

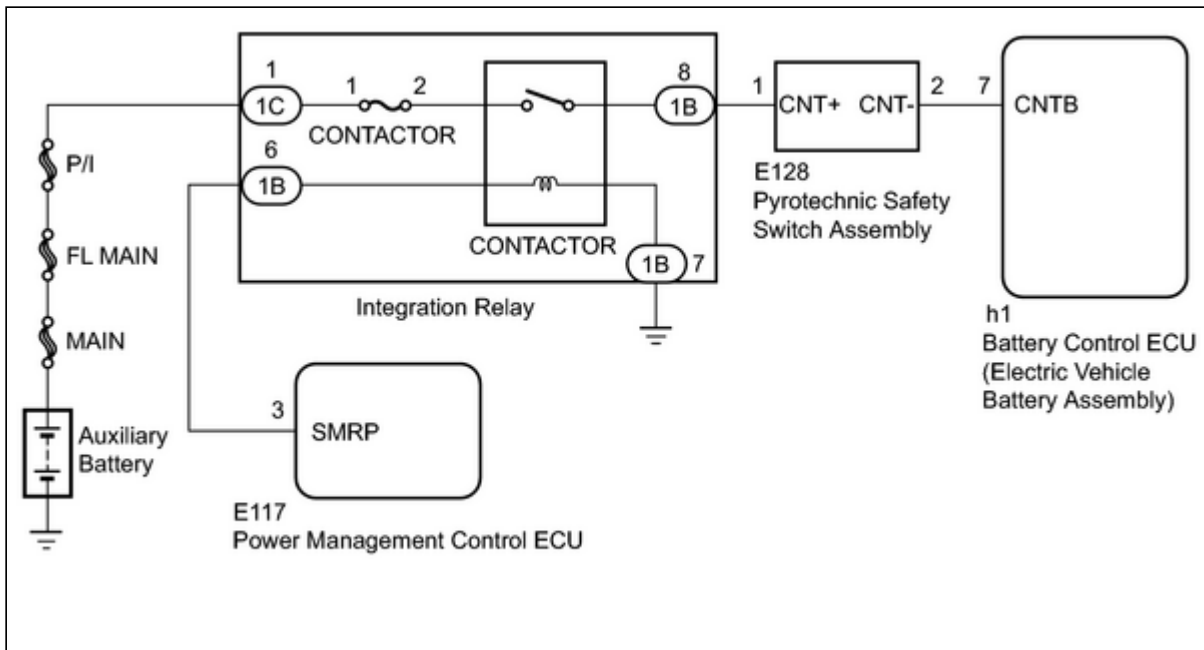
<b>Last Modified:</b> 6-8-2021	6.10:8.0.50	<b>Doc ID:</b> RM000005CLL002X
<b>Model Year Start:</b> 2012	<b>Model:</b> RAV4 EV	<b>Prod Date Range:</b> [04/2012 - ]
<b>Title:</b> HYBRID / BATTERY CONTROL: HYBRID CONTROL SYSTEM: BMS_f062; Contactor Power Supply Problem; 2012 MY RAV4 EV [04/2012 - ]		

<b>DTC</b>	<b>BMS_f062</b>	<b>Contactor Power Supply Problem</b>
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## DESCRIPTION

ALERT CODE	MONITORING ITEM	DETECTION CONDITION	DETECTION TIMING	TROUBLE AREA
BMS_f062	Contactor power supply problem	Battery control ECU detects a low power supply voltage for the contactor.	<ul style="list-style-type: none"> <li>• While power switch on (IG)</li> <li>• During charging</li> </ul>	<ul style="list-style-type: none"> <li>• Service plug grip</li> <li>• Electric vehicle battery assembly</li> <li>• Pyrotechnic safety switch assembly</li> <li>• Integration relay (CONTACTOR)</li> <li>• CONTACTOR fuse</li> <li>• Power management control ECU</li> <li>• Wire harness or connector</li> </ul>

## WIRING DIAGRAM



## INSPECTION PROCEDURE

### CAUTION:

- When performing BMS\_f062 troubleshooting, use either a tool wrapped with vinyl insulation tape or an insulated tool. (It is extremely dangerous when a high-voltage charge passes through a non-insulated tool causing a short.)
- Before inspecting the high-voltage system or disconnecting the low voltage connector of the electric vehicle traction motor assembly (inverter), DC/DC converter assembly, electric vehicle battery assembly or electric vehicle charger assembly, take safety precautions such as wearing insulated gloves and protective goggles, and removing the service plug grip to prevent electrical shocks. After removing the service plug grip, attach a note to it to prevent other technicians from mistakenly reconnecting it while you are working on the high-voltage system.
- After removing the service plug grip, wait for at least 10 minutes, and then check the voltage at the terminals in the inspection point in the electric vehicle battery assembly. The voltage should be 0 V before beginning work INFO.

### HINT:

Waiting for at least 10 minutes is required to discharge the high-voltage capacitor inside the electric vehicle traction motor assembly (inverter), DC/DC converter assembly, electric vehicle battery assembly and electric vehicle charger assembly.

### NOTICE:

Check the condition of the auxiliary battery, as an alert code may be output due to a drop in the auxiliary battery voltage.

### HINT:

If BMS\_f062 is stored, the EV system cannot enter the on (READY) state and charging stops.

## PROCEDURE

<b>1.</b>	<b>CHECK FOR ANY OTHER DTCS OUTPUT</b>
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- Connect the Techstream to the DLC3.
- Turn the power switch on (IG).
- Turn the Techstream on.

(d) Enter the following menus: System Select / Health Check.

(e) Read the DTCs.

### Result

RESULT	PROCEED TO
Only BMS_f062 is output	A
BMS_f062 and other DTCs are output	B

### HINT:

If any DTCs other than alert code BMS\_f062 are output, troubleshoot those DTCs first.

**B** ► GO TO DTC CHART

**A**



<b>2.</b>	<b>INSPECT AUXILIARY BATTERY</b>
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(a) Inspect the auxiliary battery voltage INFO.

OK:

Battery is not depleted.

**NG** ► RECHARGE AUXILIARY BATTERY

**OK**



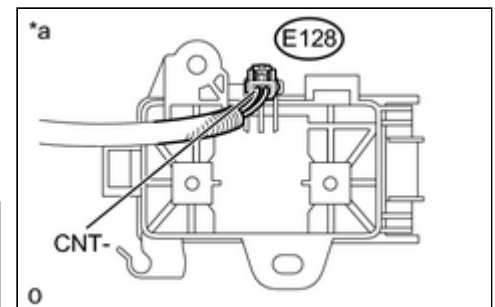
<b>3.</b>	<b>CHECK PYROTECHNIC SAFETY SWITCH ASSEMBLY</b>
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(a) Turn the power switch on (IG).

(b) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E128-2 (CNT-) - Body ground	Power switch on (IG)	11 to 14 V



### Text in Illustration



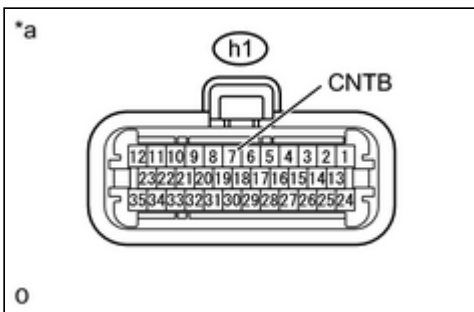
*a	Component with harness connected (Pyrotechnic Safety Switch Assembly)
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**NG**  **GO TO STEP 5**

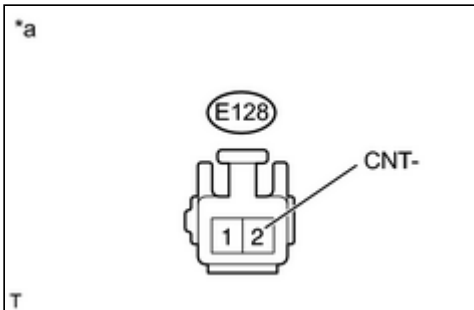
**OK**



<b>4.</b>	<b>CHECK HARNESS AND CONNECTOR (ELECTRIC VEHICLE BATTERY - PYROTECHNIC SAFETY SWITCH)</b>
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(a) Disconnect connector h1 from the electric vehicle battery.



(b) Disconnect connector E128 from the pyrotechnic safety switch.

(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
h1-7 (CNTB) - E128-2 (CNT-)	Power switch off	Below 1 Ω
h1-7 (CNTB) or E128-2 (CNT-) - Body ground and other terminals	Power switch off	1 kΩ or higher

**Text in Illustration**

*a	Front view of wire harness connector (to Electric Vehicle Battery Assembly)
*b	Front view of wire harness connector

(to Pyrotechnic Safety Switch Assembly)

**NG** ► REPAIR OR REPLACE HARNESS OR CONNECTOR

**OK** ► REPLACE ELECTRIC VEHICLE BATTERY ASSEMBLY

## 5. CHECK PYROTECHNIC SAFETY SWITCH ASSEMBLY

(a) Turn the power switch on (IG).

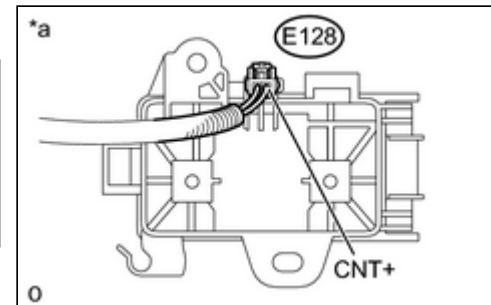
(b) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E128-1 (CNT+) - Body ground	Power switch on (IG)	11 to 14 V

### Text in Illustration

*a	Component with harness connected (Pyrotechnic Safety Switch Assembly)
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**NG** ► GO TO STEP 6

**OK** ► REPLACE NO. 1 WIRING CIRCUIT BREAKER ASSEMBLY

## 6. CHECK INTEGRATION RELAY (CONTACTOR RELAY)

(a) Turn the power switch on (IG).

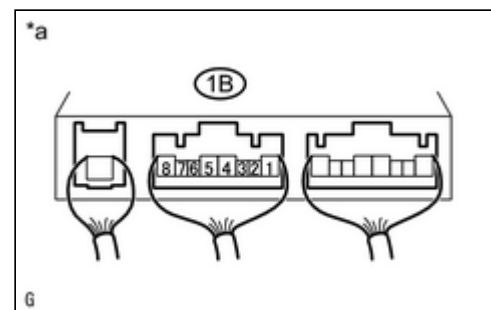
(b) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
1B-8 - Body ground	Power switch on (IG)	11 to 14 V

### Text in Illustration

*a	Component with harness connected (Integration Relay)
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**NG**  **GO TO STEP 7**

**OK**  **REPAIR OR REPLACE HARNESS OR CONNECTOR (INTEGRATION RELAY - PYROTECHNIC SAFETY SWITCH)**

**7. CHECK INTEGRATION RELAY (CONTACTOR RELAY)**

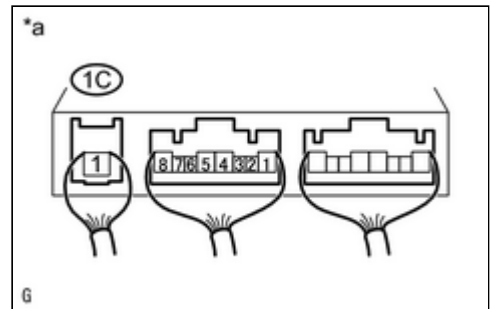
- (a) Turn the power switch on (IG).
- (b) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
1C-1 - Body ground	Power switch on (IG)	11 to 14 V

**Text in Illustration**

*a	Component with harness connected (Integration Relay)
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**NG**  **REPAIR OR REPLACE HARNESS OR CONNECTOR (INTEGRATION RELAY - AUXILIARY BATTERY)**

**OK**  

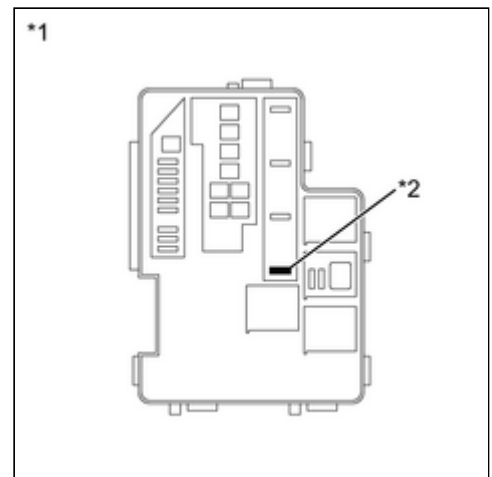

**8. CHECK CONTACTOR FUSE**

- (a) Remove the CONTACTOR fuse from the No. 1 motor compartment room relay block and junction block assembly.
- (b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
CONTACTOR fuse terminals	Always	Below 1 Ω

**Text in Illustration**



*1	No. 1 Motor Compartment Room Relay Block and Junction Block Assembly
*2	CONTACTOR Fuse

**NG** ► **CHECK FOR SHORT IN ALL HARNESES AND CONNECTORS CONNECTED TO FUSE AND REPLACE FUSE**

**OK**



<b>9.</b>	<b>CHECK INTEGRATION RELAY (CONTACTOR RELAY)</b>
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(a) Turn the power switch on (IG).

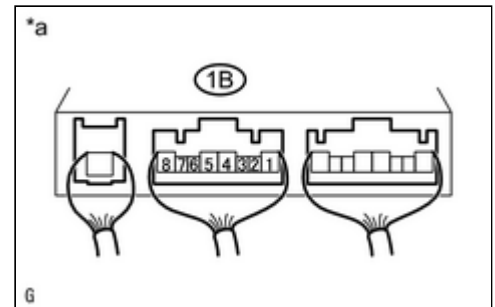
(b) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
1B-6 - Body ground	Power switch on (IG)	11 to 14 V

**Text in Illustration**

*a	Component with harness connected (Integration Relay)
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**NG** ► **GO TO STEP 11**

**OK**



<b>10.</b>	<b>CHECK INTEGRATION RELAY (CONTACTOR RELAY)</b>
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(a) Turn the power switch on (IG).

(b) Measure the voltage according to the value(s) in the table below.

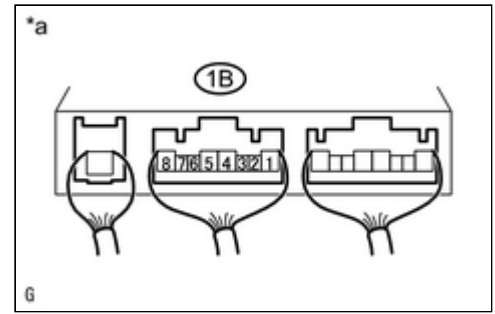
Standard Voltage:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
1B-7 - Body ground	Power switch on (IG)	0 V

**Text in Illustration**

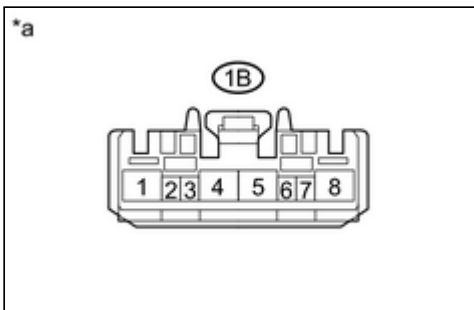
*a	Component with harness connected (Integration Relay)
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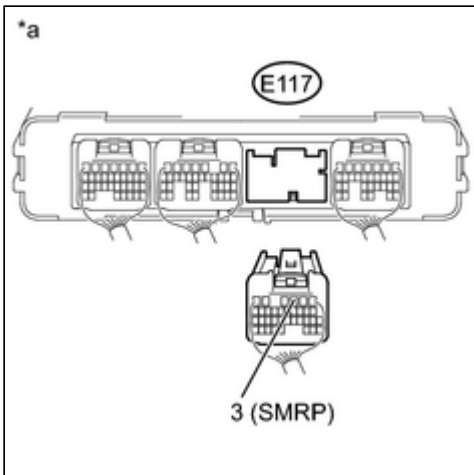
**NG** ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR (INTEGRATION RELAY - BODY GROUND)

**OK** ▶ REPLACE INTEGRATION RELAY (CONTACTOR RELAY)

**11. CHECK HARNESS AND CONNECTOR (INTEGRATION RELAY - POWER MANAGEMENT CONTROL ECU)**



(a) Disconnect connector 1B from the integration relay.



(b) Disconnect connector E117 from the power management control ECU.

(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
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TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
1B-6 - E117-3 (SMRP)	Power switch off	Below 1 $\Omega$
1B-6 or E117-3 (SMRP) - Body ground and other terminals	Power switch off	1 k $\Omega$ or higher

**Text in Illustration**

*a	Front view of wire harness connector (to Integration Relay)
*b	Rear view of wire harness connector (to Power Management Control ECU)

**NG** ► REPAIR OR REPLACE HARNESS OR CONNECTOR

**OK** ► REPLACE POWER MANAGEMENT CONTROL ECU

