



## Component Inspection

Inspection Condition	(+ ) Probe		(-) Probe		Specification
	Connector	Terminal	Connector	Terminal	
1. Ignition "OFF".	Auxiliary battery	(+)	Auxiliary battery	(-)	Approx. 12.5V (9 to 16V)
1. Ignition "ON", EV "ON".	Auxiliary battery	(+)	Auxiliary battery	(-)	Approx. 14.5V (9 to 16V)

<b>Good</b>	▶ Go to "Safety Plug Inspection" procedure.
<b>No Good</b>	▶ Check auxiliary battery and LDC system. ▶ Repair as necessary and then go to "Verification of Repair" procedure.

## Safety Plug Inspection

Inspection Condition	(+ ) Probe		(-) Probe		Specification
	Connector	Terminal	Connector	Terminal	
1. Ignition "OFF". 2. Disconnect the auxiliary battery (-) cable.	Safety plug (component side)	(power +)	Safety plug (component side)	(power -)	Approx. below 1Ω
3. Remove the safety plug, and check that the high voltage terminal voltage is less than 30V.	Safety plug (component side)	1 (ground)	Safety plug (component side)	2 (signal)	Approx. below 1Ω

<b>Good</b>	▶ Go to "Main (+) / (-) Relay Resistance Inspection" procedure.
<b>No Good</b>	▶ If no problems were found with the circuits or connectors, replace the safety plug and go to "Verification of Repair" procedure.

## Main (+) / (-) Relay Resistance Inspection

Inspection Condition	(+ ) Probe		(-) Probe		Specification
	Connector	Terminal	Connector	Terminal	
1. Ignition "OFF". 2. Disconnect auxiliary battery (-) cable. 3. Remove the safety plug, and check that the high voltage terminal voltage is less than 30V.	BMS ECU connector	22 (main relay +)	BMS ECU connector	21 (relay ground)	Approx. 30.6 to 37.4 (20°C (68°F))
4. Disconnect the electrical connector(s) from the concerned component.	BMS ECU connector	9 (main relay -)	BMS ECU connector	21 (relay ground)	Approx. 30.6 to 37.4 (20°C (68°F))

<b>Good</b>	▶ Go to "Main (+) Relay Switch Inspection" procedure.
<b>No Good</b>	▶ If no problems were found with the circuits or connectors, replace the main (+) relay and go to "Verification of Repair" procedure.

## Main (+) Relay Switch Inspection

1. Ignition "OFF".
2. Disconnect auxiliary battery (-) cable.
3. Remove the safety plug, and check that the high voltage terminal voltage is less than 30V.
4. Connect auxiliary battery (-) cable.
5. Ignition "ON", not ready.
6. Connect KDS to "Data Link Connector (DLC)".
7. Select BMS actuation test.
8. Perform "Main Relay (+) ON" of "Actuation Test" with KDS.
9. Measure the value using "Multimeter" and monitor specifications below.

Inspection Condition	(+ ) Probe		(-) Probe		Specification
	Connector	Terminal	Connector	Terminal	

1. Ignition "ON".	Power relay assembly	(+)	Inverter	(+)	ON : Approx. 0.2 to 0.8Ω / OFF : ∞ (infinity)Ω
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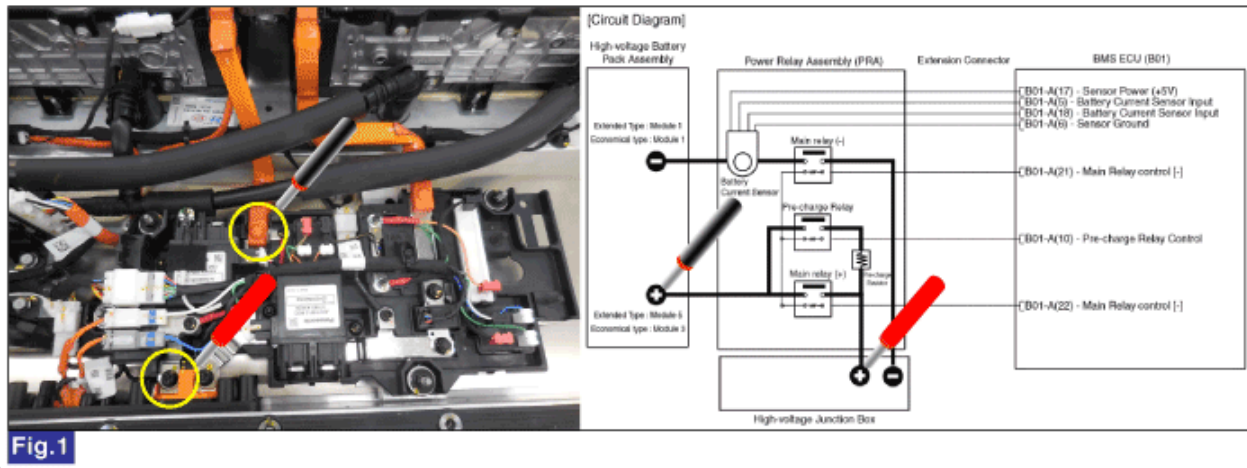


