

## Fuel Pump Control Circuit

### DESCRIPTION

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

### WIRING DIAGRAM

Refer to DTC O0230 (See page [ES-162](#))

### INSPECTION PROCEDURE

#### 1 CHECK FUEL PUMP OPERATION

- (a) Check if there is pressure in the fuel inlet hose (See page [FU-4](#)).  
**HINT:**  
 If there is fuel pressure, you will hear the sound of fuel flowing sound.

OK

Go to step 10

NG

#### 2 PERFORM ACTIVE TEST BY INTELLIGENT TESTER (OPERATION OF CIRCUIT OPENING RELAY)

- (a) Connect the 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:**

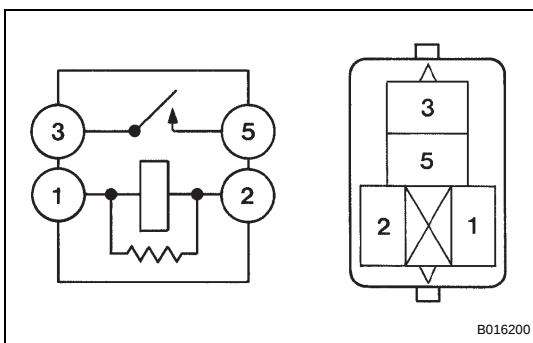
Operating sounds can be heard from the relay.

OK

Go to step 5

NG

#### 3 INSPECT CIRCUIT OPENING RELAY



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

#### Standard resistance

| Tester Connections | Specified Conditions                                                    |
|--------------------|-------------------------------------------------------------------------|
| 3 - 5              | 10 k $\Omega$ or higher                                                 |
| 3 - 5              | Below 1 $\Omega$<br>(when battery voltage applied to terminals 1 and 2) |

- (c) Reinstall the circuit opening relay.

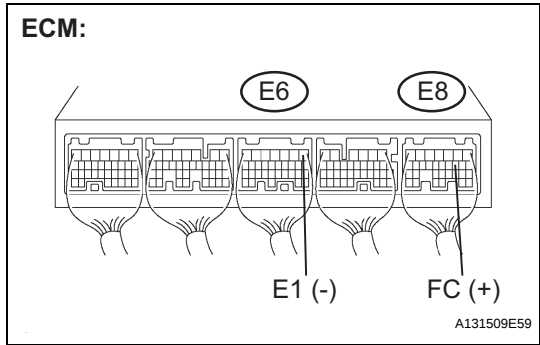
NG

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 voltage

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

OK

REPLACE ECM

NG

CHECK AND REPLACE HARNESS OR CONNECTOR (ECM - IGNITION SWITCH)

5

INSPECT ECM POWER SOURCE CIRCUIT

HINT:  
Refer to "ECM POWER SOURCE CIRCUIT" (See page [ES-372](#)).

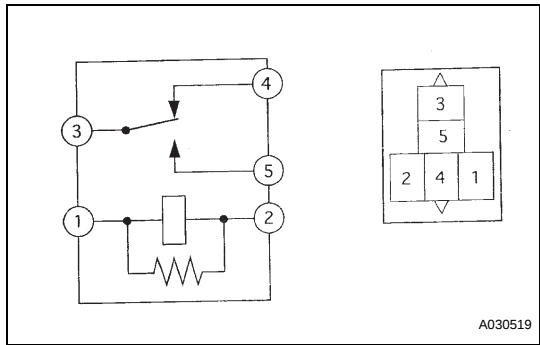
NG

REPAIR OR REPLACE ECM POWER SOURCE CIRCUIT

OK

6

INSPECT FUEL PUMP RELAY



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

Standard resistance

| Tester Connection | Specified Condition                                                           |
|-------------------|-------------------------------------------------------------------------------|
| 3 - 4             | Below 1 $\Omega$                                                              |
| 3 - 5             | 10 k $\Omega$ or higher                                                       |
| 3 - 4             | 10 k $\Omega$ or higher<br>(when battery voltage applied to terminal 1 and 2) |
| 3 - 5             | Below 1 $\Omega$<br>(when battery voltage applied to terminal 1 and 2)        |

- (c) Reinstall the fuel pump relay.

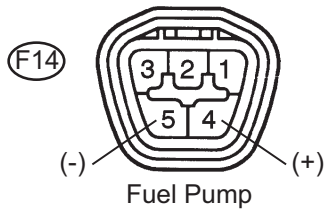
NG

REPLACE FUEL PUMP RELAY

OK

## 7 INSPECT FUEL PUMP ASSEMBLY

### Component Side:



A074356E25

- (a) Inspect fuel pump resistance.
  - (1) Disconnect the F14 fuel pump connector.
  - (2) Measure the resistance between terminals 4 and 5.

#### Standard resistance:

**0.2 to 3.0  $\Omega$  at 20°C (68°F)**

- (b) Inspect fuel pump operation.
  - (1) Apply battery voltage to both terminals. Check that the fuel 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 switch at the battery side.

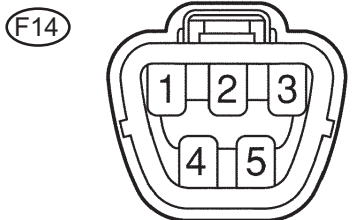
NG

**REPLACE FUEL PUMP ASSEMBLY**

OK

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

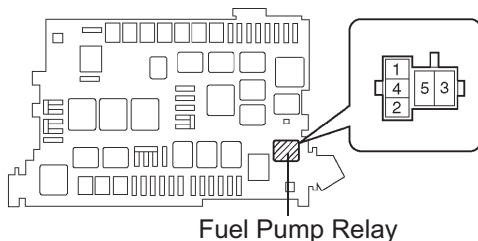
### Wire Harness Side:



P

Fuel Pump Connector

### Engine Room R/B:



Y

Fuel Pump Relay

A138729E01

- (a) Check the harness and connector between the fuel pump and circuit opening relay.
  - (1) Disconnect the F14 fuel pump connector.
  - (2) Remove the Fuel pump relay from the engine room R/B.
  - (3) Measure the resistance between the terminals of the fuel pump relay and fuel pump connector.

#### Standard resistance (Check for open)

| Tester Connections                      | Specified Conditions |
|-----------------------------------------|----------------------|
| Fuel pump (F14-4) - Fuel pump relay (4) | Below 1 $\Omega$     |

#### Standard resistance (Check for short)

| Tester Connections                                     | Specified Conditions    |
|--------------------------------------------------------|-------------------------|
| Fuel pump (F14-4) or Fuel pump relay (4) - Body ground | 10 k $\Omega$ or higher |

- (4) Reconnect the fuel pump connector.
- (5) Reinstall the engine room junction block.
- (b) Check the harness and connector between the fuel pump and body ground.
  - (1) Disconnect the fuel pump connector.
  - (2) Measure the resistance between the terminal of the fuel pump connector and body ground.

#### Standard resistance (Check for open)

| Tester Connections              | Specified Conditions |
|---------------------------------|----------------------|
| Fuel pump (F14-5) - Body ground | Below 1 $\Omega$     |

- (3) Reconnect the fuel pump connector.

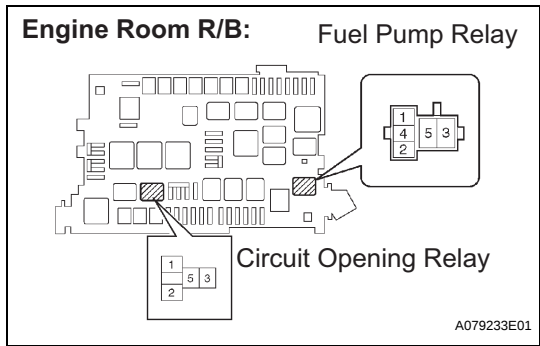
ES

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.

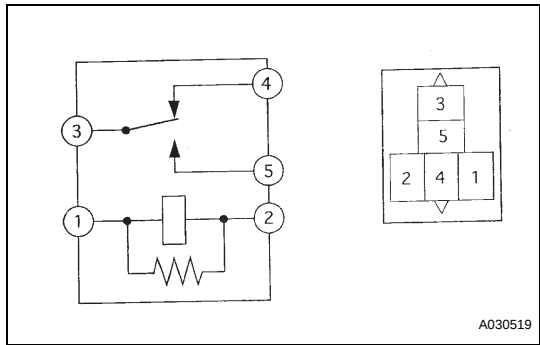
NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

CHECK AND REPLACE HARNESS OR CONNECTOR (EFI RELAY - CIRCUIT OPENING RELAY)

10 INSPECT FUEL PUMP RELAY



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

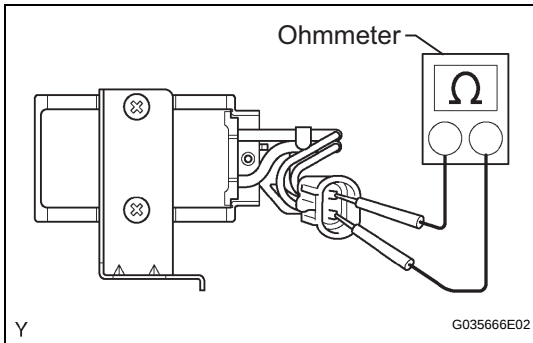
| Tester Connections | Specified Conditions                                                  |
|--------------------|-----------------------------------------------------------------------|
| 3 - 4              | Below 1 Ω                                                             |
| 3 - 5        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

- (c) Reinstall the fuel pump relay.

NG

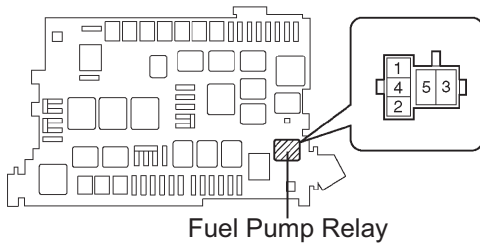
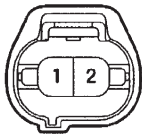
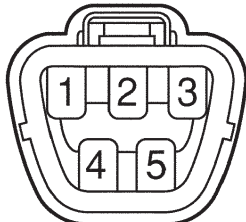
REPLACE FUEL PUMP RELAY

OK

**11 INSPECT FUEL PUMP RESISTOR (RESISTANCE)****OK**

(a) Inspect the fuel pump resistor resistance.

(1) Measure the resistance.

**Standard resistance:****0.70 to 0.76  $\Omega$  at 20°C (68°F)****NG****REPLACE FUEL PUMP RESISTOR****ES****12 CHECK HARNESS AND CONNECTOR (FUEL PUMP RELAY - FUEL PUMP)****Engine Room R/B:****Wire Harness Side:****(F8)****Fuel Pump Resistor Connector****Wire Harness Side:****(F14)****Fuel Pump Connector****P**

A138730E01

(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 F8 fuel pump resistor connector.

(3) Check the resistance.

**Standard resistance (Check for open)**

| Tester Connections                                    | Specified Conditions |
|-------------------------------------------------------|----------------------|
| Fuel pump relay (5) - Fuel pump relay resistor (F8-1) | Below 1 $\Omega$     |

**Standard resistance (Check for short)**

| Tester Connections                                               | Specified Conditions    |
|------------------------------------------------------------------|-------------------------|
| Fuel pump relay (5) - or Fuel pump resistor (F8-1) - Body ground | 10 k $\Omega$ 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 F18 fuel pump resistor connector.

(2) Disconnect the F14 fuel pump connector.

(3) Check the resistance.

**Standard resistance (Check for open)**

| Tester Connections                            | Specified Conditions |
|-----------------------------------------------|----------------------|
| Fuel pump resistor (F8-2) - Fuel pump (F14-4) | Below 1 $\Omega$     |

**Standard resistance (Check for short)**

| Tester Connections                                           | Specified Conditions    |
|--------------------------------------------------------------|-------------------------|
| Fuel pump resistor (F8-2) or Fuel pump (F14-4) - Body ground | 10 k $\Omega$ or higher |

(4) Reconnect the fuel pump resistor connector.

(5) Reconnect the fuel pump connector.

OK

PROCEED TO NEXT CIRCUIT INSPECTION  
SHOWN IN PROBLEM SYMPTOMS TABLE

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR