

CIRCUIT INSPECTION

DTC	P0031	Oxygen (A/F) Sensor Heater Control Circuit Low (Bank 1 Sensor 1)
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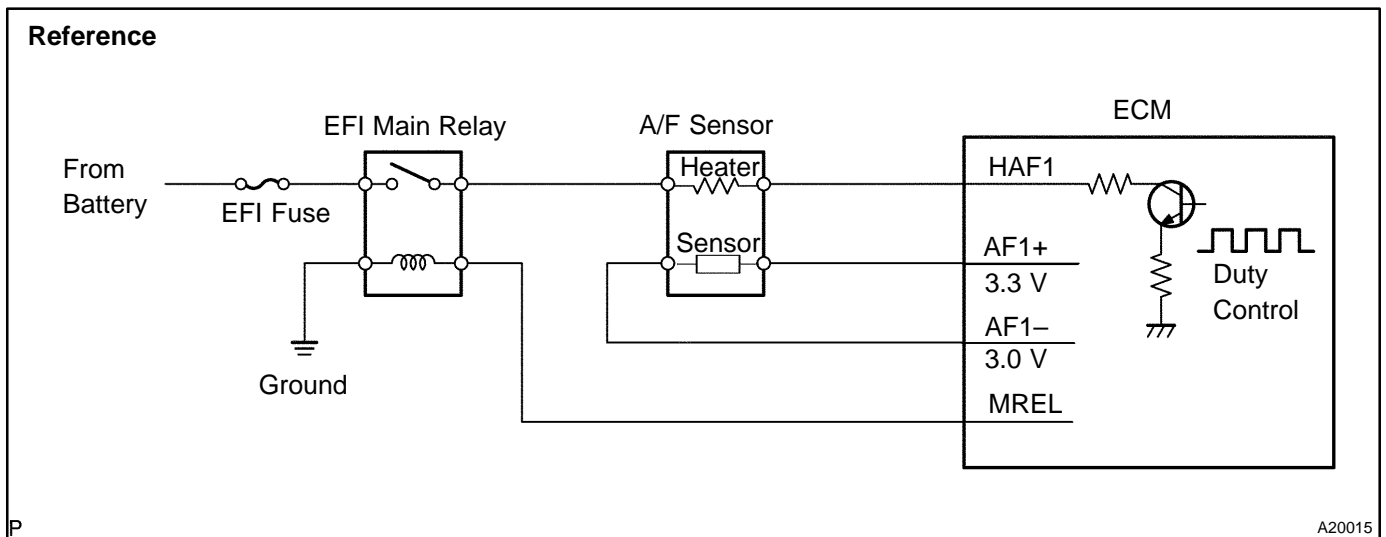
DTC	P0032	Oxygen (A/F) Sensor Heater Control Circuit High (Bank 1 Sensor 1)
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CIRCUIT DESCRIPTION

Refer to DTC P2195 on page [DI-421](#).

HINT:

- This DTC is related to A/F sensor is in a malfunction, although the caption is oxygen sensor.
- The ECM provides a pulse width to control current through the heater. The A/F ratio sensor heater circuit uses a relay on the B+ side of the circuit.



DTC No.	DTC Detection Condition	Trouble Area
P0031	Heater current is 3 A or less when the heater operates (2 trip detection logic)	<ul style="list-style-type: none"> • Open or short in heater circuit of A/F sensor • A/F sensor heater
P0032	When the heater operates, heater current exceeds 19.7 A (2 trip detection logic)	<ul style="list-style-type: none"> • EFI main relay • ECM

HINT:

Sensor 1 refers to the sensor closest to the engine body.

WIRING DIAGRAM

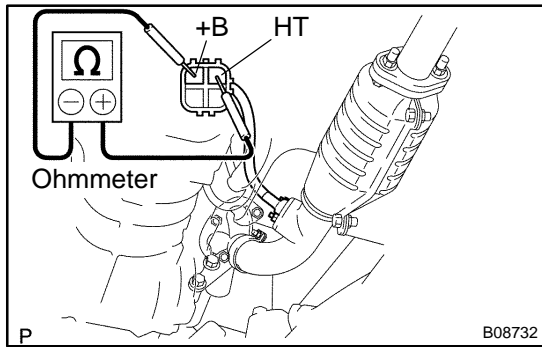
Refer to DTC P0134 on page [DI-278](#).

INSPECTION PROCEDURE

HINT:

Read freeze frame data using the hand-held tester or the OBD II scan tool, 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.

1 Check resistance of A/F sensor heater.



PREPARATION:

Disconnect the sensor connector.

CHECK:

Using an ohmmeter, measure the resistance between terminals +B and HT.

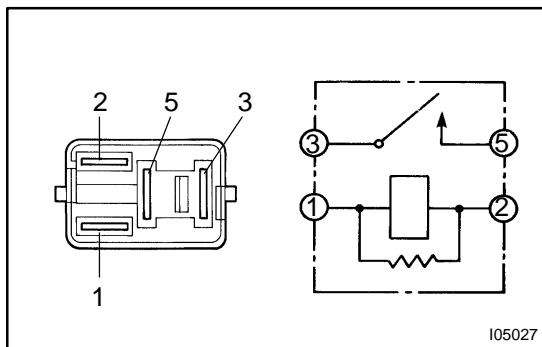
OK:

at 20°C (68°F)	0.8 - 1.4 Ω
at 800°C (1,472°F)	1.8 - 3.2 Ω

NG → Replace A/F sensor.

OK

2 Check EFI main relay (Marking : EFI).



PREPARATION:

Remove the EFI main relay from RB No. 2.

CHECK:

Inspect the EFI main relay.

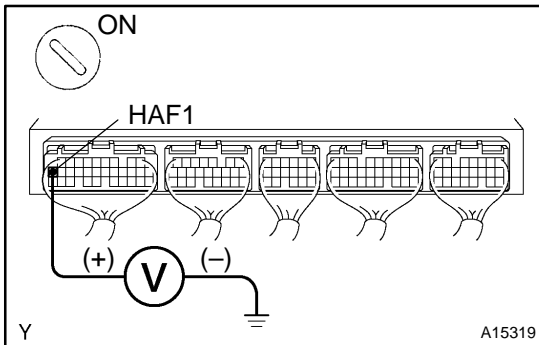
OK:

Condition	Tester connection	Specified condition
Constant	1 - 2	Continuity
	3 - 5	No continuity
Apply B+ between terminals 1 and 2.	3 - 5	Continuity

NG → Replace EFI main relay

OK

3 Check voltage between terminal HAF1 of ECM connector and body ground.



PREPARATION:

- (a) Remove the glove compartment (See page [SF-63](#)).
- (b) Turn the ignition switch ON.

CHECK:

Measure the voltage between terminal HAF1 of the ECM connector and body ground.

OK:

Voltage: 9 – 14 V

OK

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

NG

Check and repair harness or connector between EFI main relay (Marking: EFI) and A/F sensor, and A/F sensor and ECM (See page [IN-28](#)).