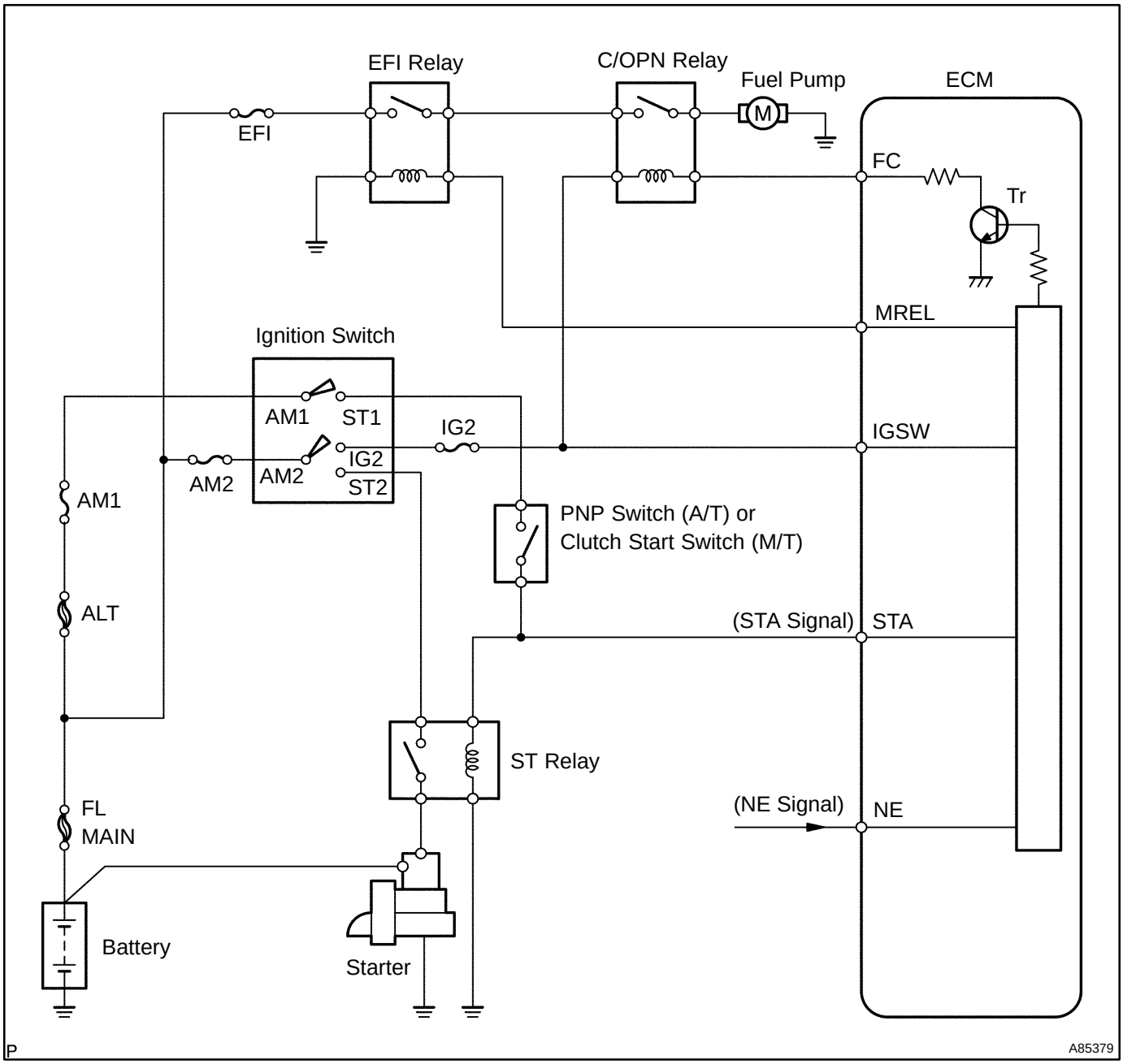
