



PROCEDURE

Reference:	PR20210728-01		
Version:	01.0	Category:	E

MODEL(S)	GOAL	
EVOLUTION LITHIUM BATTERY L4860/L48110/L48130	Quality improvement	
	Performance	√
	Upgrade	√
PARTS INFO	Down time	
BMS Circuit board Solenoid Diverter Wire harness	Maintenance	√
	Work around	√
	<u>Others:</u>	

VERSION CONTROL:

Author:	Version:	Date:	Change/update:
Arvin Lu	01.0	2021/07/28	

TITLE

How to replace the BMS/Solenoid/Wire harness/Diverter

DESCRIPTION /PURPOSE OF THIS PROCEDURE

THE PROCEDURE SHOWS THE STEPS OF REPLACING THE BMS/SOLENOID/WIRE HARNESS INSIDE THE LITHIUM BATTERY PACK.

TOOLS REQUIRED



- Insulation Gloves
- Socket Tool Kit
- Insulated Wrench



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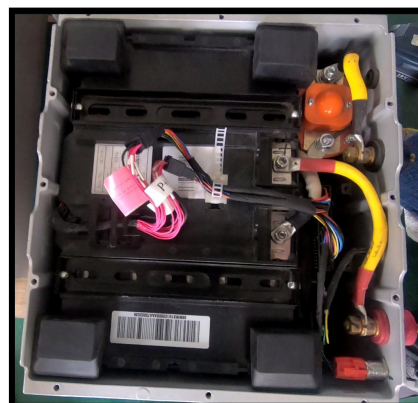
OVERVIEW OF LITHIUM BATTERY PACK



110AH
130AH



60AH



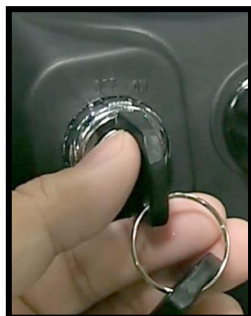


PROCEDURE

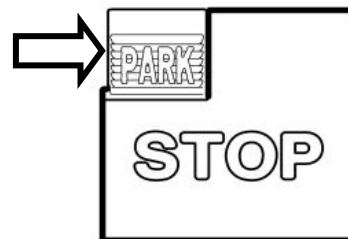
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HOW TO DO ?

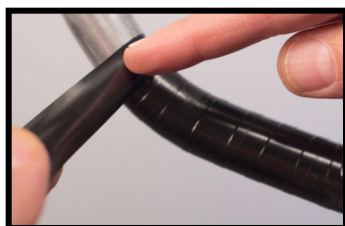
1. Turn the key switch off and Park the cart on the flat ground.



PARKING
BRAKE

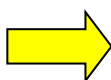


2. Disconnect the Battery positive and negative terminals, and use the insulated electrical tape to wrap the terminal poles for preventing short.

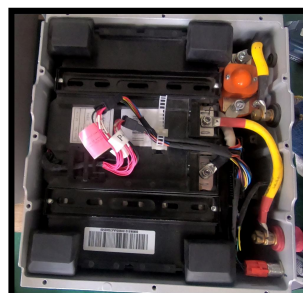
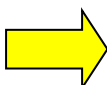


3. Remove the top cover of lithium battery pack to reach the inside of battery.

110AH
130AH



60AH





PROCEDURE

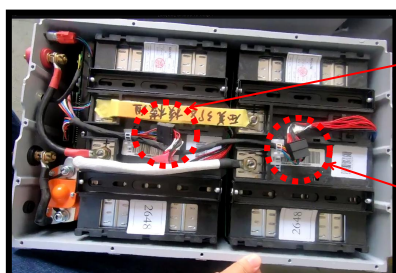
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4. Replace the BMS/wire harness/solenoid/diverter inside the lithium battery pack.

