

Fuel Pump Control Circuit

DESCRIPTION

Refer to DTC P0230 (See page [ES-158](#)).

WIRING DIAGRAM

Refer to DTC P0230 (See page [ES-160](#)).

1 CHECK FUEL PUMP OPERATION

- (a) Check if there is pressure in the fuel inlet hose.
HINT:
 If there is fuel pressure, you will hear the sound of fuel flowing.

OK

Go to step 10

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2 PERFORM ACTIVE TEST USING INTELLIGENT TESTER (OPERATE CIRCUIT OPENING RELAY)

- (a) Connect an intelligent tester to the DLC3.
 (b) Turn the ignition switch ON and turn the tester ON.
 (c) Select the following menu items: DIAGNOSIS / ENHANCED OBD II / ACTIVE TEST / FUEL PUMP / SPD.
 (d) Check whether operating sounds can be heard while operating the relay using the tester.

OK:

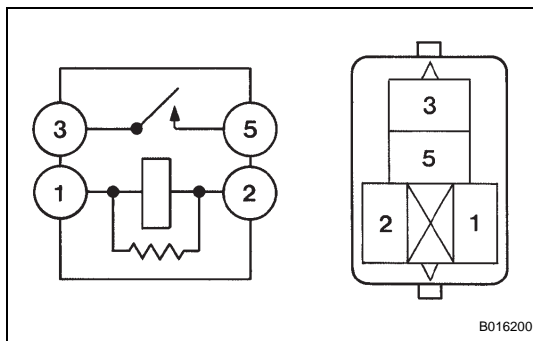
Operating sounds can be heard from relay.

OK

Go to step 5

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3 INSPECT CIRCUIT OPENING RELAY



- (a) Remove the circuit opening relay from the engine room R/B.

- (b) Check the circuit opening relay resistance.

Standard Resistance

Tester Connections	Specified Conditions
3 - 5	10 k Ω or higher
3 - 5	Below 1 Ω (when battery voltage applied to terminals 1 and 2)

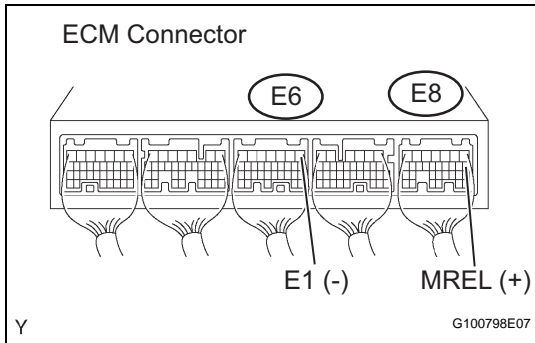
- (c) Reinstall the circuit opening relay.

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REPLACE CIRCUIT OPENING RELAY

OK

4 INSPECT ECM (FC VOLTAGE)



- (a) Turn the ignition switch ON.
- (b) Measure the voltage between the terminals of the E8 and E6 ECM connectors.

Standard Voltage

Tester Connections	Specified Conditions
FC (E8-10) - E1 (E6-1)	9 to 14 V

OK → **REPLACE ECM**

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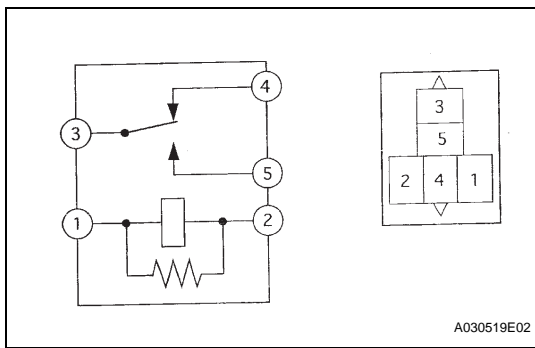
CHECK AND REPLACE HARNESS AND CONNECTOR (ECM - CIRCUIT OPENING RELAY - IGNITION)

5 INSPECT ECM POWER SOURCE CIRCUIT

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

6 INSPECT FUEL PUMP RELAY ASSEMBLY



- (a) Remove the fuel pump relay from the engine room R/B.
- (b) Check the fuel pump relay resistance.

Standard Resistance

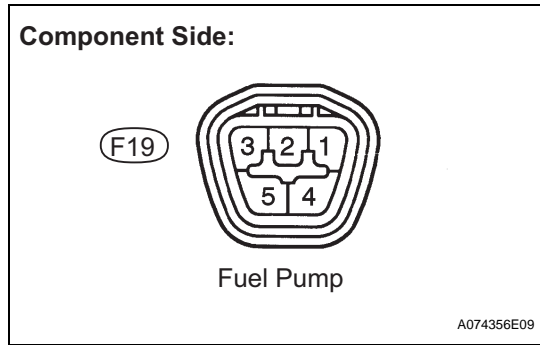
Tester Connections	Specified Conditions
3 - 4	Below 1 Ω
3 - 5	10 kΩ or higher
3 - 4	10 kΩ or higher (when battery voltage applied to terminals 1 and 2)
3 - 5	Below 1 Ω (when battery voltage applied to terminals 1 and 2)

- (c) Reinstall the fuel pump relay.

NG → **REPLACE FUEL PUMP RELAY ASSEMBLY**

OK

7 INSPECT FUEL PUMP ASSEMBLY

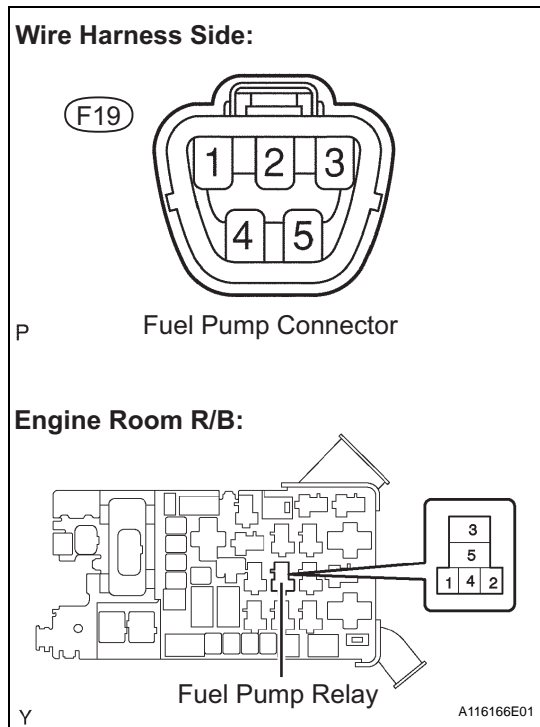


- (a) Inspect the fuel pump resistance.
 - (1) Measure the resistance between terminals 4 and 5.
Standard Resistance:
0.2 to 3.0 Ω at 20°C (68°F)
- (b) Inspect the fuel pump operation.
 - (1) Apply battery voltage to both terminals. Check that the pump operates.
NOTICE:
 - These tests must be done quickly (within 10 seconds) to prevent the coil from burning out.
 - Keep the fuel pump as far away from the battery as possible.
 - Always do the switching at the battery side.

NG → **REPLACE FUEL PUMP ASSEMBLY**

OK

8 CHECK HARNESS AND CONNECTOR (FUEL PUMP - FUEL PUMP RELAY, FUEL PUMP - BODY GROUND)



- (a) Check the harness and connector between the fuel pump and fuel pump relay.
 - (1) Disconnect the F19 fuel pump connector.
 - (2) Remove the fuel pump relay from the engine room R/B.
 - (3) Check the resistance.
Standard Resistance (Check for open)

Tester Connections	Specified Conditions
Fuel pump (F19-4) - Fuel pump relay (4)	Below 1 Ω

Standard Resistance (Check for short)

Tester Connections	Specified Conditions
Fuel pump (F19-4) or Fuel pump relay (4) - Body ground	10 kΩ or higher

- (4) Reconnect the fuel pump connector.
- (5) Reinstall the fuel pump relay.
- (b) Check the harness and connector between the fuel pump and body ground.
 - (1) Disconnect the fuel pump connector.
 - (2) Check the resistance.
Standard Resistance (Check for open)

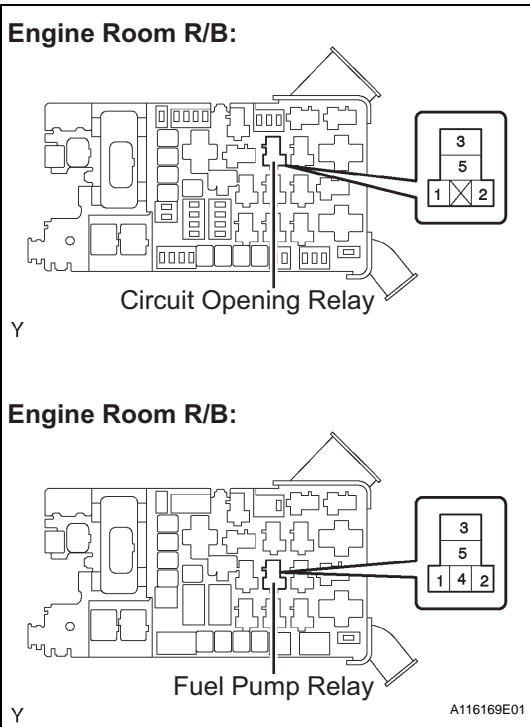
Tester Connections	Specified Conditions
Fuel pump (F19-5) - Body ground	Below 1 Ω

- (3) Reconnect the fuel pump connector.

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

9 CHECK HARNESS AND CONNECTOR (CIRCUIT OPENING RELAY - FUEL PUMP RELAY)



- (a) Remove the circuit opening relay from the engine room R/B.
- (b) Remove the fuel pump relay from the engine room R/B.
- (c) Check the resistance.

Standard Resistance (Check for open)

Tester Connections	Specified Conditions
Circuit opening relay (3) - Fuel pump relay (3)	Below 1 Ω

Standard Resistance (Check for short)

Tester Connections	Specified Conditions
Circuit opening relay (3) or Fuel pump relay (3) - Body ground	10 kΩ or higher

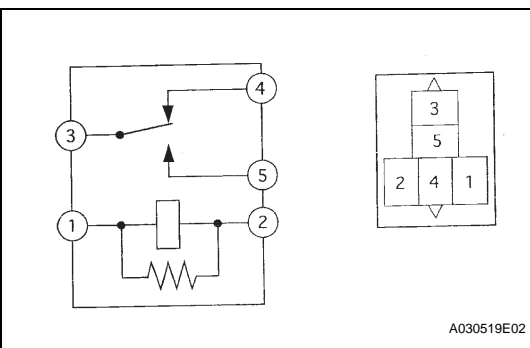
- (d) Reinstall the circuit opening relay.
- (e) Reinstall the fuel pump relay.

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

CHECK AND REPAIR HARNESS AND CONNECTOR (EFI RELAY - CIRCUIT OPENING RELAY)

10 INSPECT FUEL PUMP RELAY ASSEMBLY



- (a) Remove the fuel pump relay from the engine room R/B.
- (b) Check the fuel pump relay resistance.

Standard Resistance

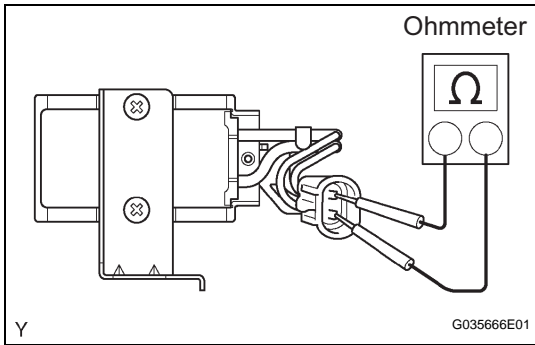
Tester Connections	Specified Conditions
3 - 4	Below 1 Ω
3 - 5	10 kΩ or higher
3 - 4	10 kΩ or higher (when battery voltage applied to terminals 1 and 2)
3 - 5	Below 1 Ω (when battery voltage applied to terminals 1 and 2)

- (c) Reinstall the fuel pump relay.

