

Fuel Pump Control Circuit

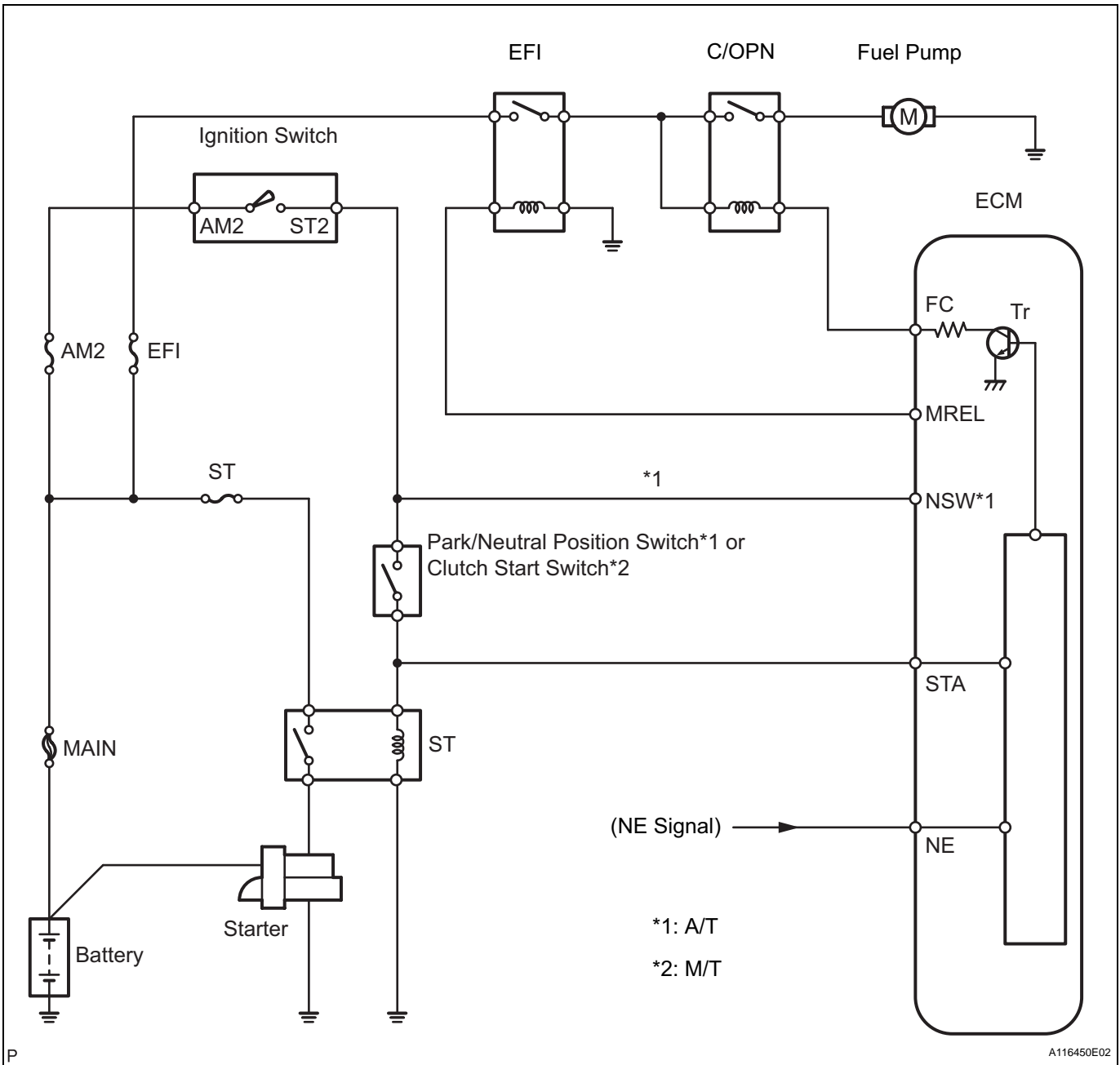
DESCRIPTION

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

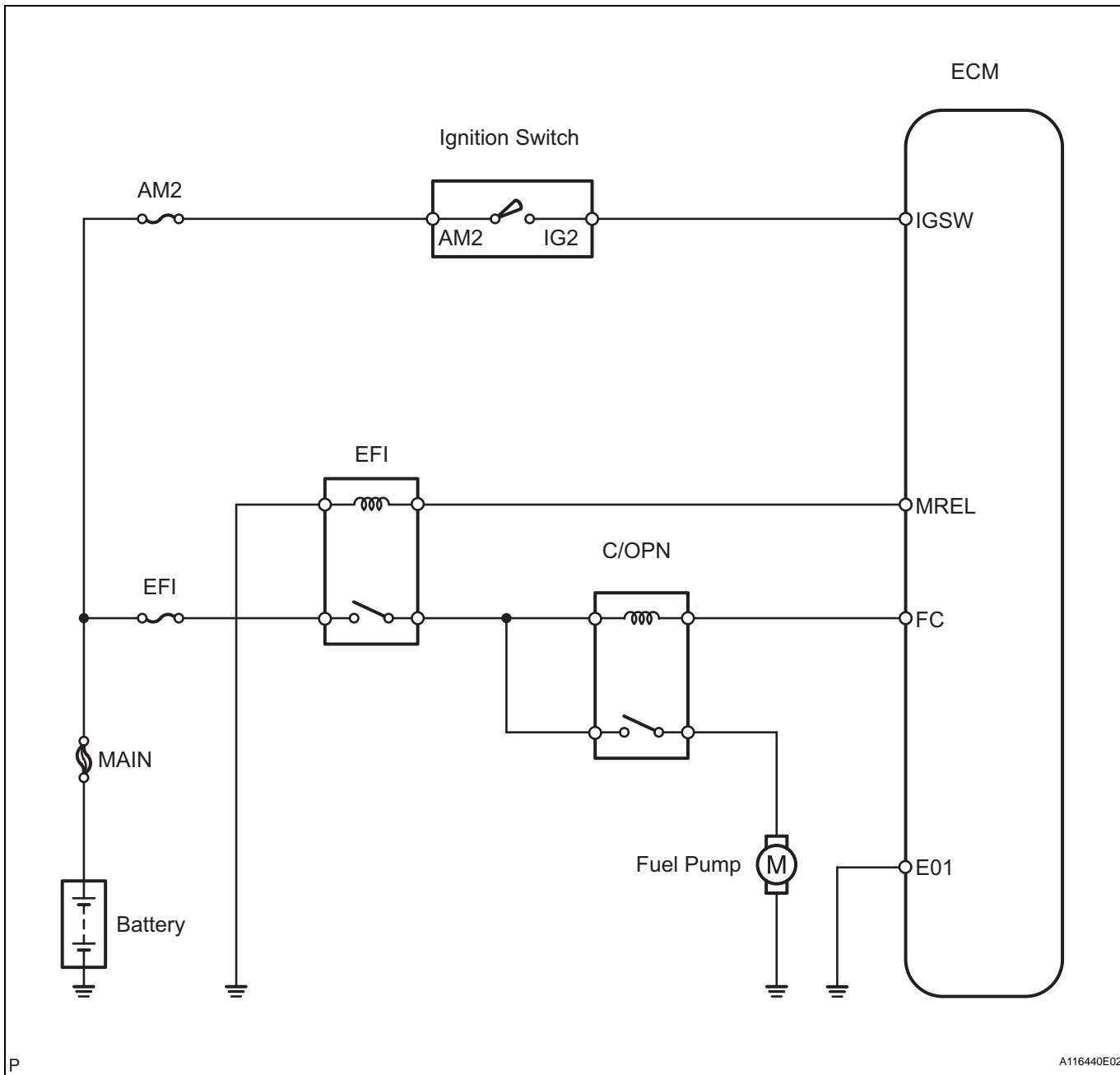
When the STA and NE signals are received by the ECM, Tr (power transistor) is switched on, allowing a current to flow into the circuit opening relay (Marking: C/OPN) coil. The circuit opening relay switches on, power is supplied to the fuel pump and the fuel pump operates.

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.

ES



WIRING DIAGRAM



ES

1

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) Enter the following menus: 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 relay.

OK → Go to step 7

NG

2 INSPECT ECM POWER SOURCE CIRCUIT

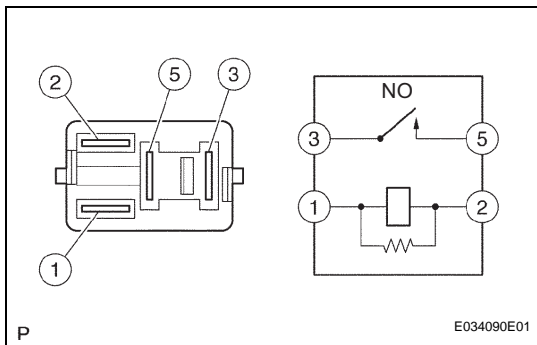
(a) Inspect the ECM power source circuit (see page ES-305).

