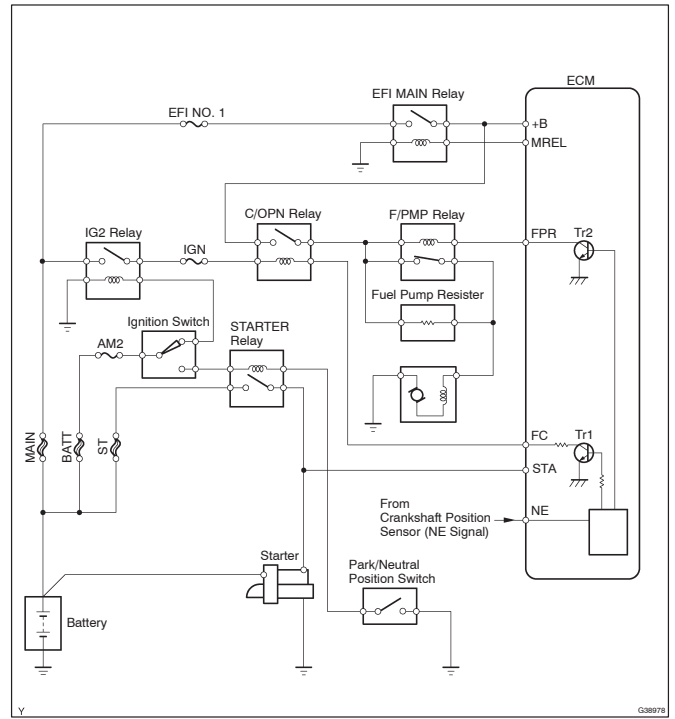


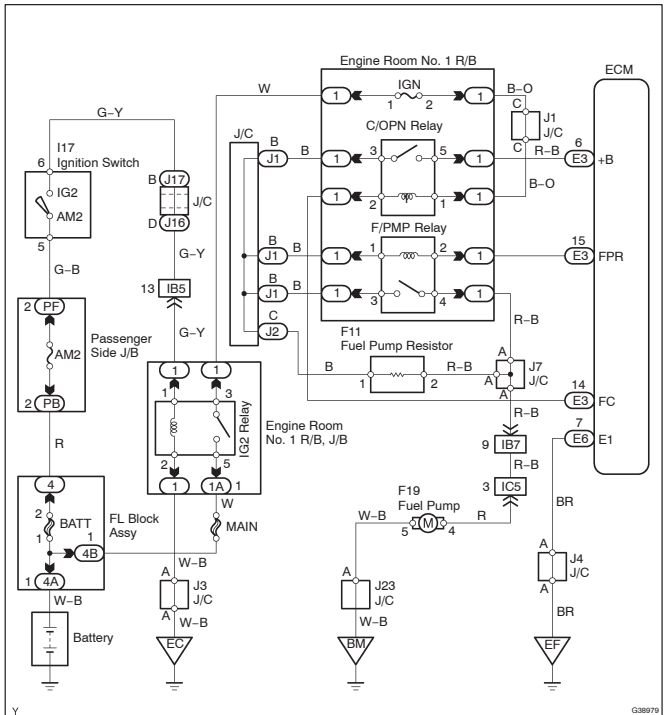
FUEL PUMP CONTROL CIRCUIT

CIRCUIT DESCRIPTION

When the engine is cranked, current flows from terminal ST of the ignition switch to the starter relay coil and also current flows to terminal STA of the ECM (STA signal). When the STA signal and NE signal are input to the ECM, Transistor 1 (Tr1) of the ECM is turned ON, current flows to the coil of the circuit opening relay (Marking C/OPN), the relay switches on, power is supplied to the fuel pump, and the fuel pump operates. While the NE signal is generated (engine running), the ECM keeps Tr1 ON (circuit opening relay ON) and the fuel pump also keeps operating. The fuel pump speed is controlled at two levels (high speed or low speed) by the condition of the engine (starting, light load, heavy load). The fuel pump operates at high speed when: 1) the engine starts and the STA signal is ON; and 2) Transistor 2 (Tr2) of the ECM is OFF, causing the fuel pump relay (Marking: F/PMP) to close and battery positive voltage to be applied directly to the fuel pump. The fuel pump operates at low speed when: 1) after the engine starts, the engine is idling or has a light load; and 2) since the ECM's Tr2 is ON, battery positive voltage is applied to the fuel pump via the fuel pump resistor.



WIRING DIAGRAM



HINT:
This troubleshooting procedure is based on the premise that the engine is started. If the engine is not started, proceed to the problem symptoms table on page 05-32.

INSPECTION PROCEDURE

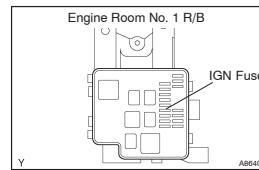
1 PERFORM ACTIVE TEST (OPERATE C/OPN RELAY)

- (a) Connect the hand-held tester to the CAN VIM. Then connect the CAN VIM to the DLC3.
 - (b) Turn the ignition switch ON and turn the hand-held tester ON.
 - (c) Enter the following menu: DIAGNOSIS / ENHANCED OBD II / ACTIVE TEST / FUEL PUMP / SPD.
 - (d) Check the relay operation while operating it using the hand-held tester.
- OK: Operating noise can be heard from the relay.**

OK Go to step 6

NG

2 INSPECT FUSE (IGN)

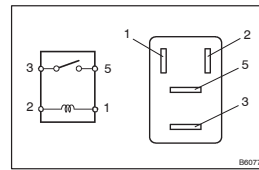


- (a) Remove the IGN fuse from the engine room No. 1 R/B.
 - (b) Measure the resistance of the fuse.
- Standard: Below 1 Ω**

NG REPLACE FUSE

OK

3 INSPECT RELAY (Marking: C/OPN)

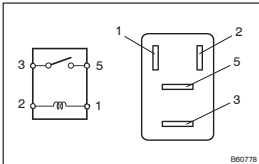


- (a) Remove the C/OPN relay from the engine room No. 1 R/B.
 - (b) Measure the resistance of the relay.
- Standard:**

Tester Connection	Specified Condition
3 - 5	10 kΩ or higher
3 - 5	Below 1 Ω (when battery voltage is applied to terminals 1 and 2)

NG REPLACE RELAY

OK

4 INSPECT RELAY (Marking: IG2)

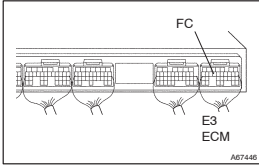
- (a) Remove the IG2 relay from the engine room No. 1 R/B.
 (b) Measure the resistance of the relay.

Standard:

Tester Connection	Specified Condition
3 - 5	10 kΩ or higher
3 - 5	Below 1 Ω (when battery voltage is applied to terminals 1 and 2)

NG → REPLACE RELAY

OK

5 CHECK ECM (FC VOLTAGE)

- (a) Turn the ignition switch ON.
 (b) Measure the voltage of the ECM connector.

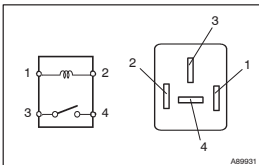
Standard:

Tester Connection	Specified Condition
E3-14 (FC) - Body ground	9 to 14 V

NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

REPLACE ECM (See page 10-20)

6 INSPECT RELAY (Marking: F/PMP)

- (a) Remove the F/PMP relay from the engine room No. 1 R/B.
 (b) Measure the resistance of the relay.

Standard:

Tester Connection	Specified Condition
3 - 4	Below 1 Ω
3 - 4	10 kΩ or more (when battery voltage is applied to terminals 1 and 2)

NG → REPLACE RELAY

OK

10 CHECK FOR SHORT OR OPEN IN ALL HARNESS CONNECTED FUEL PUMP AND FUEL PUMP RESISTER

NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

REPLACE ECM (See page 10-20)

7 INSPECT FUEL PUMP

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

NOTICE:

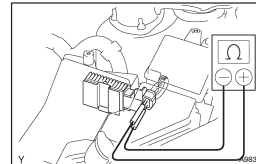
- These tests must be done quickly (within 10 seconds) to prevent the coil from burning out.
- Keep fuel pump as far away from the battery as possible.

CAUTION:

Always turn on and off the voltage on the battery side, not the fuel pump side.

NG → REPLACE FUEL PUMP (See page 11-20)

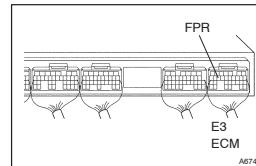
OK

8 INSPECT FUEL PUMP RESISTER

- (a) Measure the resistance of the resistor.
Standard: 0.30 to 0.34 Ω at 20°C (68°F)

NG → REPLACE FUEL PUMP RESISTER

OK

9 CHECK ECM (FPR VOLTAGE)

- (a) Turn the ignition switch ON.
 (b) Measure the voltage of the ECM connector.

Standard:

Tester Connection	Specified Condition
E3-15 (FPR) - Body ground	9 to 14 V

NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

OK