NG → **REPLACE FUEL PUMP RELAY ASSEMBLY**

OK

11 INSPECT FUEL PUMP RESISTER (RESISTANCE)



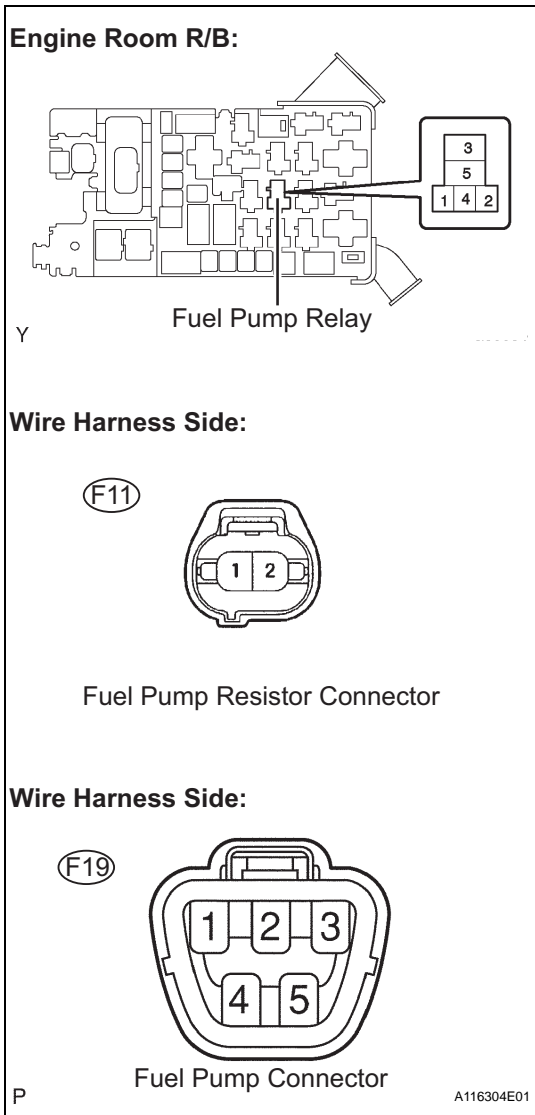
- (a) Inspect the fuel pump resistor resistance.
 (1) Measure the resistance.
Standard Resistance:
0.70 to 0.76 Ω at 20°C (68°F)

NG → **REPLACE FUEL PUMP RESISTER**

OK

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12 CHECK HARNESS AND CONNECTOR (FUEL PUMP RELAY - FUEL PUMP RESISTOR - FUEL PUMP)



- (a) Check the harness and connector between the fuel pump relay and fuel pump resistor.
 (1) Remove the fuel pump relay from the engine room R/B.
 (2) Disconnect the F11 fuel pump resistor connector.
 (3) Check the resistance.
Standard Resistance (Check for open)

Tester Connections	Specified Conditions
Fuel pump relay (5) - Fuel pump resistor (F11-1)	Below 1 Ω

Standard Resistance (Check for short)

Tester Connections	Specified Conditions
Fuel pump relay (5) or Fuel pump resistor (F11-1) - Body ground	10 kΩ or higher

- (4) Reinstall the fuel pump relay.
 (5) Reconnect the fuel pump resistor connector.
 (b) Check the harness and connector between the fuel pump resistor and fuel pump.
 (1) Disconnect the F11 fuel pump resistor connector.
 (2) Disconnect the fuel pump connector.
 (3) Check the resistance.
Standard Resistance (Check for open)

Tester Connections	Specified Conditions
Fuel pump resistor (F11-2) - Fuel pump (F19-4)	Below 1 Ω

Standard Resistance (Check for short)

Tester Connections	Specified Conditions
Fuel pump resistor (F11-2) or Fuel pump (F19-4) - Body ground	10 kΩ or higher

- (4) Reconnect the fuel pump resistor connector.
 (5) Reconnect the fuel pump connector.

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PROCEED TO NEXT CIRCUIT INSPECTION
SHOWN ON PROBLEM SYMPTOMS TABLE

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REPAIR OR REPLACE HARNESS OR CONNECTOR