

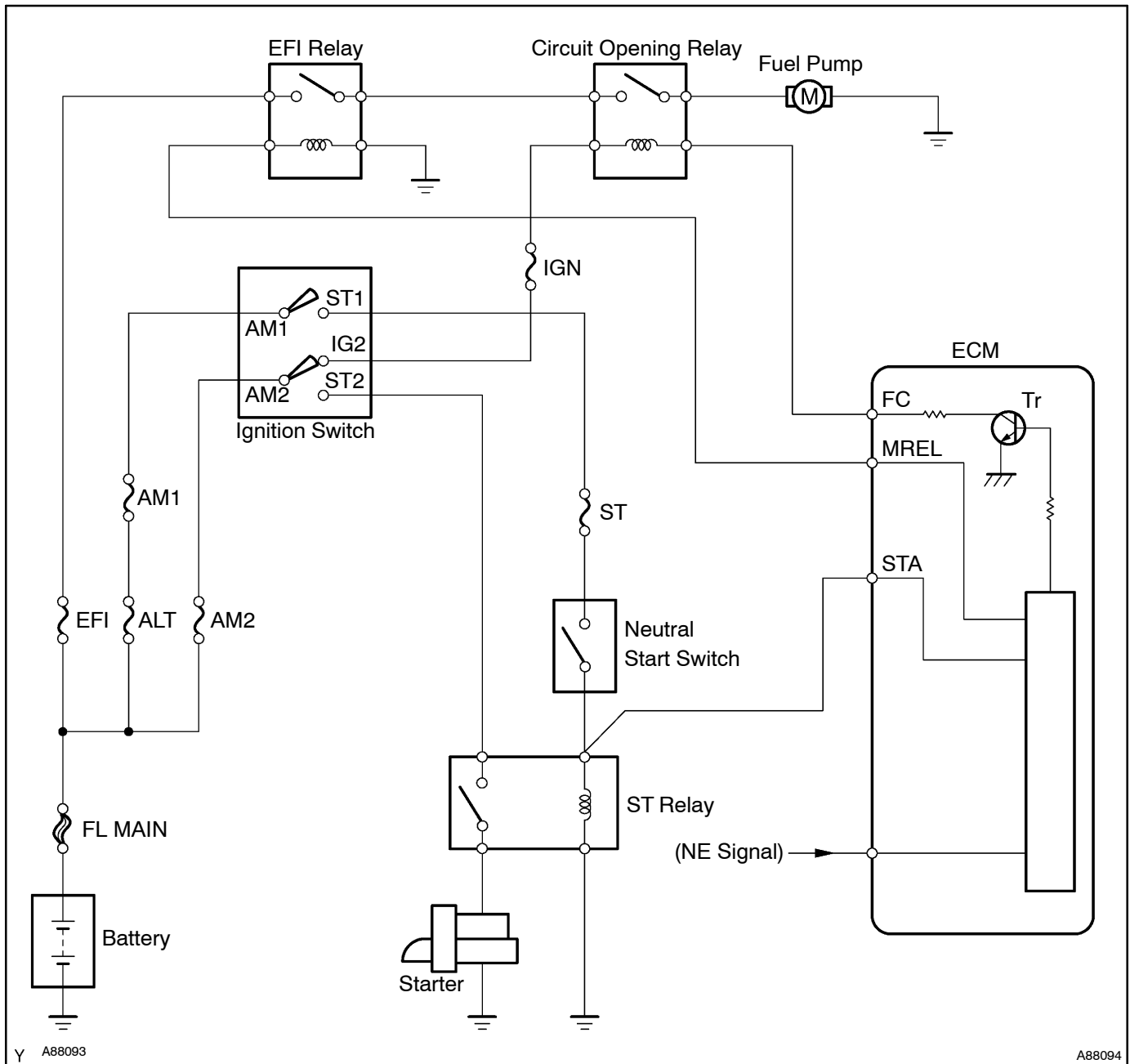
## FUEL PUMP CONTROL CIRCUIT

### CIRCUIT DESCRIPTION

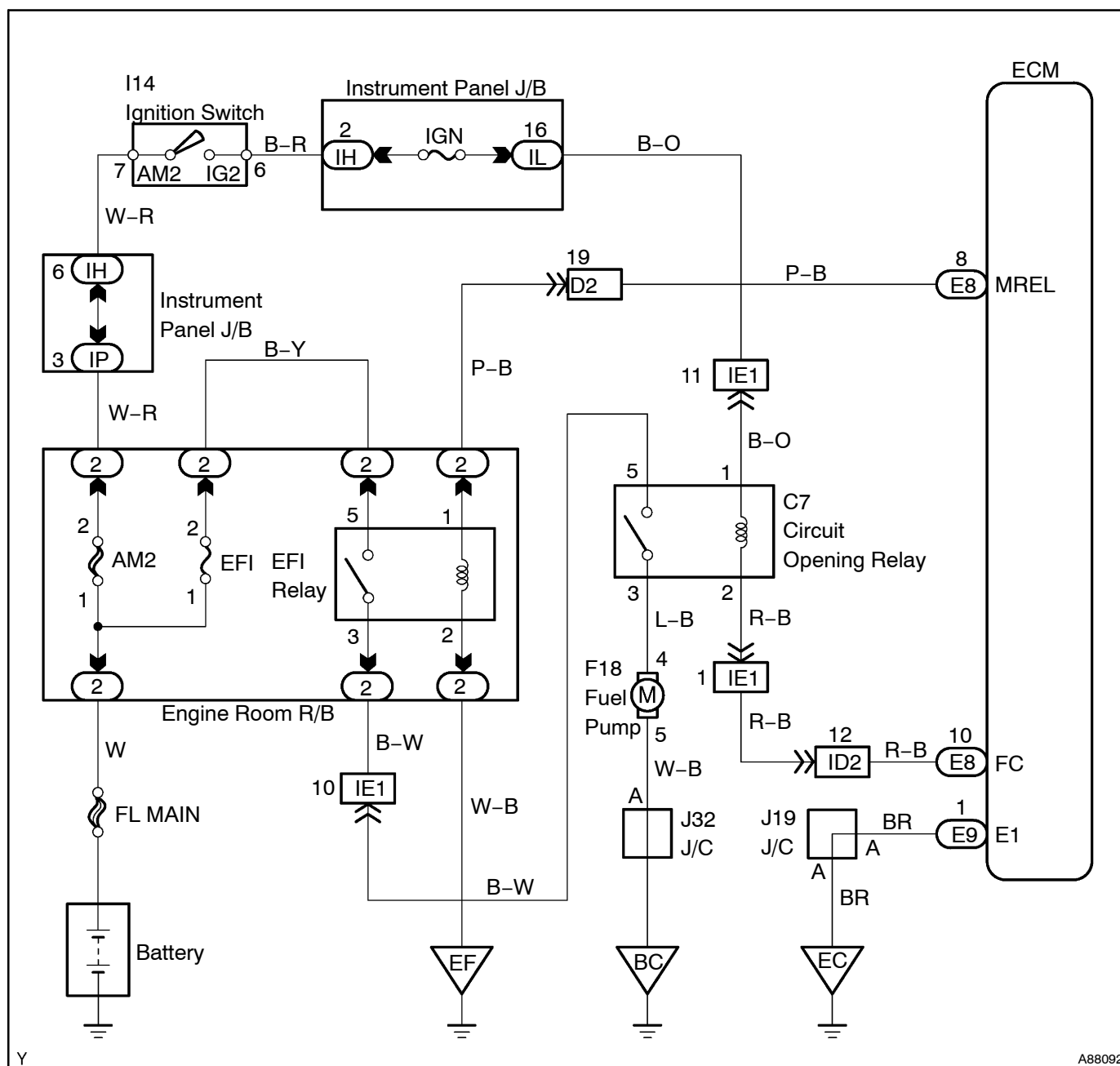
In the diagram below, when the engine is cranked, a current flows from terminal ST2 of the ignition switch to the starter relay coil and also a current flows to terminal STA of the ECM (STA signal).

