DTC	P0130	HEATED OXYGEN SENSOR CIRCUIT MALFUNCTION (BANK 1 SENSOR 1)

CIRCUIT DESCRIPTION

Refer to DTC P0125 on page 05–44.

DTC No	DTC Detecting Condition	Trouble Area
P0130	Voltage output of oxygen sensor remains at 0.4 V or more, or 0.55 V or less, during idling after engine is warmed up (2 trip detection logic)	• Open or short in oxygen sensor circuit • Oxygen sensor • Air induction system • Fuel pressure • Injector • ECM

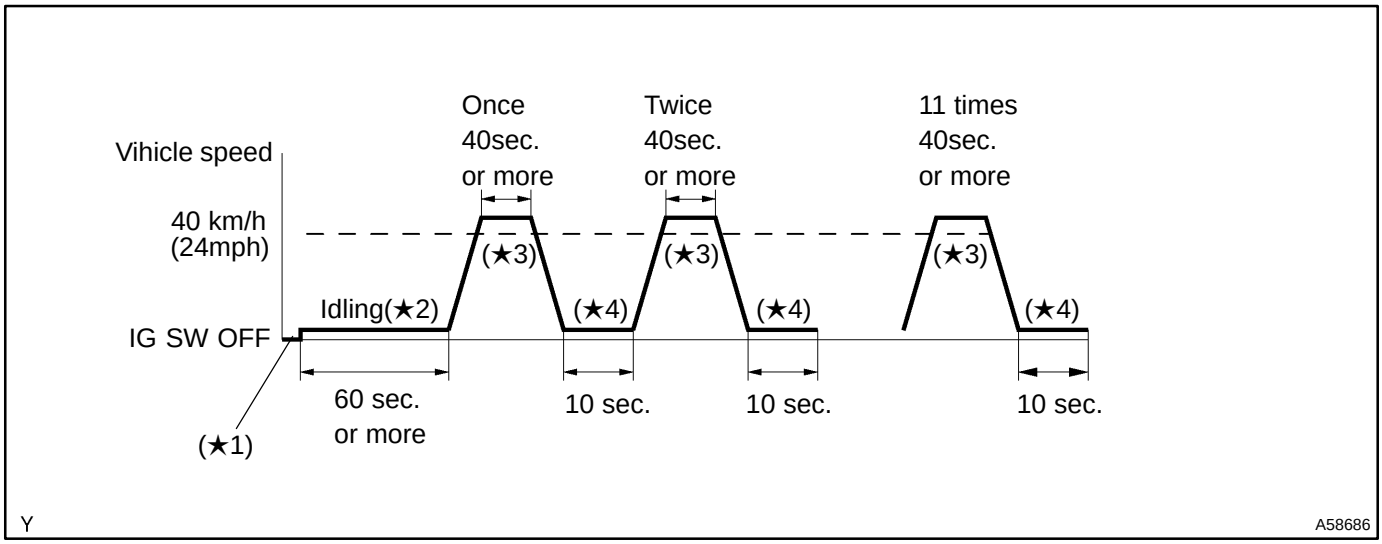
HINT:

- Bank 1 refers to bank that includes cylinder No. 1.
- Sensor 1 refers to the sensor closer to the engine body.
- The oxygen sensor's output voltage and the short−term fuel trim value can be read using the hand−held tester or OBD II scan tool.

WIRING DIAGRAM

Refer to DTC P0125 on page 05–44.

CONFIRMATION DRIVING PATTERN



1. **Connect the hand–held tester or OBD II scan tool to the DLC3.**
2. **Switch the hand–held tester or OBD II scan tool from the normal mode to the check (test) mode (See page 05–5). (★1)**
3. **Start the engine and let the engine idle for 60 seconds or more. (★2)**
4. **Drive the vehicle at 40 km/h (24 mph) or more for 40 seconds or more. (★3)**
5. **Let the engine idle for 10 seconds or more. (★4)**
6. **Preform steps (★3) to (★4) 11 times. (★5)**

HINT:

If a malfunction exists, the MIL will light up on the multi information display during step (★5).

NOTICE:

If the conditions in this test are not strictly followed, detection of the malfunction will not be possible. If you do not have a hand–held tester, turn the ignition switch OFF after performing steps from (★2) to (★5), then perform steps from (★2) to (★5) again.

INSPECTION PROCEDURE

HINT:

Read freeze frame data using the hand–held tester or OBD II scan tool, as freeze frame data records the engine conditions when the 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.

1	READ OUTPUT DTC(BESIDES P0130)

Result:

	A	B
RESULT	P0130 are output.	P0130 other codes are output.

