

DTC	P0125/91	INSUFFICIENT COOLANT TEMP. FOR CLOSE LOOP FUEL CONTROL
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CIRCUIT DESCRIPTION

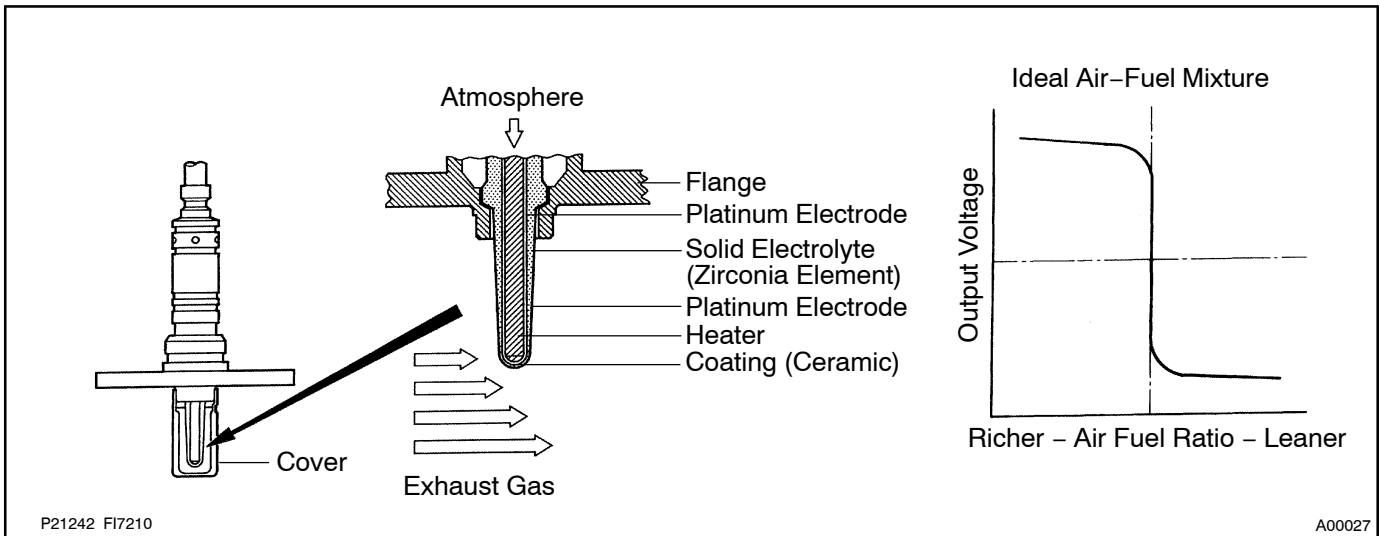
To obtain high purification rate for the CO, HC and NOx components of the exhaust gas, a three-way catalytic converter is used. But for the most efficient use of the three-way catalytic converter, the air-fuel ratio must be precisely controlled so that it can be always close to the stoichiometric air-fuel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

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

When the air-fuel ratio becomes LEAN, the oxygen concentration in the exhaust increases and the heated 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 heated oxygen sensor informs the ECM of the RICH condition (large electromotive force: > 0.45 V). The ECM judges by the electromotive force from the heated oxygen sensor whether the air-fuel ratio is RICH or LEAN and controls the injection time accordingly. However, if a malfunction of the oxygen sensor causes an output of abnormal electromotive force, the ECM becomes unable to perform accurate air-fuel ratio control.

The main 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 the accurate oxygen concentration detection.

