

FUEL PUMP CONTROL CIRCUIT

CIRCUIT DESCRIPTION

Refer to DTC P0230 on page 05-95 .

WIRING DIAGRAM

Refer to DTC P0230 on page 05-95 .

INSPECTION PROCEDURE

Hand-held tester:

1 CHECK FUEL PUMP OPERATION (See page 11-5)

(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

NG

2 PERFORM ACTIVE TEST BY HAND-HELD TESTER(OPERATE CIRCUIT OPENING RELAY)

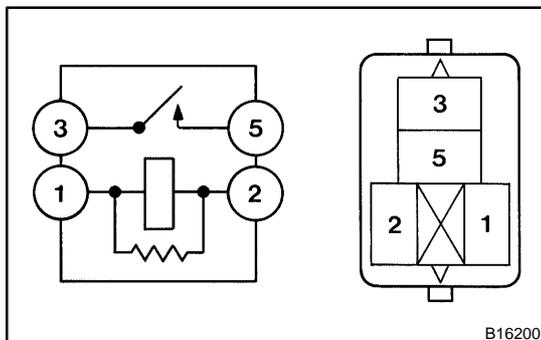
- (a) Connect the hand-held tester to the DLC3.
 (b) Turn the ignition switch ON and push the hand-held tester main switch ON.
 (c) Select the item "DIAGNOSIS/ENHANCED OBD II/ACTIVE TEST/FUEL PUMP / SPD".
 (d) Check the relay operation when it is operated by the hand-held tester.

Standard: Operating noise can be heard from the relay.

OK → Go to step 5

NG

3 INSPECT CIRCUIT OPENING RELAY



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

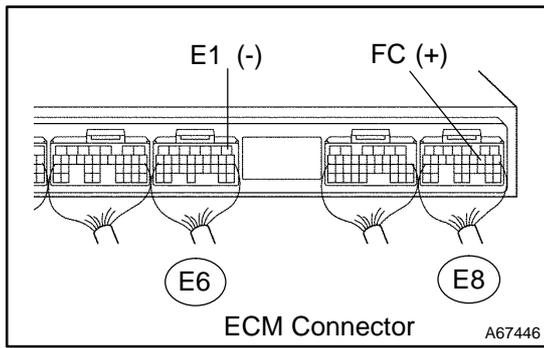
Standard:

Terminal No.	Condition	Specified condition
1 ↔ 2	Constant	Continuity
3 ↔ 5	Usually	No Continuity
	Apply B+ between Terminals 1 and 2	Continuity

NG → 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 E6 and E8 ECM connectors.

Standard:

Symbols (Terminal No.)	Specified condition
FC (E8-10) ⇔ E1 (E6-1)	9 - 14 V

OK → **CHECK AND REPLACE ECM (See page 01-35)**

NG

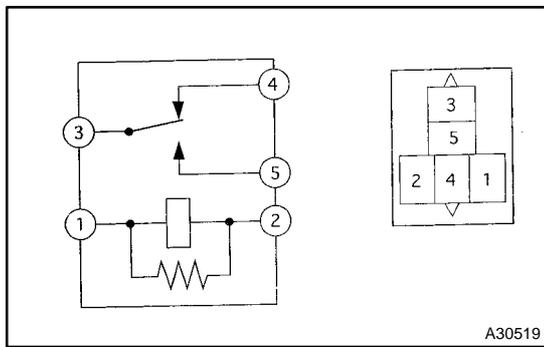
CHECK AND REPAIR HARNESS AND CONNECTOR (ECM - CIRCUIT OPENING RELAY, CIRCUIT OPENING RELAY - IGNITION SWITCH)

5 CHECK FOR ECM POWER SOURCE CIRCUIT (See page 05-202)

NG → **REPAIR OR REPLACE**

OK

6 INSPECT FUEL PUMP RELAY ASSY



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

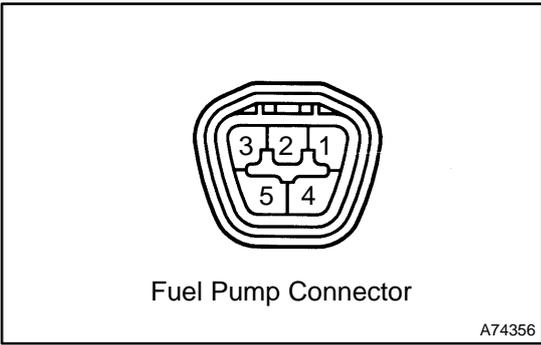
Standard:

