

<b>DTC</b>	<b>P0133</b>	<b>HEATED OXYGEN SENSOR SLOW RESPONSE (BANK 1 SENSOR 1)</b>
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## CIRCUIT DESCRIPTION

Refer to DTC P0125 on page [05-44](#).

DTC No	DTC Detecting Condition	Trouble Area
P0133	Response time for oxygen sensor's voltage output to change from rich to lean, or from lean to rich, is 1.0 sec. or more during idling after engine is warmed up (2 trip detection logic)	<ul style="list-style-type: none"> <li>• Open or short in oxygen sensor circuit</li> <li>• Oxygen sensor</li> <li>• Air induction system</li> <li>• Fuel pressure</li> <li>• Injector</li> <li>• ECM</li> </ul>

### 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](#).

## INSPECTION PROCEDURE

### HINT:

Read freeze frame data using hand-held tester or OBD II scan tool. 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 warmed up or not, the air-fuel ratio lean or rich, etc. at the time of the malfunction.

<b>1</b>	<b>READ OUTPUT DTC(BESIDES P0133)</b>
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### Result:

	A	B
RESULT	P0133 is output.	P0133 and other codes are output.

<b>B</b>	<b>GO TO RELEVANT DTC CHART</b>
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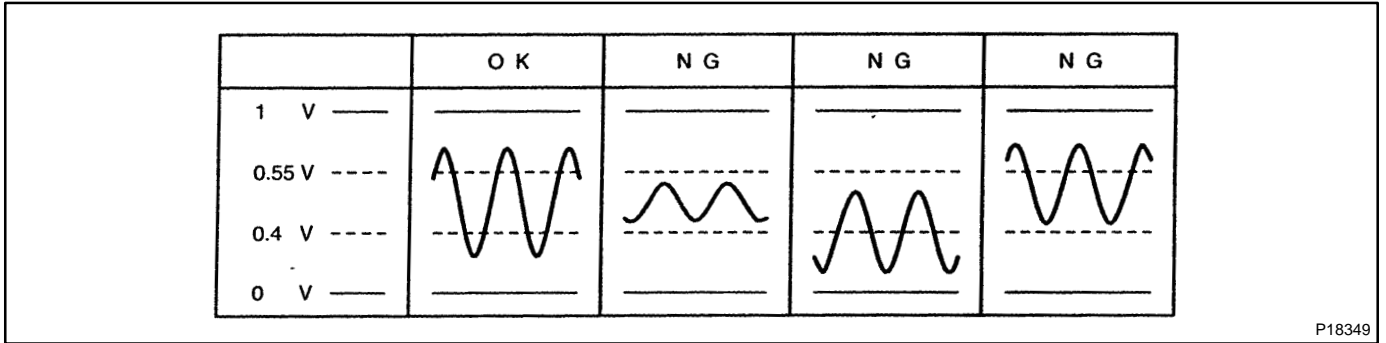
<b>A</b>
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**2 READ VALUE OF HAND-HELD TESTER(OUTPUT VOLTAGE OXYGEN SENSOR)**

- (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:**

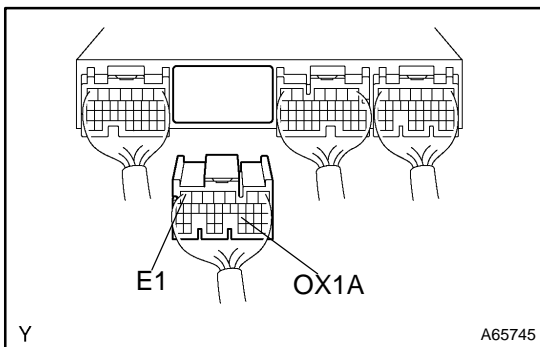
**Alternates repeatedly between less than 0.4 V and more than 0.55 V (See the following table)**



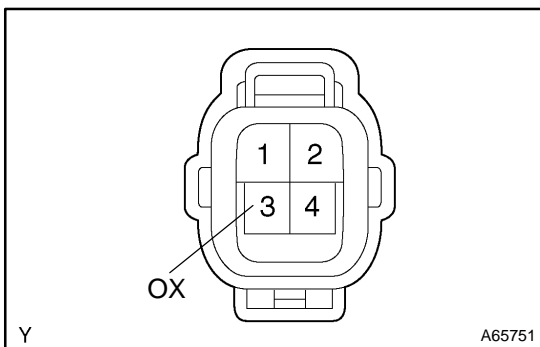
**OK** → **Go to step 9**

**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**

<b>4</b>	<b>CHECK WHETHER MISFIRE IS OCCURRED OR NOT BY MONITORING DTC AND DATA LIST (See page 05-5)</b>
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<b>NG</b>	<b>CHECK FOR SPARK AND IGNITION</b>
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<b>OK</b>
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<b>5</b>	<b>CHECK AIR INDUCTION SYSTEM (See page 12-1)</b>
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<b>NG</b>	<b>REPAIR OR REPLACE AIR INDUCTION SYSTEM</b>
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<b>OK</b>
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<b>6</b>	<b>CHECK FUEL PRESSURE (See page 11-5)</b>
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<b>NG</b>	<b>REPAIR OR REPLACE FUEL SYSTEM</b>
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<b>OK</b>
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<b>7</b>	<b>CHECK FUEL INJECTOR ASSY (See page 11-7)</b>
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<b>NG</b>	<b>REPLACE FUEL INJECTOR ASSY</b>
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<b>OK</b>
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<b>8</b>	<b>CHECK EXHAUST GAS LEAK</b>
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(a) Clear the DTC.

(b) Warm up the oxygen sensor by a driving test to check the system.

HINT:

Refer to CONFIRMATION DRIVING PATTERN.

<b>NG</b>	<b>REPAIR OR REPLACE EXHAUST GAS LEAKAGE POINT</b>
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<b>OK</b>
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<b>REPLACE OXYGEN SENSOR</b>
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<b>9</b>	<b>PERFORM CONFIRMATION DRIVING PATTERN</b>
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(a) Clear the DTC.

(b) Warm up the oxygen sensor by a driving test to check the system.

HINT:

Refer to CONFIRMATION DRIVING PATTERN.

<b>GO</b>
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**10 READ OUTPUT DTC(BESIDS P0133)**

**Result:**

	A	B
RESULT	P0133 is not output again.	P0133 is 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 P0133 is not output after the CONFIRMATION DRIVING PATTERN. This means that the ECM records DTC P0133 because of the running out of fuel in the past.

**NO** **CHECK FOR INTERMITTENT PROBLEMS**

**YES**

**DTC IS CAUSED RUNNING OUT OF FUEL**