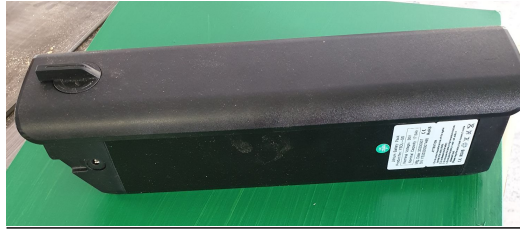


REPLACING THE BMS in the Rhino Battery

by Bruce McKenzie



Tools and Materials

PHILLIPS HEAD DRIVERS

120 GRIT SANDPAPER

ELECTRICAL TAPE

INLINE CONNECTORS - BULLET OR SPADE

SNIPS

PLIERS

HEAT SHRINK

SOLDERING GEAR

CRIMPING TOOL

HOT GLUE

Getting at the BMS

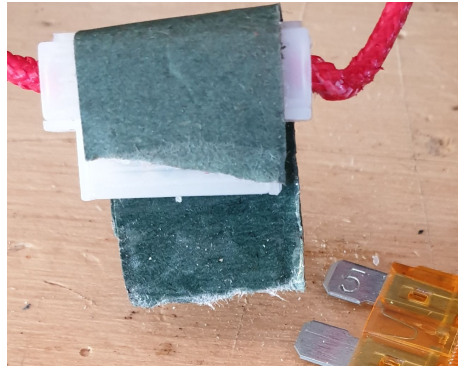
At the latch end, remove the centre screw just above the latch and take out the turn lever that operates the latch. (This will help keep the unit flat on your work surface.)



Slide the curved cover off. The unit will now be easier to work with.

Place the unit in a soft jawed vice or have some way to hold it firmly then undo the four screws at one end that hold the end plate on.

Remove the paper wrapping on the inline fuse and using a pair of pliers, remove the fuse (for safety reasons).



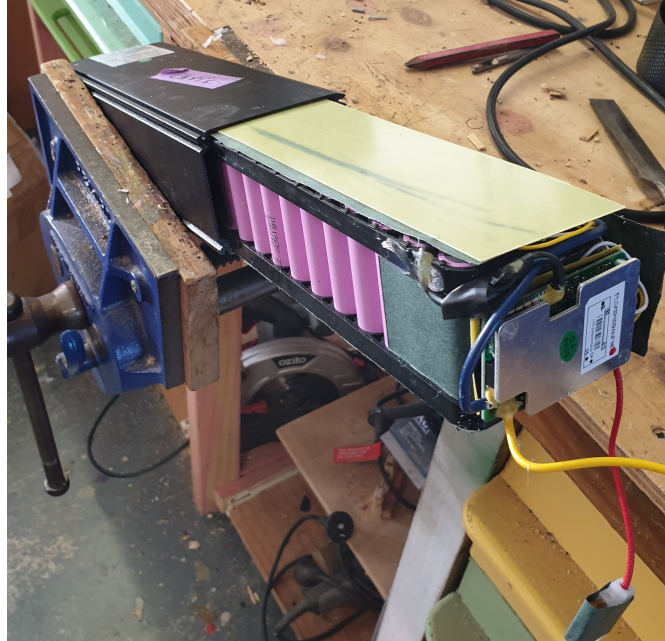
Do the same at the other end of the unit. Take note which fuse belongs where because they have different ratings. (Take care not to damage the gaskets that are fitted between the end blocks and the aluminium body of the pack.)

Unplug the four inline bullet terminals.



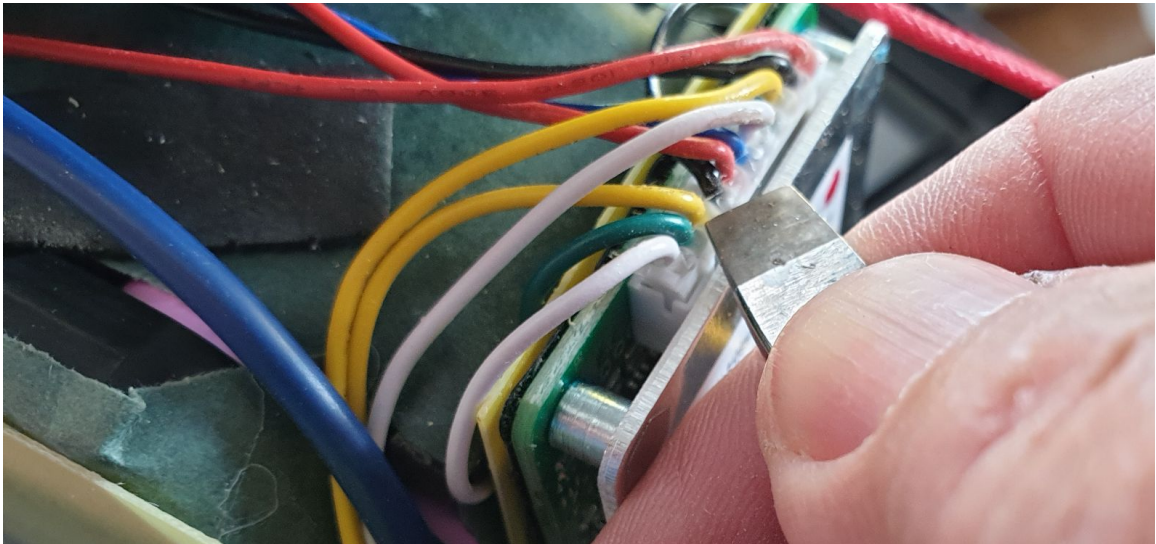
The two endplates can now be moved aside.

To expose the BMS circuit board, gently begin to ease the whole battery pack from the aluminium shell. Put even pressure on the pack as a whole from the end opposite where the latch was. The aim is to remove the battery pack from the aluminium housing. It may be a tight fit so a piece of soft timber and a mallet may be needed to achieve this. Tap from the end opposite the BMS.



Removing and Replacing the BMS

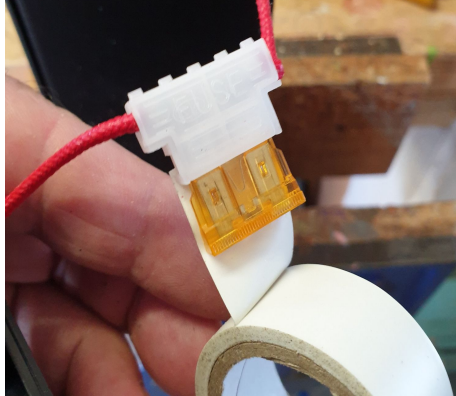
1. Gently ease out the white 11 pin plug at the top of the BMS near the label. You will need a tiny screwdriver type tool for this.
2. Place a screwdriver or small chisel between the black insulation cover and the yellow insulation on the battery pack and ease it away from the hot glue.
3. Remove the old glue and buff the surface of the yellow plate with sandpaper so the new glue keys well when applied.
4. Apply new hot glue and stick the BMS back down where it belongs.
5. Reinstall the 11 pin white electronic plug.



6. Cut the YELLOW wire on the new BMS at 9cm and fit your desired connection by crimping it well. (I used a female butt terminal because they match the existing terminals.)
7. Do likewise with the BLUE wire which should be cut at 39cm. This wire runs the length of the battery.
8. For the BLACK wire, we need to fabricate a solution. We do not recommend desoldering and soldering the new wire at the battery terminal. Join the wire in the centre by cutting the wire in half. Strip both ends by about 4mm each, place two 10mm pieces of heat-shrink one on each wire, push the wires together like forcing your fingers into their knuckles, solder well and apply the heat-shrink pieces over the joint one at a time.

Reassemble

1. Refit the fuses and wrap them with some electrical tape.



2. Make a careful assessment of how you are going to place all wires back into the unit in the spaces available.
3. All that is left to do is assemble the pack in the opposite order from which it was taken apart.

