


SB-10056327-1193

 <b style="font-size: 1.2em;">HYUNDAI NEW THINKING. NEW POSSIBILITIES. <h2 style="margin: 0;">Technical Service Bulletin</h2>	GROUP HYBRID CONTROL	NUMBER 14-HC-002
	DATE AUGUST, 2014	MODEL SONATA (YF HEV)
SUBJECT: HYBRID POWER RELAY DTC P1B25, P1B76, P1B77, P0A0D		

Description: On certain Sonata (YF HEV) vehicles, the power relay assembly (PRA) or HEV safety plug may cause the following symptoms and related DTC. Follow the Service Procedure before diagnosing the Hybrid battery.

Applicable Vehicles:	2011~ Sonata Hybrid (YF HEV)
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Warning light:

- No "EV Ready" mode or "Ready" light blinks on and off
- Check Engine light on
- Charging warning light on
- "Wrench" symbol (Service Indicator) blinks on and off

Drivability symptoms:

- Vehicle will not move from a stop or gasoline engine will not turn on.
- Warning in the instrument cluster display: "Hybrid System Warning! Safely stop and Do Not Drive" and/or alarm sound

DTC List:

DTC	Description	Inspect
P0A0D	High Voltage System Interlock Circuit High	HEV safety plug
P1B25	High Voltage Path Fault	Power relay assembly
P1B76	High Voltage Relay Fault	Power relay assembly
P1B77	High Voltage Precharging Fault	Power relay assembly

Parts Information:

Model	Part	Section	PNC	Part Number
2011~ Sonata HEV	Power relay assembly	37-371	39160	37514-4R000
	EV safety plug	37-371	37586	37586-4R001

Warranty Information

Model	Op Code	Operation	Op Time	Causal P/N	Nature Code	Cause Code
2011~ Sonata Hybrid (YF HEV)	37514R1H	Power relay assy.	1.0	37514-4R000	N69	C06
	37586R1H	Hybrid battery module safety plug	0.2	37586-4R001	N69	C06
	37514RQ0	GDS operation	0.3			

Service Procedure:

1. Depress the brake pedal and press the Start/Stop button once to activate “EV Ready” mode. Attach a GDS, and select **VIN**, **BMS** menu and **DTC**. Check for **DTC** in the **BMS** menu. **Record the DTC and description**. Delete the DTC.

Select **Current Data** and the following parameters. If the results are not as shown, the PRA may not be functioning correctly. Go to Step 2.

Parameter	Result
BMS Main Relay ON Status	YES
Inverter Capacitor Voltage	200v~310v

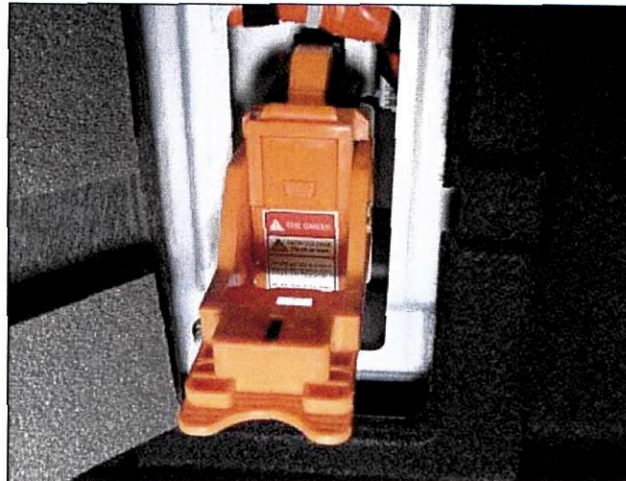
2. Open the rear trunk and open the cover to the safety plug.

Put on insulation gloves and pull up on the black tab and pull out the safety plug.



WARNING

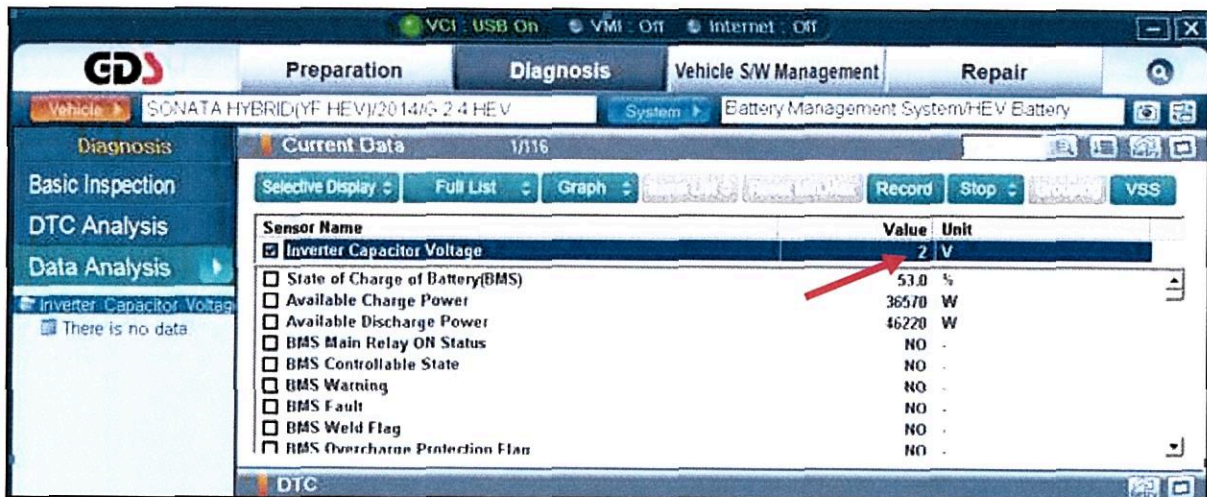
Failure to wear protective gear and perform this procedure may result in accidental injury or death.



