

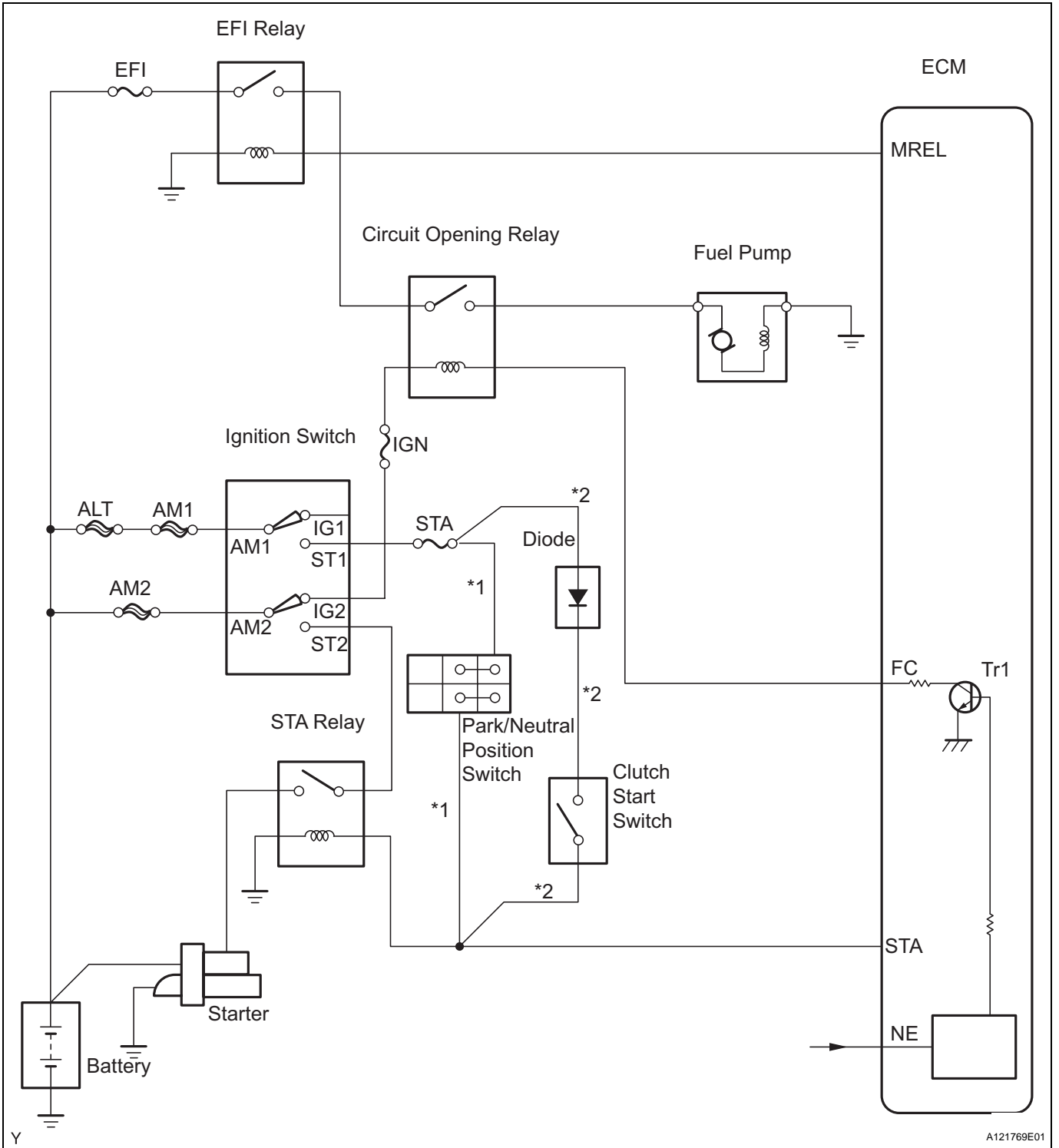
Fuel Pump Control Circuit

DESCRIPTION

When the engine is cranked, a current flows from terminal ST2 of the ignition switch into the STA (starter) relay coil and a current also flows into terminal STA of the ECM (STA signal).

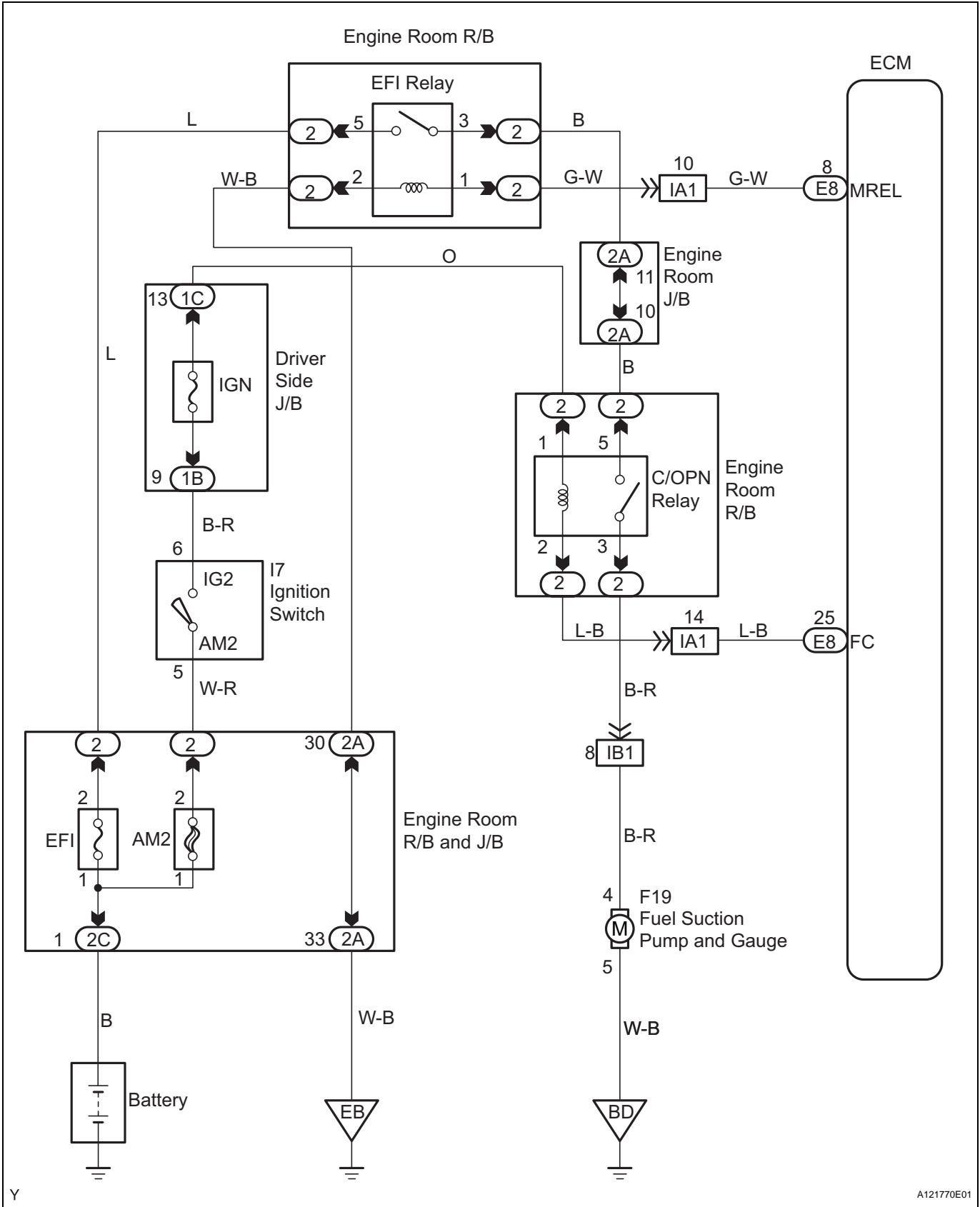
When the STA and NE signals are received by the ECM, Tr (power transistor) is switched on, allowing a current to flow into the circuit opening relay coil. The circuit opening relay switches on, power is supplied to the fuel pump and the fuel pump operates.

While the NE signal is being generated (engine running), the ECM keeps Tr ON, therefore keeping the circuit opening relay ON, so that the fuel pump continues to operate.



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WIRING DIAGRAM



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1 PERFORM ACTIVE TEST USING INTELLIGENT TESTER (OPERATION OF CIRCUIT OPENING RELAY)

- (a) Connect an intelligent tester to the DLC3.
- (b) Turn the ignition switch to ON and turn the tester ON.
- (c) Select the following menu items: DIAGNOSIS / ENHANCED OBD II / ACTIVE TEST / FUEL PUMP/ SPD.
- (d) Check whether relay operating sounds can be heard while operating the relay using the tester.

