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

DTC	P0154	OXYGEN SENSOR CIRCUIT NO ACTIVITY DETECTED (BANK 2 SENSOR 1)

HINT:

- Bank 1 refers to the bank that includes cylinder No.1.
- Bank 2 refers to the bank that does not include cylinder No.1.
- Cylinder No. 1 is located in the front part of the engine, opposite the transmission.
- Sensor 1 refers to the sensor closest to the engine body.

CIRCUIT DESCRIPTION

Refer to DTC P0130 on page 05–87.

DTC No.	DTC Detecting Condition	Trouble Area
P0134 P0154	After engine is warmed up, voltage of Heated Oxygen Sensor (HO2S) sensor 1 does not become RICH (greater than 0.45 V) even once when conditions (a), (b), (c), (d) and (e) continue for more than 50 seconds (1 trip detection logic): (a) Engine speed: 1,400 rpm or more (b) Vehicle speed: 40 km/h (25 mph) or more (c) Throttle valve is not fully closed (d) 180 seconds or more after starting engine (e) Engine Coolant Temperature (ECT) is more than 40°C (104°F)	• Open or short in HO2S (sensor 1) circuit • HO2S (sensor 1) • PCV valve and hose • Air induction system • EFI MAIN relay • Fuel pressure • Injector • Gas leakage in exhaust system • ECM

HINT:

After confirming DTC P0134, P0154, use the Intelligent Tester II to confirm the output voltage of the HO2S (bank 1 sensor 1 and bank 2 sensor 1) from the data list.

If the voltage output of the HO2S is less than 0.1 V, the HO2S circuit may be open or short.

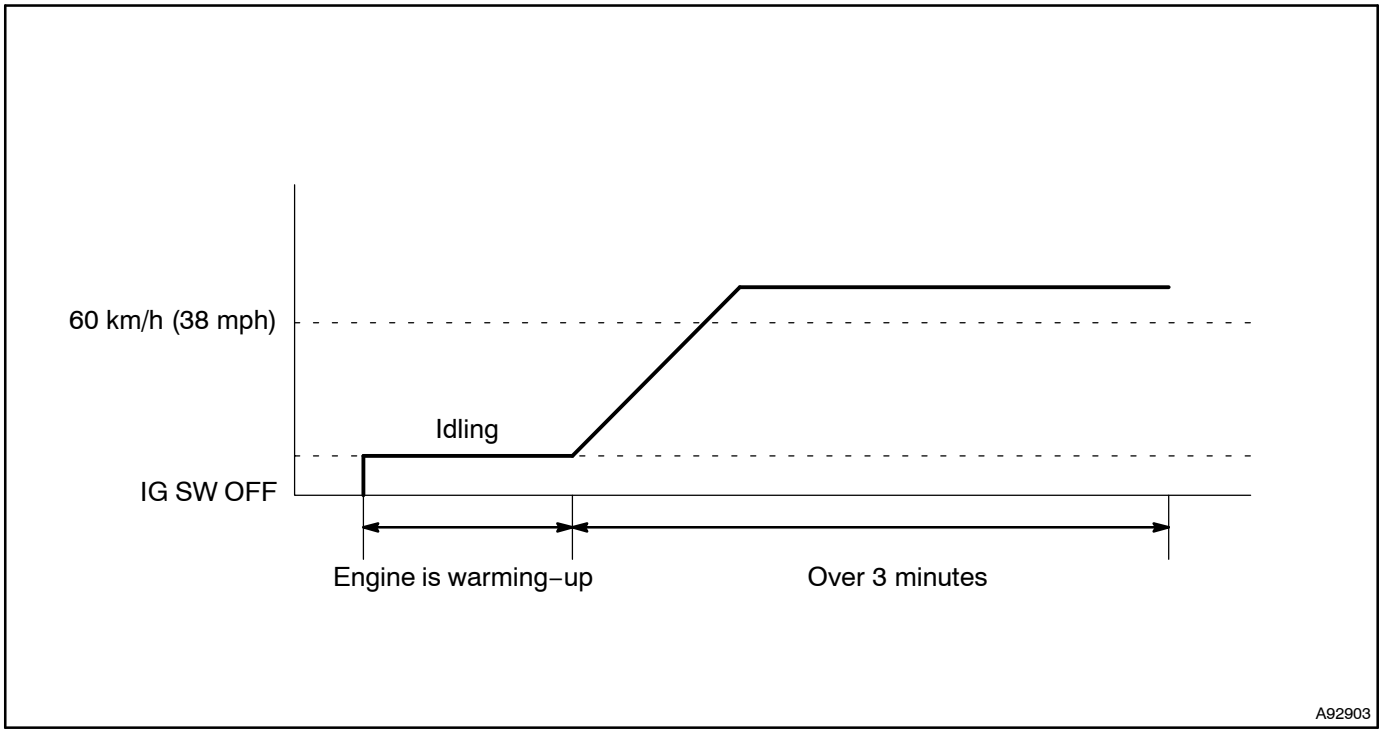
MONITOR DESCRIPTION

The ECM uses the HO2S to optimize the air–fuel mixture with 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 0.1 V to 0.9 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 sensor does not indicate RICH even once despite the conditions for the closed–loop fuel control being met and the specified time period has passed, the ECM will conclude that the closed–loop fuel control is malfunctioning. The ECM will illuminate the MIL and a DTC is set.

WIRING DIAGRAM

Refer to DTC P0031 on page 05–54.

CONFIRMATION DRIVING PATTERN



(a) Connect the Intelligent Tester II to the DLC3.
(b) Allow the engine to idle until the ECT reaches 40°C (104°F).
(c) Allow the vehicle to run at 60 km/h (38 mph) or more for 3 minutes or more.

INSPECTION PROCEDURE

HINT:
It is possible the malfunctioning area can be found using the active test ”Control the injection volume A/F sensor” operation. The active test can determine if the HO2S or othe potential trouble areas are malfunctioning or not.
The injection volume can be switched to –12.5 % (decrease) or +25 % (increase) by the active test.
The active test procedure enables a technician to check and graph the voltage outputs of the HO2Ss.

Procedure:

(a) Connect the Intelligent Tester II to the DLC3 on the vehicle.
(b) Turn the ignition switch ON.
(c) Warm up the engine by running the engine at 2,500 rpm for approximately 90 seconds.
(d) Enter the following menus: Active Test/ Control the injection volume A/F sensor.
(e) Perform the active test at the engine idling.

Standard:

The HO2S reacts in accordance with increase and decrease of injection volume +25 % → Rich output: more than 0.55 V
–12.5 % → Lean output: Less than 0.4 V

NOTICE:
The HO2S (sensor 1) output has a few seconds of delay and the HO2S (sensor 2) output has a maximum of 20 seconds of delay.
If the vehicle is short of fuel, the air–fuel ratio becomes LEAN and the DTCs will be recorded.

Case	HO2S Voltage (Sensor 1)	HO2S Voltage (Sensor 2)	Main Suspected Trouble Area
1	Injection Volume +25% –12.5% HO2S Voltage 0.55 V or more Below 0.4 V OK	Injection Volume +25% –12.5% HO2S Voltage 0.5 V or more Below 0.4 V OK	–
2	Injection Volume +25% –12.5% HO2S Voltage Almost no reaction NG	Injection Volume +25% –12.5% HO2S Voltage 0.5 V or more Below 0.4 V OK	HO2S (sensor 1) HO2S heater (sensor 1)
3	Injection Volume +25% –12.5% HO2S Voltage 0.55 V or more Below 0.4 V OK	Injection Volume +25% –12.5% HO2S Voltage Almost no reaction NG	HO2S (sensor 2) HO2S heater (sensor 2)
4	Injection Volume +25% –12.5% HO2S Voltage Almost no reaction NG	Injection Volume +25% –12.5% HO2S Voltage Almost no reaction NG	Injector Fuel Pressure Exhaust Gas Leak etc. (Air–Fuel ratio is extremely Lean or Rich)

HINT:
Read freeze frame data using the Intelligent Tester II. Freeze frame data records the engine conditions when a malfunction is detected. When troubleshooting, freeze frame data can help determine if the vehicle was running or stopped, if the engine was warmed up or not, if the air–fuel ratio was lean or rich, and other data from the time the malfunction occurred.

1	CHECK OTHER DTC OUTPUT (IN ADDITION TO DTC P0134, P0154)

Display (DTC output)	Proceed to
P0134 or P0154	A
P0134 or P0154 and other DTC	B

B → GO TO RELEVANT DTC CHART (See page 05–36)

A

2	READ VALUE OF INTELLIGENT TESTER II (HO2S VOLTAGE)

(a) Connect the Intelligent Tester II to the DLC3.
(b) Enter the following menus: Enter/ Diagnosis/ OBD·MOBD/ Power train/ Engine and ECT/ Data List/ All Data/ O2S B1S1 (O2S B2 S1).
(c) Allow the engine to idle until the ECT reaches 40°C (104°F).
(d) Quickly depress the accelerator pedal 3 times until the engine RPM reaches 4,000 rpm. Then, read the HO2S bank 1 sensor 1 (or bank 2 sensor 1) voltage.
Standard: HO2S voltage is 0.45 V or more at least once.

OK > **Go to step 11**

NG

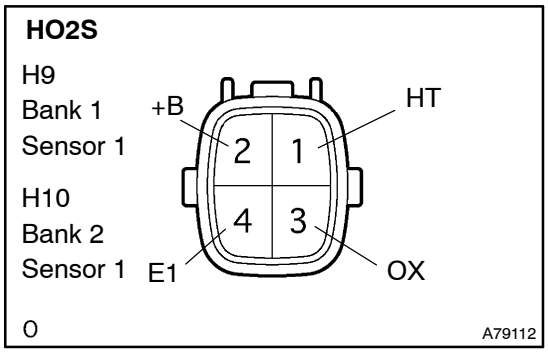
3	CHECK CONNECTION OF PCV HOSE

OK: PCV hose is connected correctly and is not damaged.

NG > **REPAIR OR REPLACE PCV HOSE**

OK

4	INSPECT HEATED OXYGEN SENSOR



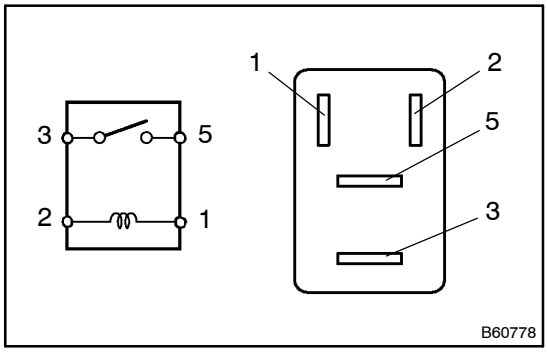
(a) Disconnect the H9 or H10 HO2S connector.
(b) Measure the resistance between the terminals of the HO2S.
Standard:

Tester Connection	Specified Condition
H9–1 (HT) – H9–2 (+B)	5 to 10 Ω at 20 °C (68 °F)
H9–1 (HT) – H9–4 (E1)	10 kΩ or higher
H10–1 (HT) – H10–2 (+B)	5 to 10 Ω at 20 °C (68 °F)
H10–1 (HT) – H10–4 (E1)	10 kΩ or higher

NG > **REPLACE HEATED OXYGEN SENSOR**

OK

5 INSPECT EFI MAIN RELAY



(a) Remove the EFI MAIN relay from the engine room R/B.
(b) Measure the resistance of the EFI MAIN relay.
Standard:

Tester Connection	Specified Condition
3 – 5	10 kΩ or higher
3 – 5	Below 1 Ω (apply battery voltage to terminals 1 and 2)

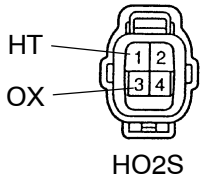
NG → **REPLACE EFI MAIN RELAY**

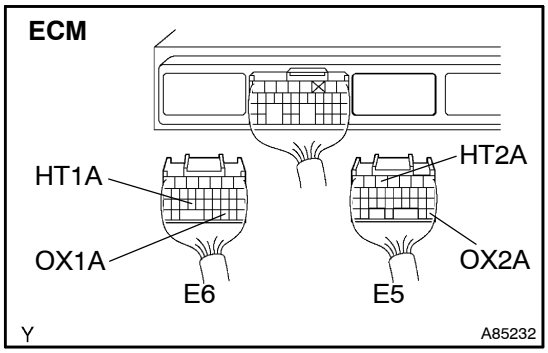
OK

6 CHECK WIRE HARNESS

Wire Harness Side

H9 Bank 1 Sensor 1
H10 Bank 2 Sensor 1





(a) Disconnect the H9 and H10 HO2S connectors.
(b) Disconnect the E5 and E6 ECM connectors.
(c) Measure the resistance between the wire harness side connectors.
Standard:

Tester Connection	Specified Condition
H9–1 (HT) – E6–24 (HT1A)	Below 1 Ω
H9–3 (OX) – E6–30 (OX1A)	Below 1 Ω
H10–1 (HT) – E5–5 (HT2A)	Below 1 Ω
H10–3 (OX) – E5–28 (OX2A)	Below 1 Ω
H9–1 (HT) or E6–24 (HT1A) – Body ground	10 kΩ or higher
H9–3 (OX) or E6–30 (OX1A) – Body ground	10 kΩ or higher
H10–1 (HT) or E5–5 (HT1A) – Body ground	10 kΩ or higher
H10–3 (OX) or E5–28 (OX1A) – Body ground	10 kΩ or higher

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

7 CHECK AIR INDUCTION SYSTEM

Check the air induction system for vacuum leaks.

NG → **REPAIR OR REPLACE AIR INDUCTION SYSTEM**

OK

8	CHECK FUEL PRESSURE (See page 11–9)

NG → REPAIR OR REPLACE FUEL SYSTEM

OK

9	INSPECT FUEL INJECTOR ASSY

NG → REPLACE FUEL INJECTOR ASSY (See page 11–15)

OK

10	CHECK FOR EXHAUST GAS LEAKAGE

NG → REPAIR OR REPLACE EXHAUST SYSTEM

OK

REPLACE HEATED OXYGEN SENSOR

11	PERFORM CONFIRMATION DRIVING PATTERN

HINT:
Clear all DTCs prior to performing the confirmation driving pattern.

NEXT

12	READ OUTPUT DTC

Display (DTC output)	Proceed to
P0134 or P0154	A
No output	B

B → REPLACE ECM (See page 10–21)

A

13	CONFIRM IF VEHICLE HAS RUN OUT OF FUEL

If the vehicle has run out of fuel, proceed to A.
If the vehicle has not run out of fuel, proceed to B.

B → CHECK FOR INTERMITTENT PROBLEMS (see page 05–11)

A

DTC IS CAUSED BY RUNNING OUT OF FUEL