When the STA signal and NE signal are transmitted to the ECM, the power transistor (Tr) is turned ON, a current flows to the coil of the circuit opening relay, the relay switches on, the power is supplied to the fuel pump and the fuel pump operates.

While the NE signal is generated (when engine running), the ECM keeps Tr ON (circuit opening relay ON) and the fuel pump also keeps operating.



## WIRING DIAGRAM



INSPECTION PROCEDURE

When using intelligent tester II:

1

PERFORM ACTIVE TEST USING INTELLIGENT TESTER II (OPERATE CIRCUIT OPENING RELAY)

- (a) Connect the intelligent tester II to the DLC3.
- (b) Turn the ignition switch to ON and turn the intelligent tester II ON.
- (c) Select the following menu items: Powertrain / Engine and ECT / Active Test / Fuel Pump Relay.
- (d) Check the operation of the relay while operating it using the intelligent tester II.

Standard: Operating sounds can be heard from the relay.

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE  
(See page 05-262)

NG

2

CHECK ECM POWER SOURCE CIRCUIT (See page 05-399)

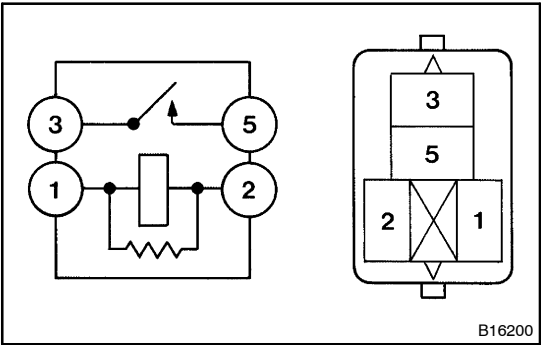
NG

REPAIR OR REPLACE POWER SOURCE CIRCUIT

OK

3

INSPECT CIRCUIT OPENING RELAY



- (a) Remove the C7 circuit opening relay.
- (b) Check the circuit opening relay resistance.

Standard:

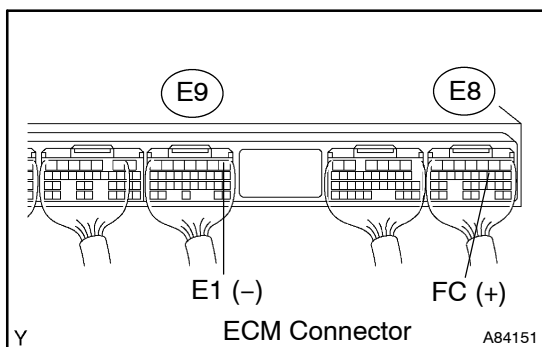
Tester Connection	Specified Condition
3 - 5	10 kΩ or higher
3 - 5	Below 1 Ω (Apply battery voltage to terminals 1 and 2)

- (c) Reinstall the circuit opening relay.

NG

REPLACE CIRCUIT OPENING RELAY

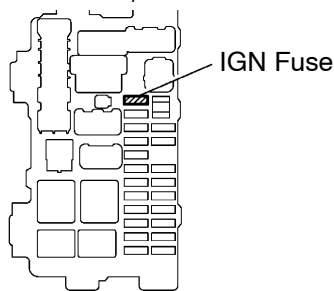
OK

**4 INSPECT ECM(FC VOLTAGE)**

- Turn the ignition switch to ON.
- Measure the voltage between the terminals of the E8 and E9 ECM connectors.

**Standard:**

Tester Connection	Specified Condition
FC (E8-10) - E1 (E9-1)	9 to 14 V

**OK****Go to step 7****NG****5 CHECK HARNESS AND CONNECTOR(IGNITION SWITCH - CIRCUIT OPENING RELAY)****Instrument Panel J/B:**

- Inspect the IGN fuse.
  - Remove the IGN fuse from the instrument panel J/B.
  - Check the IGN fuse resistance.

**Standard: Below 1  $\Omega$** 

- Reinstall the IGN fuse.
- Disconnect the I14 ignition switch connector.
- Remove the C7 circuit opening relay.
- Check the resistance.