OK:

Relay operating sounds can be heard from relay.

OK →

Go to step 7

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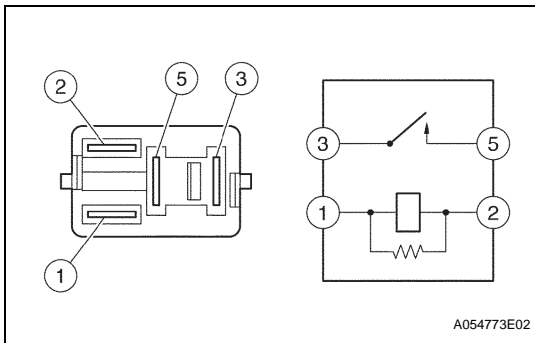
2 INSPECT ECM POWER SOURCE CIRCUIT

NG →

REPAIR OR REPLACE POWER SOURCE CIRCUIT

OK

3 INSPECT CIRCUIT OPENING RELAY (C/OPN RELAY)



- (a) Remove the circuit opening (C/OPN) relay from the engine room R/B.
 - (b) Check the circuit opening relay resistance.
- Standard Resistance**

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

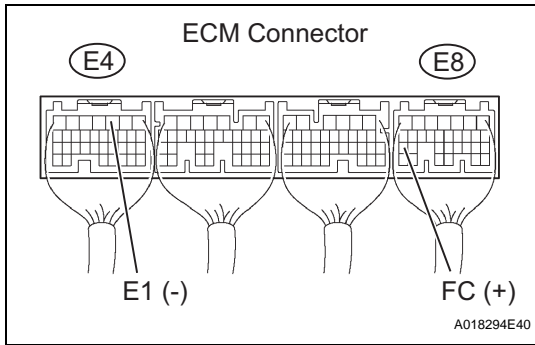
- (c) Reinstall the circuit opening relay.

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REPLACE CIRCUIT OPENING RELAY

OK

4 INSPECT ECM (FC VOLTAGE)



- (a) Turn the ignition switch to ON.
- (b) Measure the voltage between the terminals of the ECM connectors.

Standard Voltage

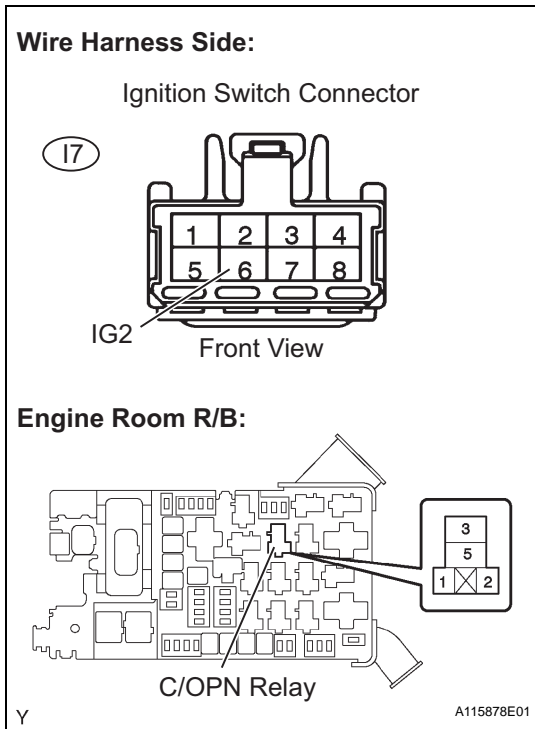
Tester Connections	Specified Conditions
FC (E8-25) - E1 (E4-3)	9 to 14 V

OK → **REPLACE ECM**

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5 CHECK HARNESS AND CONNECTOR (IGNITION SWITCH - CIRCUIT OPENING RELAY)



- (a) Disconnect the I7 ignition switch connector.
- (b) Remove the circuit opening (C/OPN) relay from the engine room R/B.
- (c) Check the resistance.

Standard Resistance (Check for open)

Terminal Connections	Specified Conditions
IG2 (I7-6) - Engine room R/B (Circuit opening relay terminal 1)	Below 1 Ω

Standard Resistance (Check for short)

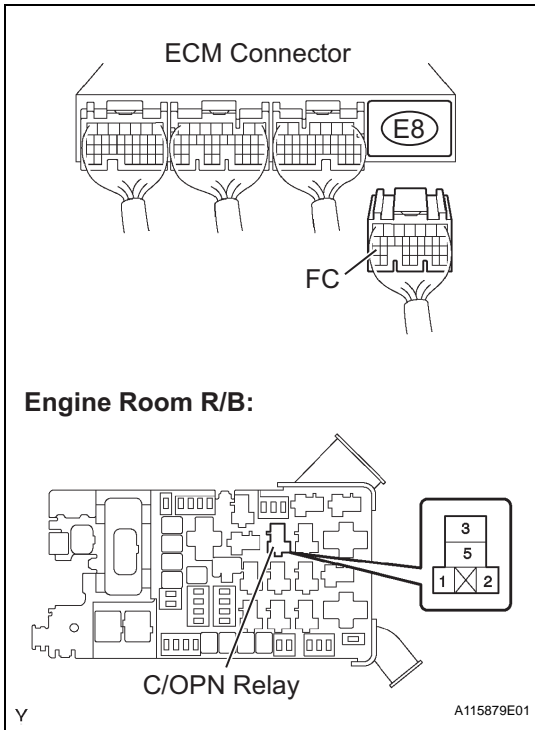
Terminal Connections	Specified Conditions
IG2 (I7-6) or Engine room R/B (Circuit opening relay terminal 1) - Body ground	10 k Ω or higher

- (d) Reinstall the circuit opening relay.
- (e) Reconnect the ignition switch connector.

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

OK

6 CHECK HARNESS AND CONNECTOR (ECM - CIRCUIT OPENING RELAY)



- (a) Disconnect the E8 ECM connector.
- (b) Remove the circuit opening (C/OPN) relay from the engine room R/B.
- (c) Check the resistance.

Standard Resistance (Check for open)

Tester Connections	Specified Conditions
FC (E8-25) - Engine room R/B (Circuit opening relay terminal 2)	Below 1 Ω

Standard Resistance (Check for short)

Tester Connections	Specified Conditions
FC (E8-25) or Engine room R/B (Circuit opening relay terminal 2) - Body ground	10 kΩ or higher

- (d) Reinstall the circuit opening relay.
- (e) Reconnect the ECM connector.

NG **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

REPLACE ECM

7 INSPECT FUEL PUMP ASSEMBLY

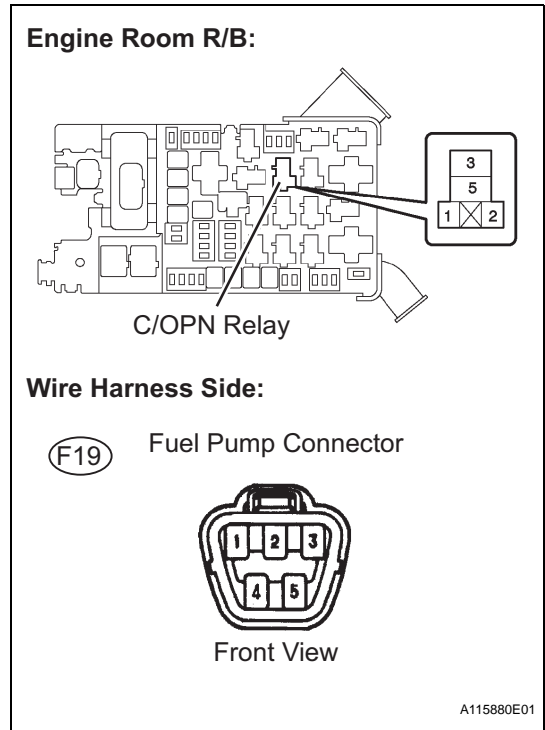
HINT:
Refer to Fuel Pump Inspection (See page [FU-26](#)).

NG **REPLACE FUEL PUMP ASSEMBLY**

OK

ES

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



- (a) Remove the circuit opening (C/OPN) relay from the engine room R/B.
- (b) Disconnect the F19 fuel pump connector.
- (c) Check the resistance.

Standard Resistance (Check for open)

Tester Connections	Specified Conditions
Engine room R/B (Circuit opening relay terminal 3) - Fuel pump (F19-4)	Below 1 Ω
Fuel pump (F19-5) - Body ground	Below 1 Ω

Standard Resistance (Check for short)

Tester Connections	Specified Conditions
Engine room R/B (Circuit opening relay terminal 3) or Fuel pump (F19-4) - Body ground	10 kΩ or higher

- (d) Reconnect the fuel pump connector.
- (e) Reinstall the circuit opening relay.

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

OK

CHECK AND REPLACE HARNESS AND CONNECTOR (EFI RELAY - C/OPN RELAY)

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