 Check injector injection (See page [SF-24](#))

NG

Replace injector.

OK

11 Check exhaust system for gas leakage.

NG

Repair or replace exhaust gas leakage point.

OK

Replace heated oxygen sensor (bank 1, 2 sensor 1).

12 Perform confirmation driving pattern (See page [DI-106](#)).

HINT:

Clear all DTCs prior to performing the confirmation driving pattern.

Go

13 Are there DTCs P0134 and P0154 being output again?

YES

Replace ECM (See page [SF-60](#)).

NO

14 Confirm if vehicle has run out of fuel in past.

NO

**Check for intermittent problems
(See page [DI-3](#)).**

YES

DTCs P0134 and P0154 are caused by running out of fuel.