➤ **Note:**

Must unplug the connectors in the wire harness of battery modules prior to any operations below. Must unplug #1 connector first, then unplug #2 connector (For 110/130Ah)

110AH
130AH

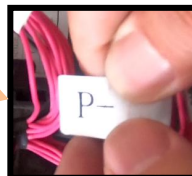
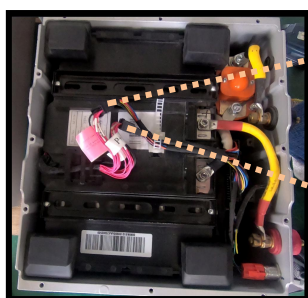


#1

#2



60AH

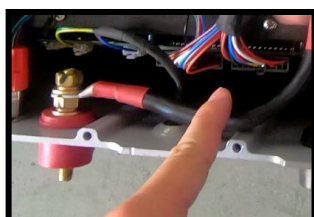


Note:

Must unplug [P+] connector first, then unplug [P-] connector (For 60Ah)

4.1 Replace the wire harness.

4.1.2 Remove the connectors in the wire harness from BMS boards.



4.1.3 Remove the connector from "SW" switch

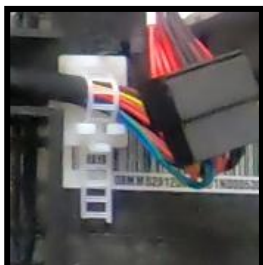




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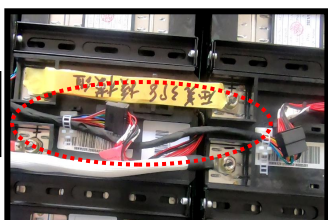
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4.1.4 Open the wire harness clips.

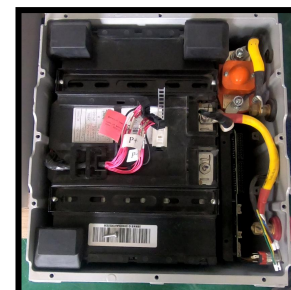
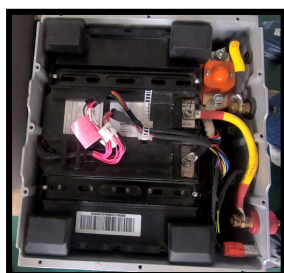


4.1.5 Remove the old wire harness and then

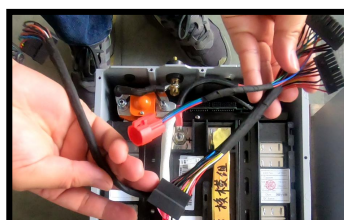
110AH
130AH



60A



4.1.6 Reconnect the new wire harness, go to **Step 5.**





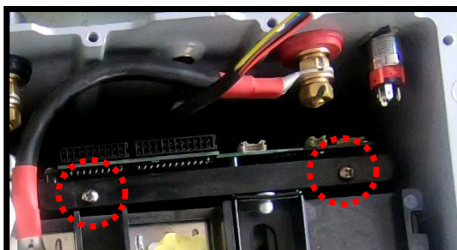
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4.2 Replace the BMS.

4.2.1 Remove the connectors in the wire harness from BMS boards. Same as Step 4.1.2

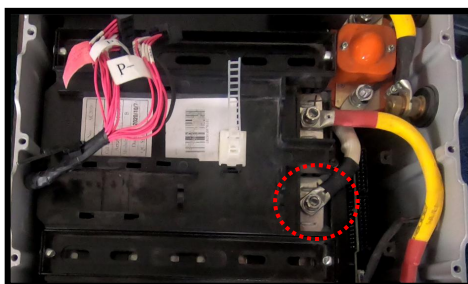
4.2.2 Loosen 2 small screws that fix the BMS mounting board.



110AH
130AH

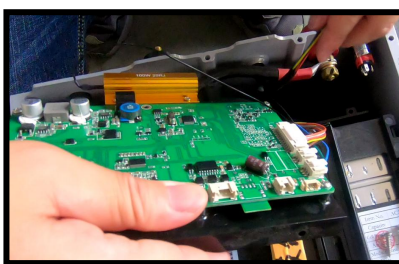
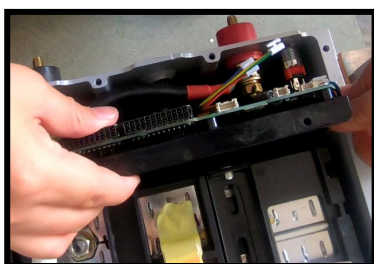
60AH

For 60AH lithium pack, also need to loosen this cable (from solenoid to module's negative pole) .

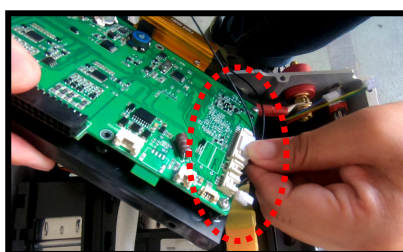
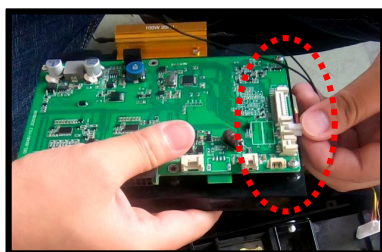


60AH

4.2.3 Take out the whole BMS mounting board with BMS & golden pre-charge resistor.



4.2.4 Remove all the connectors from BMS board.

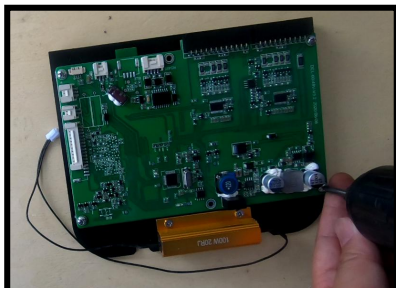




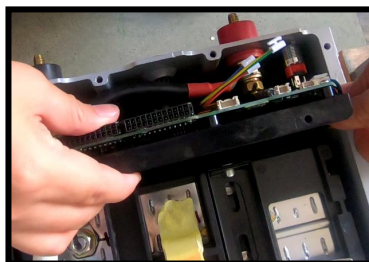
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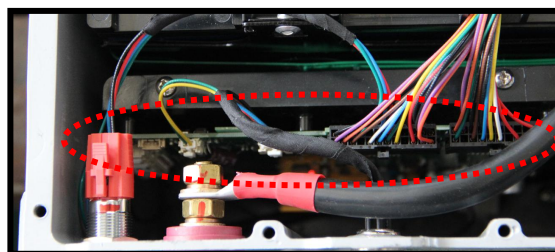
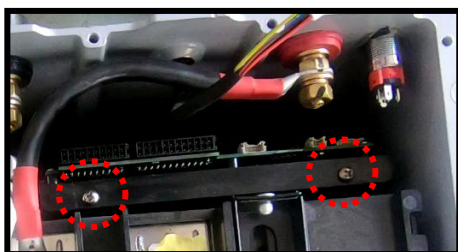
4.2.5 Replace the new BMS & golden pre-charge resistor.



4.2.6 Re-install the new BMS board and re-connect all the connectors.



4.2.7 Fix the BMS board with 2 screws and re-plug all the connectors.



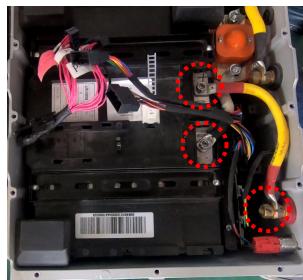
4.3 Replace the solenoid/diverter.

4.3.1 Remove the connectors in the wire harness from BMS boards. Same as Step 4.1.2

4.3.2 Disconnect the battery module's positive and negative cables.



110AH
130AH



60AH



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4.3.3 Disconnect the copper bar connecting to 2 battery modules, and then remove it.

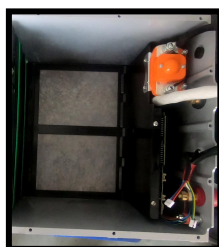


4.3.4 Take out the #1 battery module.

110AH
130AH



60AH

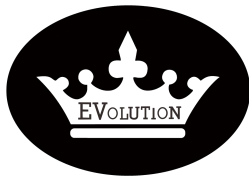


4.3.5 Disconnect the the cable connected from solenoid to battery negative terminal inside.



4.3.6 Take out the whole bracket with the solenoid/diverter/BMS.

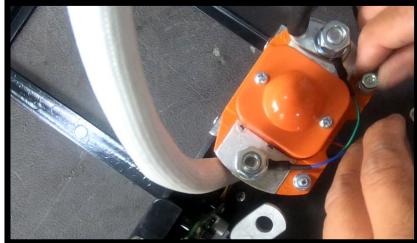




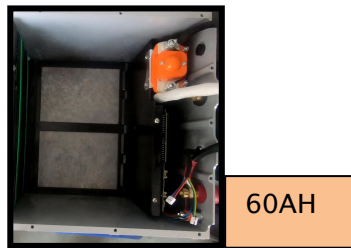
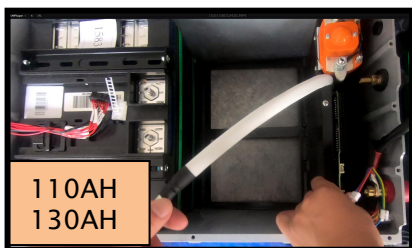
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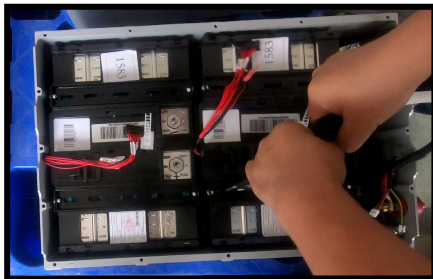
4.3.7 Replace the solenoid & diverter.



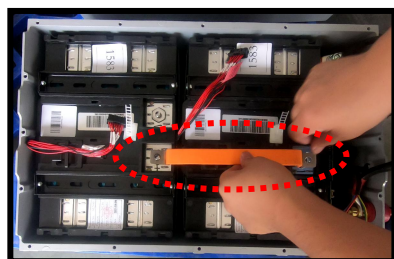
4.3.8 Re-install the bracket with the solenoid/diverter/BMS to the lithium pack.



4.3.9 Put the battery module back to the pack.

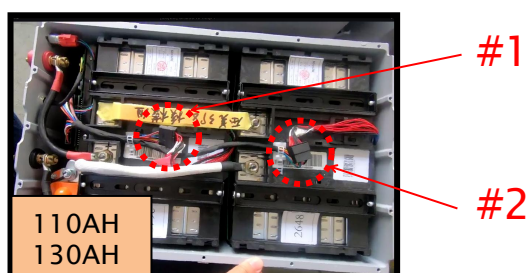


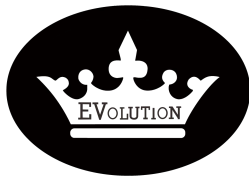
4.3.10 Re-connect the copper bar and battery module's positive and negative cables.



5. Re-connect the battery module's connectors.

Note: Must re-plug #2 connector first, and then re-plug the #1 connector.

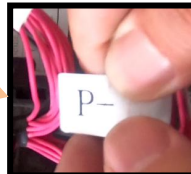
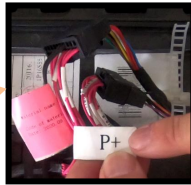
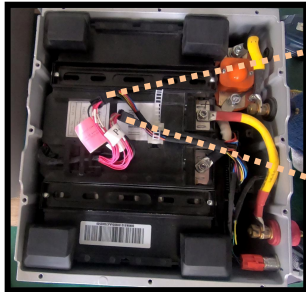




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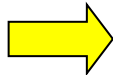
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60AH

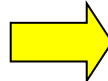
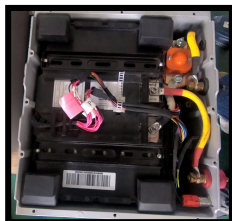


Note:
Must plug [P-] connector first, then plug [P+] connector (For 60Ah)

6. Put the top cover of lithium battery pack.



110AH
130AH



60AH

7. Reconnect the battery positive and negative terminals.



8. Press the "SW" switch to activate the BMS, then test the cart.

