

Diag. Code 27, 29**Sub-Oxygen Sensor Circuit****— CIRCUIT DESCRIPTION —**

The sub-oxygen sensor is installed on the exhaust pipe. Its construction and operation is the same as the main oxygen sensor on page [TR-62](#).

Code No.	Diagnostic Code Detecting Condition	Trouble Area
27 • 29	(1) Open or short in heater circuit of sub-oxygen sensor for 0.5 sec. or more.	<ul style="list-style-type: none"> •Open or short in heater circuit of sub-oxygen sensor •Sub-oxygen sensor heater. •ECU
	(2) Main oxygen sensor signal is 0.45 V or more and sub-oxygen sensor signal is 0.45 V or less under conditions (a) and (b). (2 trip detection logic) * (a) Coolant temp.: 80°C (176°F) or more. (b) Accel. pedal: Fully depressed for 2 sec. or more.	<ul style="list-style-type: none"> •Open or short in sub-oxygen sensor circuit. •Sub-oxygen sensor •ECU

*: See page [TR-21](#).

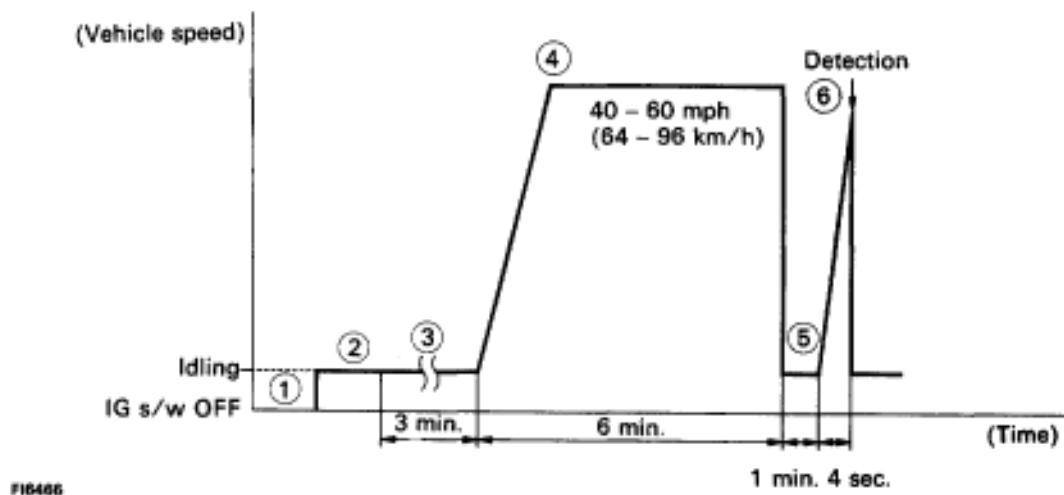
HINT: Diag. code 27 is for the left bank sub-oxygen sensor circuit.

Diag. code 29 is for the right bank sub-oxygen sensor circuit.

— **CIRCUIT DESCRIPTION (Cont'd)** —**DIAGNOSIS CODE DETECTION DRIVING PATTERN**

Purpose of the driving pattern.

- (a) To simulate diag. code detecting condition after diag. code is recorded.
- (b) To check that the malfunction is corrected when the repair is completed confirming that diag. code is no longer detected.

Malfunction: Open or Short in Sub-Oxygen Sensor

F16466

- ① Initiate test mode (See page [TR-12](#)).
- ② Start engine and warm up.
- ③ After engine is warmed up, let it idle for 3 min.
- ④ With the A/C ON and the transmission in D range (O/D OFF), drive at 40 – 60 mph (64–96 km/h) for 6 min.
- ⑤ After the driving in , stop the vehicle.
- ⑥ Once the vehicle is stopped, within the next minute apply acceleration with the throttle fully open for 4 sec.

