

DTC	P0125	Insufficient Coolant Temp. for Closed Loop Fuel Control
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CIRCUIT DESCRIPTION

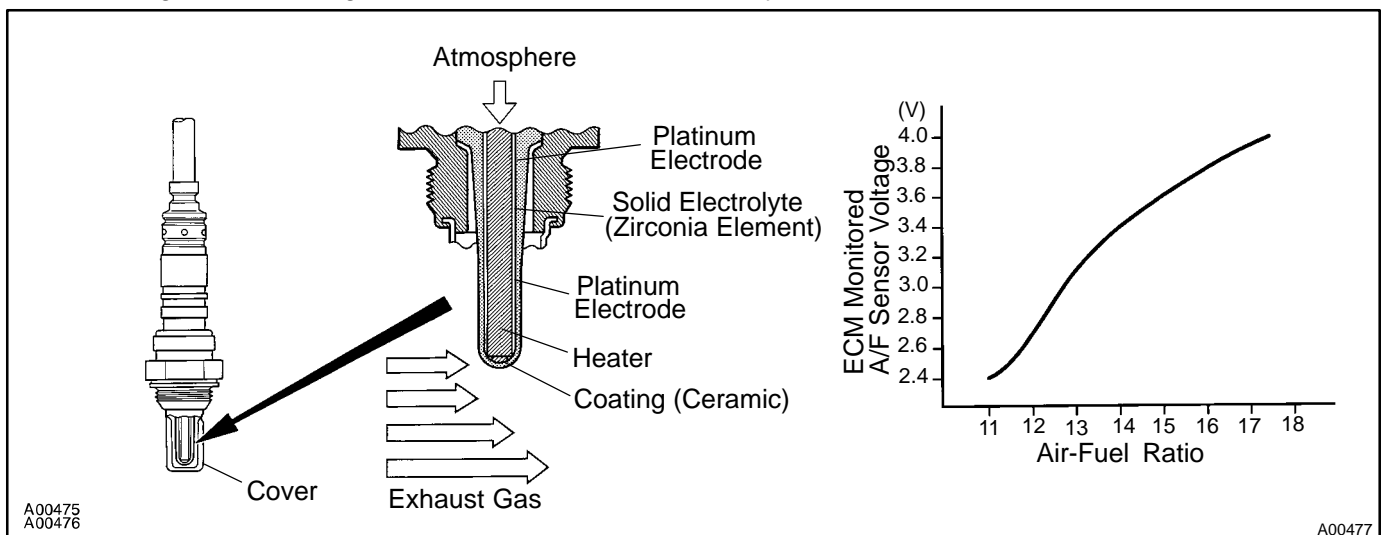
To obtain a high purification rate for the CO, HC and NO_x components of the exhaust gas, a three-way catalytic converter is used, but for the most efficient use of the three-way catalytic converter, the air-fuel ratio must be precisely controlled so that it is always close to the stoichiometric air-fuel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

The A/F sensor has the characteristic that provides output voltage* approximately proportional to the existing air-fuel ratio. The A/F sensor output voltage* is used to provide feedback for the ECM to control the air-fuel ratio.

By the A/F sensor output, the ECM can determine the deviation amount from the stoichiometric air-fuel ratio and control the proper injection time immediately. If the A/F sensor is malfunctioning, ECM is unable to perform accurate air-fuel ratio control.

The A/F sensor is equipped with a heater which heats the zirconia element. The heater is controlled by the ECM. When the intake air volume is low (the temp. of the exhaust gas is low), current flows to the heater to heat the sensor for accurate oxygen concentration detection.

*: The voltage value changes at the inside of the ECM only.



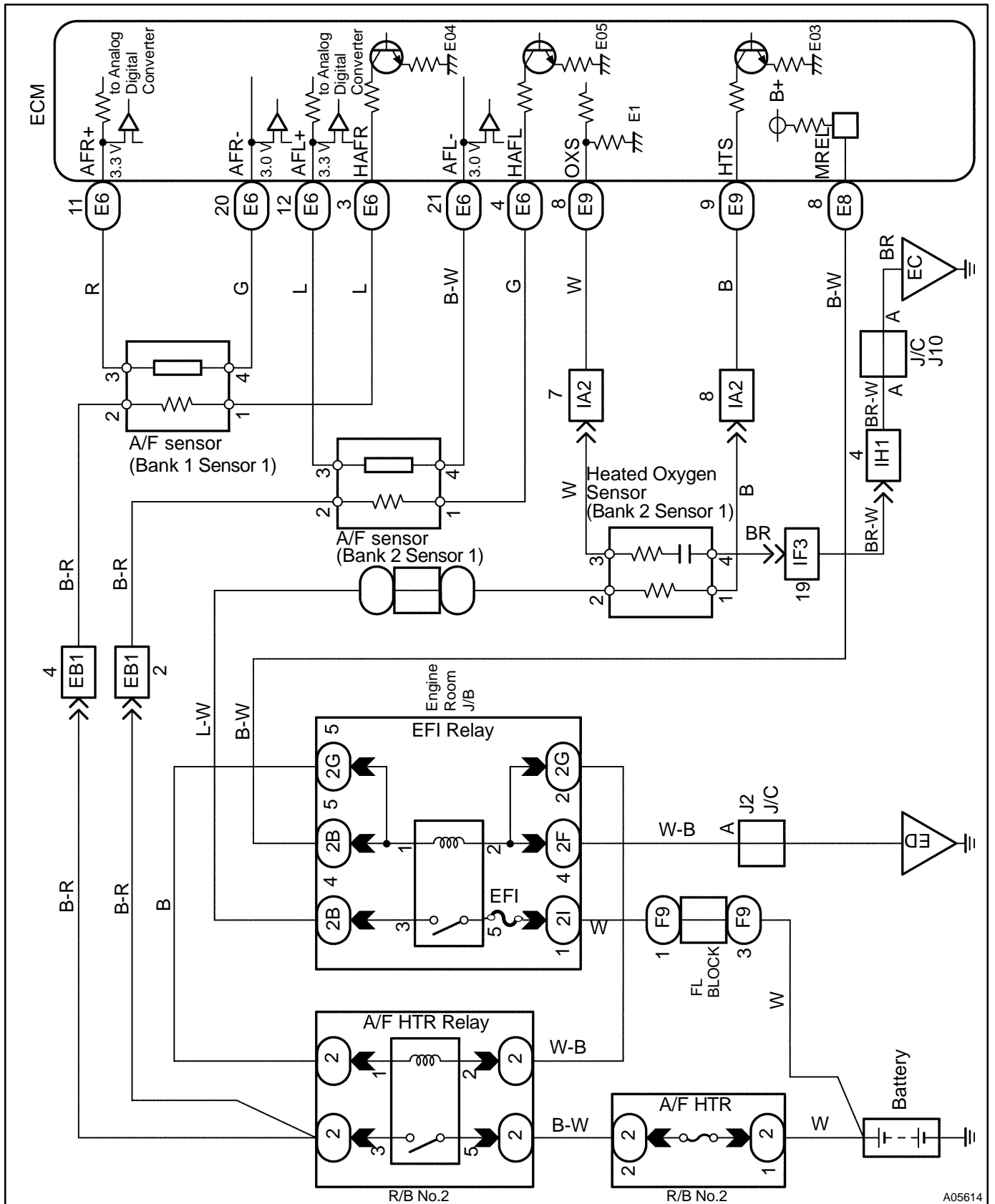
DTC No.	DTC Detecting Condition	Trouble Area
P0125	<p>After the engine is warmed up, A/F sensor output* does not change when conditions (a), (b), and (c) continue for at least 1.5 min.</p> <p>*: The output value changes at the inside of the ECM only.</p> <p>(a) Engine speed: 1,500 rpm or more</p> <p>(b) Vehicle speed: 40 ~ 100 km/h (25 ~ 62 mph)</p> <p>(c) Throttle valve does not fully closed</p>	<ul style="list-style-type: none"> • Open or short in A/F sensor circuit (bank 1, 2 sensor 1) • A/F sensor (bank 1, 2 sensor 1) • ECM

HINT:

- After confirming DTC P0125 use the OBD II scan tool or LEXUS hand-held tester to confirm voltage output of heated oxygen sensor (bank 1, 2 sensor 1) from CURRENT DATA.
- The ECM controls the voltage of AF⁺ and AF⁻ terminals of ECM to the fixed voltage. Therefore, it is impossible to confirm the A/F sensor output voltage without OBD II scan tool or LEXUS hand-held tester.

- OBD II scan tool (excluding LEXUS hand-held tester) displays the one fifth of the A/F sensor output voltage which is displayed on the LEXUS hand-held tester.

WIRING DIAGRAM



A05614

INSPECTION PROCEDURE

HINT:

Read freeze frame data using LEXUS 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.

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

Go to relevant DTC chart.

NO

2	Check for open and short in harness and connector between ECM and heated oxygen sensor (bank 1, 2 sensor 1) (See page IN-35).
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Repair or replace harness or connector.

OK

3	Check resistance of A/F sensor heater (See page SF-72).
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NG

Replace A/F sensor (bank 1, 2 sensor 1).

OK

4 Connect the OBD II scan tool or LEXUS hand-held tester and read value for voltage output of A/F sensor (bank 1, 2 sensor 1).

PREPARATION:

- (a) Connect the OBD II scan tool or LEXUS hand-held tester to the DLC3.
- (b) Warm up the A/F sensor (bank 1, 2 sensor 1) when the engine at 2,500 rpm for approx. 90 sec.

CHECK:

Read voltage value of A/F sensor (bank 1, 2 sensor 1) on the screen of OBD II scan tool or LEXUS hand-held tester when you perform all the following conditions.

HINT:

The voltage of AFR \oplus ,AFL \oplus terminal of ECM is 3.3 fixed and the AFR \ominus ,AFL \ominus terminal is 3.0 V fixed. Therefore, it is impossible to check the A/F sensor output voltage at the terminals (AFR \oplus ,AFL \oplus /AFR \ominus ,AFL \ominus) of ECM.

OK:

Condition	A/F Sensor Value Voltage
Engine idling	<ul style="list-style-type: none"> • Not remains at 3.3 V (*0.660 V) • Not remains at 3.8 V (*0.76 V) or more • Not remains at 2.8 V (*0.56 V) or less *: When you use the OBD II scan tool (excluding LEXUS hand-held tester)
Engine idling	
Driving at engine speed 1,500 rpm or more and vehicle speed 40 km/h (25 mph) or more, and operate throttle valve open and close	

HINT:

- During fuel enrichment, there is a case that the output voltage of A/F sensor (bank 1, 2 sensor 1) is below 2.8 V (* 0.56 V), it is normal.
- During fuel cut, there is a case that the output voltage of A/F sensor (bank 1, 2 sensor 1) is above 3.8 V (* 0.76 V), it is normal.
- If output voltage of A/F sensor (bank 1, 2 sensor 1) remains at 3.30 V (* 0.660 V) even after performing all the above conditions, A/F sensor (bank 1, 2 sensor 1) circuit may be short.
- If output voltage of A/F sensor remains at 3.8 V (* 0.76 V) or more, or 2.8 V (* 0.56 V) or less even after performing all the above conditions, A/F sensor (bank 1, 2 sensor 1) circuit may be short.

*: When you use all the OBD II scan tool (excluding LEXUS hand-held tester).

OK

Go to step 5.

NG

Replace A/F sensor (bank 1, 2 sensor 1).

5	Perform confirmation driving pattern (See page DI-102).
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Go

6	Is there DTC P0125 being output again?
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NO	Check for intermittent problems (See page DI-3).
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YES

Check and Replace ECM (See page IN-35).
