

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)

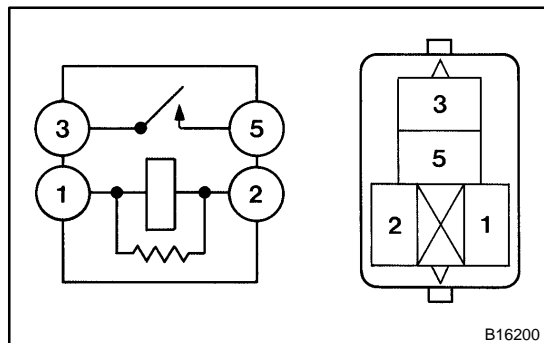
- (a) Connect the hand-held tester to the DLC3.
- (b) Turn the ignition switch ON and push the hand-held tester main switch ON.
- (c) Select the item "DIAGNOSIS/ENHANCED OBD II/ACTIVE TEST/FUEL PUMP / SPD".
- (d) Check the relay operation when it is operated by the hand-held tester.

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.

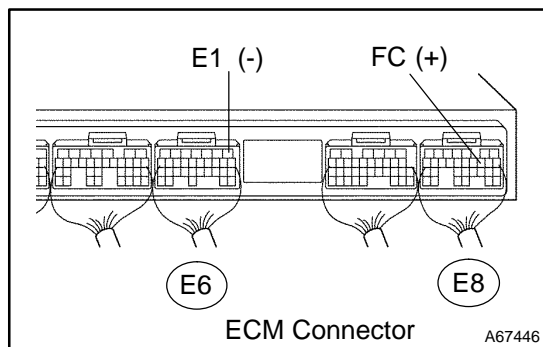
(b) Inspect the circuit opening relay.

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

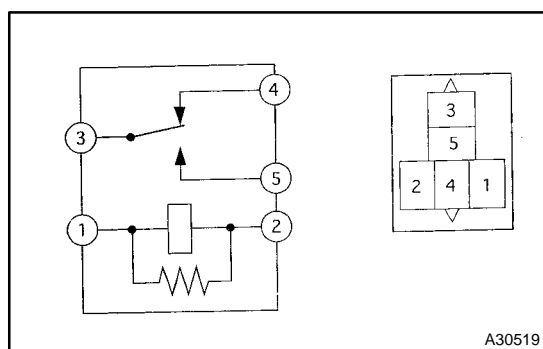
OK

4 INSPECT ECM(FC VOLTAGE)

- Turn the ignition switch ON.
- 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**

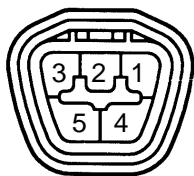
- Remove the fuel pump relay from the engine room R/B.
- Inspect the fuel pump relay.

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



Fuel Pump Connector

A74356

- (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:

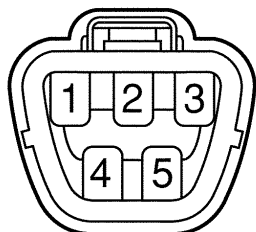
- These tests must be done quickly (within 10 seconds) to prevent the coil from burning out.
- Keep fuel pump as far away from the battery as possible.
- Always do the switching at the battery side.

NG

REPLACE FUEL PUMP

OK

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

Wire Harness Side

Fuel Pump Connector

A67586

- (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) \leftrightarrow Fuel pump relay (4)	Continuity

Standard (Check for short):

Symbols (Terminal No.)	Specified condition
Fuel pump (4) or Fuel pump relay (4) \leftrightarrow 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.