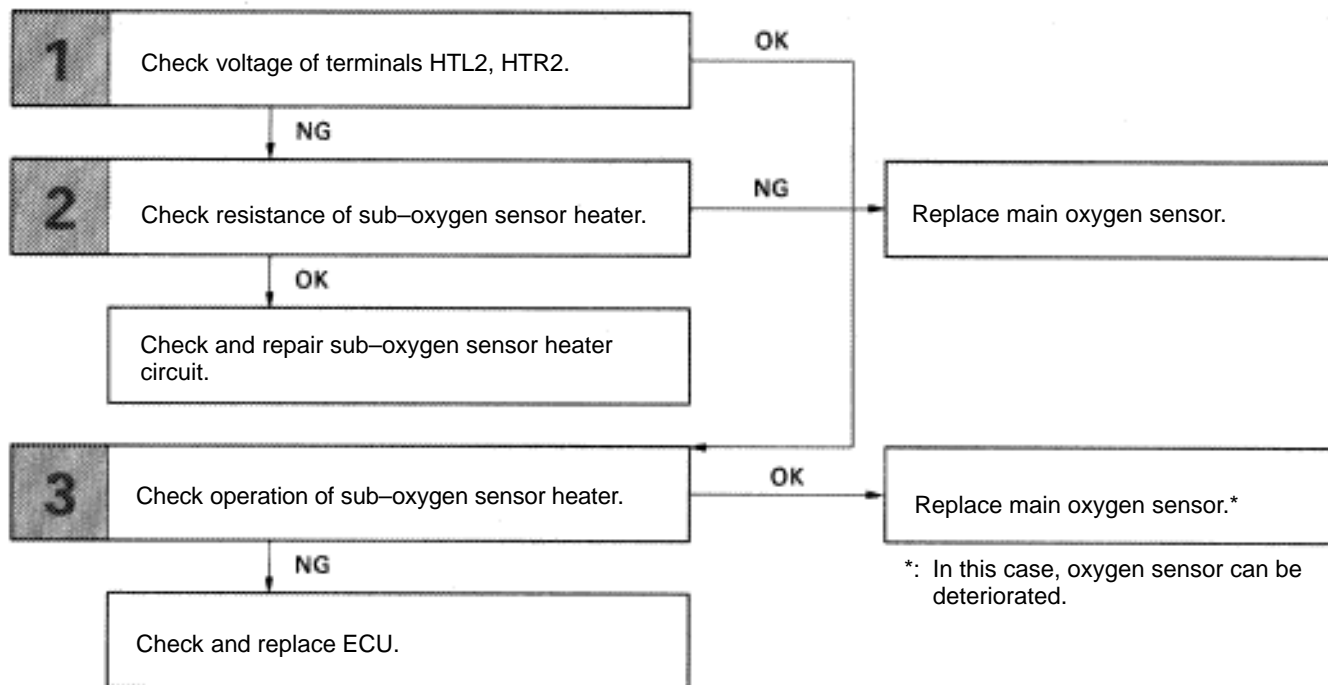
HINT: If a malfunction exists, the "CHECK" engine warning light will light up after full acceleration for 4 sec.

NOTICE: If the conditions in this test are not strictly followed, detection of the malfunction will not be possible.

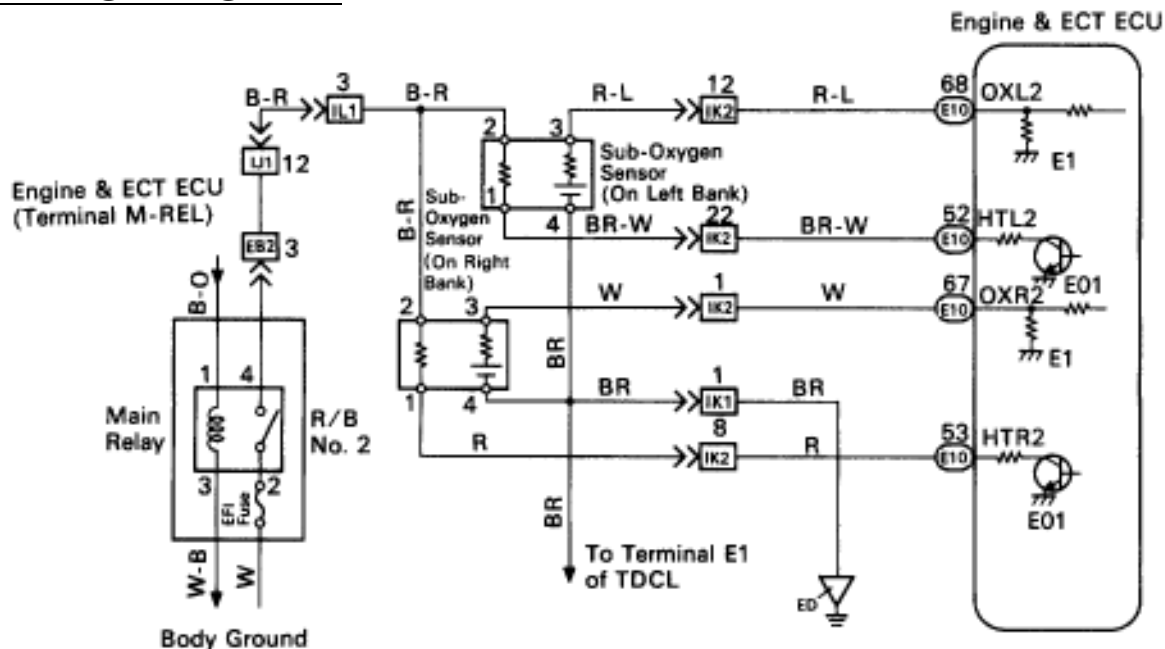
DIAGNOSTIC CHART

HINT:

- When other codes are output in addition to 27 and 29 at the same time, check the circuits for other codes first.
- If diag. code 27 is displayed, check left bank sub-oxygen sensor circuit, and if 29 is displayed, check right bank sub-oxygen sensor circuit.

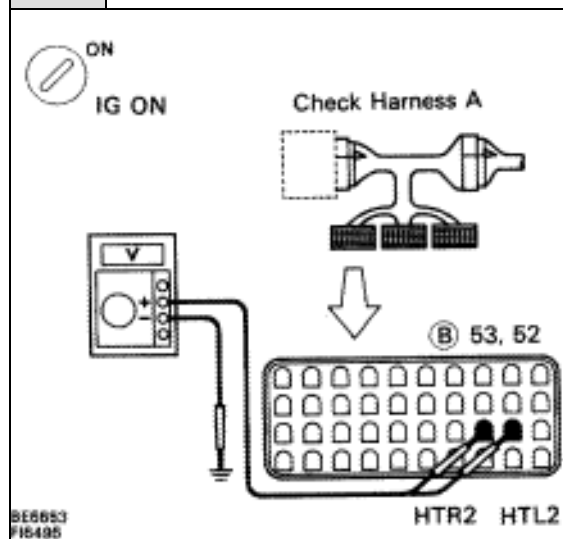


WIRING DIAGRAM



INSPECTION PROCEDURE

1 Disconnect the engine & ECT ECU connector.



- P** (2) Connect the Check Harness A.
(See page [TR-30](#))
(2) Disconnect engine & ECT ECU connector.
(2) Turn ignition switch on.

C Measure voltage between terminals HTL2, HTR2 of engine & ECT ECU connector and body ground.

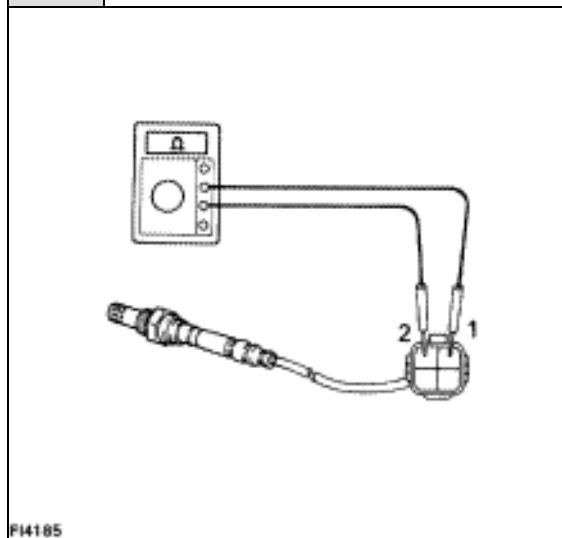
OK Voltage: 10 – 14 V

NG

OK

Go to step [3].

2 Check sub-oxygen sensor heater.



P Disconnect sub-oxygen sensor connector.

C Measure resistance between terminals 1 and 2 of sub-oxygen sensor connector.

OK Resistance: 5.1 – 6.3 Ω 20°C (68°F)

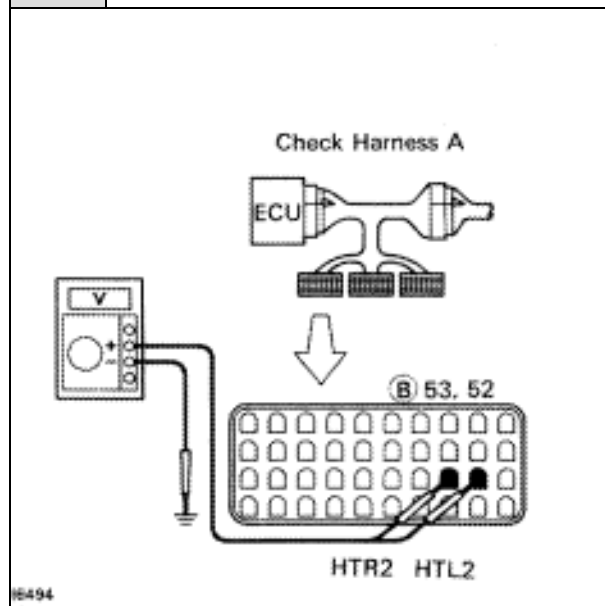
OK

NG

Replace sub-oxygen sensor.

Check and repair harness or connector between main relay and sub-oxygen sensor, sub-oxygen sensor and engine & ECT ECU.

3 Check voltage between terminals HTL2, HTR2 of engine & ECT ECU connector and body ground.



- P** (2) Connect engine & ECT ECU connector.
(2) Warm up engine to normal operating temperature.

- C** Measure voltage between terminals HTL2, HTR2 of engine & ECT ECU connector and body ground, when engine is idling and racing at 4,000 rpm.

OK

	Voltage
Idling	0 V
Racing at 4,000 rpm	10 – 14 V

Hint

In the 4,000 rpm racing check, continue engine racing at 4,000 rpm for approx. 20 seconds or more.

NG

OK

Replace sub-oxygen sensor.*

*: In this case, oxygen sensor can be deteriorated.

Check and replace engine & ECT ECU.

—MEMO—