- Without depressing the brake pedal, push the Start-Stop button 2 times to power the cluster.

Attach a GDS and select **BMS** menu, **Current Data** and **Inverter Capacitor Voltage**. Confirm the **Inverter Capacitor Voltage** is less than 30V.

- If less than 30V, the system voltage is safe for the technician. Turn off the ignition and disconnect the 12 volt negative battery cable. Go to Step 4.
- If more than 30V, wait until the voltage is within specification before performing any repairs. Go to Step 4.



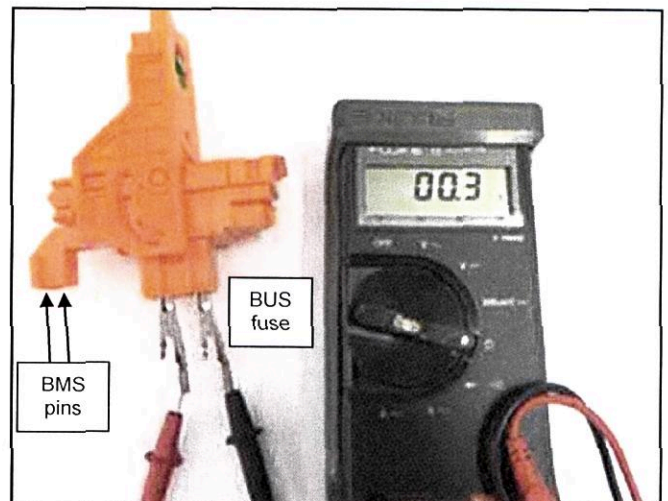
- Use a DVOM to measure the resistance of the BUS fuse inside the safety switch.

Measure the resistance between the BMS pins.

Specification: 1Ω or less

If the resistance is:

- Not within specification, replace the safety plug.
- Within specification, go to Step 5.

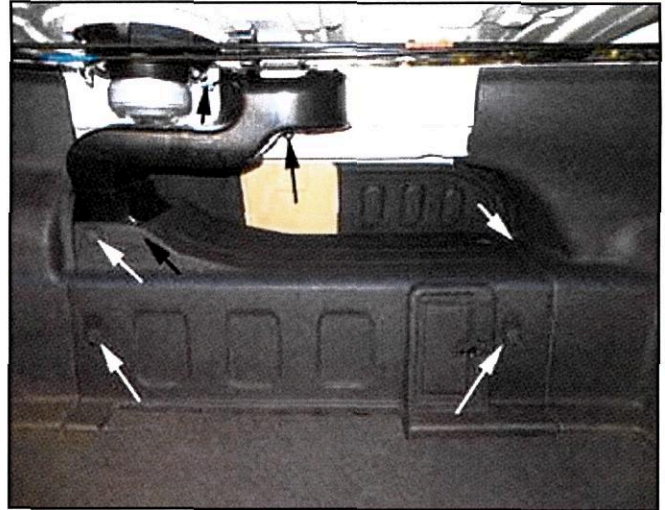


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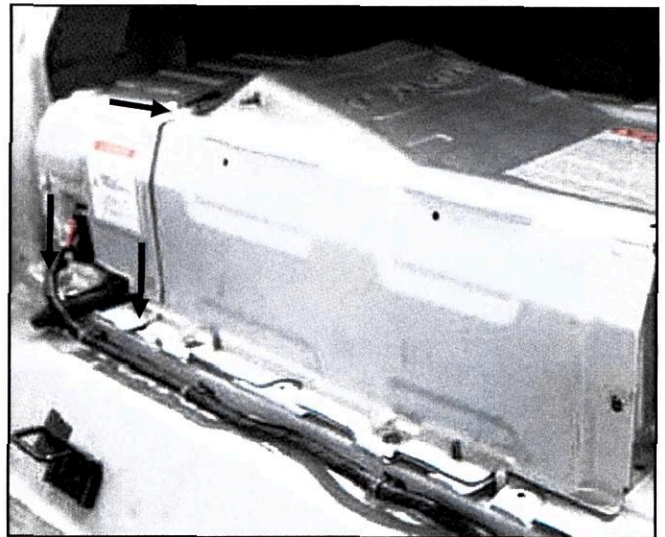
5. Remove 4 fasteners and remove the carpet trim (white arrows). Refer to BD Section, Interior, of the shop manual.

Remove 3 nuts securing the air duct and remove the air duct (black arrows).

Remove the rear seat (Refer to BD Section, Seat, of the shop manual).



6. Remove the nuts and bolts securing the steel cover and remove the cover for the PRA.



7. Put on insulation gloves and leather gloves on top of insulation gloves. Wear safety glasses.

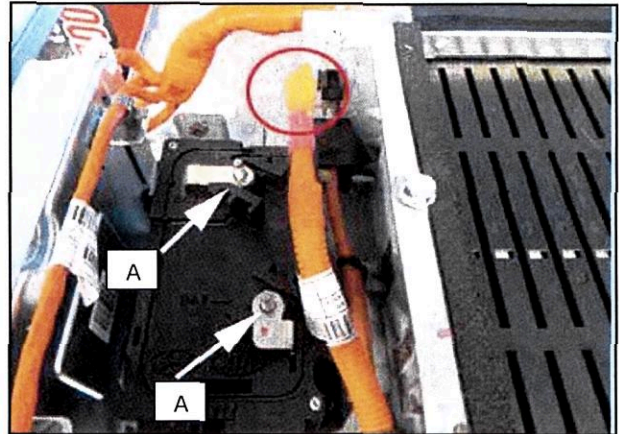
Remove the high voltage cables (A) and wrap the cable ends with insulation tape (red circle).

Torque:

5.8~8.7 lb-ft (0.8~1.2 kgf.m, 7.8~11 N.m)

WARNING

The HEV battery may have a charge of 120~150v. Wear insulation gloves.

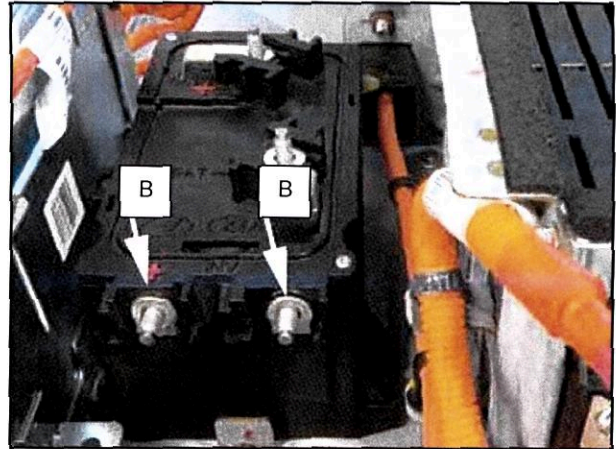


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8. Remove the inverter cables (B) on the side of the PRA.

Torque:

5.8~8.7 lb-ft (0.8~1.2 kgf.m, 7.8~11 N.m)

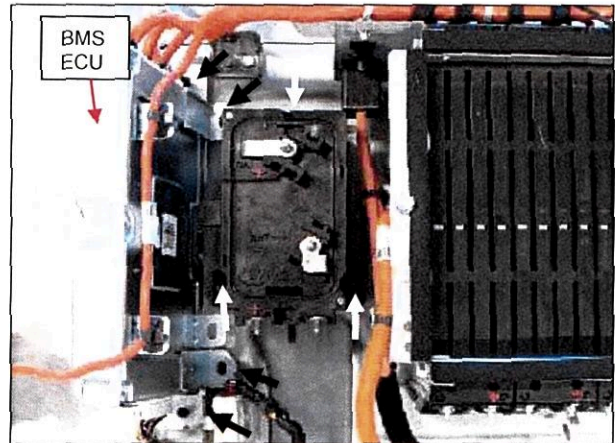


9. Loosen four nuts (black arrows) and tilt the BMS ECU to the left to provide clearance between the PRA.

Remove 3 mounting nuts (white arrows) and remove the PRA. Install a new PRA.

Torque:

5.8~8.7 lb-ft (0.8~1.2 kgf.m, 7.8~11 N.m)



10. Reassemble all parts in the reverse order of disassembly.
11. Attach a GDS and delete any DTC.
12. Clear the DTC in the BlueLink system according to instructions in TSB 12-BE-005-2.
13. Drive the vehicle for two key-on/key-off drive cycles. If the DTC or condition occur again:
 - Check high voltage connectors for loose or corroded pins.
 - Exchange an HPCU and test again. If the condition does not occur again, replace the HPCU.