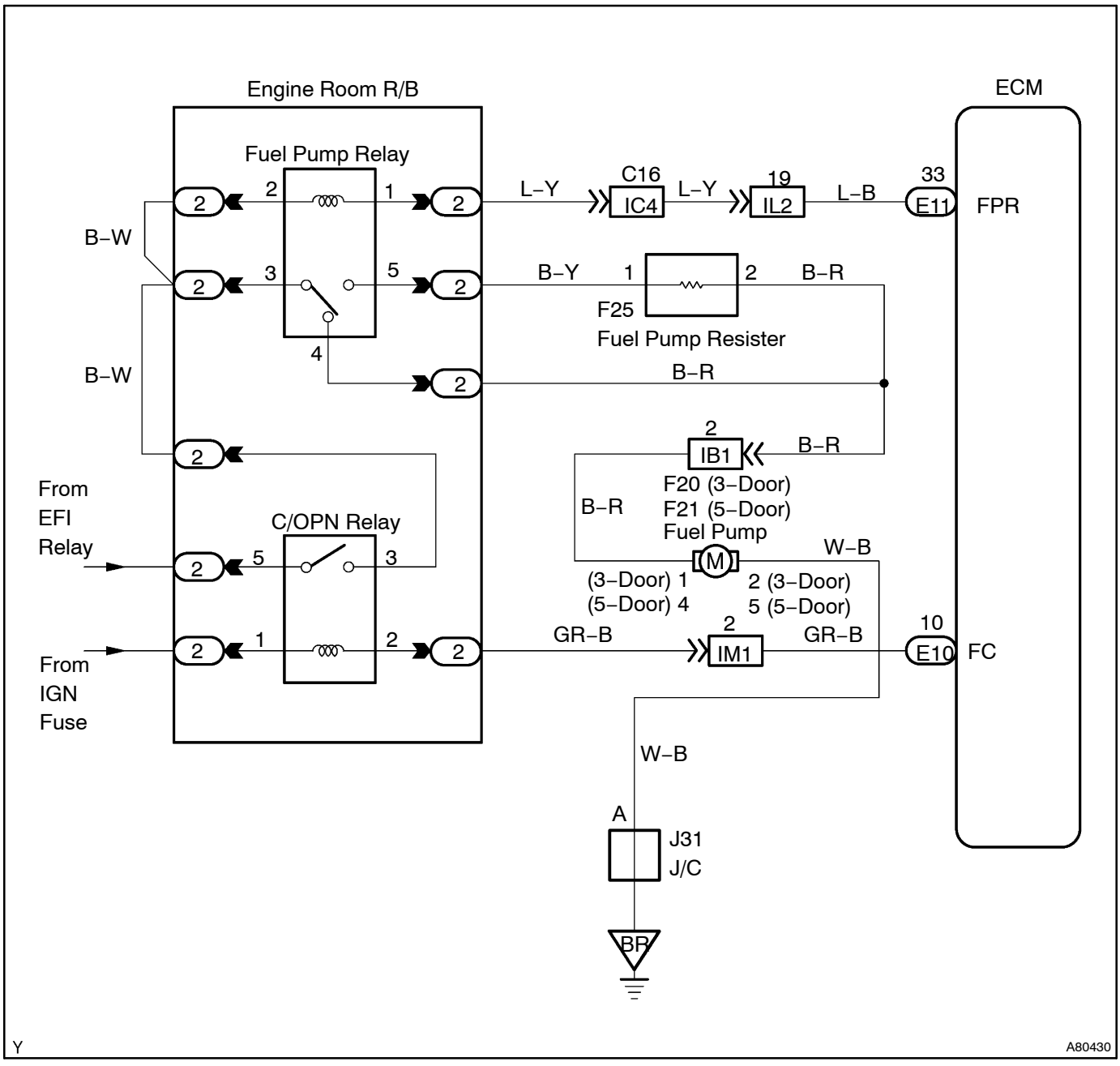
FUEL PUMP CONTROL CIRCUIT

CIRCUIT DESCRIPTION

Refer to DTC P0230/78 on page 05–101.

WIRING DIAGRAM



INSPECTION PROCEDURE

When using 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

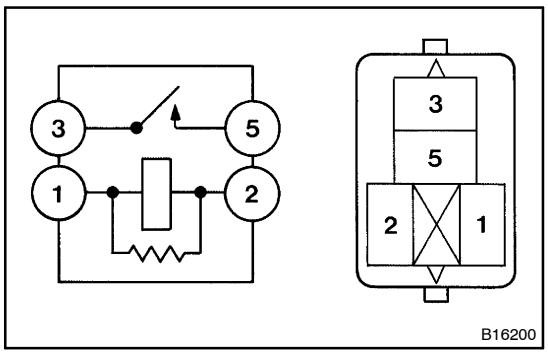
2	PERFORM ACTIVE TEST BY HAND–HELD TESTER(OPERATE CIRCUIT OPENING RELAY)

(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 / OBD/MOBD / ACTIVE TEST / FUEL PUMP / SPD”.
(d) Check the relay operation while operating it with the hand–held tester.
Standard: Operating noise can be heard from the relay.

OK → **Go to step 5**

NG

3	INSPECT CIRCUIT OPENING RELAY



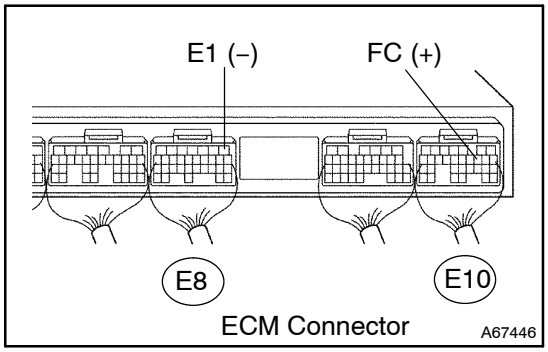
(a) Remove the circuit opening relay from the engine room R/B.
(b) Inspect the circuit opening relay.
Standard:

Terminal No.	Specified condition
1 – 2	Continuity
3 – 5	No Continuity
	Continuity (Apply battery voltage terminals 1 and 2)

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 E8 and E10 ECM connectors.

Standard:

Symbols (Terminal No.)	Specified condition
FC (E10–10) – E1 (E8–1)	9 to 14 V

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

NG

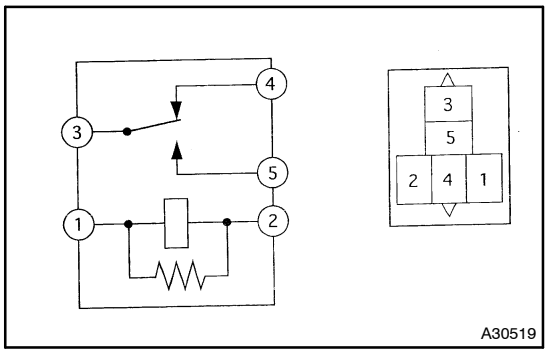
CHECK AND REPAIR HARNESS AND CONNECTOR (ECM – CIRCUIT OPENING RELAY, CIRCUIT OPENING RELAY – IGNITION SWITCH)

5 INSPECT ECM POWER SOURCE CIRCUIT (See page 05–215)

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.

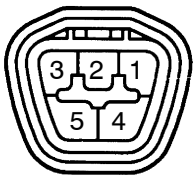
Standard:

Terminal No.	Specified condition
1 – 2 3 – 4	Continuity
3 – 5	No Continuity
	Continuity (Apply battery voltage terminals 1 and 2)

NG → **REPLACE FUEL PUMP RELAY ASSY**

OK

7	INSPECT FUEL PUMP



Fuel Pump

A74356

(a) Inspect fuel pump resistance.
  (1) Measure the resistance between terminals 4 and 5.
  Resistance: 0.2 to 3.0 Ω at 20°C (68°F)

(b) Inspect fuel pump operation
  (1) Apply battery voltage to both the terminals. Check that the pump operates.