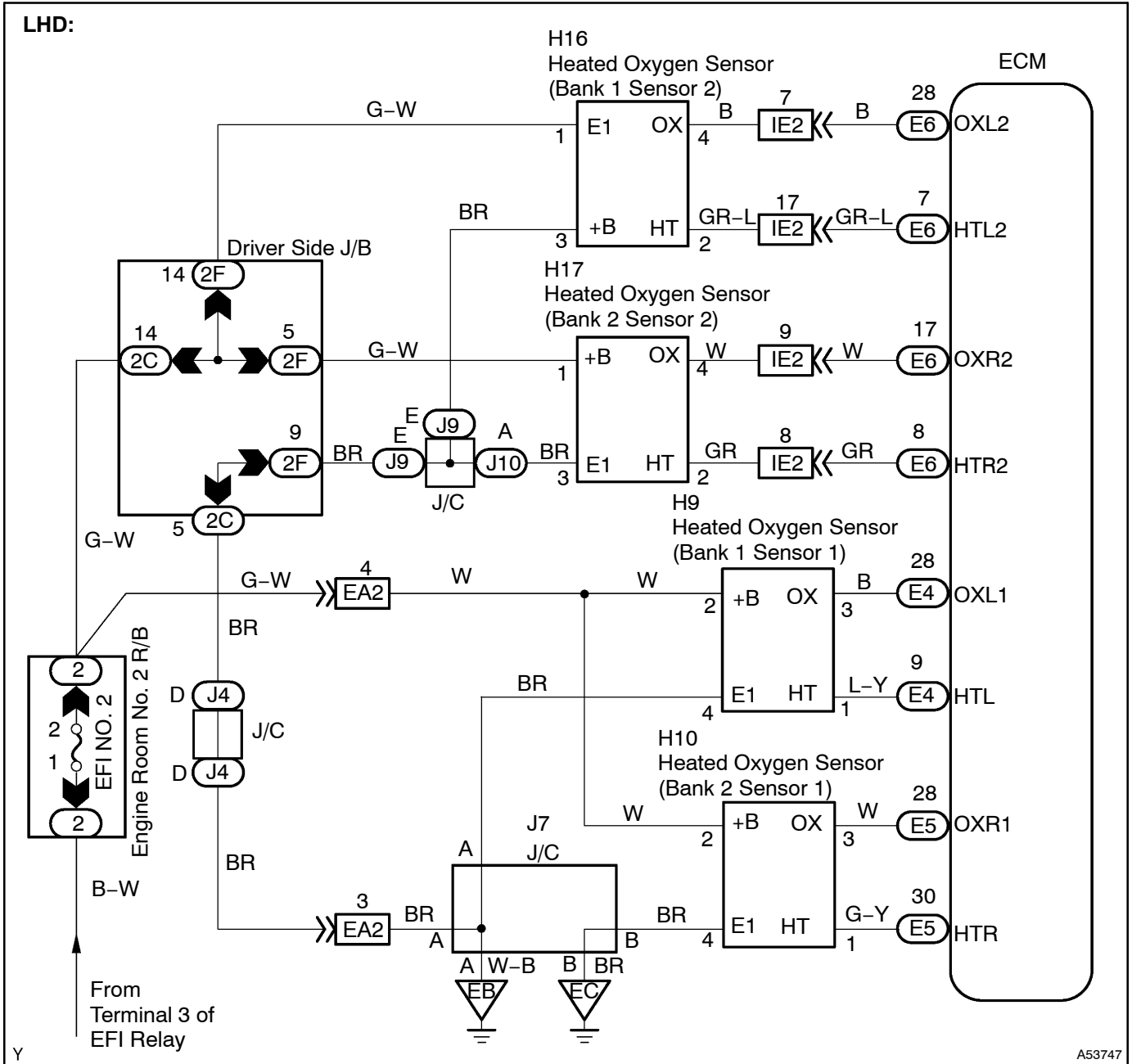


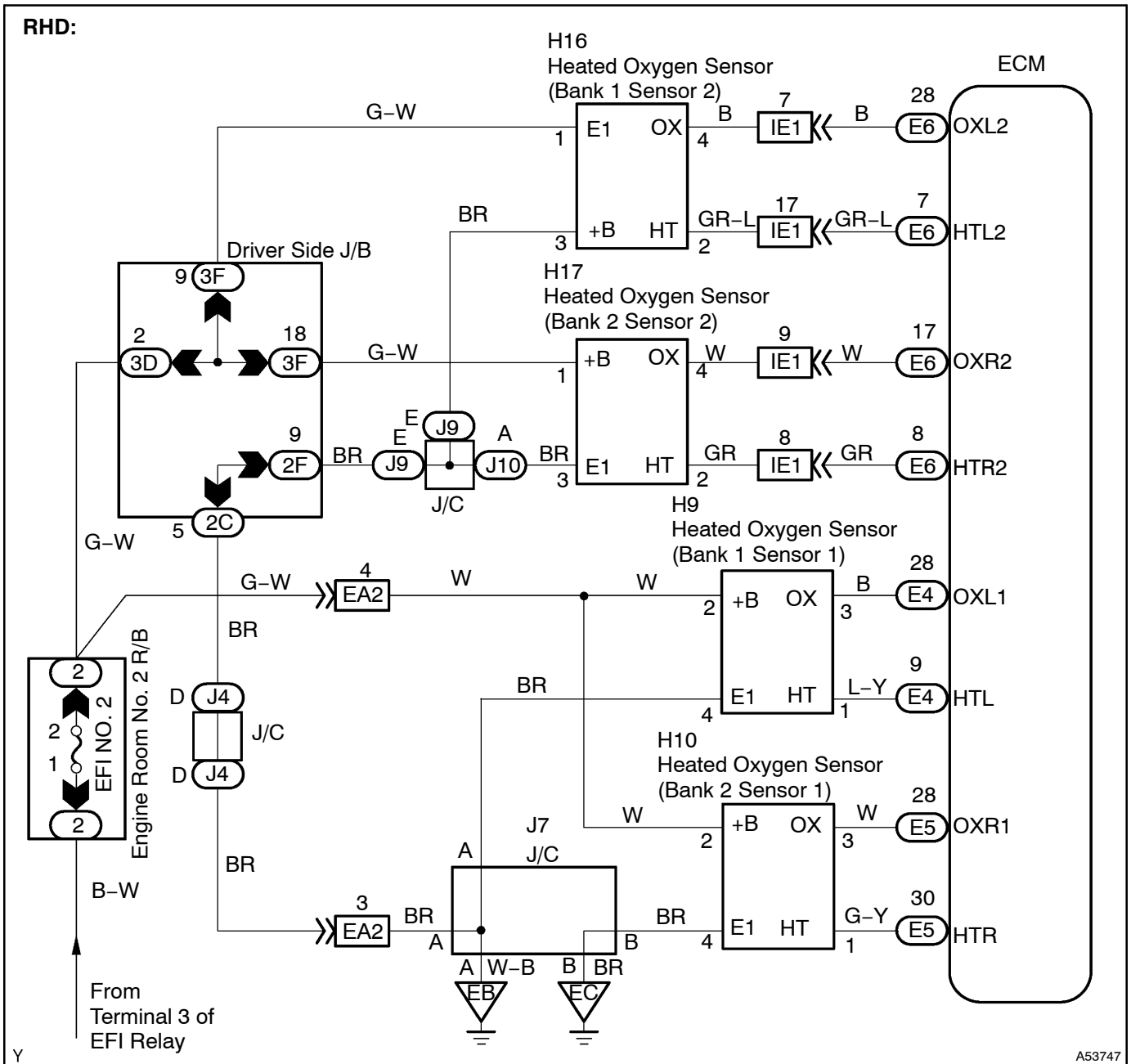
DTC No.	DTC Detecting Condition	Trouble Area
P0125/91	After engine is warmed up, heated oxygen sensor (bank 1, 2 sensor 1) output does not indicate RICH (≥ 0.45 V) even once when conditions (a), (b), (c) and (d) continue for at least 65 sec.: (a) Engine speed: 1,400 rpm or more (b) Vehicle speed: 40 - 100 km/h (25 - 62 mph) (c) Throttle valve does not fully closed (d) 180 sec. or more after starting engine	<ul style="list-style-type: none"> • Heated oxygen sensor (bank 1, 2 sensor 1) circuit • Heated oxygen sensor (bank 1, 2 sensor 1) • Air induction system • Fuel pressure • PCV hose connection • Injector • Gas leakage on exhaust system • ECM

HINT:

After confirming DTC P0125/91, use a hand-held tester to confirm the output voltage of the heated oxygen sensor (bank 1, 2 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:

- Read freeze frame data using a hand-held tester, as freeze frame data records the engine conditions when a 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.
- If the vehicle is short of fuel, the air-fuel ratio is LEAN and DTC P0125/91 will be recorded. The MIL then comes on.

1 READ OUTPUT DTC

(a) Read output DTC using a hand-held tester.

Display	Type
P0125/91	A
P0125/91 and any other DTC	B

B GO TO RELEVANT DTC CHART

A

2 READ VALUE OF HAND-HELD TESTER

- (a) Warm up the engine.
- (b) Read the voltage output of the heated oxygen sensor when the engine is suddenly raced.

HINT:

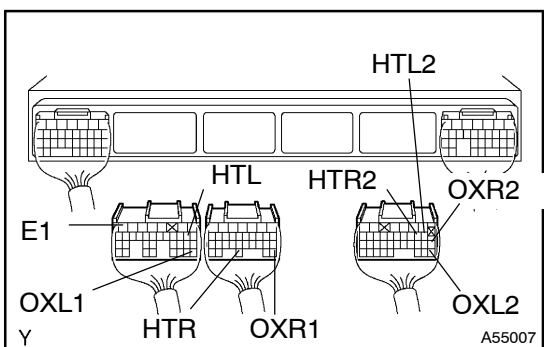
Perform a quick racing to 4,000 rpm 3 times using the accelerator pedal.

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

OK Go to step 10

NG

3 CHECK WIRE HARNESS (ECM - HEATED OXYGEN SENSOR)



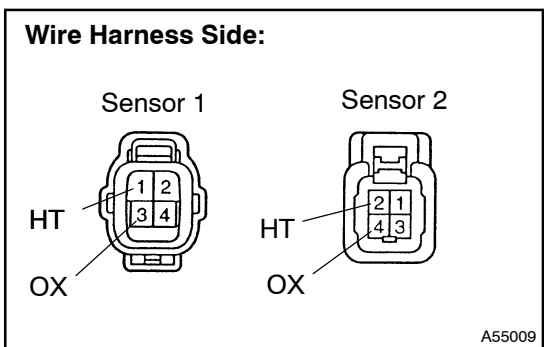
- (a) Disconnect the heated oxygen sensor connector.
- (b) Disconnect the E4, E5 and E6 ECM connectors.
- (c) Check the continuity between terminals in the chart below.

Standard (Check for open):

Sensor position	Oxygen sensor connector terminal	ECM connector terminal	Continuity
Bank 1 sensor 1	OX (3)	OXL1 (E4-28)	Continuity
	HT (1)	HTL (E4-9)	Continuity
Bank 2 sensor 1	OX (3)	OXR1 (E5-28)	Continuity
	HT (1)	HTR (E5-30)	Continuity
Bank 1 sensor 2	OX (4)	OXL2 (E6-28)	Continuity
	HT (2)	HTL2 (E6-7)	Continuity
Bank 2 sensor 2	OX (4)	OXR2 (E6-17)	Continuity
	HT (2)	HTR2 (E6-8)	Continuity

(Check for short)

Sensor position	Oxygen sensor connector terminal	ECM connector terminal	Continuity
Bank 1, 2 sensor 1	OX (3)	E1 (E4-7)	No continuity
	HT (1)		No continuity
Bank 1, 2 sensor 2	OX (4)		No continuity
	HT (2)		No continuity



NG REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

4 CHECK WHETHER MISFIRE IS OCCURRED OR NOT BY MONITORING DTC AND DATA LIST

NG PERFORM TROUBLESHOOTING FOR MISFIRE

OK

5 CHECK CONNECTION OF PCV HOSE

NG REPAIR OR REPLACE CONNECTION OF PCV HOSE

OK

6 CHECK AIR INDUCTION SYSTEM (See page 99-1)

NG REPAIR OR REPLACE AIR INDUCTION SYSTEM

OK

7 CHECK FUEL PRESSURE (See page 11-4)

NG CHECK AND REPLACE FUEL PUMP, PRESSURE REGULATOR, FUEL PIPE LINE AND FILTER (See page 11-1)

OK

8 CHECK INJECTOR INJECTION (See page 11-6)

NG REPLACE FUEL INJECTOR (See page 11-10)

OK

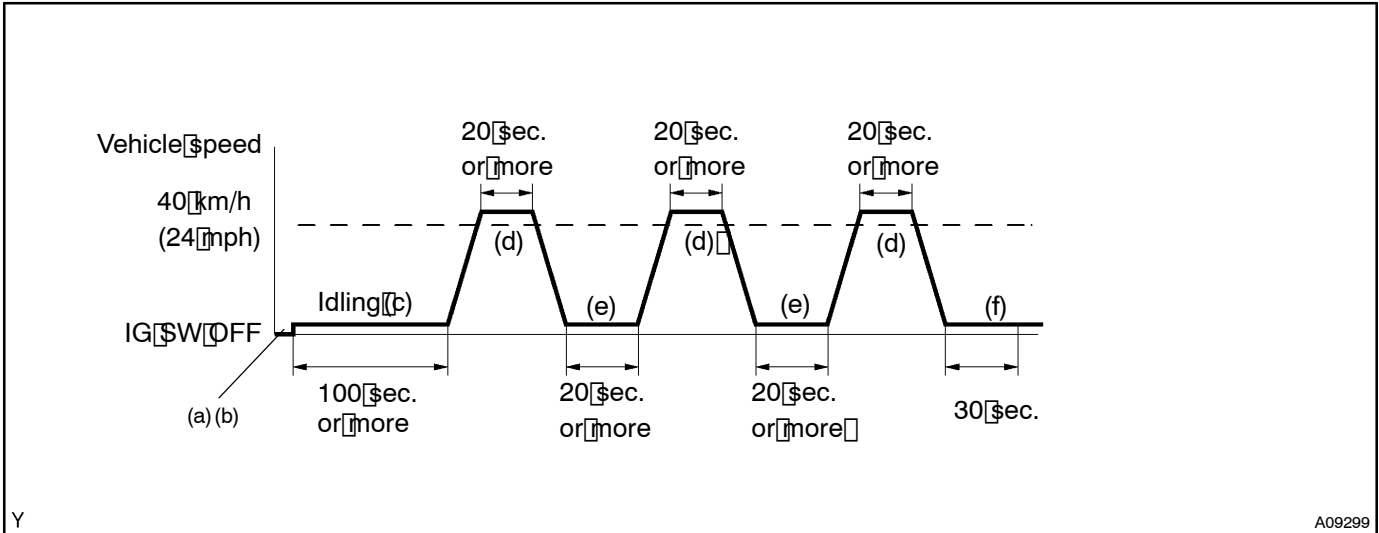
9 CHECK EXHAUST GAS LEAK

OK REPLACE OXYGEN SENSOR (See page 15-2 and 15-5)

NG REPAIR OR REPLACE EXHAUST SYSTEM

10 PERFORM CONFIRMATION DRIVING PATTERN

- Connect the hand-held tester to the DLC3.
- Switch the hand-held tester from normal mode to check mode (See page 05-7).
- Start the engine and keep the engine at idle for 100 seconds or more.
- Drive the vehicle at 40 km/h (24 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 check engine warning light will light up 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 step (3) to (6), then perform step (3) to (6) again.

GO**11 READ OUTPUT DTC**

- Check that P0125/91 is not output.

NG**CHECK AND REPLACE ECM****OK****12 CONFIRM VEHICLE RUNS OUT OF FUEL IN THE PAST**

- Did the vehicle run out of fuel in past ?

NO**CHECK FOR INTERMITTENT PROBLEMS****YES****DTC P0125 IS CAUSED BY SHORTAGE OF FUEL**