NG → REPAIR OR REPLACE

OK

ES

3 INSPECT CIRCUIT OPENING RELAY (Marking: C/OPN)



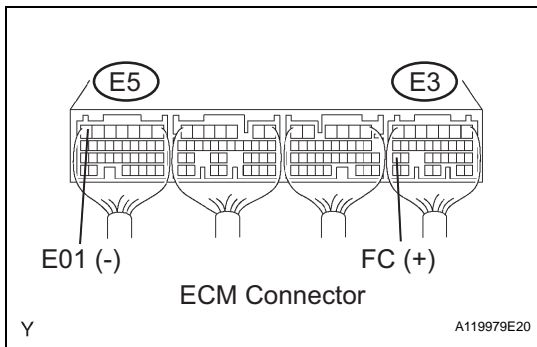
(a) Remove the circuit opening relay from the instrument panel junction block.
 (b) Measure the resistance of the circuit opening relay.
Standard resistance

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 CIRCUIT OPENING RELAY

OK

4 INSPECT ECM (FC VOLTAGE)



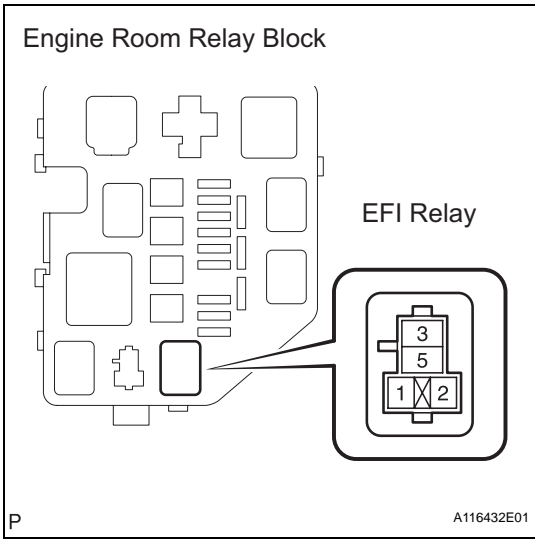
(a) Turn the ignition switch ON.
 (b) Measure the voltage of the ECM connectors.
Standard voltage

Tester Connection	Specified Condition
FC (E3-25) - E01 (E5-7)	9 to 14 V

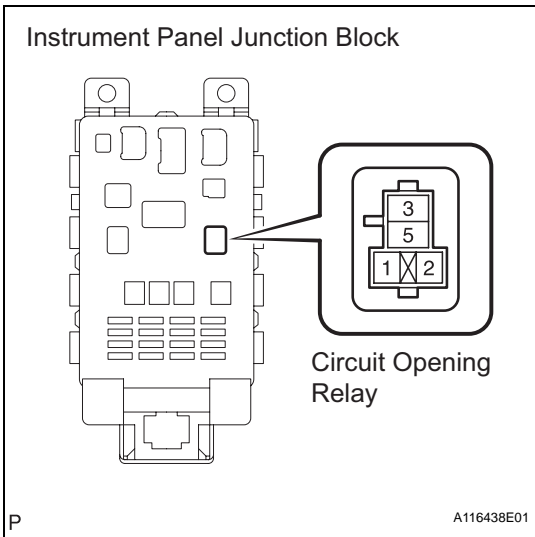
OK → REPLACE ECM

NG

5 CHECK HARNESS AND CONNECTOR (EFI RELAY (Marking: EFI) - CIRCUIT OPENING RELAY (Marking: C/OPN))



(a) Remove the EFI relay from the engine room relay block.



(b) Remove the circuit opening relay from the instrument panel junction block.

(c) Measure the resistance of the wire harness side connectors.

Standard resistance (Check for open)

Tester Connection	Specified Condition
Engine room relay block (EFI relay terminal 3) - Instrument panel junction block (Circuit opening relay terminal 1)	Below 1 Ω
Engine room relay block (EFI relay terminal 3) - Instrument panel junction block (Circuit opening relay terminal 5)	Below 1 Ω

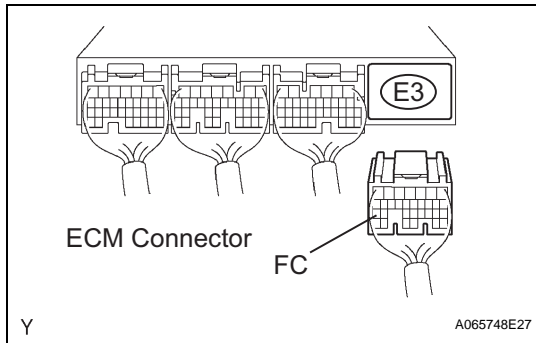
Standard resistance (Check for short)

