

DTC	P0130	Oxygen Sensor Circuit (Bank 1 Sensor 1)
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DTC	P0150	Oxygen Sensor Circuit (Bank 2 Sensor 1)
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DTC	P2195	Oxygen Sensor Signal Stuck Lean (Bank 1 Sensor 1)
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DTC	P2196	Oxygen Sensor Signal Stuck Rich (Bank 1 Sensor 1)
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DTC	P2197	Oxygen Sensor Signal Stuck Lean (Bank 2 Sensor 1)
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DTC	P2198	Oxygen Sensor Signal Stuck Rich (Bank 2 Sensor 1)
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CIRCUIT DESCRIPTION

Refer to DTC P0031 on page [DI-34](#).

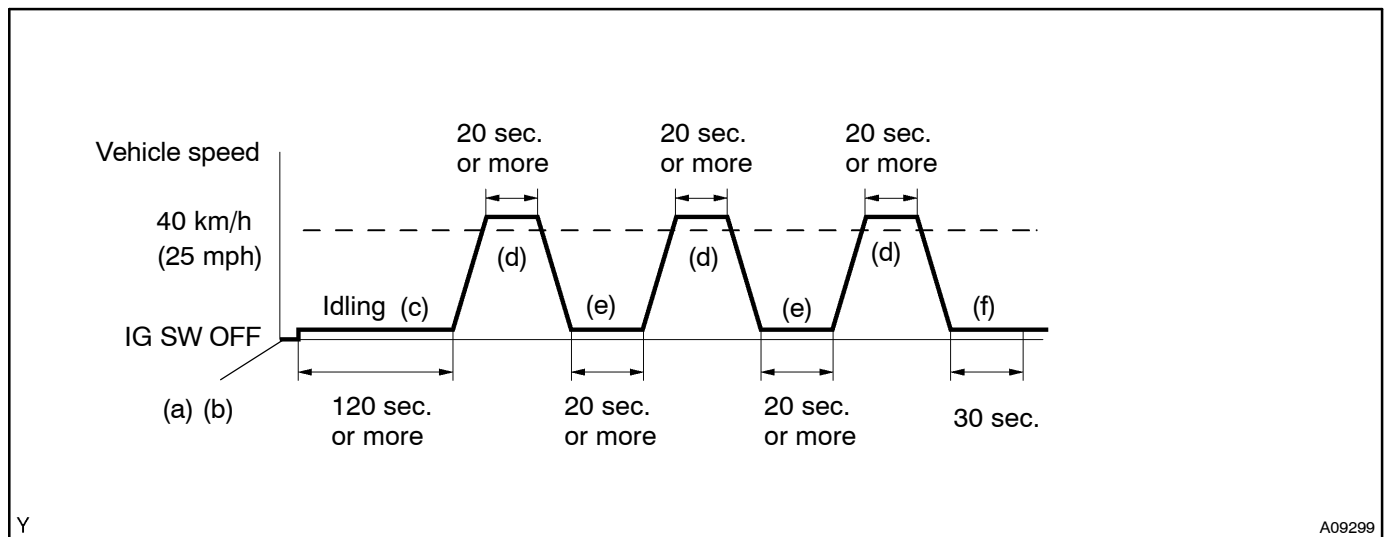
DTC No.	Detection Item	Trouble Area
P0130 P0150	Voltage output of heated oxygen sensor remains at 0.4 V or more, or 0.55 V or less, during idling after engine is warmed up (2 trip detection logic)	• Open or short in heated oxygen sensor circuit • Heated oxygen sensor • Air induction system • Fuel pressure • Injector • ECM
P2195 P2197	Voltage output of heated oxygen sensor remains at 0.55 V or less, during idling after engine is warmed up (2 trip detection logic)	
P2196 P2198	Voltage output of heated oxygen sensor remains at 0.4 V or more, during idling after engine is warmed up (2 trip detection logic)	

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 heated oxygen sensor's output voltage and the short-term fuel trim value can be read using the OBD II scan tool or hand-held tester.

WIRING DIAGRAM

Refer to DTC P0031 on page [DI-34](#).

CONFIRMATION DRIVING PATTERN

- Connect the hand-held tester to the DLC3.
- Switch the hand-held tester from the normal mode to the check mode (See page [DI-3](#)).
- Start the engine and let the engine idle for 120 seconds or more.
- Drive the vehicle at 40 km/h (25 mph) or more for 20 seconds or more.
- Let the engine idle for 20 seconds or more.
- Let the engine idle for 30 seconds.

HINT:

If a malfunction exists, the MIL will light up during step (f).

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 (c) to (f), then perform steps (c) to (f) again.

INSPECTION PROCEDURE**HINT:**

Read freeze frame data using hand-held tester or the OBD II scan tool, as freeze frame data records the engine conditions when a malfunction is detected. When troubleshooting this 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, P0150, P2195, P2196, P2197 or P2198) being output?
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YES

Go to relevant DTC chart.

NO

2	Check output voltage of heated oxygen sensor during idling.
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PREPARATION:

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

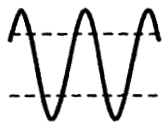
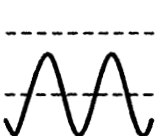
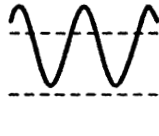
CHECK:

Use the OBD II scan tool or hand-held tester to read the output voltage of the heated oxygen sensor during idling.

OK:

Heated oxygen sensor output voltage:

Alternates repeatedly between less than 0.4 V and more than 0.55 V (See the following table).

	O K	N G	N G	N G
1 V ———	—————	—————	—————	—————
0.55 V - - - -				
0.4 V - - - -	—————	—————	—————	—————
0 V ———	—————	—————	—————	—————

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OK

Go to step 7.

NG

3	Check for open and short in harness and connector between ECM and heated oxygen sensor (See page SF-57).
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NG

Repair or replace harness or connector.

OK

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

NG

Repair or replace.

OK

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

NG

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

OK

6 Check injector injection (See page [SF-7](#)).

NG

Replace injector.

OK

Replace heated oxygen sensor.

7 Perform confirmation driving pattern.

Go

8	Is there DTC P0130, P0150, P2195, P2196,P2197 or P2198 being output again?
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NO

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

YES

Check and replace ECM (See page [IN-36](#)).