Terminal No.	Condition	Specified condition
1 ⇔ 2 3 ⇔ 4	Constant	Continuity
3 ⇔ 5	Usually	No Continuity
	Apply B+ between Terminals 1 and 2	Continuity

NG → **REPLACE FUEL PUMP RELAY ASSY**

OK

7 INSPECT FUEL PUMP



- (a) Inspect fuel pump resistance.
 - (1) Measure the resistance between terminals 4 and 5.
Resistance: 0.2 - 3.0 Ω at 20°C (68°F)
- (b) Inspect fuel pump operation
 - (1) Apply battery voltage to both terminals. Check that the pump operates.

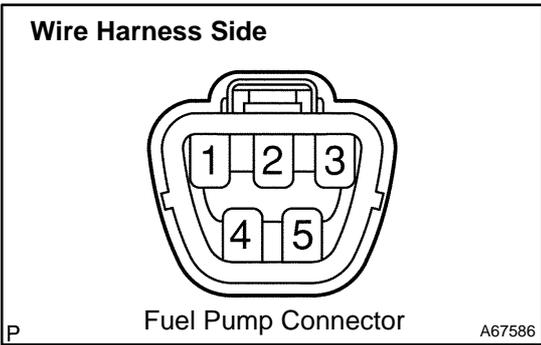
NOTICE:

- These tests must be done quickly (within 10 seconds) to prevent the coil from burning out.
- Keep fuel pump as far away from the battery as possible.
- Always do the switching at the battery side.

NG → **REPLACE FUEL PUMP**

OK

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



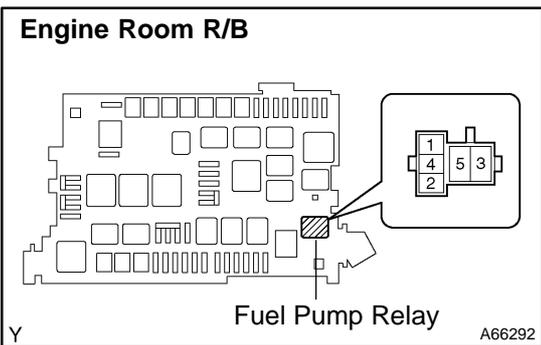
- (a) Check the harness and connector between the fuel pump connector and fuel pump relay.
 - (1) Disconnect the fuel pump connector.
 - (2) Remove the fuel pump relay from the engine room R/B.
 - (3) Check the continuity between the wire harness side connectors.

Standard (Check for open):

Symbols (Terminal No.)	Specified condition
Fuel pump (4) ↔ Fuel pump relay (4)	Continuity

Standard (Check for short):

Symbols (Terminal No.)	Specified condition
Fuel pump (4) or Fuel pump relay (4) ↔ Body ground	No continuity



- (b) Check the harness and connector between the fuel pump connector and body ground.
 - (1) Disconnect the fuel pump connector.
 - (2) Check the continuity between the wire harness side connector and body ground.

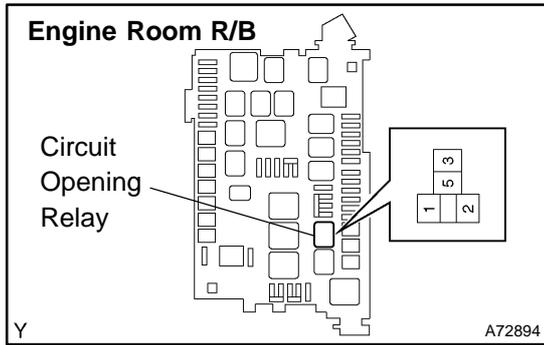
Standard (Check for open):

Symbols (Terminal No.)	Specified condition
Fuel pump (5) ↔ Body ground	Continuity

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

OK

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



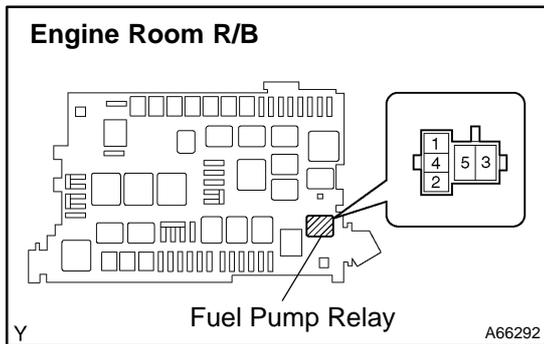
- (a) Remove the circuit opening relay from the engine room R/B.
- (b) Remove the fuel pump relay from the engine room R/B.
- (c) Check the continuity between the wire harness side connectors.

Standard (Check for open):

Symbols (Terminal No.)	Specified condition
Circuit opening relay (3) ⇔ Fuel pump relay (3)	Continuity

Standard (Check for short):

Symbols (Terminal No.)	Specified condition
Circuit opening relay (3) or Fuel pump relay (3) ⇔ Body ground	No continuity

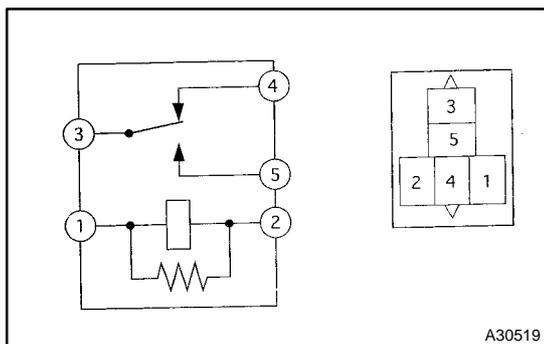


NG REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

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

10 INSPECT FUEL PUMP RELAY ASSY



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

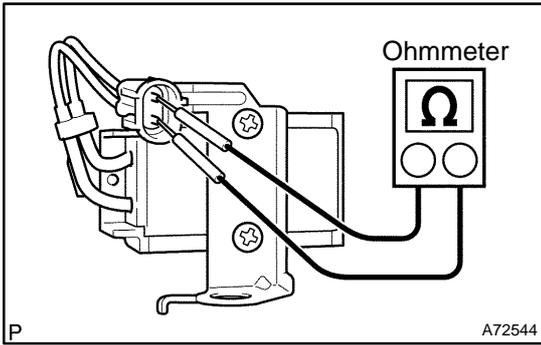
Standard:

Terminal No.	Condition	Specified condition
1 ⇔ 2 3 ⇔ 4	Constant	Continuity
3 ⇔ 5	Usually	No Continuity
	Apply B+ between Terminals 1 and 2	Continuity

NG REPLACE FUEL PUMP RELAY ASSY

OK

11 INSPECT FUEL PUMP RESISTER(RESISTANCE)



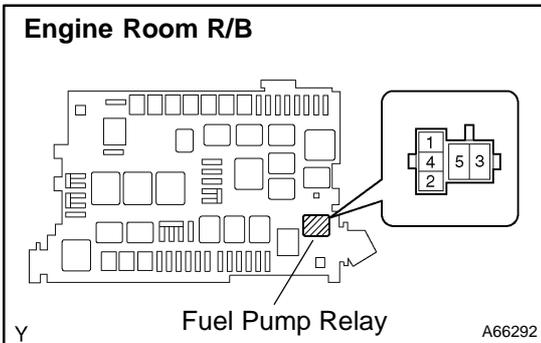
- (a) Inspect the fuel pump resistor resistance.
 - (1) Measure the resistance between terminal.

Resistance: 0.70 - 0.76 Ω at 20°C (68°F)

NG → **REPLACE FUEL PUMP RESISTER**

OK

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



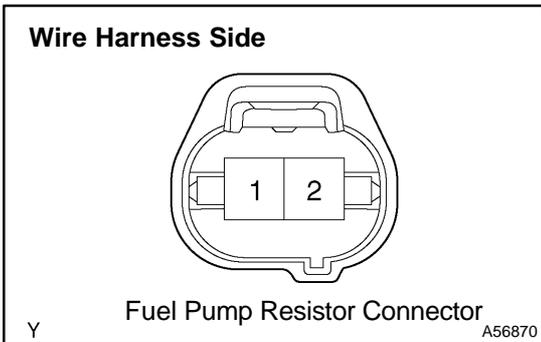
- (a) Check the harness and connector between the fuel pump relay and fuel pump resistor.
 - (1) Remove the fuel pump relay from the engine room R/B.
 - (2) Disconnect the fuel pump resistor connector.
 - (3) Check the continuity between the wire harness side connectors.

Standard (Check for open):

Symbols (Terminal No.)	Specified condition
Fuel pump relay (5) ⇔ Fuel pump resistor (1)	Continuity

Standard (Check for short):

Symbols (Terminal No.)	Specified condition
Fuel pump relay (5) or Fuel pump resistor (1) ⇔ Body ground	No continuity



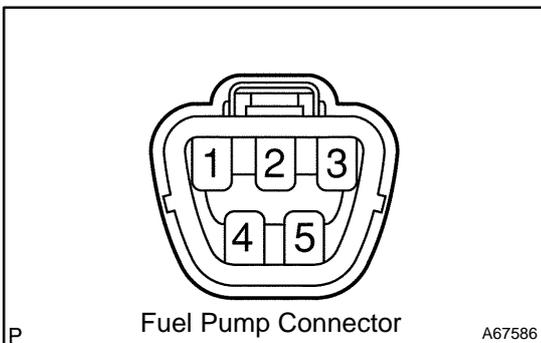
- (b) Check the harness and connector between the fuel pump resistor connector and fuel pump connector.
 - (1) Disconnect the fuel pump resistor connector.
 - (2) Disconnect the fuel pump connector.
 - (3) Check the continuity between the wire harness side connectors.

Standard (Check for open):

Symbols (Terminal No.)	Specified condition
Fuel pump resistor (2) ⇔ Fuel pump (4)	Continuity

Standard (Check for short):

Symbols (Terminal No.)	Specified condition
Fuel pump resistor (2) or Fuel pump (4) ⇔ Body ground	No continuity



OK → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE (See page 05-29)**

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OBD II scan tool (excluding hand-held tester):

1 CHECK FUEL PUMP OPERATION (See page 11-5)

(a) Check if there is pressure in the fuel inlet hose.

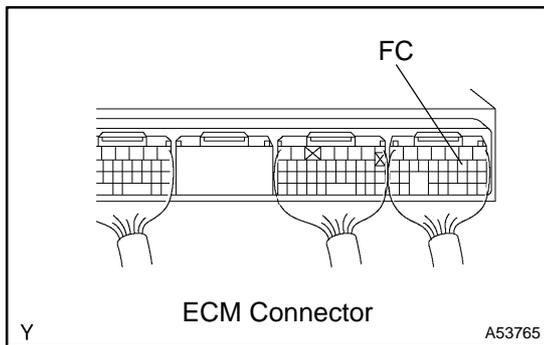
HINT:

If there is fuel pressure, you will hear the sound of fuel flowing.

OK Go to step 10

NG

2 CHECK RELAY OPERATION(CIRCUIT OPENING RELAY)



(a) When connecting between the terminal FC of the ECM connector and body ground, check the relay operation.

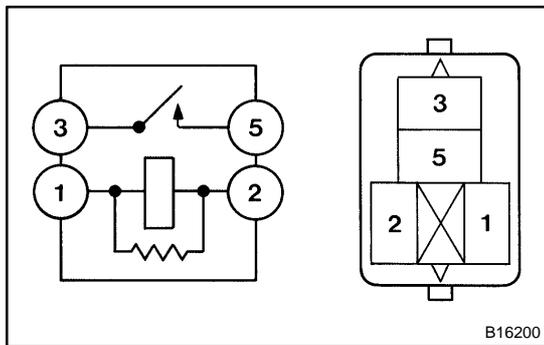
Standard:

Operating noise can be heard from the circuit opening relay.

OK Go to step 5

NG

3 INSPECT CIRCUIT OPENING RELAY



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

(b) Inspect the circuit opening relay.

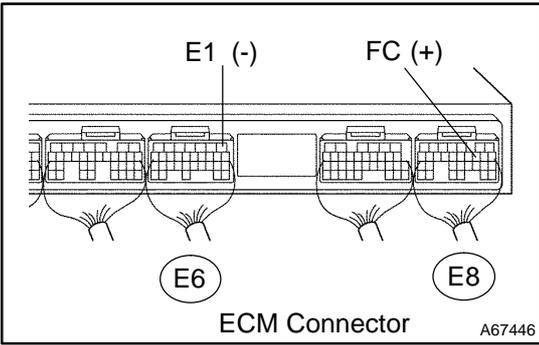
Standard:

Terminal No.	Condition	Specified condition
1 ↔ 2	Constant	Continuity
3 ↔ 5	Usually	No Continuity
	Apply B+ between Terminals 1 and 2	Continuity

NG 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 E6 and E8 ECM connectors.

Standard:

Symbols (Terminal No.)	Specified condition
FC (E8-10) ↔ E1 (E6-1)	9 - 14 V

OK → **CHECK AND REPLACE ECM (See page 01-35)**

NG

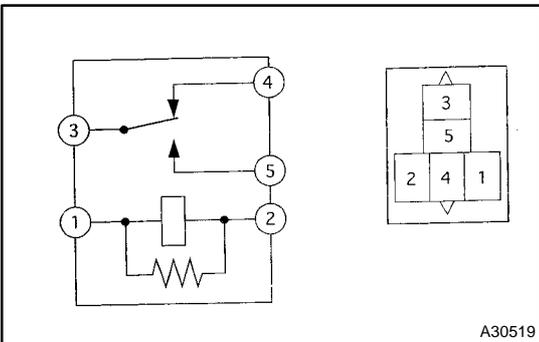
CHECK AND REPAIR HARNESS AND CONNECTOR (ECM - CIRCUIT OPENING RELAY, CIRCUIT OPENING RELAY - IGNITION SWITCH)

5 CHECK FOR ECM POWER SOURCE CIRCUIT (See page 05-202)

NG → **REPAIR OR REPLACE**

OK

6 INSPECT FUEL PUMP RELAY ASSY



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

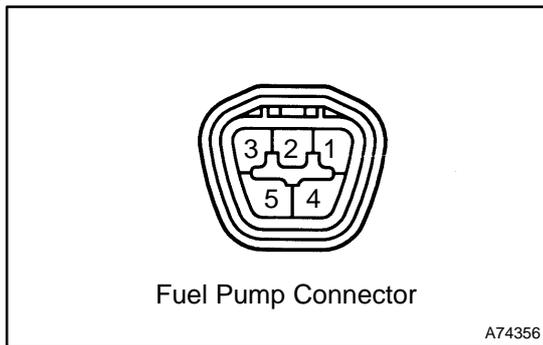
Standard:

Terminal No.	Condition	Specified condition
1 ↔ 2 3 ↔ 4	Constant	Continuity
3 ↔ 5	Usually	No Continuity
	Apply B+ between Terminals 1 and 2	Continuity

NG → **REPLACE FUEL PUMP RELAY ASSY**

OK

7 INSPECT FUEL PUMP



- (a) Inspect fuel pump resistance.
 - (1) Measure the resistance between terminals 4 and 5.
Resistance: 0.2 - 3.0 Ω at 20°C (68°F)
- (b) Inspect fuel pump operation
 - (1) Apply battery voltage to both terminals. Check that the pump operates.

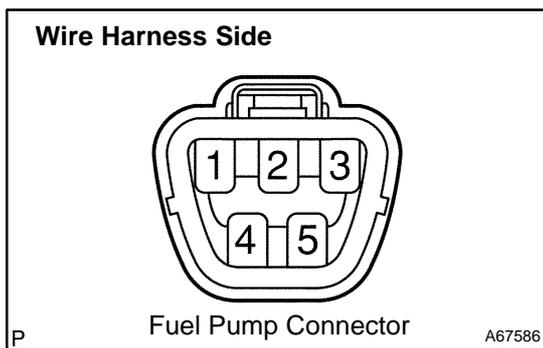
NOTICE:

- These tests must be done quickly (within 10 seconds) to prevent the coil from burning out.
- Keep fuel pump as far away from the battery as possible.
- Always do the switching at the battery side.

NG → **REPLACE FUEL PUMP**

OK

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



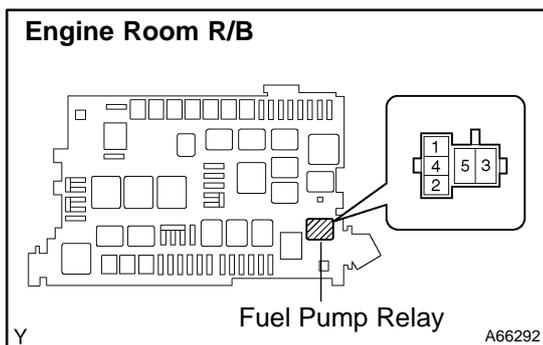
- (a) Check the harness and connector between the fuel pump connector and fuel pump relay.
 - (1) Disconnect the fuel pump connector.
 - (2) Remove the fuel pump relay from the engine room R/B.
 - (3) Check the continuity between the wire harness side connectors.

Standard (Check for open):

Symbols (Terminal No.)	Specified condition
Fuel pump (4) ↔ Fuel pump relay (4)	Continuity

Standard (Check for short):

Symbols (Terminal No.)	Specified condition
Fuel pump (4) or Fuel pump relay (4) ↔ Body ground	No continuity



- (b) Check the harness and connector between the fuel pump connector and body ground.
 - (1) Disconnect the fuel pump connector.
 - (2) Check the continuity between the wire harness side connector and body ground.

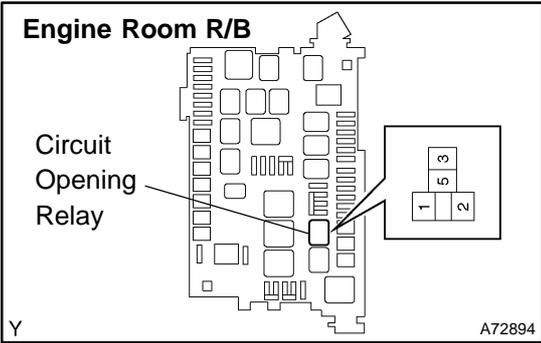
Standard (Check for open):

Symbols (Terminal No.)	Specified condition
Fuel pump (5) ↔ Body ground	Continuity

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

OK

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



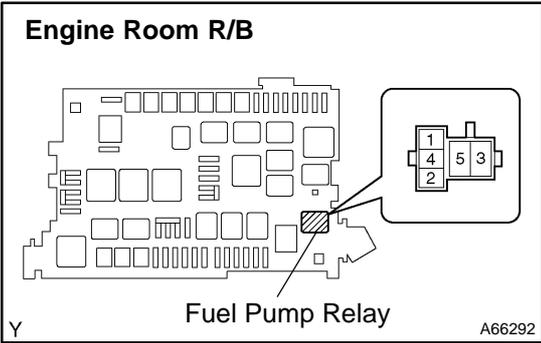
- (a) Remove the circuit opening relay from the engine room R/B.
- (b) Remove the fuel pump relay from the engine room R/B.
- (c) Check the continuity between the wire harness side connectors.

Standard (Check for open):

Symbols (Terminal No.)	Specified condition
Circuit opening relay (3) ⇔ Fuel pump relay (3)	Continuity

Standard (Check for short):

Symbols (Terminal No.)	Specified condition
Circuit opening relay (3) or Fuel pump relay (3) ⇔ Body ground	No continuity

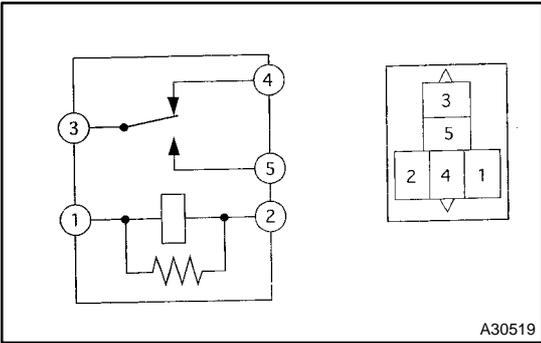


NG REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

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

10 INSPECT FUEL PUMP RELAY ASSY



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

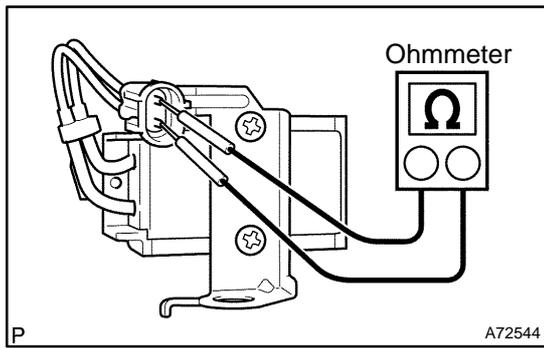
Standard:

Terminal No.	Condition	Specified condition
1 ⇔ 2 3 ⇔ 4	Constant	Continuity
3 ⇔ 5	Usually	No Continuity
	Apply B+ between Terminals 1 and 2	Continuity

NG REPLACE FUEL PUMP RELAY ASSY

OK

11 INSPECT FUEL PUMP RESISTER(RESISTANCE)

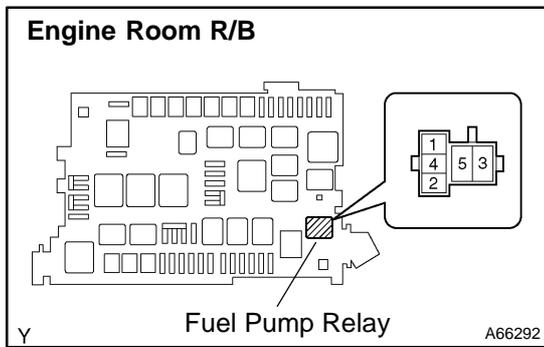


- (a) Inspect the fuel pump resistor resistance.
 - (1) Measure the resistance between terminal.
Resistance: 0.70 - 0.76 Ω at 20°C (68°F)

NG → **REPLACE FUEL PUMP RESISTER**

OK

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



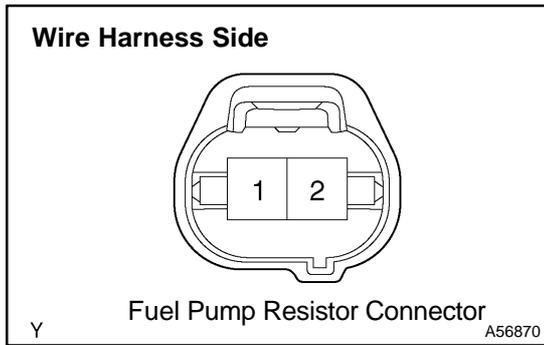
- (a) Check the harness and connector between the fuel pump relay and fuel pump resistor.
 - (1) Remove the fuel pump relay from the engine room R/B.
 - (2) Disconnect the fuel pump resistor connector.
 - (3) Check the continuity between the wire harness side connectors.

Standard (Check for open):

Symbols (Terminal No.)	Specified condition
Fuel pump relay (5) ⇔ Fuel pump resistor (1)	Continuity

Standard (Check for short):

Symbols (Terminal No.)	Specified condition
Fuel pump relay (5) or Fuel pump resistor (1) ⇔ Body ground	No continuity



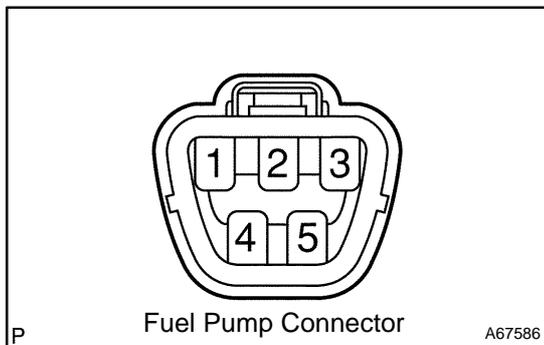
- (b) Check the harness and connector between the fuel pump resistor connector and fuel pump connector.
 - (1) Disconnect the fuel pump resistor connector.
 - (2) Disconnect the fuel pump connector.
 - (3) Check the continuity between the wire harness side connectors.

Standard (Check for open):

Symbols (Terminal No.)	Specified condition
Fuel pump resistor (2) ⇔ Fuel pump (4)	Continuity

Standard (Check for short):

Symbols (Terminal No.)	Specified condition
Fuel pump resistor (2) or Fuel pump (4) ⇔ Body ground	No continuity



OK → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE (See page 05-29)**

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR