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| DTC | P0125 | Insufficient Coolant Temp. for Closed Loop Fuel Control (Except California Spec.) |
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CIRCUIT DESCRIPTION

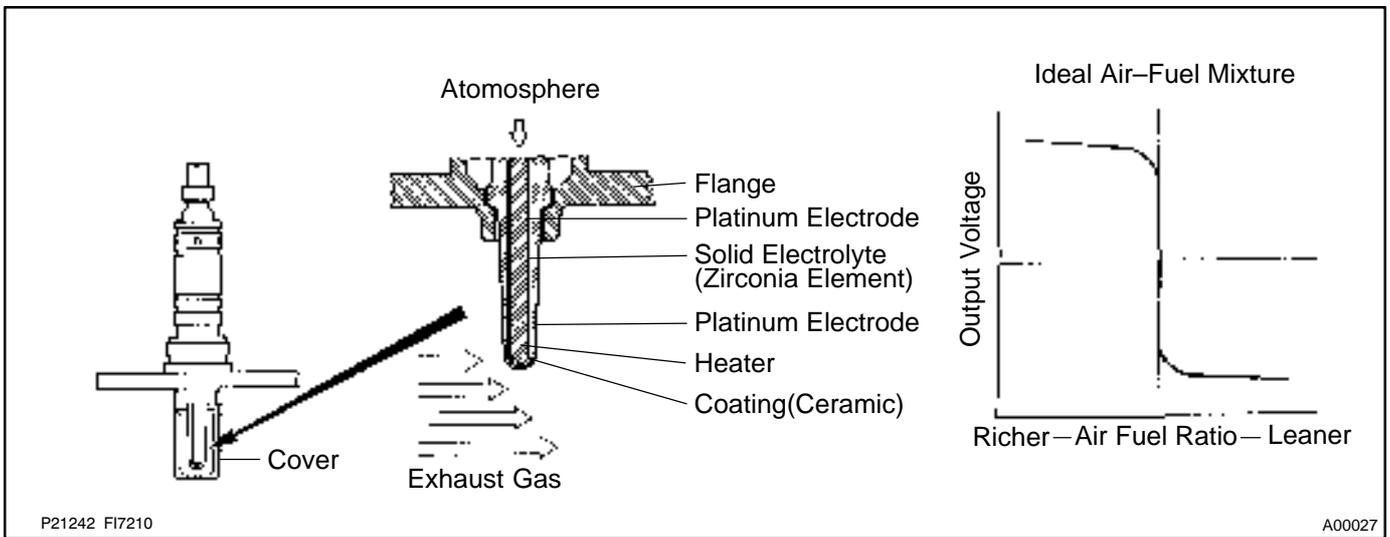
To obtain a high purification rate for the CO, HC and NOx components of the exhaust gas, a three-way catalytic converter is used, but for the most efficient use of the three-way catalytic converter, the air-fuel ratio must be precisely controlled so that it is always close to the stoichiometric air-fuel ratio.

The oxygen sensor has the characteristic which its output voltage changes suddenly in the vicinity of the stoichiometric air-fuel ratio. This characteristic is used to detect the oxygen concentration in the exhaust gas and provide the ECM with feedback to control the air-fuel ratio.

When the air-fuel ratio becomes LEAN, the oxygen concentration in the exhaust increases and the oxygen sensor informs the ECM of the LEAN condition (small electromotive force: <0.45 V).

When the air-fuel ratio is RICHER than the stoichiometric air-fuel ratio the oxygen concentration in the exhaust gas is reduced and the oxygen sensor informs the ECM of the RICH condition (large electromotive force: >0.45 V).

The ECM judges by the electromotive force from the oxygen sensor whether the air-fuel ratio is RICH or LEAN and controls the injection time accordingly. However, if malfunction of the oxygen sensor causes output of abnormal electromotive force, the ECM is unable to perform accurate air-fuel ratio control. The heated oxygen sensors include a heater which heats the zirconia element. The heater is controlled by the ECM. When the intake air volume is low (the temperature of the exhaust gas is low) current flows to the heater to heat the sensor for accurate oxygen concentration detection.



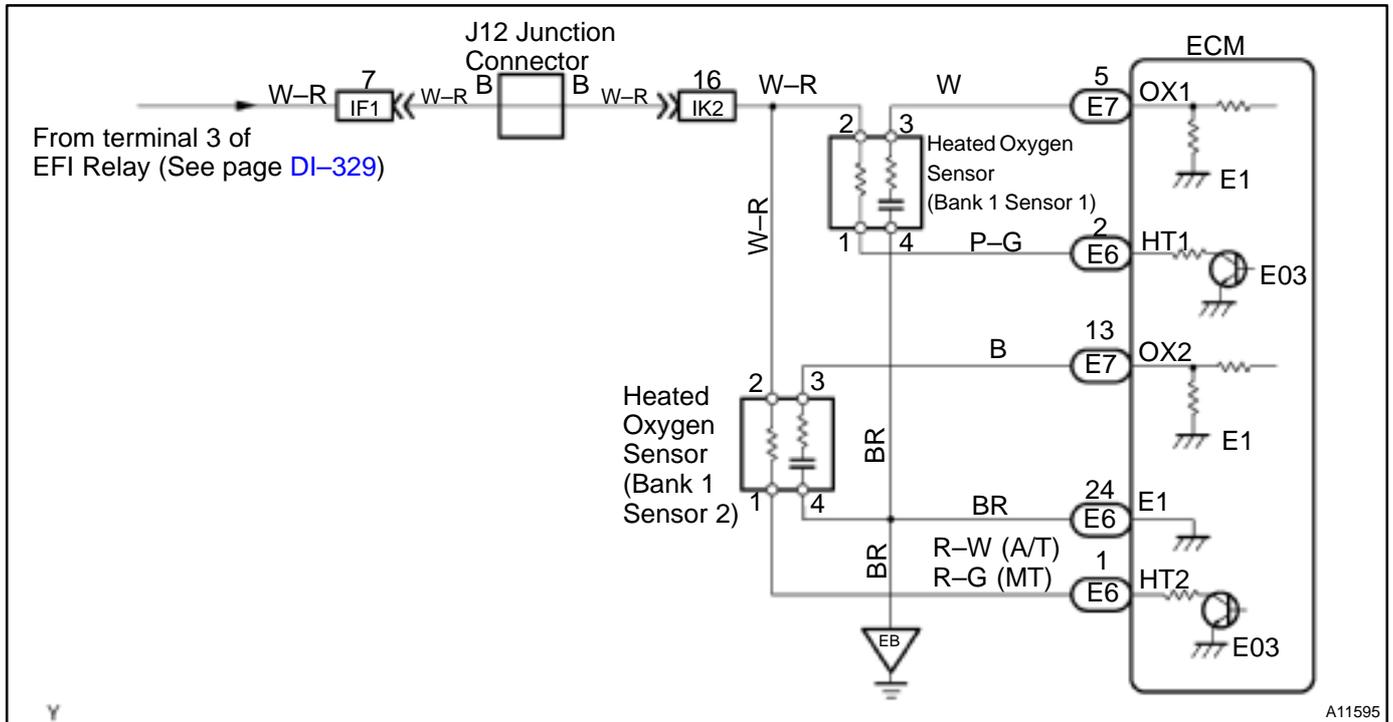
| DTC No. | DTC Detecting Condition | Trouble Area |
|---------|---|---|
| P0125 | After engine is warmed up, heated oxygen sensor output does not indicate RICH (≥ 0.45 V) even once when conditions (a), (b), (c) and (d) continue for at least 1.5 min.: (a) Engine speed: 1,500 rpm or more (b) Vehicle speed: 40 - 100 km/h (25 - 62 mph) (c) Throttle valve does not fully closed (d) 140 sec. or more after starting engine | <ul style="list-style-type: none"> • Open or short in heated oxygen sensor (bank 1 sensor 1) circuit • Heated oxygen sensor (bank 1 sensor 1) • Air induction system • Fuel pressure • Injector • Gas leakage on exhaust sytem • ECM |

HINT:

After confirming DTC P0125, use the OBD II scan tool or TOYOTA hand-held tester to confirm voltage output of the heated oxygen sensor (bank 1 sensor 1) from the CURRENT DATA.

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

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

- If the vehicle run out of fuel, the air-fuel ratio is LEAN and DTC P0125 will be recorded. The MIL then comes on.
- Read freeze frame data using TOYOTA 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 was warmed up or not, the air-fuel ratio was lean or rich, etc. at the time of the malfunction.

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| 1 | Are there any other codes (besides DTC P0125) being output? |
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YES

Go to relevant DTC chart (See page DI-192).

NO

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| 2 | Connect OBD II scan tool or TOYOTA hand-held tester, and read value for voltage output of heated oxygen sensor (bank 1 sensor 1). |
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PREPARATION:

- Connect the OBD II scan tool or TOYOTA hand-held tester to the DLC3.
- Warm up the engine to normal operating temperature (above 75°C (167°F)).

CHECK:

Read the voltage output of heated oxygen sensor when the engine is suddenly raced.

HINT:

Perform quick racing to 4,000 rpm 3 times using the accelerator pedal.

OK:

Heated oxygen sensor output a RICH signal (0.45 V or more) at least once.

OK → Check and replace ECM (See page [IN-28](#)).

NG

3 Check for open and short in harness and connector between ECM and heated oxygen sensor (bank 1 sensor 1) (See page [IN-28](#)).

NG → Repair or replace harness or connector.

OK

4 Check whether misfire is occurred or not by monitoring DTC and data list.

NG → Perform troubleshooting for misfire (See page [DI-312](#)).

OK

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

NG → Repair or replace.

OK

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

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

OK

7 Check injector injection (See page SF-20).

NG

Replace injector.

OK

8 Check gas leakage on exhaust system.

NG

Repair or replace.

OK

Replace heated oxygen sensor (bank 1 sensor 1).

9 Perform confirmation driving pattern (See page DI-234).

Go

10 Is there DTC P0125 being output again?

YES

Check and replace ECM (See page IN-28).

NO

11 Did vehicle runs out of fuel in past?

NO

Check for intermittent problems (See page DI-182).

NO

DTC P0125 is caused by running out of fuel.