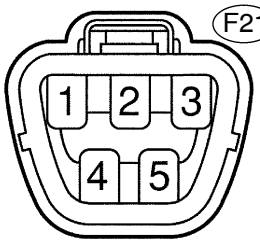
NOTICE:

- **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**

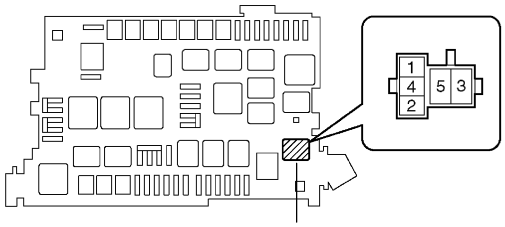
OK

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



Fuel Pump Connector

P A67586



Fuel Pump Relay

Y A66292

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

Standard (Check for open):

Symbols (Terminal No.)	Specified condition
3–Door: Fuel pump (F20–1) – Fuel pump relay (4)	Continuity
5–Door: Fuel pump (F21–4) – Fuel pump relay (4)	Continuity

Standard (Check for short):

Symbols (Terminal No.)	Specified condition
3–Door: Fuel pump (F20–1) or Fuel pump relay (4) – Body ground	No continuity
5–Door: Fuel pump (F21–4) or Fuel pump relay (4) – Body ground	No continuity

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

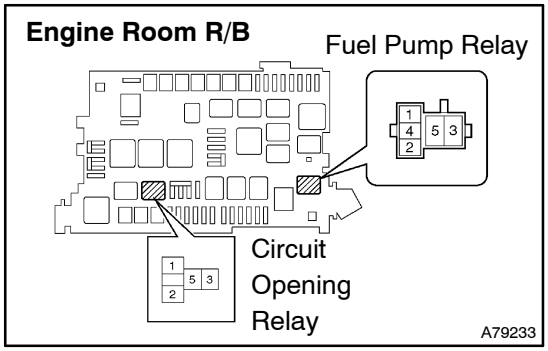
Standard (Check for open):

Symbols (Terminal No.)	Specified condition
3–Door: Fuel pump (F20–2) – Body ground	Continuity
5–Door: Fuel pump (F21–5) – 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 for 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):

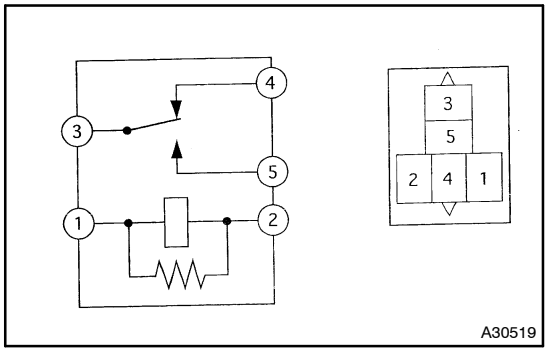
Symbols (Terminal No.)	Specified condition
Circuit opening relay (3) or Fuel pump relay (3) – Body ground	No continuity

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.

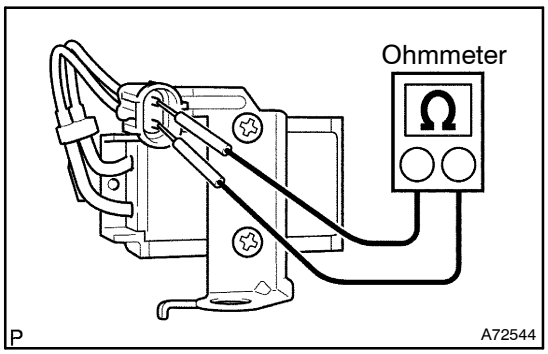
Standard:

Terminal No.	Specified condition
1 – 2 3 – 4	Continuity
3 – 5	No Continuity
	Continuity (Apply battery voltage terminals 1 and 2)

NG → REPLACE FUEL PUMP RELAY ASSY

OK

11	INSPECT FUEL PUMP RESISTER(RESISTANCE)



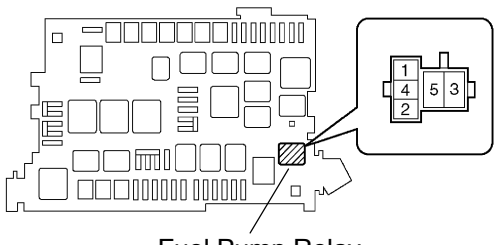
(a) Inspect the fuel pump resistor resistance.
(1) Measure the resistance between the terminals.
Resistance: 0.70 to 0.76 Ω at 20°C (68°F)