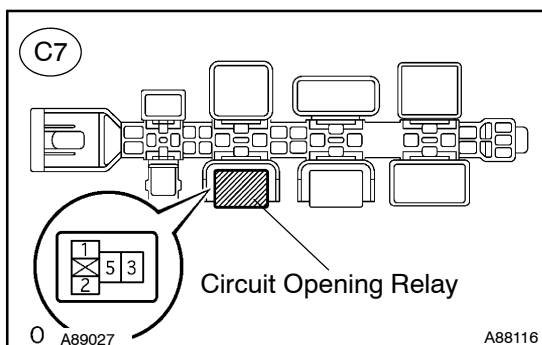
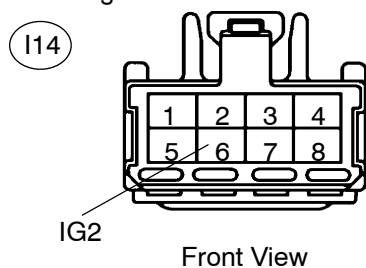
**Standard (Check for open):**

Tester Connection	Specified Condition
IG2 (I14-6) - Circuit opening relay (C7-1)	Below 1 $\Omega$

**Standard (Check for short):**

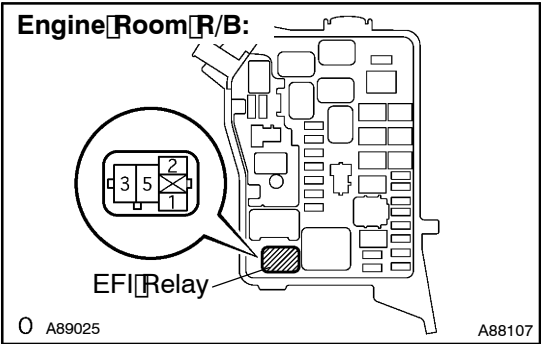
Tester Connection	Specified Condition
IG2 (I14-6) or Circuit opening relay (C7-1) - Body ground	10 k $\Omega$ or higher

- Reconnect the ignition switch connector.
- Reinstall the circuit opening relay.

**Wire Harness Side:  
Ignition Switch Connector****NG****REPAIR OR REPLACE HARNESS OR CONNECTOR****OK**

6

CHECK HARNESS AND CONNECTOR (EFI RELAY - ECM, CIRCUIT OPENING RELAY - ECM, EFI RELAY - CIRCUIT OPENING RELAY)



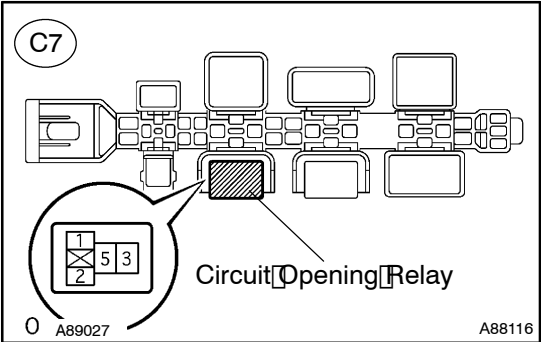
- (a) Remove the EFI relay from the engine room R/B.
- (b) Remove the C7 circuit opening relay.
- (c) Disconnect the E8 ECM connector.
- (d) Check the resistance.

Standard (Check for open):

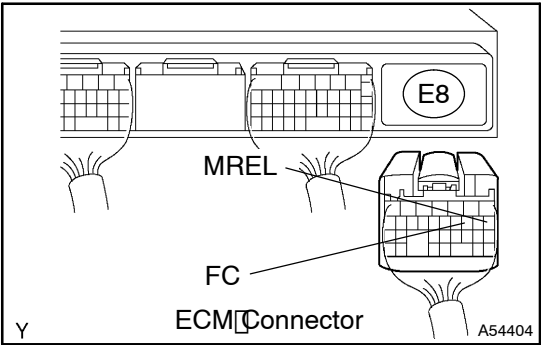
Tester Connection	Specified Condition
Engine Room R/B (EFI relay terminal 1) - MREL (E8-8)	Below 1 Ω
Circuit opening relay (C7-2) - FC (E8-10)	Below 1 Ω
Engine Room R/B (EFI relay terminal 3) - Circuit opening relay (C7-5)	Below 1 Ω

Standard (Check for short):

Tester Connection	Specified Condition
Engine Room R/B (EFI relay terminal 1) or MREL (E8-8) - Body ground	10 kΩ or higher
Circuit opening relay (C7-2) or FC (E8-10) - Body ground	10 kΩ or higher
Engine Room R/B (EFI relay terminal 3) or Circuit opening relay (C7-5) - Body ground	10 kΩ or higher



- (e) Reinstall the EFI relay.
- (f) Reinstall the circuit opening relay.
- (g) Reconnect the ECM connector.



NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

REPLACE ECM (See page 10-30)

7

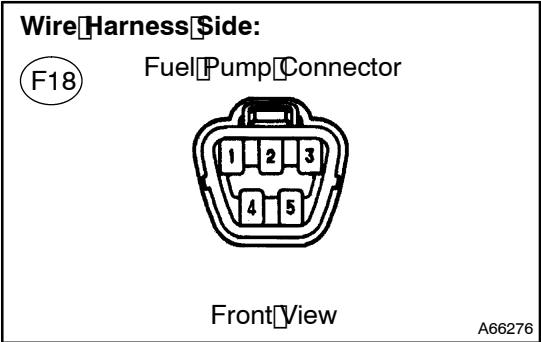
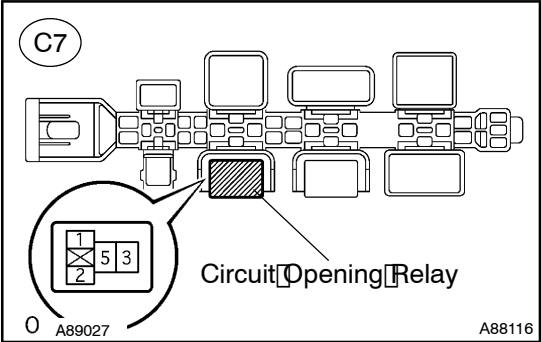
INSPECT FUEL PUMP (See page 11-8)

NG

REPAIR OR REPLACE FUEL PUMP

OK

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



- (a) Remove the C7 circuit opening relay.
- (b) Disconnect the F18 fuel pump connector.
- (c) Check the resistance.

Standard (Check for open):

Tester Connection	Specified Condition
Circuit opening relay (C7-3) - Fuel pump (F18-4)	Below 1 Ω
Fuel pump (F18-5) - Body ground	Below 1 Ω

Standard (Check for short):

Tester Connection	Specified Condition
Circuit opening relay (C7-3) or Fuel pump (F18-4) - Body ground	10 kΩ or higher

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

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

REPLACE ECM (See page 10-30)

When not using intelligent tester:

1 INSPECT OPERATION OF FUEL PUMP (See page 11-5)

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE (See page 05-262)

NG

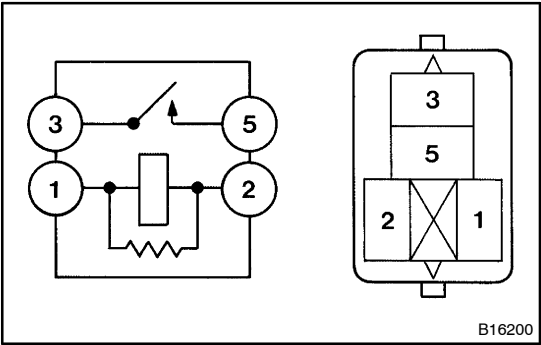
2 CHECK ECM POWER SOURCE CIRCUIT (See page 05-399)

NG

REPAIR OR REPLACE POWER SOURCE CIRCUIT

OK

3 INSPECT CIRCUIT OPENING RELAY



- (a) Remove the C7 circuit opening relay.
- (b) Check the circuit opening relay resistance.

Standard:

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

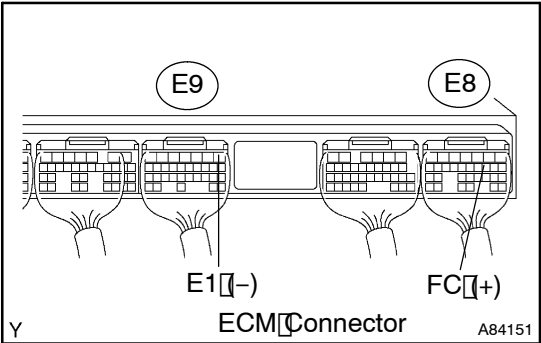
- (c) Reinstall the circuit opening relay.

NG

REPLACE CIRCUIT OPENING RELAY

OK

4 INSPECT ECM(FC VOLTAGE)



- (a) Turn the ignition switch to ON.
- (b) Measure the voltage between the terminals of the E8 and E9 ECM connectors.

Standard:

Tester Connection	Specified Condition
FC (E8-10) - E1 (E9-1)	9 to 14 V

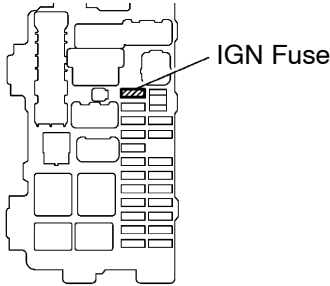
OK

Go to step 7

NG

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

**Instrument Panel J/B:**



0 A89020

A88113

- (a) Inspect the IGN fuse.
  - (1) Remove the IGN fuse from the instrument panel J/B.
  - (2) Check the IGN fuse resistance.  
**Standard: Below 1  $\Omega$**
  - (3) Reinstall the IGN fuse.
- (b) Disconnect the I14 ignition switch connector.
- (c) Remove the C7 circuit opening relay.
- (d) Check the resistance.

**Standard (Check for open):**

Tester Connection	Specified Condition
IG2 (I14-6) - Circuit opening relay (C7-1)	Below 1 $\Omega$

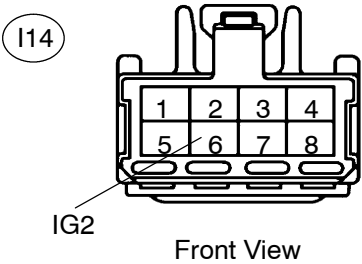
**Standard (Check for short):**

Tester Connection	Specified Condition
IG2 (I14-6) or Circuit opening relay (C7-1) - Body ground	10 k $\Omega$ or higher

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

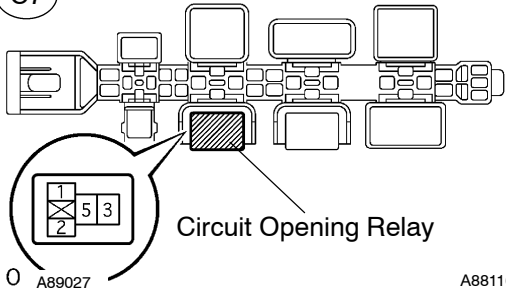
**Wire Harness Side:**

**Ignition Switch Connector**



A61075

**C7**



0 A89027

A88116

**NG**

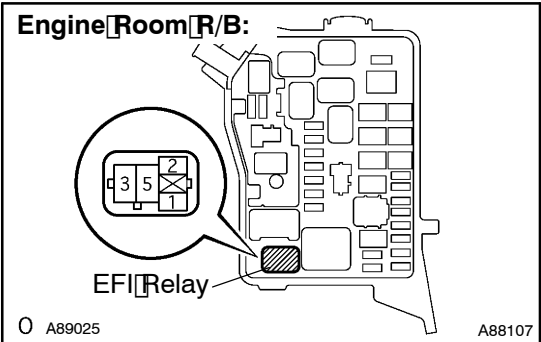
**REPAIR OR REPLACE HARNESS OR CONNECTOR**

**OK**



6

CHECK HARNESS AND CONNECTOR (EFI RELAY - ECM, CIRCUIT OPENING RELAY - ECM, EFI RELAY - CIRCUIT OPENING RELAY)



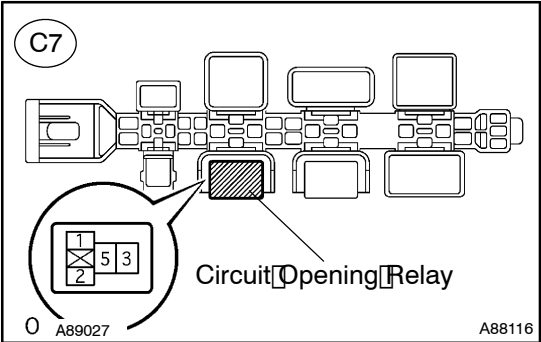
- (a) Remove the EFI relay from the engine room R/B.
- (b) Remove the C7 circuit opening relay.
- (c) Disconnect the E8 ECM connector.
- (d) Check the resistance.

Standard (Check for open):

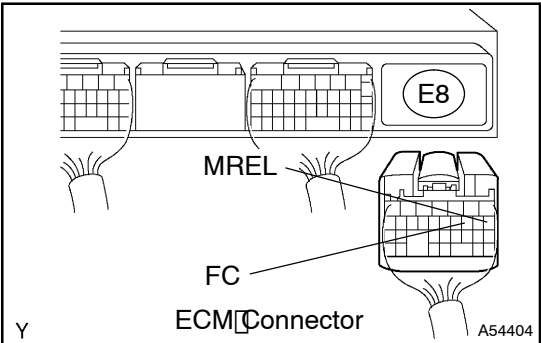
Tester Connection	Specified Condition
Engine Room R/B (EFI relay terminal 1) - MREL (E8-8)	Below 1 Ω
Circuit opening relay (C7-2) - FC (E8-10)	Below 1 Ω
Engine Room R/B (EFI relay terminal 3) - Circuit opening relay (C7-5)	Below 1 Ω

Standard (Check for short):

Tester Connection	Specified Condition
Engine Room R/B (EFI relay terminal 1) or MREL (E8-8) - Body ground	10 kΩ or higher
Circuit opening relay (C7-2) or FC (E8-10) - Body ground	10 kΩ or higher
Engine Room R/B (EFI relay terminal 3) or Circuit opening relay (C7-5) - Body ground	10 kΩ or higher



- (e) Reinstall the EFI relay.
- (f) Reinstall the circuit opening relay.
- (g) Reconnect the ECM connector.



NG REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

REPLACE ECM (See page 10-30)

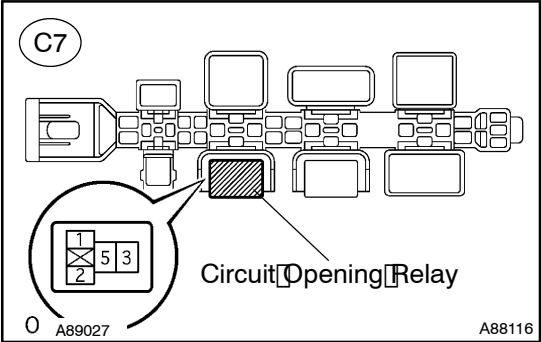
7

INSPECT FUEL PUMP (See page 11-8)

NG REPAIR OR REPLACE FUEL PUMP

OK

3 8 CHECK HARNESS AND CONNECTOR (CIRCUIT OPENING RELAY - FUEL PUMP, FUEL PUMP - BODY GROUND)



- (a) Remove the C7 circuit opening relay.
- (b) Disconnect the F18 fuel pump connector.
- (c) Check the resistance.

Standard (Check for open):

Tester Connection	Specified Condition
Circuit opening relay (C7-3) - Fuel pump (F18-4)	Below 1 Ω
Fuel pump (F18-5) - Body ground	Below 1 Ω

Standard (Check for short):

Tester Connection	Specified Condition
Circuit opening relay (C7-3) or Fuel pump (F18-4) - Body ground	10 kΩ or higher

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

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

REPLACE ECM (See page 10-30)