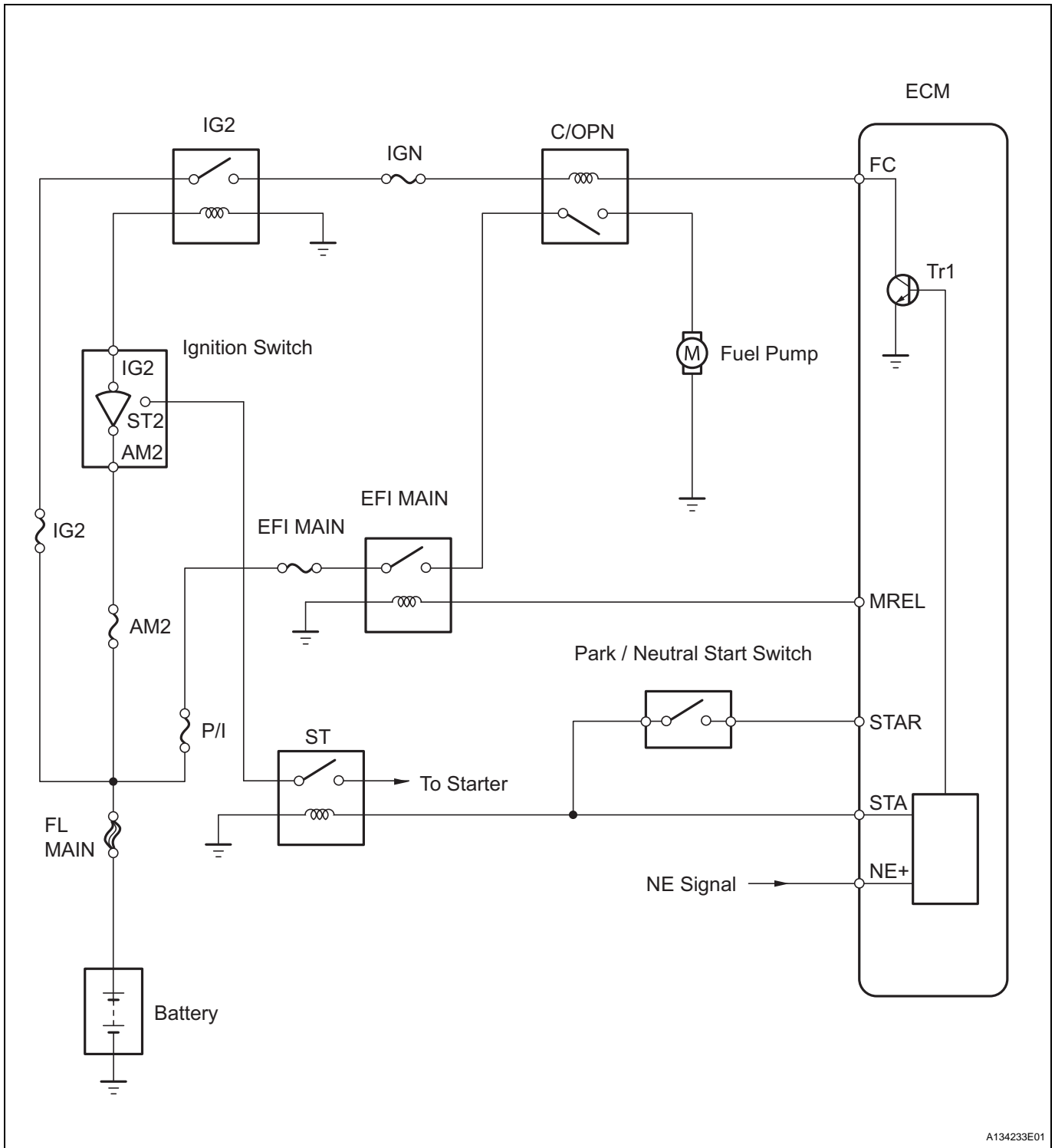


Fuel Pump Control Circuit

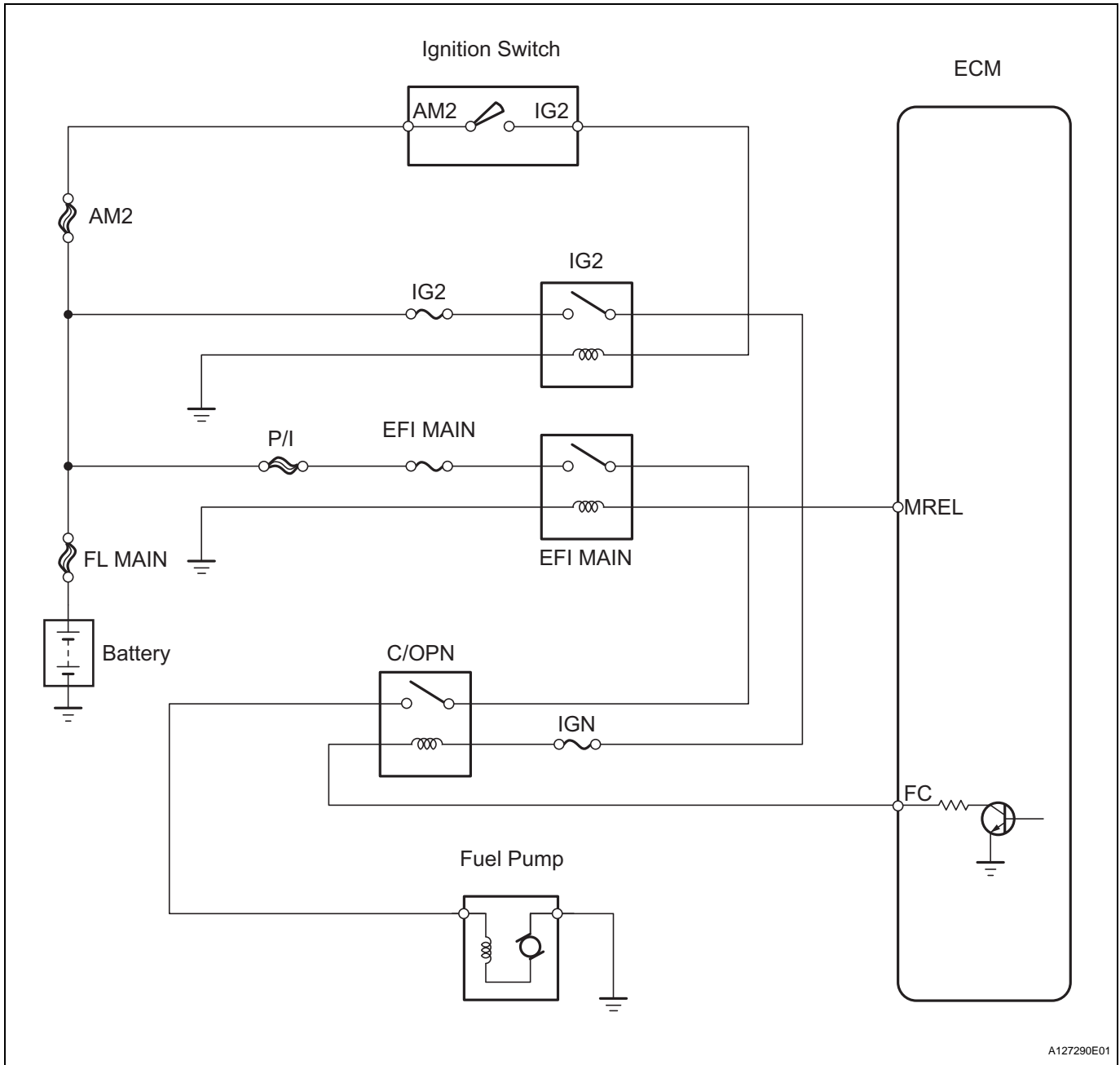
DESCRIPTION

When the engine is cranked, the starter relay drive signal output from the STAR terminal of the ECM is input into the STA terminal of the ECM, and NE signal generated by the crankshaft position sensor is also input into the NE+ terminal. Thus, the ECM interprets that the engine is cranked, and turns the transistor Tr1 in the ECM internal circuit ON. The current flows to the C/OPN (Circuit Opening) relay by turning the Tr1 ON. Then, the fuel pump operates. While the NE signal is input into the ECM, when the engine is running, the ECM turns the Tr1 on continuously.



ES

WIRING DIAGRAM



INSPECTION PROCEDURE

1

PERFORM ACTIVE TEST USING INTELLIGENT TESTER (FUEL PUMP/SPD)

- (a) Connect the intelligent tester to the DLC3.
- (b) Turn the ignition switch ON and turn the tester ON.
- (c) Select the following menu items: DIAGNOSIS / ENHANCED OBD II / ACTIVE TEST / FUEL PUMP / SPD.
- (d) Check whether the fuel pump operating sound occurs when performing the Active Test on the tester.

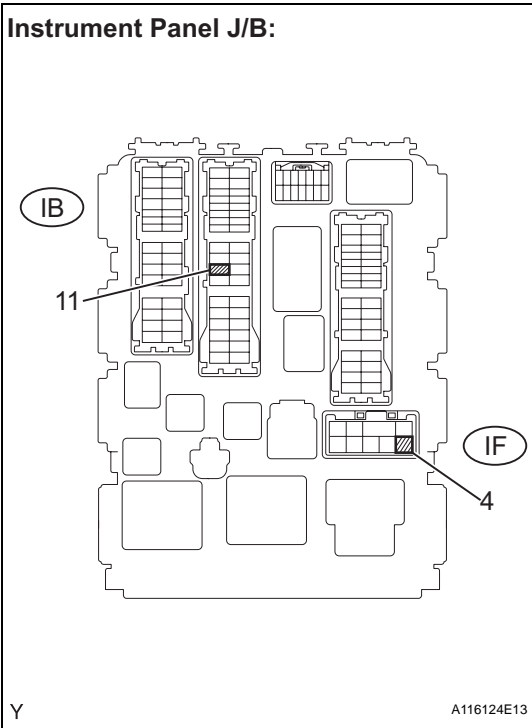
OK:
Fuel pump operating sound occurs.

OK → Go to step 8

NG

2 INSPECT INSTRUMENT PANEL JUNCTION BLOCK ASSEMBLY (C/OPN RELAY INPUT VOLTAGE)

Instrument Panel J/B:



(a) Measure the voltage between the terminal of the instrument panel Junction Block (J/B) and the body ground when the ignition switch is turned ON and OFF.
Standard voltage

Tester Connections	Ignition Switch Conditions	Specified Conditions
IB-11 - Body ground	OFF	Below 1 V
IF-4 - Body ground		
IB-11 - Body ground	ON	9 to 14 V
IF-4 - Body ground		

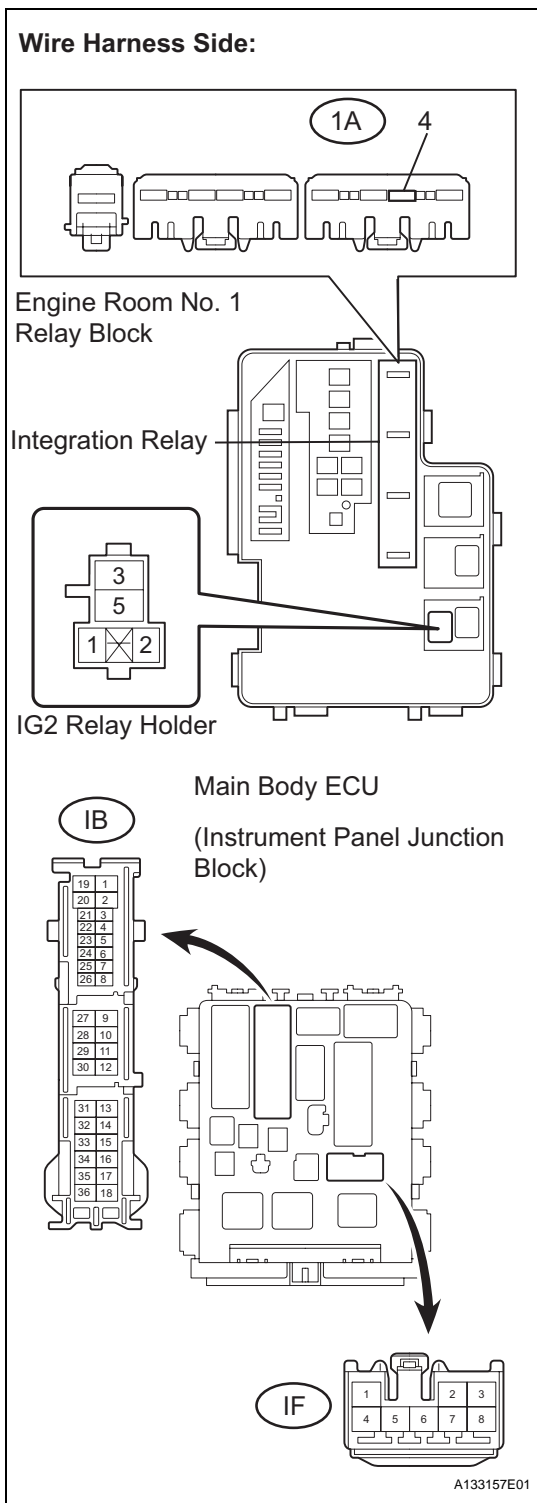
ES

OK → Go to step 4

NG

3 CHECK HARNESS AND CONNECTOR (INSTRUMENT PANEL J/B - INTEGRATION RELAY, IG2 RELAY)

ES



- (a) Remove the integration relay and IG2 relay from the engine room No. 1 relay block.
- (b) Disconnect the instrument panel junction block connector.
- (c) Check the resistance.

Standard resistance (Check for open)

Tester Connections	Specified Conditions
IG2 relay 5 - IF-4	Below 1 Ω
1A-4 - IB-11	Below 1 Ω

Standard resistance (Check for short)

Tester Connections	Specified Conditions
IF-4 - Body ground	10 kΩ or higher
IB-11 - Body ground	10 kΩ or higher

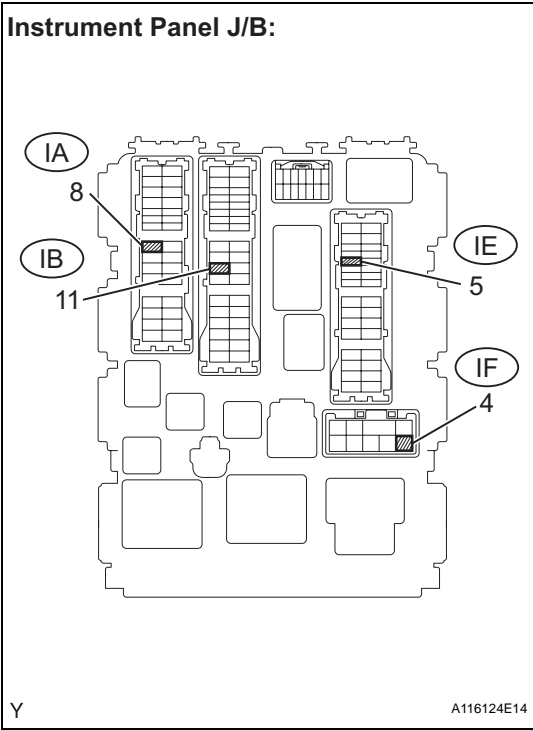
- (d) Reinstall the integration relay and IG2 relay.
- (e) Reconnect the instrument panel junction block connector.

NG **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

GO TO ECM POWER SOURCE CIRCUIT

4 INSPECT INSTRUMENT PANEL JUNCTION BLOCK ASSEMBLY (C/OPN RELAY)



- (a) Remove the instrument panel junction block.
- (b) Measure the C/OPN relay resistance.

Standard resistance

Tester Connections	Specified Conditions
IB-11 - IA-8	10 kΩ or higher
	Below 1 Ω (when battery voltage is applied to terminals IF-4 and IE-5)

HINT:

Relay coil circuit between IF-4 and IE-5 is not through IGN fuse.

- (c) Reinstall the instrument panel junction block.

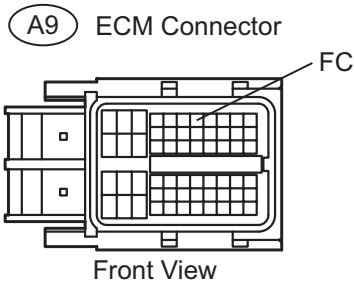
NG **REPLACE INSTRUMENT PANEL JUNCTION BLOCK ASSEMBLY**

ES

OK

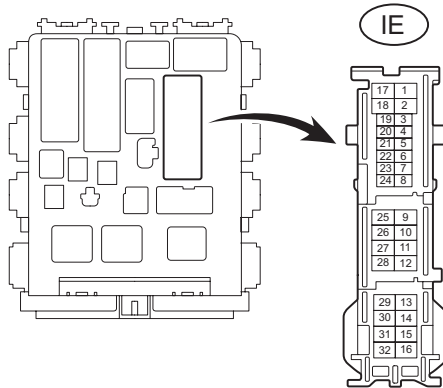
5 CHECK HARNESS AND CONNECTOR (INSTRUMENT PANEL J/B - ECM)

Wire Harness Side:



Main Body ECU

(Instrument Panel Junction Block)



Y

A133158E02

- (a) Disconnect the A9 ECM connector.
- (b) Disconnect the IE connector from instrument panel junction block.
- (c) Measure the resistance.

Standard resistance (Check for open)

Tester Connections	Specified Conditions
IE-5 (Instrument panel J/B) - A9-7 (FC)	Below 1Ω

Standard resistance (Check for short)

Tester Connections	Specified Conditions
IE-5 (Instrument panel J/B) or A9-7 (FC) - Body ground	10 kΩ or higher

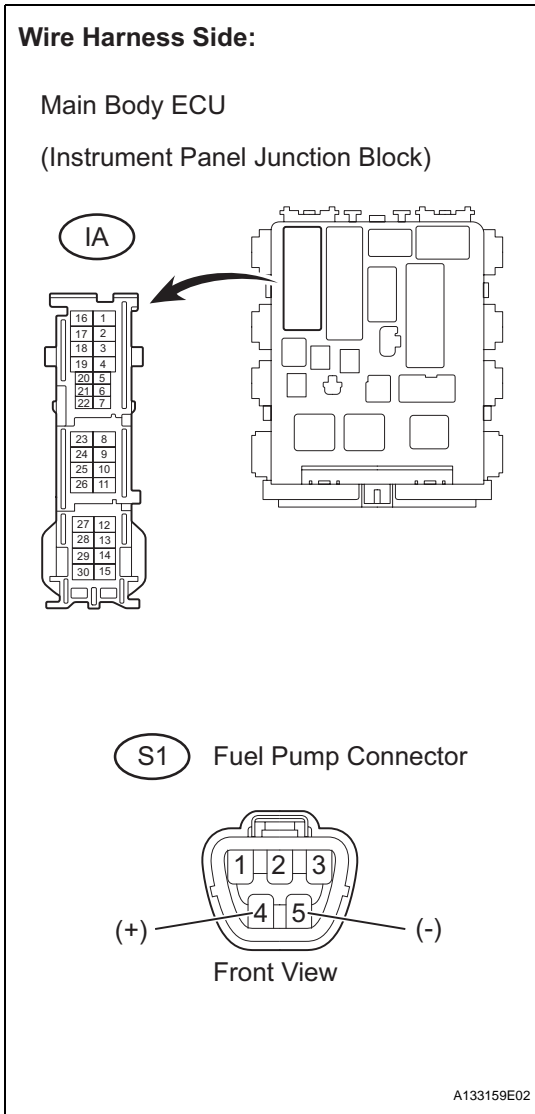
- (d) Reconnect the instrument panel junction block and the ECM connectors.

NG **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

ES

6 CHECK HARNESS AND CONNECTOR (C/OPN RELAY - FUEL PUMP - BODY GROUND)



- (a) Check the harness and the connectors between the instrument panel junction block assembly and the fuel pump.
- (1) Disconnect the IA instrument panel junction block connector.
 - (2) Disconnect the S1 fuel pump connector.
 - (3) Measure the resistance.

Standard resistance (Check for open)

Tester Connections	Specified Conditions
IA-8 (Instrument panel J/B) - S1-4 (Fuel pump)	Below 1Ω

Standard resistance (Check for short)

Tester Connections	Specified Conditions
IA-8 (Instrument panel J/B) or S1-4 (Fuel pump) - Body ground	10 kΩ or higher

- (b) Check the harness and the connectors between the fuel pump and the body ground.
- (1) Disconnect the S1 fuel pump connector.
 - (2) Measure the resistance.

Standard resistance (Check for open)

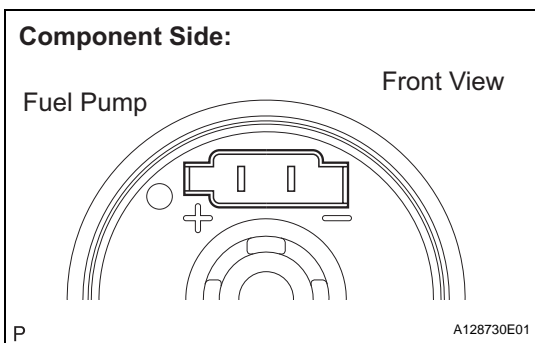
Tester Connections	Specified Conditions
S1-5 (Fuel pump) - Body ground	Below 1 Ω

- (c) Reconnect the instrument panel junction block connector.
- (d) Reconnect the fuel pump connector.

NG **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

7 INSPECT FUEL PUMP



- (a) Inspect fuel pump resistance.
- (1) Measure the resistance between the terminals.

Standard resistance:
0.2 to 3.0 Ω at 20°C(68°F)

- (b) Inspect fuel pump operation.
- (1) Apply the 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 the fuel pump as far away from the battery as possible.

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

NG → REPLACE FUEL PUMP

OK

REPLACE ECM

8 READ VALUE USING INTELLIGENT TESTER (STARTER SIG)

ES

- Connect the intelligent tester to the DLC3.
- Turn the ignition switch ON and turn the tester ON.
- Select the following menu items: DIAGNOSIS / ENHANCED OBD II / DATA LIST / PRIMARY / STARTER SIG.
- Check the result when the ignition switch is turned to ON and START.

OK

Ignition Switch Position	Starter Signal
ON	OFF
START	ON

NG → REPAIR OR REPLACE STARTING SYSTEM

OK

9 READ VALUE USING INTELLIGENT TESTER (ENGINE SPD)

- Connect the intelligent tester to the DLC3.
- Turn the ignition switch ON and turn the tester ON.
- Select the following menu items: DIAGNOSIS / ENHANCED OBD II / DATA LIST / PRIMARY / ENGINE SPD.
- Read the values displayed on the tester while cranking.

Standard:

Values are displayed continuously.

NG → REPAIR OR REPLACE CRANKSHAFT POSITION SENSOR CIRCUIT

OK

REPLACE ECM