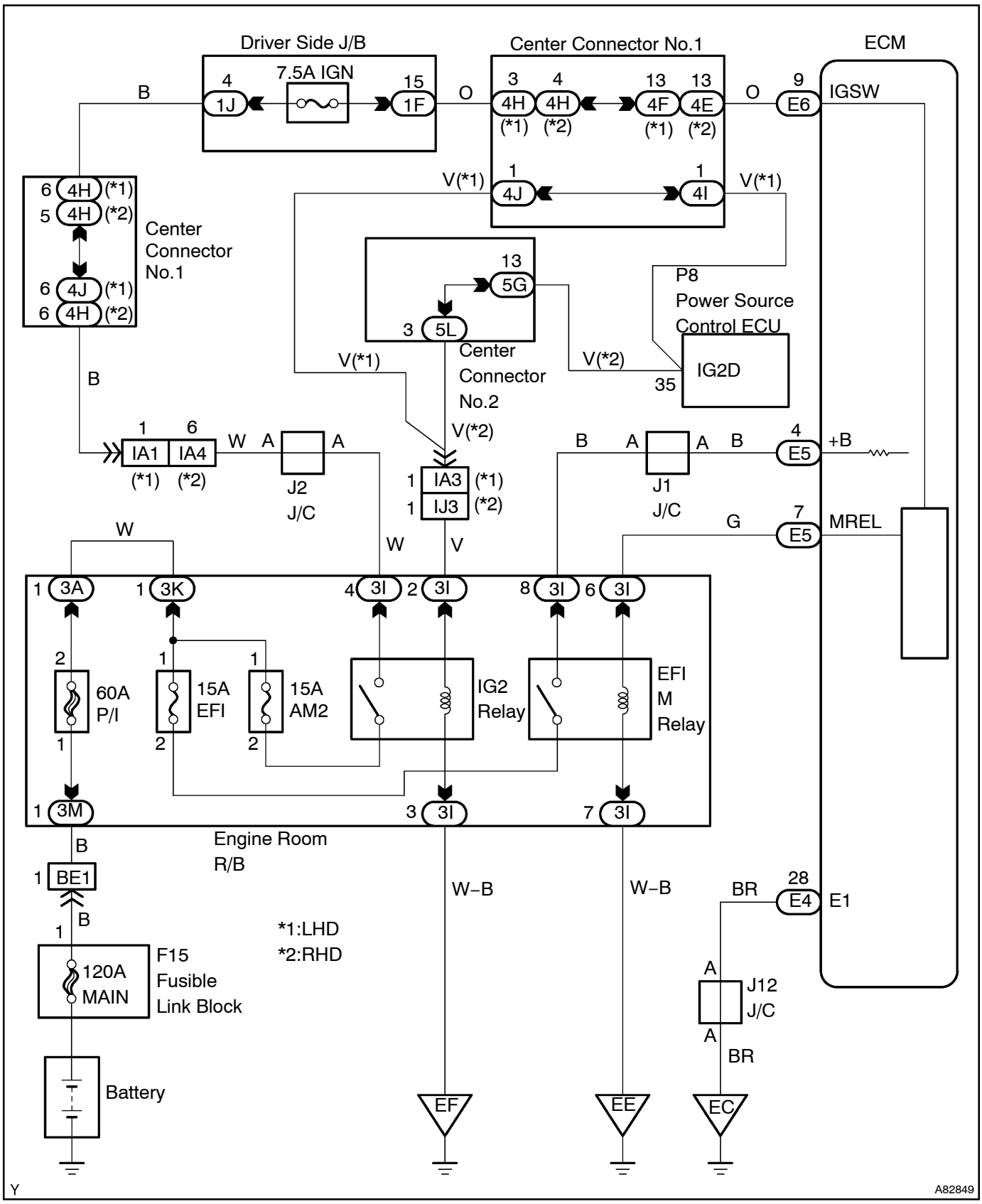
ECM POWER SOURCE CIRCUIT

CIRCUIT DESCRIPTION

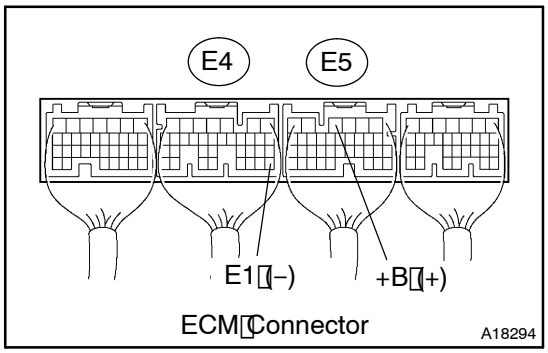
The power source circuit of the hybrid system differs from the conventional power source circuit in the method in which the battery voltage is supplied to IGSW terminal of the ECM. The hybrid system has adopted one relay to serve as an ignition switch, which is controlled by the power source control ECU.
When the HV system is turned ON, the power source control ECU actuates the IG2 relay, which applies the battery voltage to IGSW terminal of the ECM. This causes the MREL terminal to transmit a signal to the EFI M relay. Then, the current that passes through the contact points of the EFI M relay (which is actuated by the MREL signal) flows to the +B terminal of the ECM.
When the ignition switch is turned OFF, the ECM keeps the EFI M relay ON for a maximum of 2 seconds, in order to initialize the throttle valve.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 INSPECT ECM(+B VOLTAGE)



(a) Turn the power switch ON (IG).
(b) Measure the voltage between the specified terminals of the E4 and E5 ECM connectors.

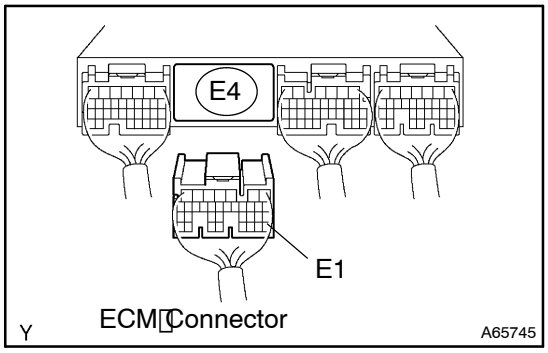
Standard:

Tester Connection	Specified Condition
+B (E5–4) – E1 (E4–28)	9 to 14 V

OK → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE** (See page 05–17)

NG

2 CHECK HARNESS AND CONNECTOR(ECM – BODY GROUND)



(a) Disconnect the E4 ECM connector.
(b) Check the resistance between the wire harness side connectors.

Standard (Check for open):

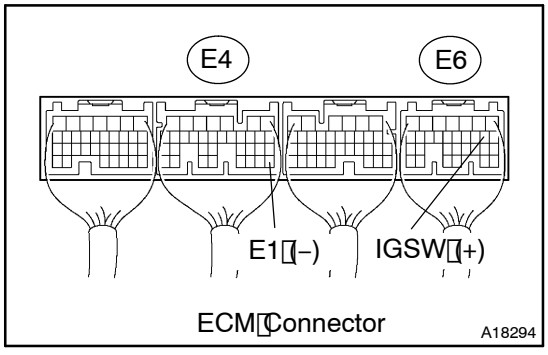
Tester Connection	Specified Condition
E1 (E4–28) – Body ground	Below 1 Ω

(c) Reconnect the ECM connector.

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

OK

3 INSPECT ECM(IGSW VOLTAGE)



(a) Turn the power switch ON (IG).
(b) Measure the voltage between the specified terminals of the E4 and E6 ECM connectors.

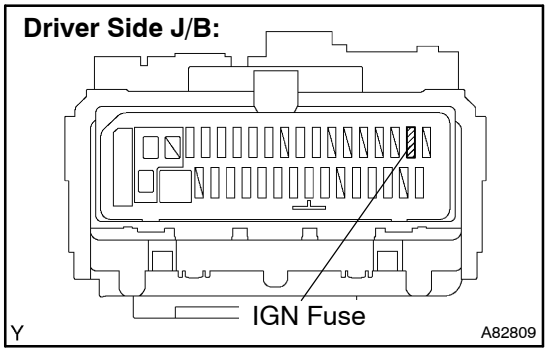
Standard:

Tester Connection	Specified Condition
IGSW (E6–9) – E1 (E4–28)	9 to 14 V

OK → **Go to step 7**

NG

4 CHECK FUSE(IGN FUSE)

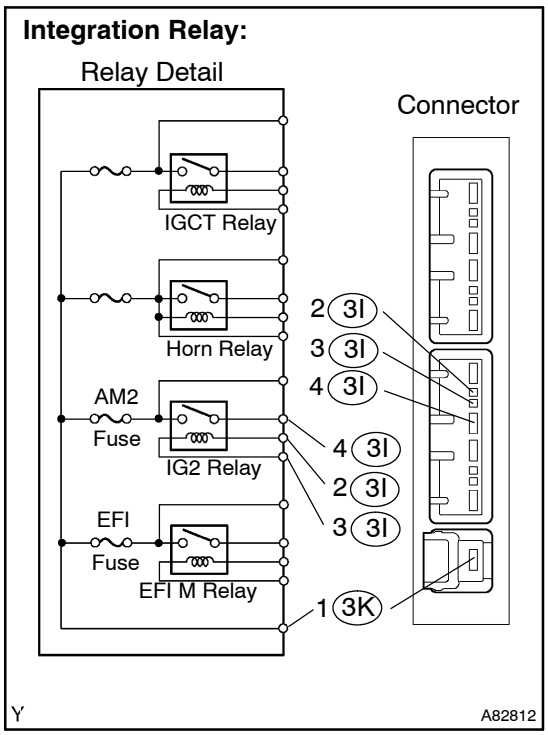


(a) Remove the IGN fuse from the driver side J/B.
(b) Check the resistance of the IGN fuse.
Standard: Below 1 Ω
(c) Reinstall the IGN fuse.

NG → **CHECK FOR SHORT IN ALL HARNESS AND COMPONENTS CONNECTED TO FUSE**

OK

5 INSPECT INTEGRATION RELAY(IG2 RELAY)



(a) Remove the integration relay from the engine room R/B.
(b) Inspect the IG2 relay.
Standard:

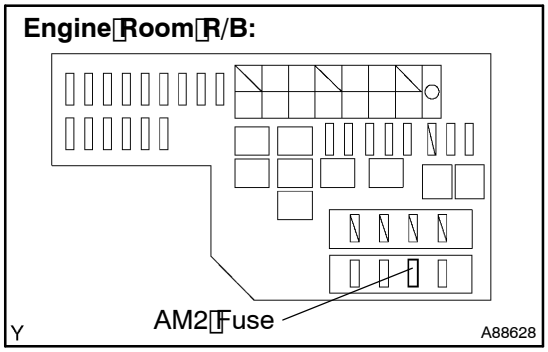
Tester Connection	Specified Condition
(3K–1) – (3I–4)	10 kΩ or higher
(3K–1) – (3I–4)	Below 1 Ω (Apply battery voltage to terminals 3I–2 and 3I–3)

(c) Reinstall the integration relay.

NG → **REPLACE INTEGRATION RELAY**

OK

6 CHECK FUSE(AM2 FUSE)



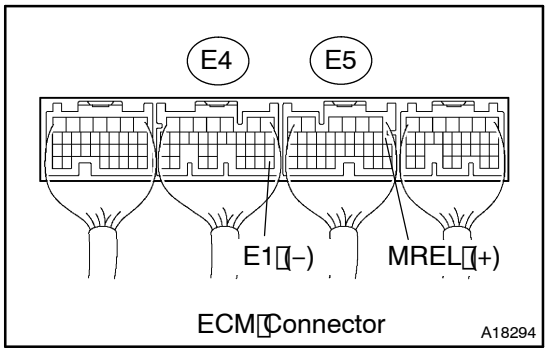
(a) Remove the AM2 fuse from the engine room R/B.
(b) Check the resistance of the AM2 fuse.
Standard: Below 1 Ω
(c) Reinstall the AM2 fuse.

NG → **CHECK FOR SHORT IN ALL HARNESS AND COMPONENTS CONNECTED TO FUSE**

OK

CHECK AND REPAIR HARNESS AND CONNECTOR (BATTERY – IG2 RELAY, IG2 RELAY – ECM)

7 INSPECT ECM(MREL VOLTAGE)



(a) Turn the power switch ON (IG).
(b) Measure the voltage between the specified terminals of the E4 and E5 ECM connectors.

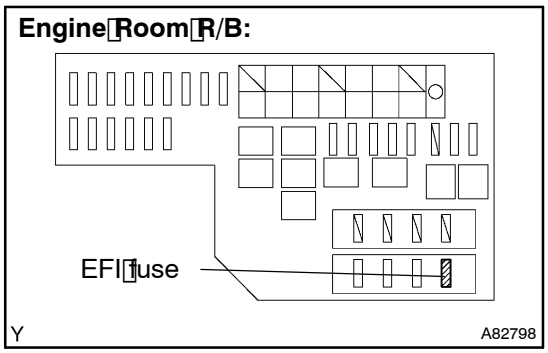
Standard:

Tester Connection	Specified Condition
MREL (E5–7) – E1 (E4–28)	9 to 14 V

NG → **REPLACE ECM (See page 10–24)**

OK

8 CHECK FUSE(EFI FUSE)

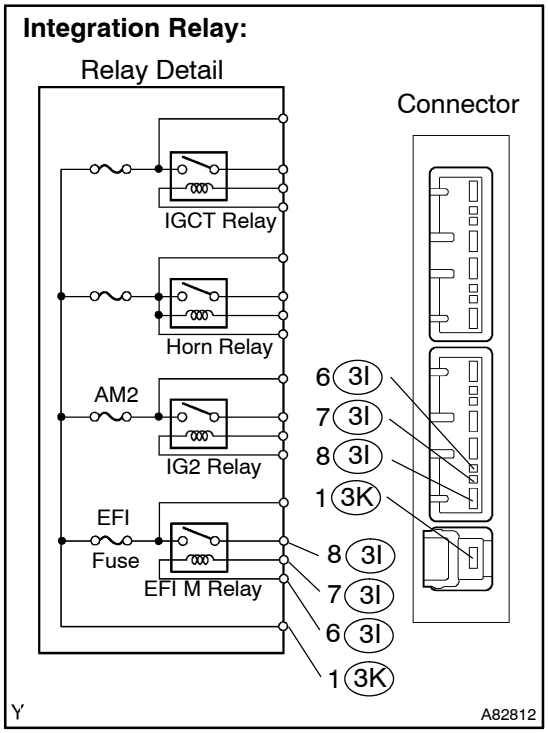


(a) Remove the EFI fuse from the engine room R/B.
(b) Check the resistance of the EFI fuse.
Standard: Below 1 Ω
(c) Reinstall the EFI fuse.

NG → **CHECK FOR SHORT IN ALL HARNESS AND COMPONENTS CONNECTED TO FUSE**

OK

9 INSPECT INTEGRATION RELAY(EFI M RELAY)



(a) Remove the integration relay from the engine room R/B.

(b) Inspect the EFI M relay.

Standard:

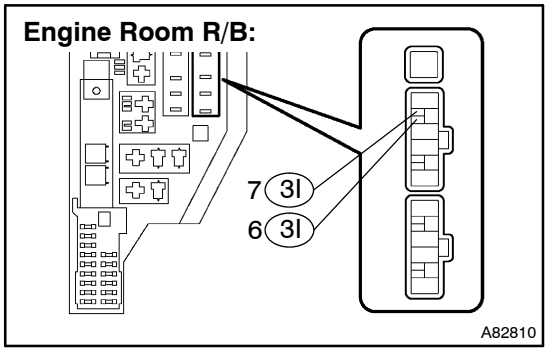
Tester Connection	Specified Condition
(3K–1) – (3I–8)	10 kΩ or higher
(3K–1) – (3I–8)	Below 1 Ω (Apply battery voltage to terminals 3I–6 and 3I–7)

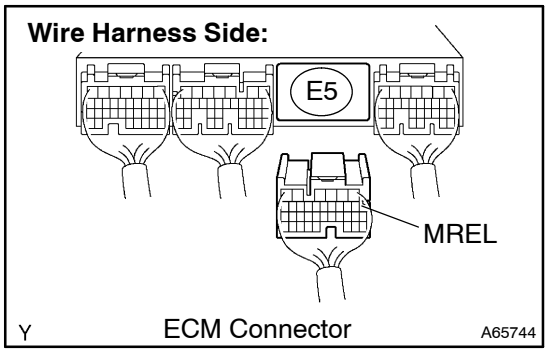
(c) Reinstall the integration relay.

NG → **REPLACE INTEGRATION RELAY**

OK

10 CHECK HARNESS AND CONNECTOR(EFI M RELAY – ECM, EFI M RELAY – BODY GROUND)





(a) Check the harness and connectors between the EFI M relay and ECM connector.
  (1) Remove the integration relay from the engine room R/B.
  (2) Disconnect the E5 ECM connector.
  (3) Check the resistance between the wire harness side connectors.

Standard (Check for open):

Tester Connection	Specified Condition
EFI M relay (3I–6) – MREL (E5–7)	Below 1 Ω

Standard (Check for short):

Tester Connection	Specified Condition
EFI M relay (3I–6) or MREL (E5–7) – Body ground	10 kΩ or higher

  (4) Reinstall the integration relay.
  (5) Reconnect the ECM connector.

(b) Check the harness and the connectors between the EFI M relay and the body ground.
  (1) Remove the integration relay from the engine room R/B.
  (2) Check the resistance between the wire harness side connector and the body ground.

Standard (Check for open):

Tester Connection	Specified Condition
EFI M relay (3I–7) – Body ground	Below 1 Ω

  (3) Reinstall the integration relay.

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

OK

CHECK AND REPAIR HARNESS AND CONNECTOR (TERMINAL +B OF ECM – BATTERY POSITIVE TERMINAL)