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| DTC | P0130/21 | Oxygen Sensor Circuit Malfunction (Bank 1 Sensor 1) |
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| DTC | P0150/28 | Oxygen Sensor Circuit Malfunction (Bank 2 Sensor 1) |
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CIRCUIT DESCRIPTION

Refer to DTC P0125/91 on page DI-48

| DTC No. | DTC Detecting Condition | Trouble Area |
|----------------------|---|--|
| P0130/21 P0150/28 | Voltage output of heated oxygen sensor remains at 0.35V or more, or 0.55V or less, during idling after engine is warmed up (2-trip detection logic) | <ul style="list-style-type: none"> • Open or short in oxygen sensor circuit • Oxygen sensor • Air induction system • Fuel pressure • Injector • Engine ECU |

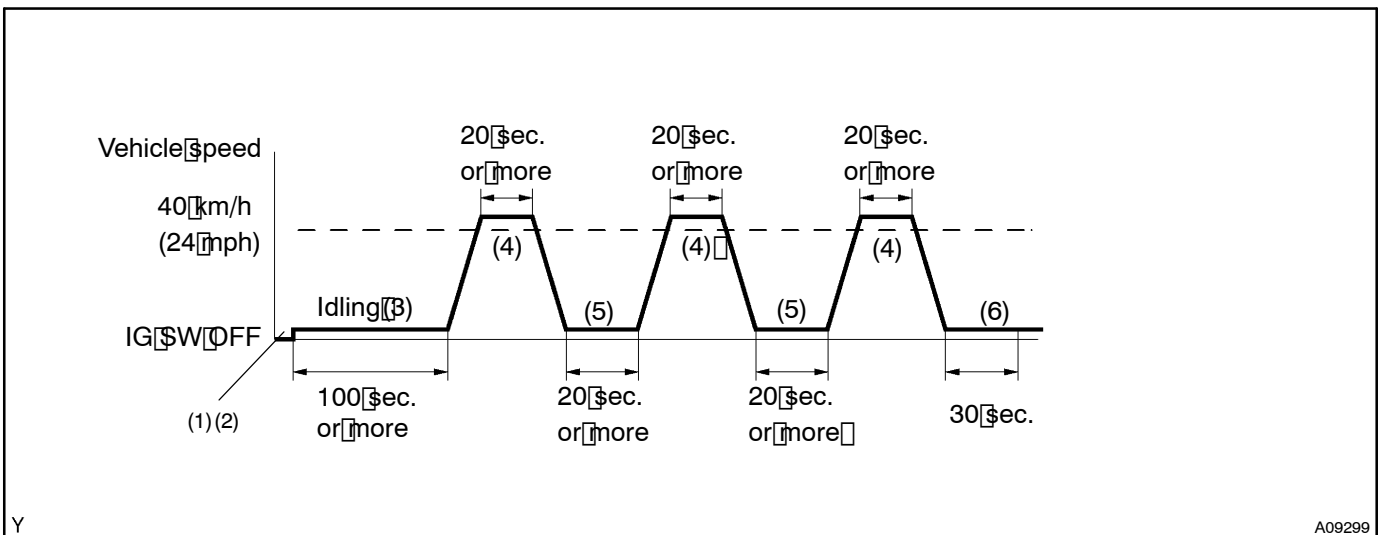
HINT:

- Bank 1 refers to bank that includes cylinder No. 1.
- Bank 2 refers to bank that does not include 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.

WIRING DIAGRAM

Refer to DTC P0125/91 on page DI-48

CONFIRMATION DRIVING PATTERN



- (1) Connect the hand-held tester to the DLC3.
- (2) Switch the hand-held tester from the Normal mode to the Check (Test) Mode (See page DI-4)
- (3) Start the engine and let the engine idle for 100 seconds or more.
- (4) Drive the vehicle at 40 km/h (24 mph) or more for 20 seconds or more.

- (5) Let the engine idle for 20 seconds or more.
 (6) Let the engine idle for 30 seconds.

HINT:

If a malfunction exists, the CHK ENG (MIL) will be indicated on the multi information display during step (6).

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 (3) to (6), then perform steps (3) to (6) again.

INSPECTION PROCEDURE**When using hand-held tester:****HINT:**

Read freeze frame data using hand-held tester. Because freeze frame 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 Are there any other codes (besides DTC P0130 or P0150) being output?

YES

Go to relevant DTC chart.

NO

2 Check output voltage of oxygen sensor during idling.

PREPARATION:

Warm up the oxygen sensor with the engine speed at 2,500 rpm for approx. 90 sec.

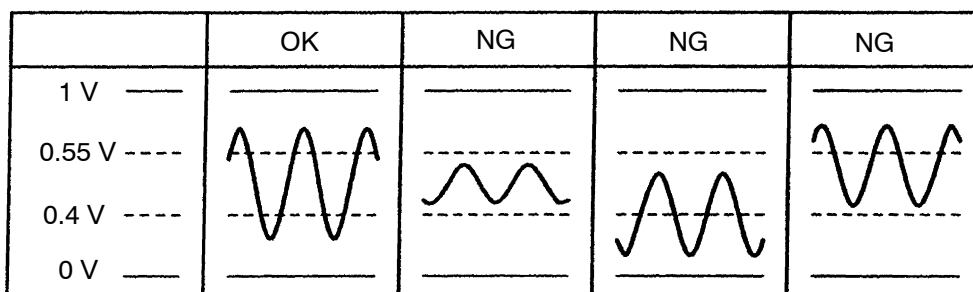
CHECK:

Use the hand-held tester to read the output voltage of the oxygen sensor during idling.

OK:

Oxygen sensor output voltage:

Alternates repeatedly between less than 0.35 V and more than 0.55 V (See the following table).



A00292

OK

Go to step 7.

NG

3 Check for open and short in harness and connector between engine ECU and oxygen sensor (See page IN-32).

NG

Repair or replace harness or connector.

OK

4 Check air induction system (See page FI-1).

NG

Repair or replace.

OK

5 Check fuel pressure (See page FI-6).

NG

Check and repair fuel pump, pressure regulator, fuel pipeline and filter (See page FI-1).

OK

6 Check injector injection (See page FI-19).

NG

Replace injector.

OK

Replace oxygen sensor.

7 Perform confirmation driving pattern.

Go

8 Is there DTC P0130 or P0150 being output again?

NO

Check for intermittent problems (See page DI-4).

YES

Check and replace engine ECU (See page IN-32).

When not using hand-held tester:

1 Are there any other codes (besides code 21 or 28) being output?

YES

Go to relevant DTC chart (See page DI-17).

NO

Replace oxygen sensor.