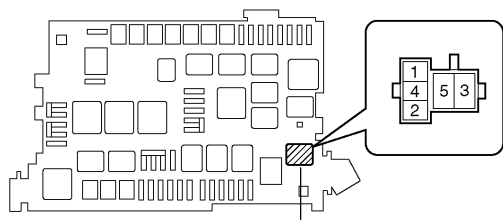
Standard (Check for open):

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

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

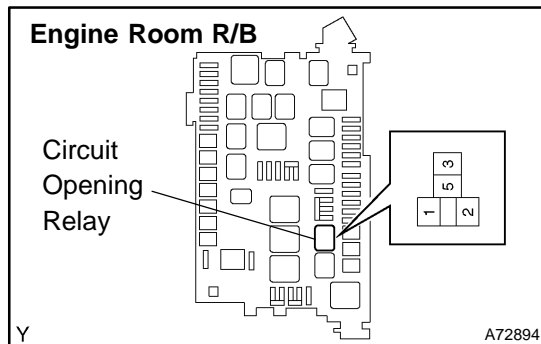
OK

Engine Room R/B

Fuel Pump Relay

A66292

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



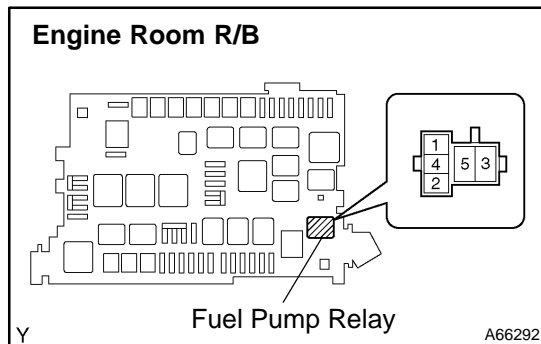
- Remove the circuit opening relay from the engine room R/B.
- Remove the fuel pump relay from the engine room R/B.
- Check the continuity between the wire harness side connectors.

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



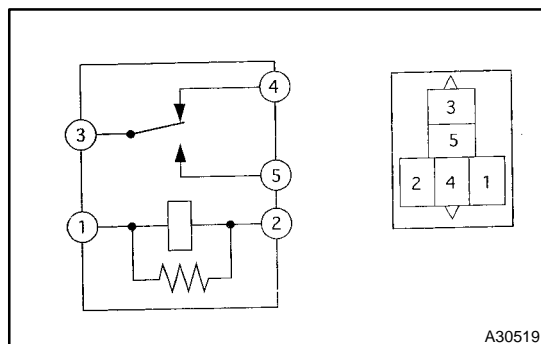
NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

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

10 INSPECT FUEL PUMP RELAY ASSY



- Remove the fuel pump relay from the engine room R/B.
- Inspect the fuel pump relay.

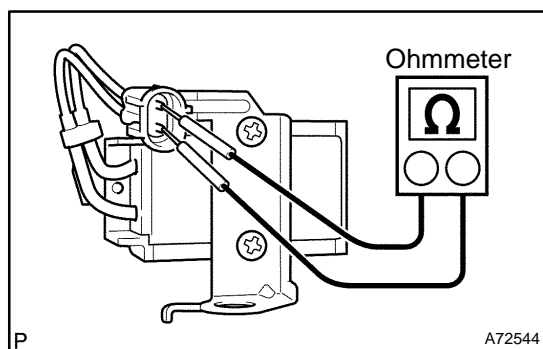
Standard:

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

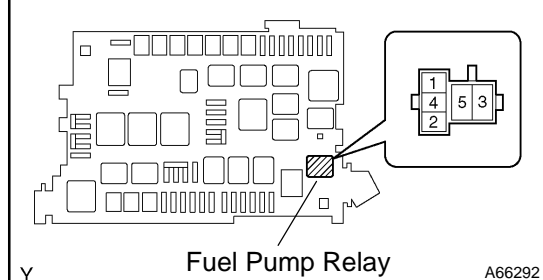
NG

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)****Engine Room R/B**

- (a) Check the harness and connector between the fuel pump relay and fuel pump resistor connector.
 (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) \leftrightarrow Fuel pump resistor (1)	Continuity

Standard (Check for short):

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

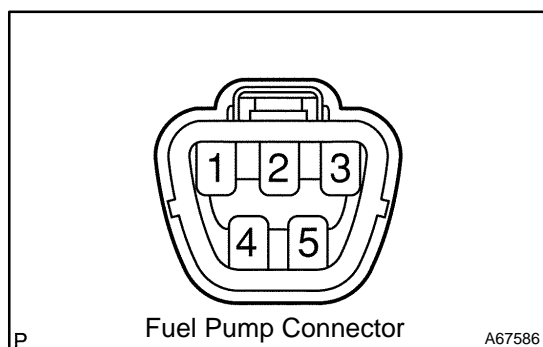
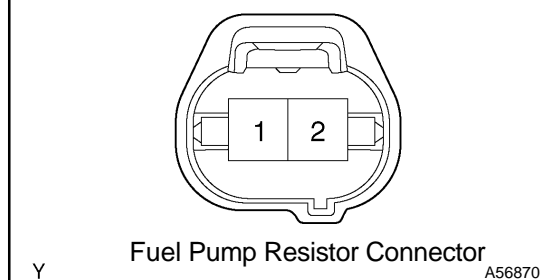
- (b) Check the harness and connector between the fuel pump resistor connector and fuel pump connector.
 (1) Disconnect the fuel pump resistor connector.
 (2) Disconnect the fuel pump connector.
 (3) Check the continuity between the wire harness side connectors.

Standard (Check for open):

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

Standard (Check for short):

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

OK**PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE (See page 05-29)****Wire Harness Side****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.

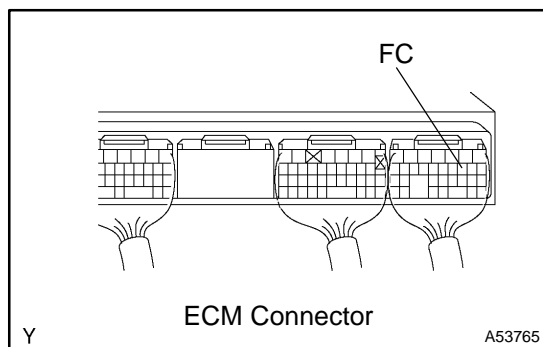
HINT:

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.

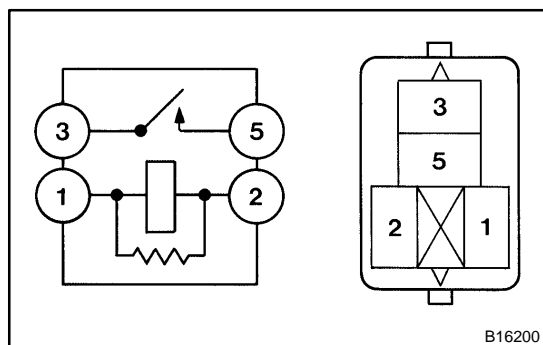
Standard:

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:

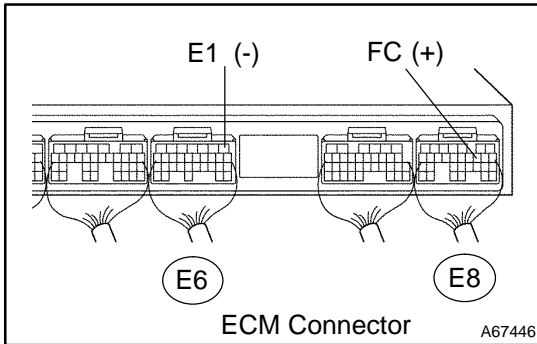
Terminal No.	Condition	Specified condition
1 ↔ 2	Constant	Continuity
3 ↔ 5	Usually	No Continuity
	Apply B+ between Terminals 1 and 2	Continuity

NG

REPLACE CIRCUIT OPENING RELAY

OK

4 INSPECT ECM(FC VOLTAGE)



- Turn the ignition switch ON.
- 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)

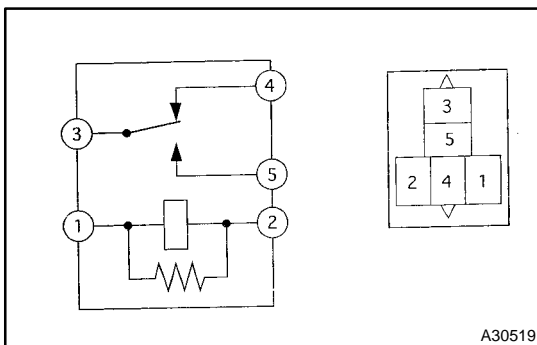
5 CHECK FOR ECM POWER SOURCE CIRCUIT (See page 05-202)

NG

REPAIR OR REPLACE

OK

6 INSPECT FUEL PUMP RELAY ASSY



- Remove the fuel pump relay from the engine room R/B.
- Inspect the fuel pump relay.

Standard:

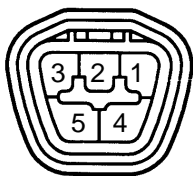
Terminal No.	Condition	Specified condition
1 ⇔ 2 3 ⇔ 4	Constant	Continuity
3 ⇔ 5	Usually	No Continuity
	Apply B+ between Terminals 1 and 2	Continuity

NG

REPLACE FUEL PUMP RELAY ASSY

OK

7 INSPECT FUEL PUMP



Fuel Pump Connector

A74356

- (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:

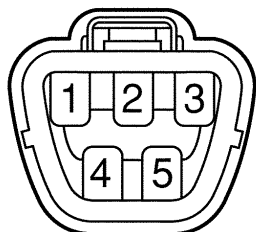
- These tests must be done quickly (within 10 seconds) to prevent the coil from burning out.
- Keep fuel pump as far away from the battery as possible.
- Always do the switching at the battery side.

NG

REPLACE FUEL PUMP

OK

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

Wire Harness Side

Fuel Pump Connector

A67586

- (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) \leftrightarrow Fuel pump relay (4)	Continuity

Standard (Check for short):

Symbols (Terminal No.)	Specified condition
Fuel pump (4) or Fuel pump relay (4) \leftrightarrow 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.

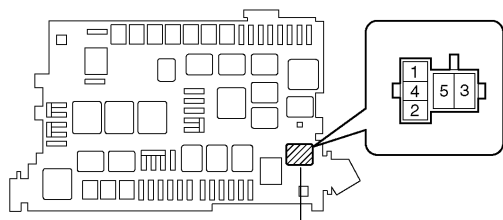
Standard (Check for open):

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

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

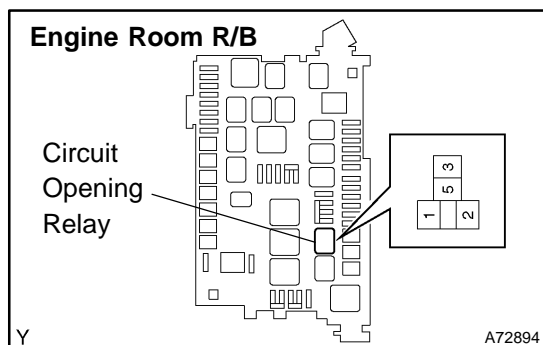
OK

Engine Room R/B

Fuel Pump Relay

A66292

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



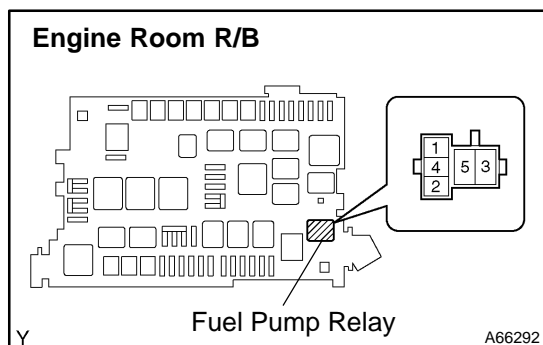
- Remove the circuit opening relay from the engine room R/B.
- Remove the fuel pump relay from the engine room R/B.
- Check the continuity between the wire harness side connectors.

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



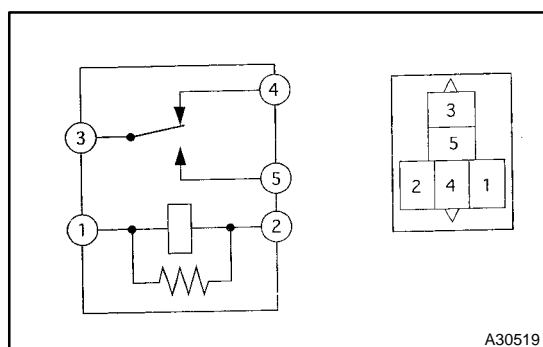
NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

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

10 INSPECT FUEL PUMP RELAY ASSY



- Remove the fuel pump relay from the engine room R/B.
- Inspect the fuel pump relay.

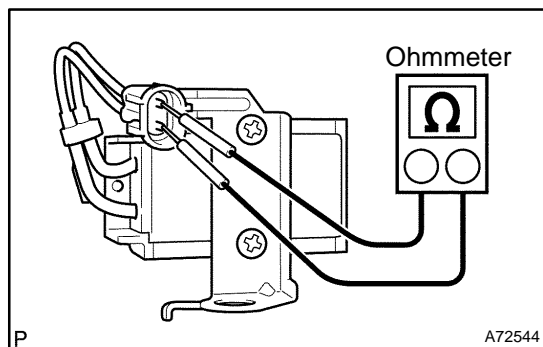
Standard:

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

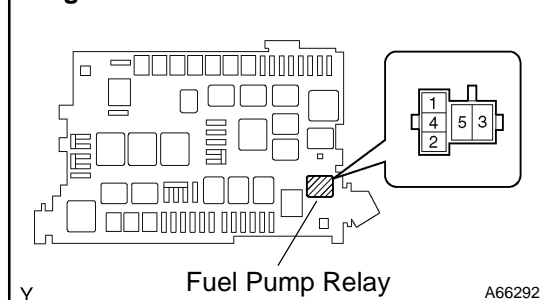
NG

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)****Engine Room R/B****Fuel Pump Relay**

A66292

- (a) Check the harness and connector between the fuel pump relay and fuel pump resistor connector.
 (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) \leftrightarrow Fuel pump resistor (1)	Continuity

Standard (Check for short):

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

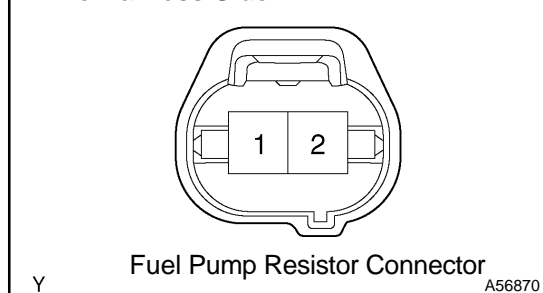
- (b) Check the harness and connector between the fuel pump resistor connector and fuel pump connector.
 (1) Disconnect the fuel pump resistor connector.
 (2) Disconnect the fuel pump connector.
 (3) Check the continuity between the wire harness side connectors.

Standard (Check for open):

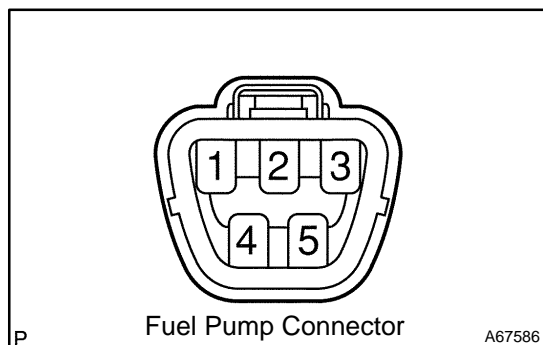
Symbols (Terminal No.)	Specified condition
Fuel pump resistor (2) \leftrightarrow Fuel pump (4)	Continuity

Standard (Check for short):

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

OK**PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE (See page 05-29)****Wire Harness Side****Fuel Pump Resistor Connector**

A56870

**Fuel Pump Connector**

A67586

NG**REPAIR OR REPLACE HARNESS OR CONNECTOR**