Fig.1) Measuring resistance between PRA (+) and hybrid inverter (+) (high voltage battery heater system not applied)

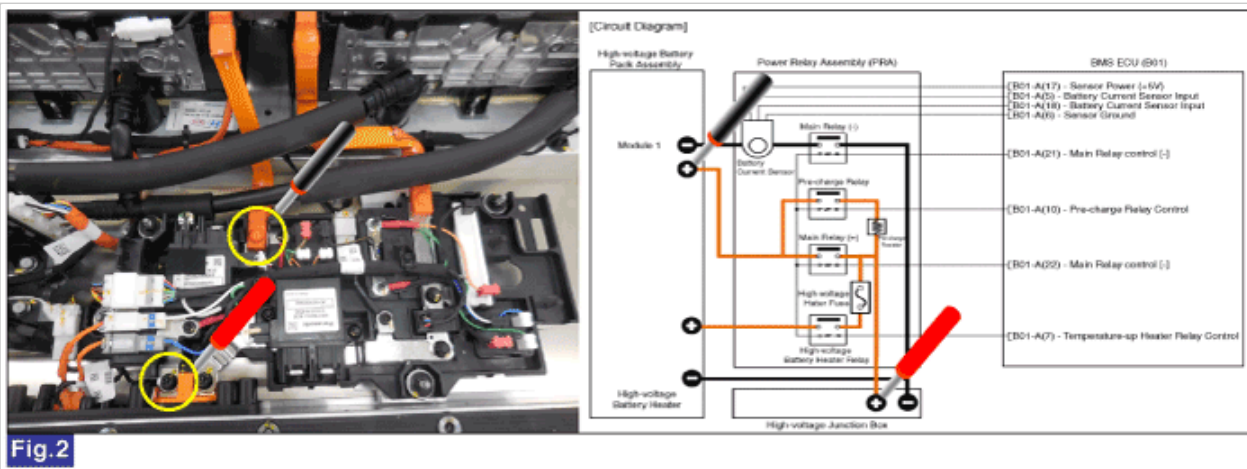


Fig.2) Measuring resistance between PRA (+) and hybrid inverter (+) (high voltage battery heater system applied)

Good	▶ Go to "Main (-) Relay Switch Inspection" procedure.
No Good	▶ If no problems were found with the circuits or connectors, replace the EV battery main (+) relay and go to "Verification of Repair" procedure.

**Main (-) Relay Switch Inspection**

1. Ignition "OFF".
2. Disconnect auxiliary battery (-) cable.
3. Remove the safety plug, and check that the high voltage terminal voltage is less than 30V.
4. Connect auxiliary battery (-) cable.
5. Ignition "ON", not ready.
6. Connect KDS to "Data Link Connector (DLC)".
7. Select BMS actuation test.
8. Perform "Main Relay (-) ON" of "Actuation Test" with KDS.
9. Measure the value using "Multimeter" and monitor specifications below.

Inspection Condition	(+ ) Probe		(- ) Probe		Specification
	Connector	Terminal	Connector	Terminal	
1. Ignition "ON".	Power relay assembly	(-)	Inverter	(-)	ON : Approx. 0.2 to 0.8Ω / OFF : ∞ (infinity)Ω

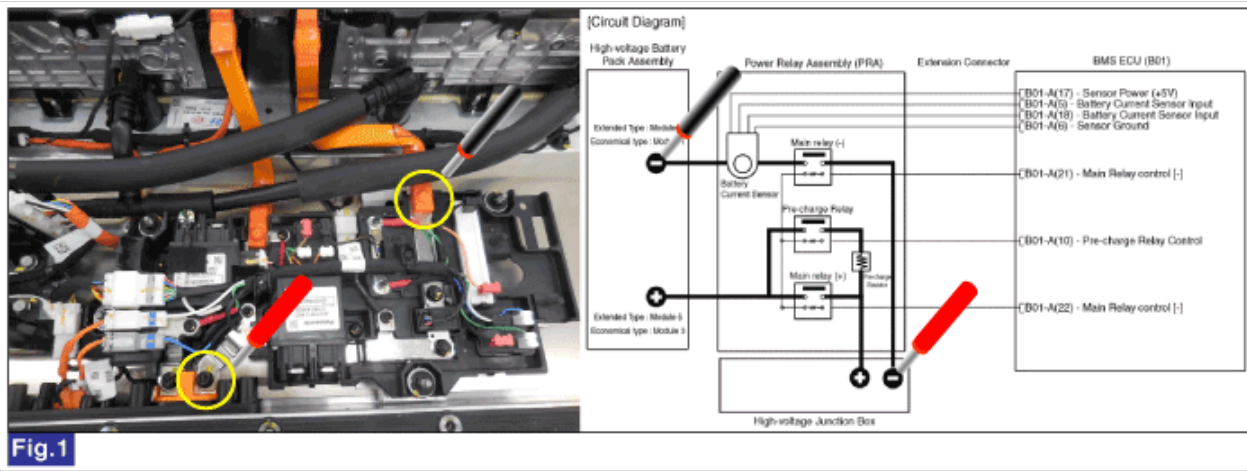


Fig.1) Measuring resistance between PRA (-) and Hybrid Inverter (-) (high voltage battery heater system not applied)

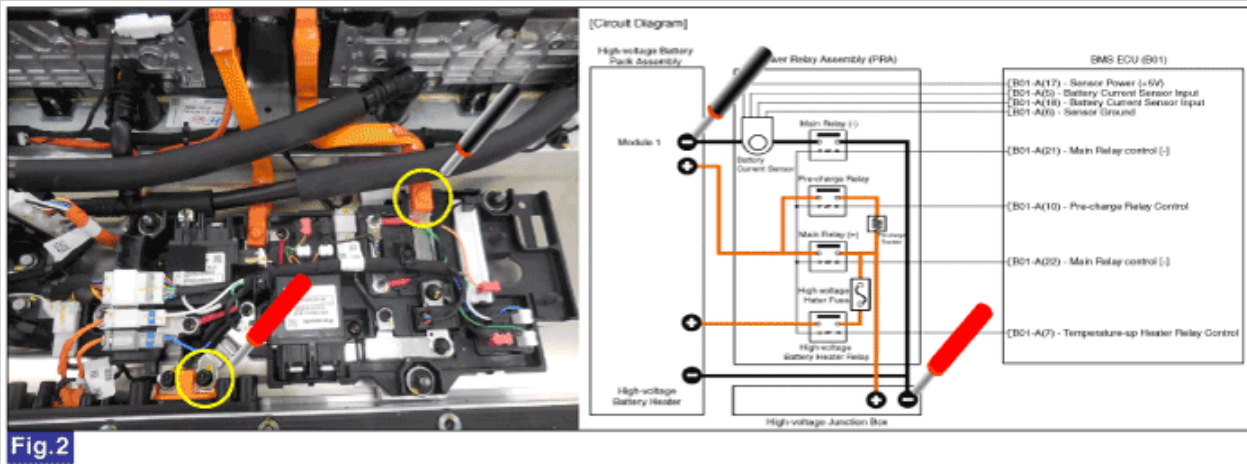


Fig.2) Measuring resistance between PRA (-) and Hybrid Inverter (-) (high voltage battery heater system applied)

<b>Good</b>	<ul style="list-style-type: none"> <li>▶ Go to "Precharge Relay Resistance Inspection" procedure.</li> <li>▶ Repair as necessary and then go to "Verification of Repair" procedure.</li> <li>▶ If BMS relay control circuit is detected, replace the BMS ECU and go to "Verification of Repair" procedure.</li> </ul>
<b>No Good</b>	<ul style="list-style-type: none"> <li>▶ If no problems were found with the circuits or connectors, replace the EV battery main (-) relay and go to "Verification of Repair" procedure.</li> </ul>

**Precharge Relay Resistance Inspection**

Inspection Condition	(+ ) Probe		(-) Probe		Specification
	Connector	Terminal	Connector	Terminal	
1. Ignition "OFF". 2. Disconnect auxiliary battery (-) cable. 3. Remove the safety plug, and check that the high voltage terminal voltage is less than 30V. 4. Disconnect the electrical connector(s) from the concerned component.	BMS ECU connector	10 (PRE)	BMS ECU connector	21 (relay ground)	Approx. 92.7 to 113.3 (20°C)

<b>Good</b>	<ul style="list-style-type: none"> <li>▶ Go to "Precharge Relay Switch Inspection" procedure.</li> </ul>
<b>No Good</b>	<ul style="list-style-type: none"> <li>▶ If no problems were found with the circuits or connectors, replace the precharge relay resistance and go to "Verification of Repair" procedure.</li> </ul>

**Precharge Relay Switch Inspection**

1. Ignition "OFF".
2. Disconnect auxiliary battery (-) cable.
3. Remove the safety plug, and check that the high voltage terminal voltage is less than 30V.
4. Connect auxiliary battery (-) cable.
5. Ignition "ON", not ready.
6. Connect KDS to "Data Link Connector (DLC)".
7. Select BMS actuation test.

8. Perform "Precharge Relay ON" of "Actuation Test" with KDS.
9. Measure the value using "Multimeter" and monitor specifications below.

Inspection Condition	(+ ) Probe		(- ) Probe		Specification
	Connector	Terminal	Connector	Terminal	
1. Ignition "ON".	Power relay assembly	(+)	Inverter	(+)	ON : Approx. 40Ω±5% / OFF : ∞ (infinity)Ω

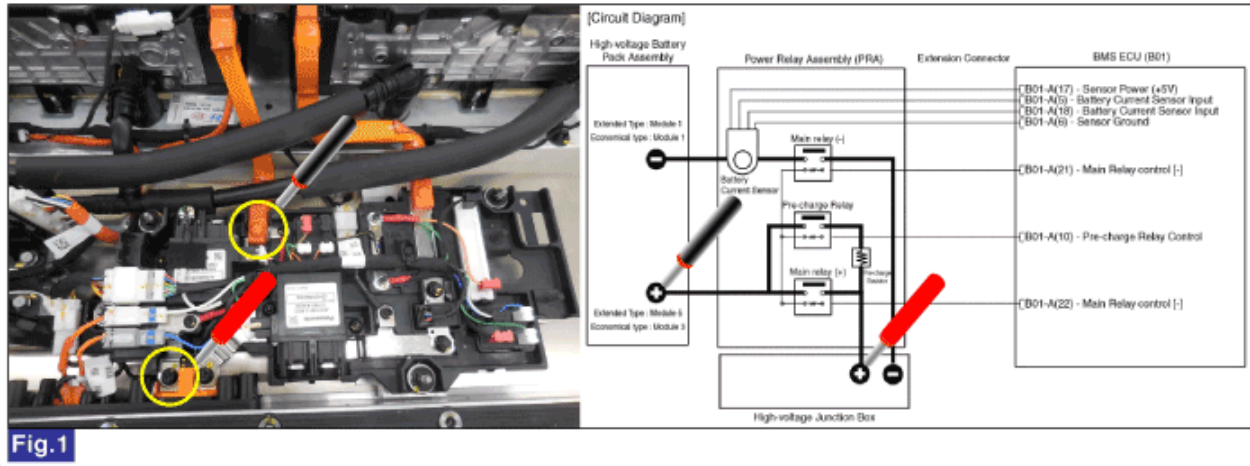


Fig.1) Measuring resistance between PRA (+) and hybrid inverter (+) (high voltage battery heater system not applied)

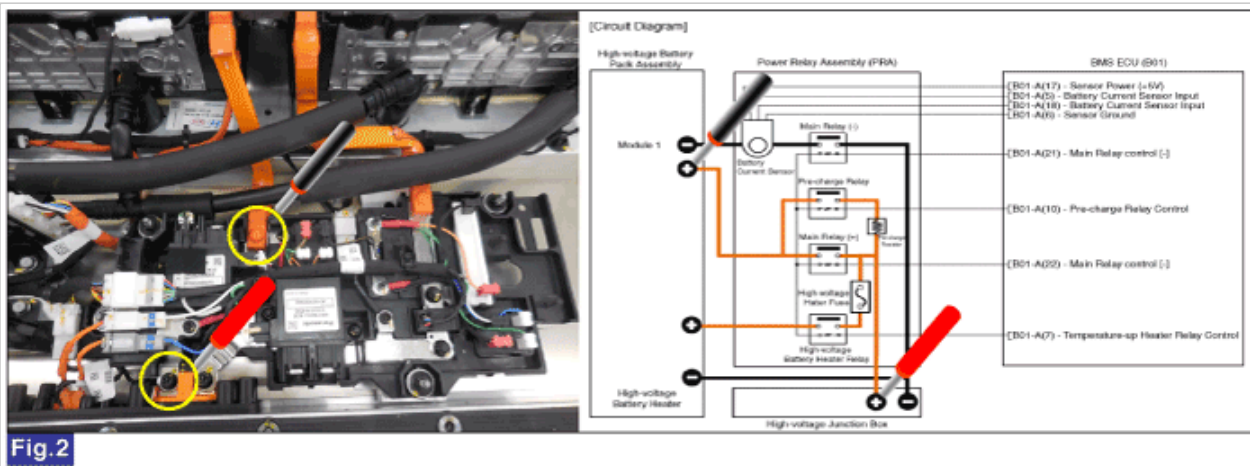


Fig.2) Measuring resistance between PRA (+) and hybrid inverter (+) (high voltage battery heater system applied)

Good	<ul style="list-style-type: none"> <li>▶ Go to "Inverter (+) and (-) CAP Capacity Inspection" procedure.</li> <li>▶ Repair as necessary and then go to "Verification of Repair" procedure.</li> <li>▶ If BMS relay control circuit is detected, replace the BMS ECU and go to "Verification of Repair" procedure.</li> </ul>
No Good	<ul style="list-style-type: none"> <li>▶ If no problems were found with the circuits or connectors, replace the PRA and go to "Verification of Repair" procedure.</li> </ul>

### Inverter (+) and (-) CAP Capacity Inspection

1. Ignition "OFF".
2. Disconnect auxiliary battery (-) cable.
3. Remove the safety plug, and check that the high voltage terminal voltage is less than 30V.
4. Set the multi-meter to CAP measuring setting.
5. Monitor specification below.

Inspection Condition	(+ ) Probe		(- ) Probe		Specification
	Connector	Terminal	Connector	Terminal	
1. Ignition "OFF".	Inverter	(+)	Inverter	(-)	Approx. 2200μF



Fig.1) Measuring capacity between inverter (+) and inverter (-)

<b>Good</b>	▶ Go to "A/C compressor Capacity Inspection" procedure.
<b>No Good</b>	▶ If no problems were found with the circuits or connectors, replace the EPCU and go to "Verification of Repair" procedure.

**A/C compressor Capacity Inspection**

1. Ignition "OFF".
2. Disconnect auxiliary battery (-) cable.
3. Remove the safety plug, and check that the high voltage terminal voltage is less than 30V.
4. Disconnect the A/C connector.
5. Set the multi-meter to CAP measuring setting.
6. Monitor specification below.

Inspection Condition	(+ ) Probe		(-) Probe		Specification
	Connector	Terminal	Connector	Terminal	
1. Ignition "OFF".	A/C compressor	(+)	A/C compressor	(-)	Approx. 50 to 70 $\mu\text{F}$

<b>Good</b>	<ul style="list-style-type: none"> <li>▶ Measure the inverter CAP and LDC CAP voltage. If voltage does not change, inspect high voltage cable. If CAP voltage change rate is not sufficient, inspect for inverter terminal of PRA.</li> <li>▶ If no problems were found with the circuits or connectors, replace the HPCU or A/C compressor and then go to "Verification of Repair" procedure.</li> </ul>
<b>No Good</b>	<ul style="list-style-type: none"> <li>▶ If no problems were found with the circuits or connectors, replace the A/C compressor and then go to "Verification of Repair" procedure.</li> <li>▶ Inspect for low voltage cable. check for fault on wiring harness between BMS ECU and PRA. If fault is found, replace the low voltage cable.</li> <li>▶ If BMS relay control circuit is detected, replace the BMS ECU and go to "Verification of Repair" procedure.</li> </ul>

※ In case of the "BMS ECU replacement" or "BSA replacement (excluding BMS)", perform "SOC calibration" to align SOC with a new battery after erasing the previous SOC in BMS.

After connecting KDS to DLC connector, turn the ignition switch "ON" and select "Vehicle S/W management" on KDS.

Perform "SOC calibration" in "Vehicle S/W management".

You can check the SOC value on the "SOC state" attribute of "Current Data" menu.

**NOTICE**

If SOC calibration was not conducted, BMS corrects the SOC value by itself so as to align the SOC with a new battery within 30 minutes of driving.