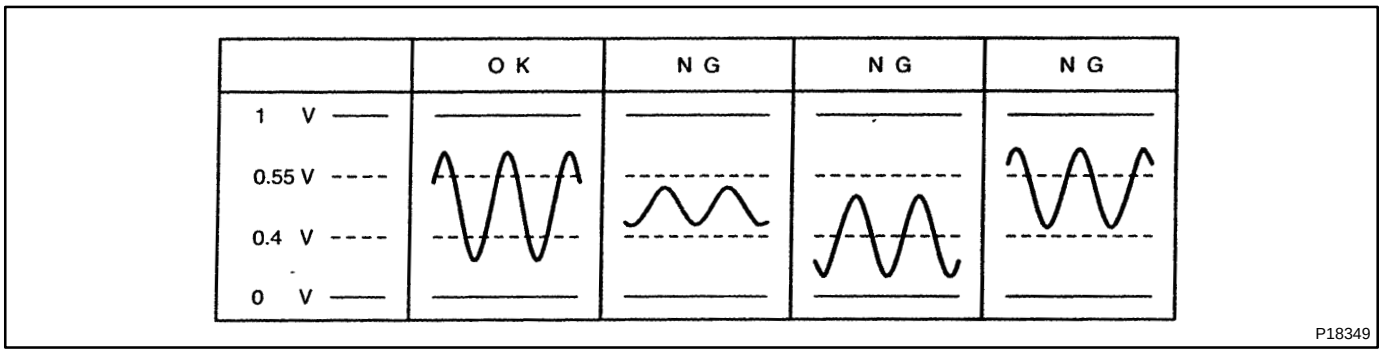
B → GO TO RELEVANT DTC CHART

A

2	READ VALUE OF HAND–HELD TESTER(OUTPUT VOLTAGE OXYGEN SENSOR)

(a) Warm up the oxygen sensor with the engine speed at 2,500 rpm for approx. 90 sec.
(b) Use the hand–held tester or OBD II scan tool to read the output voltage of the oxygen sensor during idling.

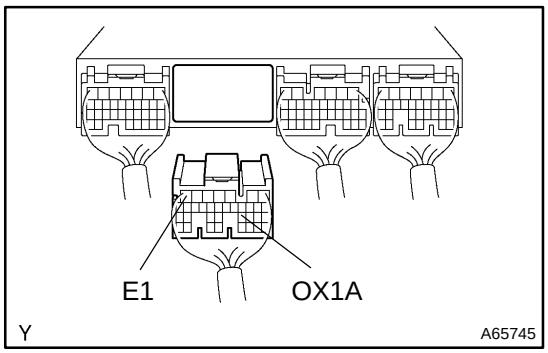
Oxygen sensor output voltage:
Alternates repeatedly between less than 0.4 V and more than 0.55 V (See the following table)



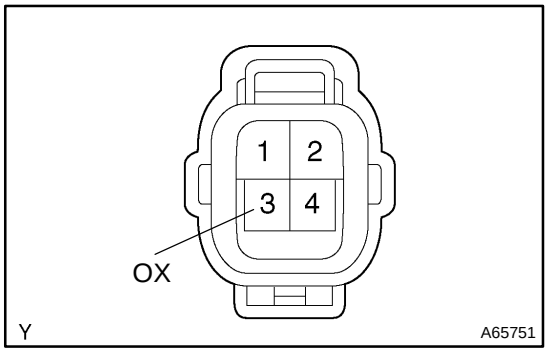
OK → **Go to step 9**

NG

3	CHECK HARNESS AND CONNECTOR(ECM–OXYGEN SENSOR)



(a) Disconnect the oxygen sensor connector.
(b) Disconnect the ECM E4 connector.
(c) Check continuity between the terminals OX1A of the ECM connector and OX of the oxygen sensor connector.
Resistance: 1 Ω or less



(d) Check for short between the terminals OX1A and E1 of the ECM connector.
Resistance: 1 MΩ or more

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

OK

4	CHECK WHETHER MISFIRE IS OCCURRED OR NOT BY MONITORING DTC AND DATA LIST (See page 05–5)

NG → CHECK FOR SPARK AND IGNITION

OK

5	CHECK AIR INDUCTION SYSTEM (See page 12–1)

NG → REPAIR OR REPLACE AIR INDUCTION SYSTEM

OK

6	CHECK FUEL PRESSURE (See page 11–5)

NG → REPAIR OR REPLACE FUEL SYSTEM

OK

7	CHECK FUEL INJECTOR ASSY (See page 11–7)

NG → REPLACE FUEL INJECTOR ASSY

OK

8	CHECK EXHAUST GAS LEAK

(a) Clear the DTC.
(b) Warm up the oxygen sensor by a driving test to check the system.
HINT:
Refer to CONFIRMATION DRIVING PATTERN.

NG → REPAIR OR REPLACE EXHAUST GAS LEAKAGE POINT

OK

REPLACE OXYGEN SENSOR

9	PERFORM CONFIRMATION DRIVING PATTERN

(a) Clear the DTC.
(b) Warm up the oxygen sensor by a driving test to check the system.
HINT:
Refer to CONFIRMATION DRIVING PATTERN.

GO

10	READ OUTPUT DTC(BESIDS P0130)

SST 09843–18040

Result:

	A	B
RESULT	P0130 are output again.	P0130 other codes are not output again.

B → **CHECK AND REPLACE ECM**

A

11	CONFIRM VEHICLE RUNS OUT OF FUEL IN THE PAST

(a) Confirm if the vehicle ran out of fuel or not in the past.

HINT:

There is no problem, if DTC P0130 is not output after the CONFIRMATION DRIVING PATTERN. This means that the ECM records DTC P0130 because of the running out of fuel in the past.

NO → **CHECK FOR INTERMITTENT PROBLEMS**

YES

DTC IS CAUSED RUNNING OUT OF FUEL