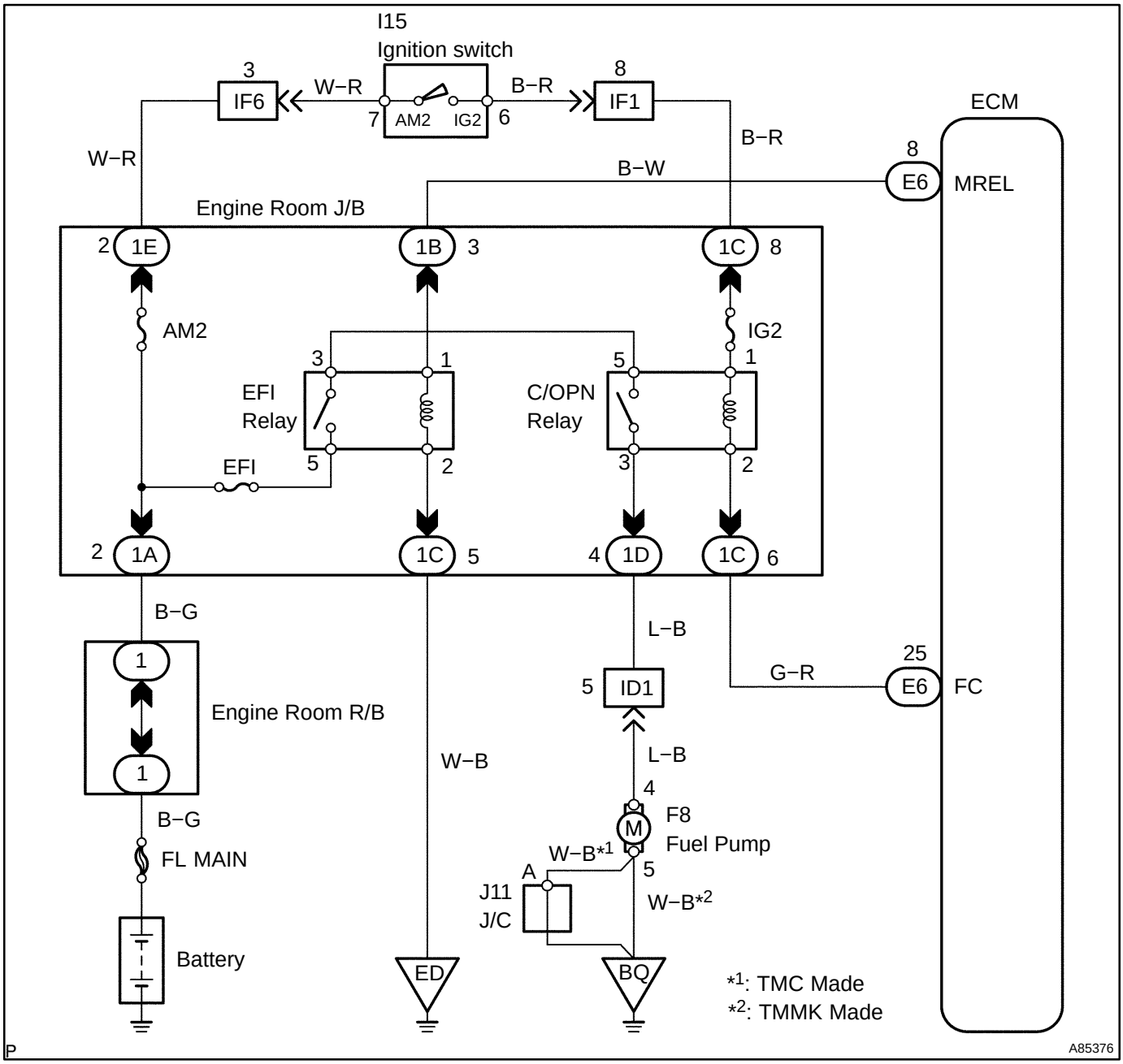
FUEL PUMP CONTROL CIRCUIT

CIRCUIT DESCRIPTION

When the engine is cranked, current flows from the ignition switch terminal ST1 to the starter relay coil (Marking: ST), and current flows to terminal STA of ECM (STA signal).
When the STA signal and NE signal are input to the ECM, Tr is turned ON, current flows to 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 and the engine is running, the ECM keeps Tr ON (C/OPN relay ON) and the fuel pump also keeps operating.



WIRING DIAGRAM



INSPECTION PROCEDURE

Hand−held tester:

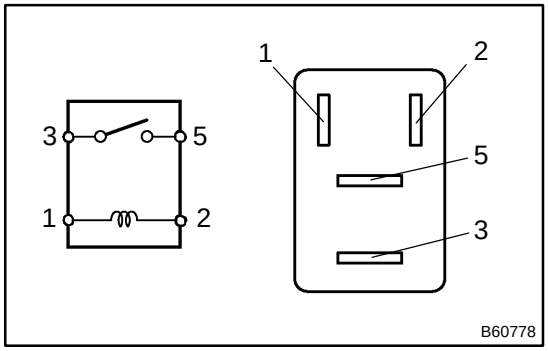
1	PERFORM ACTIVE TEST BY HAND−HELD TESTER (OPERATE C/OPN RELAY)

(a) Connect the hand−held tester to the DLC3.
(b) Turn ON the ignition switch, Push the hand−held tester or the OBD II scan tool tester main switch ON.
(c) Enter the following menus :DIAGNOSIS / ENHANCED OBD II / 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

2	INSPECT RELAY (C/OPN)



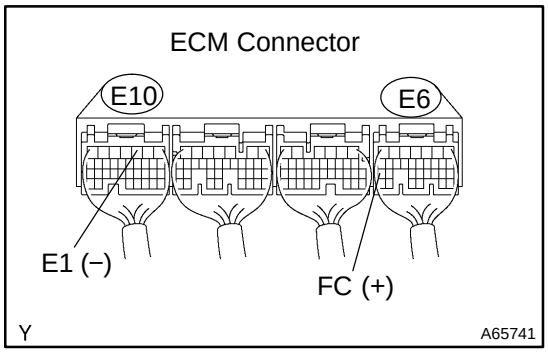
(a) Remove the C/OPN relay from the engine room J/B.
(b) Check the resistance of the C/OPN relay.
Standard:

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

3	INSPECT ECM (FC VOLTAGE)



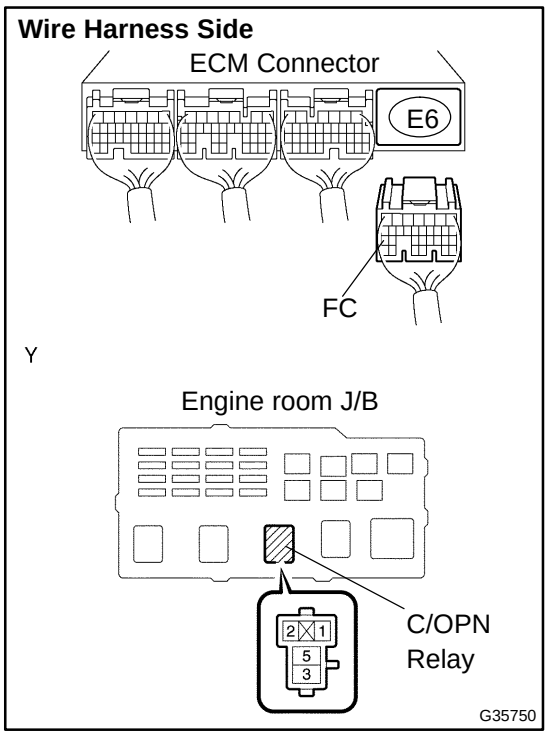
(a) Turn the ignition switch ON.
(b) Check the voltage of the ECM connectors.
Standard:

Tester Connection	Specified Condition
E6−25 (FC) − E10−3 (E1)	9 to 14 V

OK → **REPLACE ECM (See page 10−9)**

NG

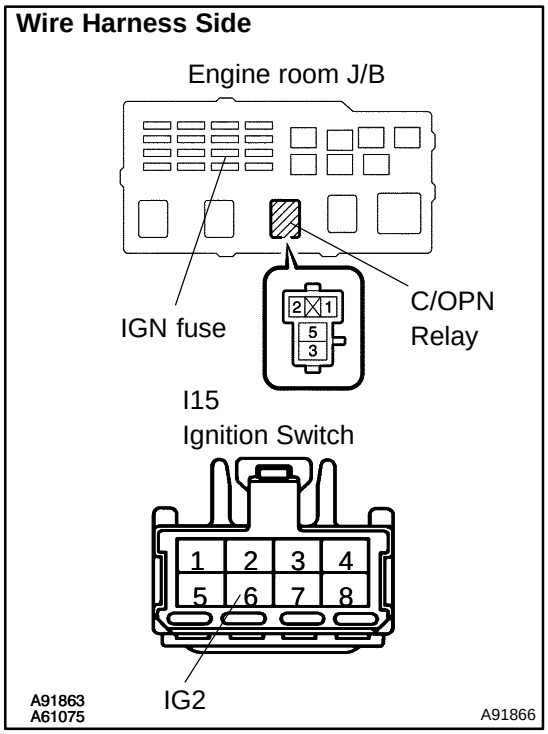
4	CHECK WIRE HARNESS (ECM − C/OPN RELAY, C/OPN RELAY − IGNITION SWITCH)



(a) Check the wire harness between the ECM and C/OPN relay.
(1) Disconnect the E6 ECM connector.
(2) Remove the C/OPN relay from the engine room J/B.
(3) Check the resistance of the wire harness side connectors.

Standard:

Tester Connection	Specified Condition
E6−25 (FC) − J/B C/OPN relay terminal 2	Below 1 Ω
E6−25 (FC) or J/B C/OPN relay terminal 2 − Body ground	10 kΩ or higher



(b) Check the wire harness between the C/OPN relay and ignition switch.
(1) Check the IGN fuse.
- Remove the IGN fuse from the engine room J/B.
- Check the resistance of the IGN fuse.

Standard: Below 1 Ω
- Reinstall the IGN fuse.

(2) Remove the C/OPN relay from the engine room J/B.
(3) Disconnect the I15 ignition switch connector.
(4) Check the resistance of the wire harness side connectors.

Standard:

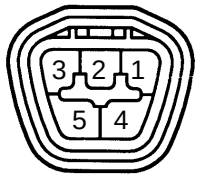
Tester Connection	Specified Condition
J/B C/OPN relay terminal 1 − I15−6	Below 1 Ω
J/B C/OPN relay terminal 1 or I15−6 − Body ground	10 kΩ or higher

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

OK

REPLACE ECM (See page 10−9)

5 INSPECT FUEL PUMP



F8
Fuel Pump

A74356

(a) Check the resistance of the fuel pump terminals.
Standard:

Tester Condition	Condition	Specified Condition
4 − 5	20°C (68°F)	0.2 to 0.3 Ω

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

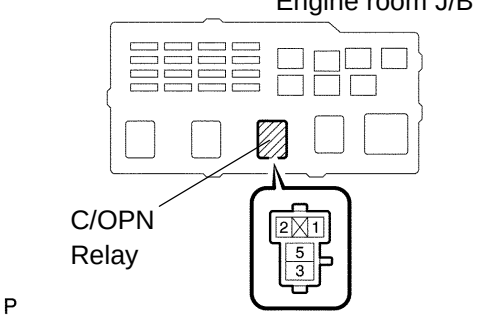
NOTICE:

- **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.**
- **Always turn ON and OFF the voltage on the battery side, not the fuel pump side.**

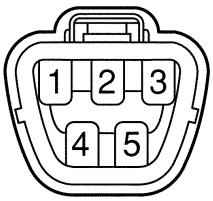
NG → **REPLACE FUEL PUMP (See page 11−12)**

OK

6 CHECK WIRE HARNESS (C/OPN RELAY − FUEL PUMP, FUEL PUMP − BODY GROUND)



F8
Fuel Pump



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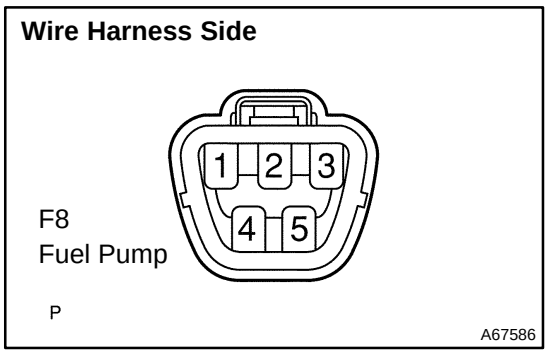
(a) Check the wire harness between the C/OPN relay and fuel pump.
(1) Remove the C/OPN relay from the engine room J/B.
(2) Disconnect the F8 fuel pump connector.
(3) Check the resistance of the wire harness side connectors.
Standard:

Tester Connection	Specified Condition
J/B C/OPN relay terminal 3 − F8−4	Below 1 Ω
J/B C/OPN relay terminal 3 or F8−4 − Body ground	10 kΩ or higher



(b) Check the wire harness between the fuel pump and body ground.
(1) Disconnect the F8 fuel pump connector.
(2) Check the resistance of the wire harness side connector and body ground.

Standard:

Tester Connection	Specified Condition
F8−5 − Body ground	Below 1 Ω

OK → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

NG

REPLACE ECM (See page 10−9)

OBD II scan tool (excluding hand−held tester):

1 CHECK FUEL PUMP OPERATION (See page 11−4)

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

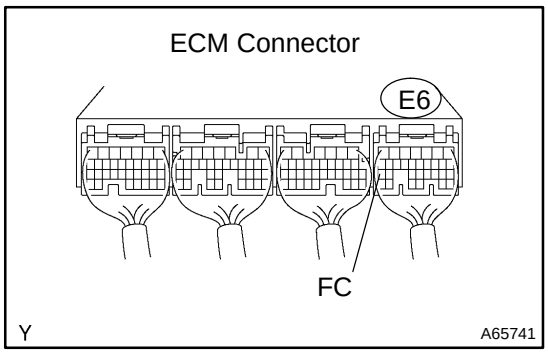
HINT:

The pipe has fuel pressure if the sound of flowing fuel can be heard.

OK → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE (See page 05−34)**

NG

2 CHECK RELAY OPERATION (C/OPN RELAY)



(a) When connecting between terminal FC of the E6 ECM connector and body ground, check relay operation.

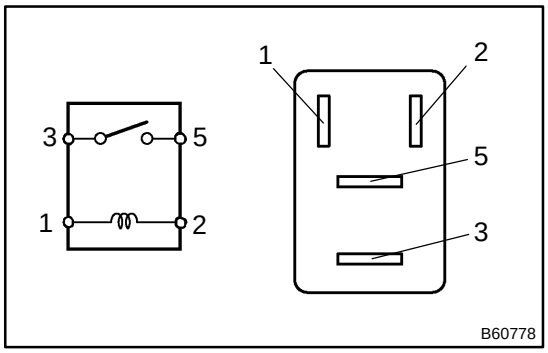
Standard:

Noise can be heard from the C/OPN relay.

OK → **Go to step 6**

NG

3 INSPECT RELAY (C/OPN)



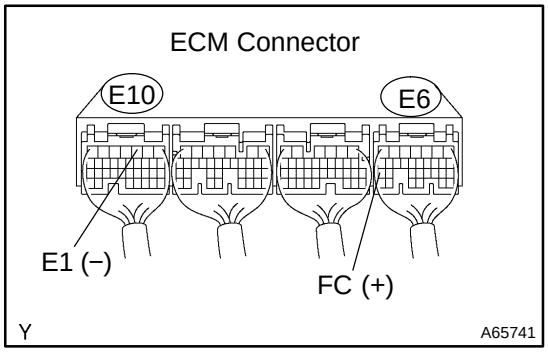
(a) Remove the C/OPN relay from the engine room J/B.
(b) Check the resistance of the C/OPN relay.
Standard:

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 ECM (FC VOLTAGE)



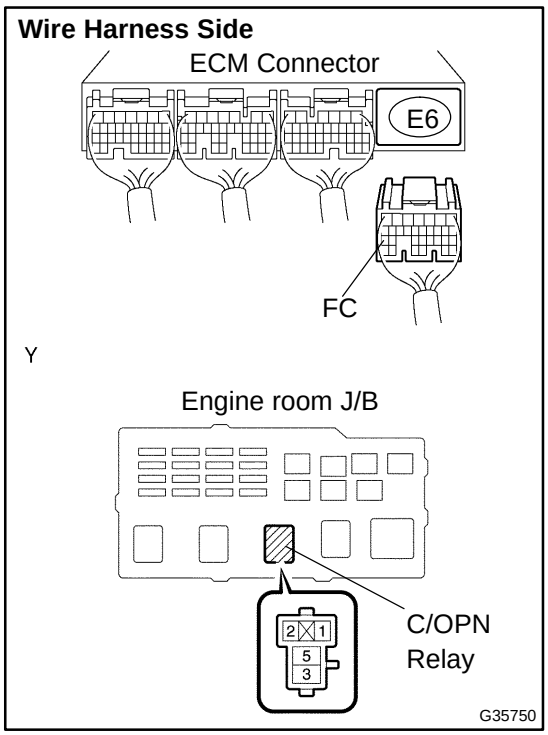
(a) Turn the ignition switch ON.
(b) Check the voltage of the E10 and E6 ECM connectors.
Standard:

Tester Connection	Specified Condition
E6−25 (FC) − E10−3 (E1)	9 to 14 V

OK → **REPLACE ECM (See page 10−9)**

NG

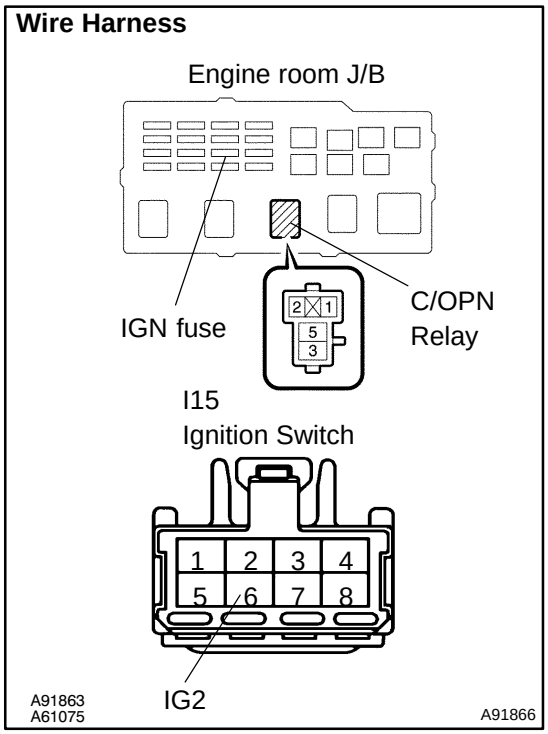
5	CHECK WIRE HARNESS (ECM − C/OPN RELAY, C/OPN RELAY − IGNITION SWITCH)



(a) Check the wire harness between the ECM and C/OPN relay.
(1) Disconnect the E6 ECM connector.
(2) Remove the C/OPN relay from the engine room J/B.
(3) Check the resistance of the wire harness side connectors.

Standard:

Tester Connection	Specified Condition
E6−25 (FC) − J/B C/OPN relay terminal 2	Below 1 Ω
E6−25 (FC) or J/B C/OPN relay terminal 2 − Body ground	10 kΩ or higher



(b) Check the wire harness between the C/OPN relay and ignition switch.
(1) Check the IGN fuse.
- Remove the IGN fuse from the engine room J/B.
- Check the resistance of the IGN fuse.

Standard: Below 1 Ω
- Reinstall the IGN fuse.

(2) Remove the C/OPN relay from the engine room J/B.
(3) Disconnect the I15 ignition switch connector.
(4) Check the resistance of the wire harness side connectors.

Standard:

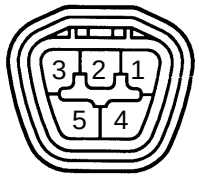
Tester Connection	Specified Condition
J/B C/OPN relay terminal 1 − I15−6	Below 1 Ω
J/B C/OPN relay terminal 1 or I15−6 − Body ground	10 kΩ or higher

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

OK

REPLACE ECM (See page 10−9)

6 INSPECT FUEL PUMP



F8
Fuel Pump

A74356

(a) Check the resistance of the fuel pump terminals.

Standard:

Tester Condition	Condition	Specified Condition
4 − 5	20°C (68°F)	0.2 to 0.3 Ω

(b) Check operation of the fuel pump.

(1) Apply battery voltage to both the terminals. Check that the pump operates.

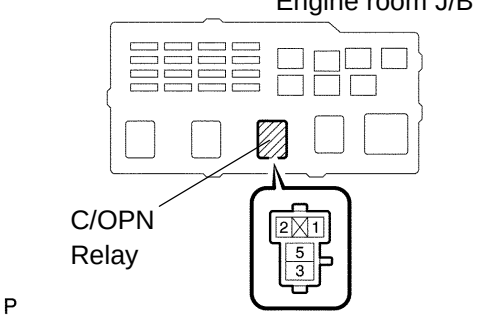
NOTICE:

- **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.**
- **Always turns ON and OFF the voltage on the battery side, not the fuel pump side.**

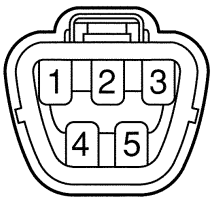
NG → **REPLACE FUEL PUMP (See page 11−12)**

OK

7 CHECK WIRE HARNESS (C/OPN RELAY − FUEL PUMP, FUEL PUMP − BODY GROUND)



F8
Fuel Pump



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(a) Check the wire harness between the C/OPN relay and fuel pump connector.

(1) Remove the C/OPN relay from the engine room J/B.

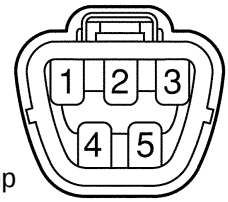
(2) Disconnect the F8 fuel pump connector.

(3) Check the resistance of the wire harness side connectors.

Standard:

Tester Connection	Specified Condition
J/B C/OPN relay terminal 3 − F8−4	Below 1 Ω
J/B C/OPN relay terminal 3 or F8−4 − Body ground	10 kΩ or higher

Wire Harness Side



F8
Fuel Pump

P

A67586

(b) Check the wire harness between the fuel pump and body ground.
(1) Disconnect the F8 fuel pump connector.
(2) Check the resistance of the wire harness side connector and body ground.

Standard:

Tester Connection	Specified Condition
F8−5 − Body ground	Below 1 Ω

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

OK

REPLACE ECM (See page 10−9)