Tester Connection	Specified Condition
Engine room relay block (EFI relay terminal 3) or Circuit opening relay (1) - Body ground	10 kΩ or higher
Instrument panel junction block (Circuit opening relay terminal 5) - Body ground	10 kΩ or higher

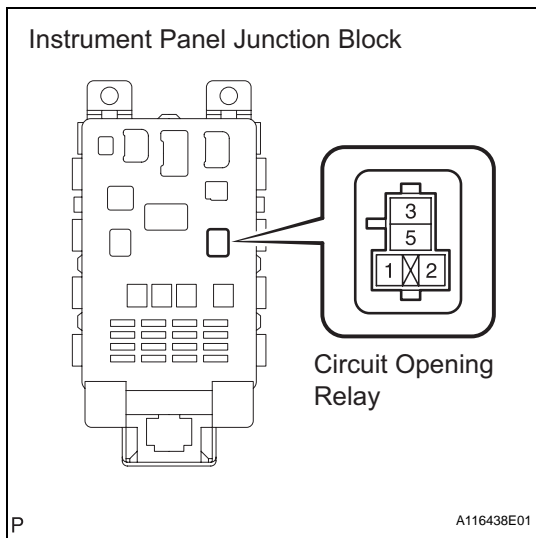
NG REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

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



(a) Disconnect the E3 ECM connector.



(b) Remove the circuit opening relay from the instrument panel junction block.

(c) Measure the resistance of the wire harness side connectors.

Standard resistance (Check for open)

Tester Connection	Specified Condition
FC (E3-25) - Instrument panel junction block (Circuit opening relay terminal 2)	Below 1 Ω

Standard resistance (Check for short)

Tester Connection	Specified Condition
FC (E3-25) or Instrument panel junction block (Circuit opening relay terminal 2) - Body ground	10 k Ω or higher

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

REPLACE ECM

7 INSPECT FUEL PUMP

(a) Inspect the fuel pump (see page [FU-21](#)).

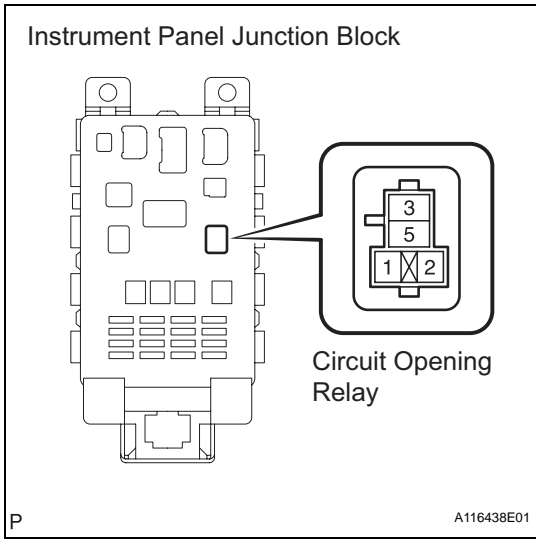
NG

REPLACE FUEL PUMP

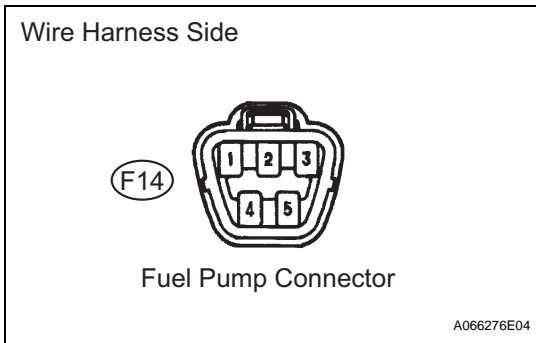
OK

ES

8 CHECK HARNESS AND CONNECTOR (CIRCUIT OPENING RELAY (Marking: C/OPN) - FUEL PUMP, FUEL PUMP - BODY GROUND)



- (a) Remove the circuit opening relay from the instrument panel junction block.
- (b) Disconnect the F14 fuel pump connector.



- (c) Measure the resistance of the wire harness side connectors.

Standard resistance (Check for open)

Tester Connection	Specified Condition
Instrument panel junction block (Circuit opening relay terminal 3) - Fuel pump (F14-4)	Below 1 Ω
Fuel pump (F14-5) - Body ground	Below 1 Ω

Standard resistance Check for short)

Tester Connection	Specified Condition
Instrument panel junction block (Circuit opening relay terminal 3) or Fuel pump (F14-4) - Body ground	10 kΩ or higher

NG **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

REPLACE ECM