NG → **REPLACE FUEL PUMP RESISTER**

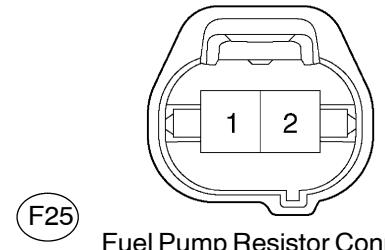
OK

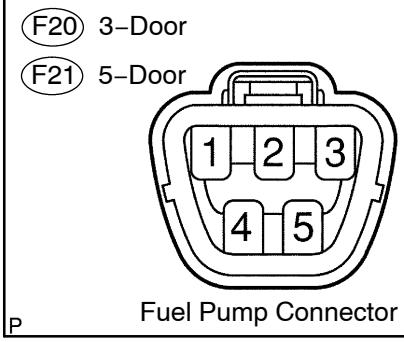
12	CHECK HARNESS AND CONNECTOR(FUEL PUMP RELAY – FUEL PUMP RESISTOR, FUEL PUMP RESISTOR – FUEL PUMP)

Engine Room R/B



Wire Harness Side





(a) Check the harness and the connector between the fuel pump relay and the 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 for continuity between the wire harness side connectors.

Standard (Check for open):

Symbols (Terminal No.)	Specified condition
Fuel pump relay (5) – Fuel pump resistor (F25–1)	Continuity

Standard (Check for short):

Symbols (Terminal No.)	Specified condition
Fuel pump relay (5) or Fuel pump resistor (F25–1) – Body ground	No continuity

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

Standard (Check for open):

Symbols (Terminal No.)	Specified condition
3–Door: Fuel pump resistor (F25–2) – Fuel pump (F20–1)	Continuity
5–Door: Fuel pump resistor (F25–2) – Fuel pump (F21–4)	Continuity

Standard (Check for short):

Symbols (Terminal No.)	Specified condition
3–Door: Fuel pump resistor (F25–2) or Fuel pump (F20–1) – Body ground	No continuity
5–Door: Fuel pump resistor (F25–2) or Fuel pump (F21–4) – Body ground	No continuity

OK → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE** **(See page 05–33)**

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

When not using hand–held tester:

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

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

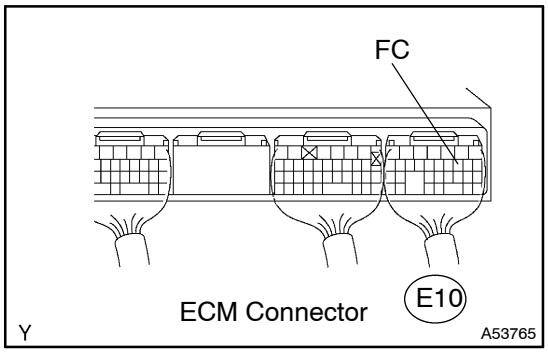
HINT:

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 terminal FC of the ECM connector and the body ground, check the relay operation.

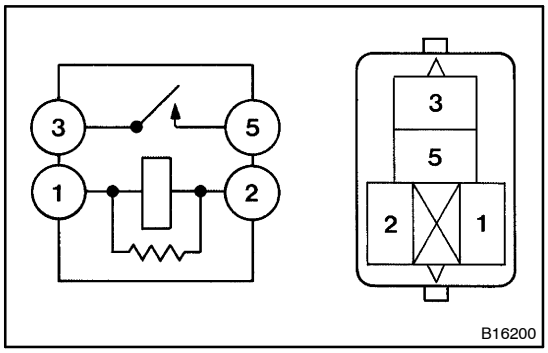
Standard:

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.

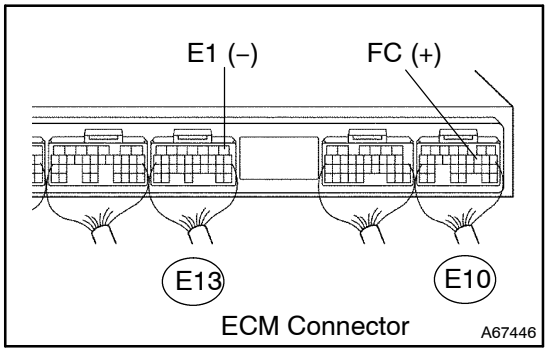
Standard:

Terminal No.	Specified condition
1 – 2	Continuity
3 – 5	No Continuity
	Continuity (Apply battery voltage terminals 1 and 2)

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 E10 and E13 ECM connectors.

Standard:

Symbols (Terminal No.)	Specified condition
FC (E10–10) – E1 (E13–1)	9 to 14 V

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

NG

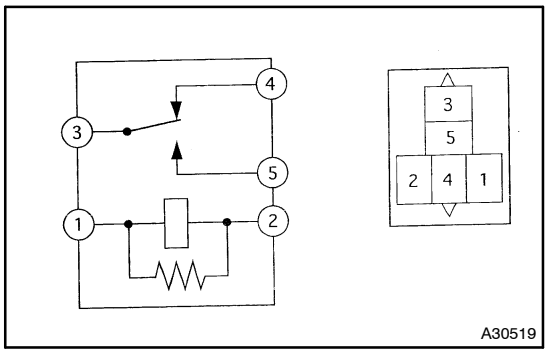
CHECK AND REPAIR HARNESS AND CONNECTOR (ECM – CIRCUIT OPENING RELAY, CIRCUIT OPENING RELAY – IGNITION SWITCH)

5 INSPECT ECM POWER SOURCE CIRCUIT (See page 05–215)

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.

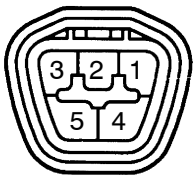
Standard:

Terminal No.	Specified condition
1 – 2 3 – 4	Continuity
3 – 5	No Continuity
	Continuity (Apply battery voltage terminals 1 and 2)

NG → **REPLACE FUEL PUMP RELAY ASSY**

OK

7	INSPECT FUEL PUMP



Fuel Pump

A74356

(a) Inspect fuel pump resistance.
  (1) Measure the resistance between terminals 4 and 5.
  Resistance: 0.2 to 3.0 Ω at 20°C (68°F)

(b) Inspect fuel pump operation
  (1) Apply battery voltage to both the terminals. Check that the pump operates.

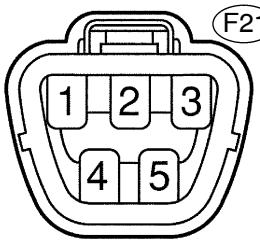
NOTICE:

- **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**

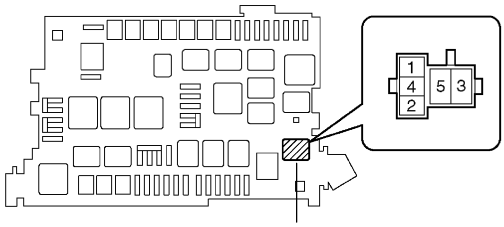
OK

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



Fuel Pump Connector

P A67586



Fuel Pump Relay

Y A66292

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

Standard (Check for open):

Symbols (Terminal No.)	Specified condition
3–Door: Fuel pump (F20–1) – Fuel pump relay (4)	Continuity
5–Door: Fuel pump (F21–4) – Fuel pump relay (4)	Continuity

Standard (Check for short):

Symbols (Terminal No.)	Specified condition
3–Door: Fuel pump (F20–1) or Fuel pump relay (4) – Body ground	No continuity
5–Door: Fuel pump (F21–4) or Fuel pump relay (4) – Body ground	No continuity

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

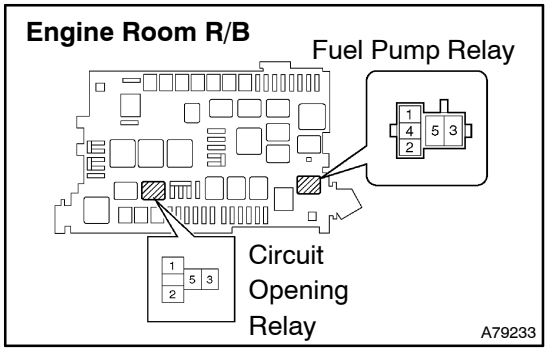
Standard (Check for open):

Symbols (Terminal No.)	Specified condition
3–Door: Fuel pump (F20–2) – Body ground	Continuity
5–Door: Fuel pump (F21–5) – 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 for 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):

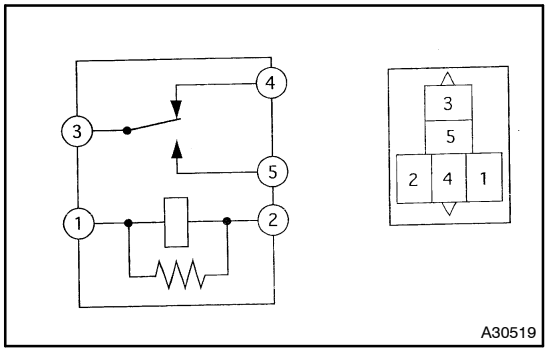
Symbols (Terminal No.)	Specified condition
Circuit opening relay (3) or Fuel pump relay (3) – Body ground	No continuity

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.

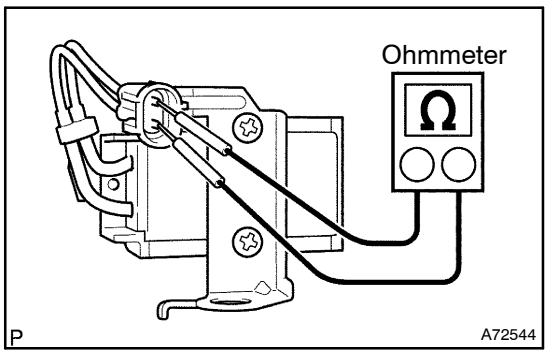
Standard:

Terminal No.	Specified condition
1 – 2 3 – 4	Continuity
3 – 5	No Continuity
	Continuity (Apply battery voltage terminals 1 and 2)

NG → REPLACE FUEL PUMP RELAY ASSY

OK

11	INSPECT FUEL PUMP RESISTER(RESISTANCE)



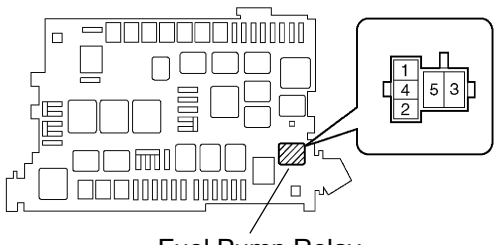
(a) Inspect the fuel pump resistor resistance.
(1) Measure the resistance between the terminals.
Resistance: 0.70 to 0.76 Ω at 20°C (68°F)

NG → **REPLACE FUEL PUMP RESISTER**

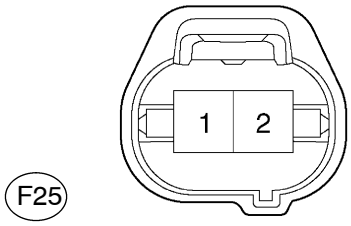
OK

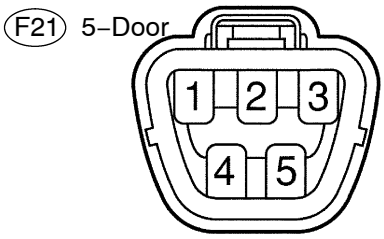
12	CHECK HARNESS AND CONNECTOR(FUEL PUMP RELAY – FUEL PUMP RESISTOR, FUEL PUMP RESISTOR – FUEL PUMP)

Engine Room R/B



Wire Harness Side





(a) Check the harness and the connector between the fuel pump relay and the 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 for continuity between the wire harness side connectors.

Standard (Check for open):

Symbols (Terminal No.)	Specified condition
Fuel pump relay (5) – Fuel pump resistor (F25–1)	Continuity

Standard (Check for short):

Symbols (Terminal No.)	Specified condition
Fuel pump relay (5) or Fuel pump resistor (F25–1) – Body ground	No continuity

(b) Check the harness and the connector between the fuel pump resistor connector and the fuel pump connector.

(1) Disconnect the fuel pump resistor connector.

(2) Disconnect the fuel pump connector.

(3) Check for continuity between the wire harness side connectors.

Standard (Check for open):

Symbols (Terminal No.)	Specified condition
3–Door: Fuel pump resistor (F25–2) – Fuel pump (F20–1)	Continuity
5–Door: Fuel pump resistor (F25–2) – Fuel pump (F21–4)	Continuity

Standard (Check for short):

Symbols (Terminal No.)	Specified condition
3–Door: Fuel pump resistor (F25–2) or Fuel pump (F20–1) – Body ground	No continuity
5–Door: Fuel pump resistor (F25–2) or Fuel pump (F21–4) – Body ground	No continuity

OK → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE** (See page 05–33)

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR