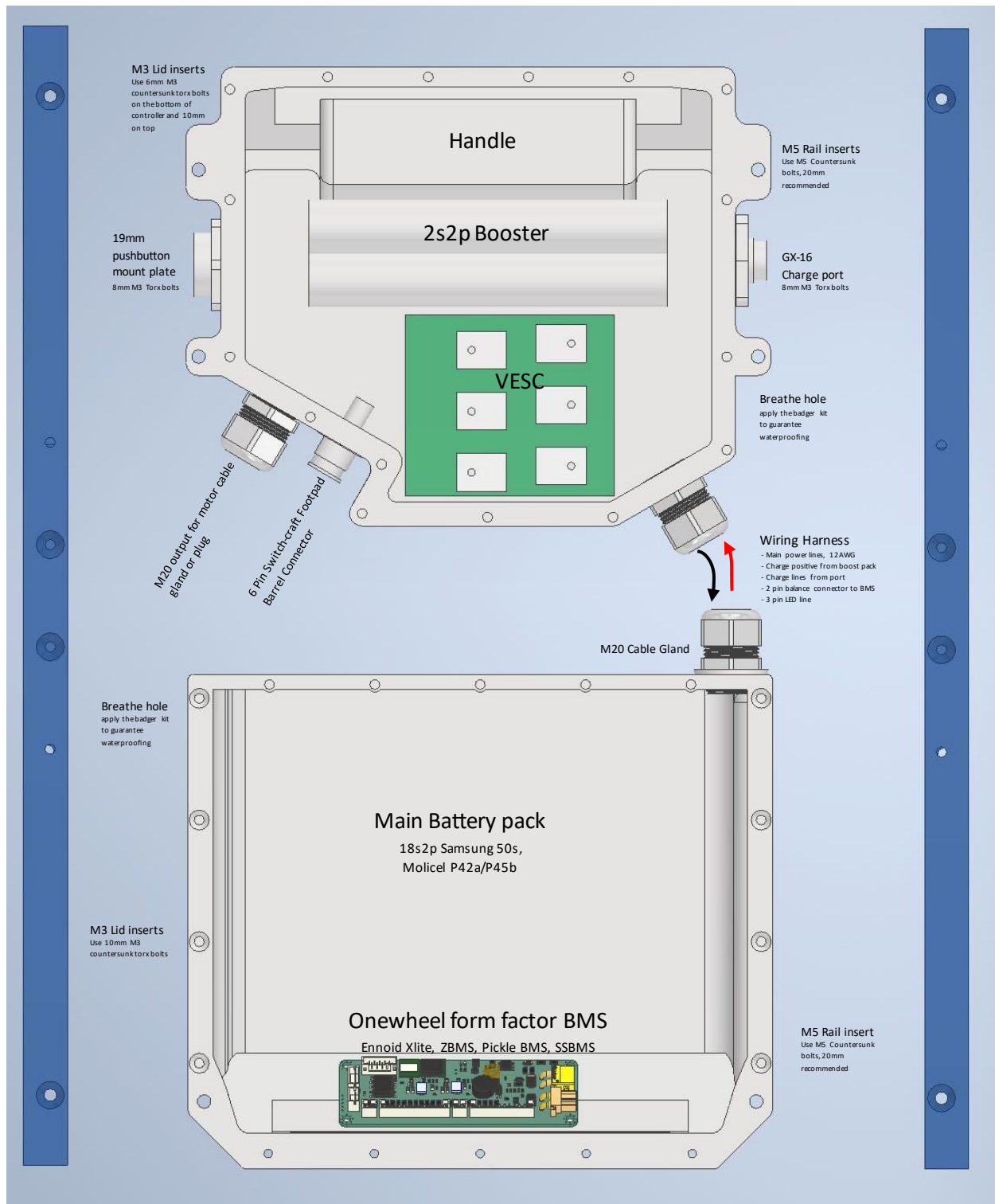




THE VOW XR SYSTEM

Guide intention:

To inform onewheel builders of the design and wiring for the entire VOW XR system.
This system has various possible configurations that achieve different specifications.

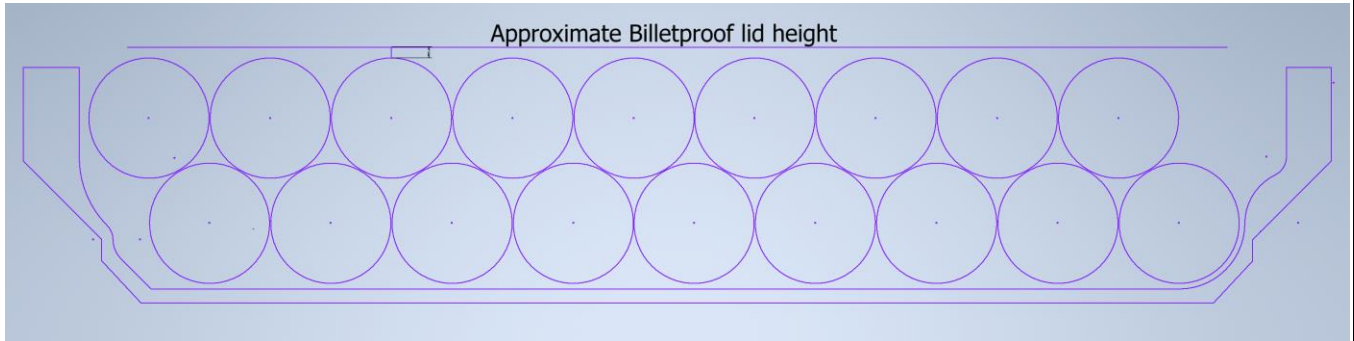


Battery Casing Specifics:

This casing is quite restrictive with its battery configuration. It is specifically designed with 18s2p 21700 in mind.

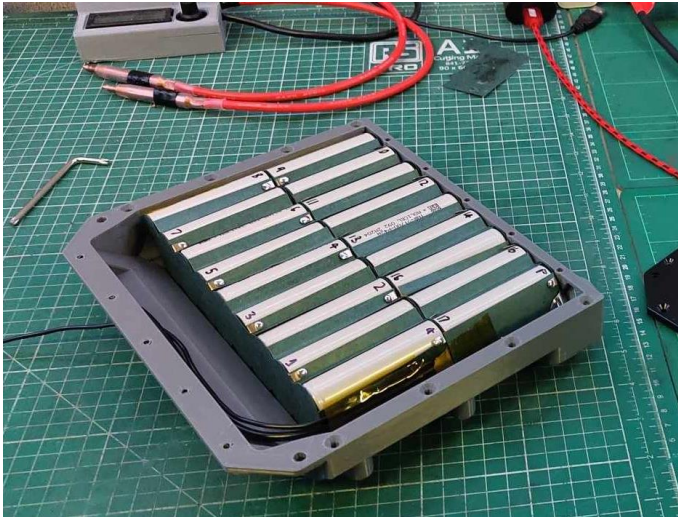
The casing has a maximum internal height of 43mm. 40mm for the staggered cells, 3mm for balance wires and foam, as per the cross section.

18s2p with stacked 21.4mm cells, MoliceL p45b, modelled with 0.3mm between cells for fishpaper
1mm of foam space below the pack (use 1mm EVA/Neoprene sponge)
2mm above the pack, 1mm for balance cabling and fishpaper, 1mm for the pre-installed Billetproof lid foam.
Large volume to the cable gland side of the pack for wire harness.



It is possible to assemble balance cables in such a way that they run over the top of the cells, as long as it does not increase pack thickness beyond 41mm. The pack cannot exceed 143mm in length, as the internal length of the casing bed is 145mm.

Here are pictures of a half assembled pack with a PLA print fitment test.

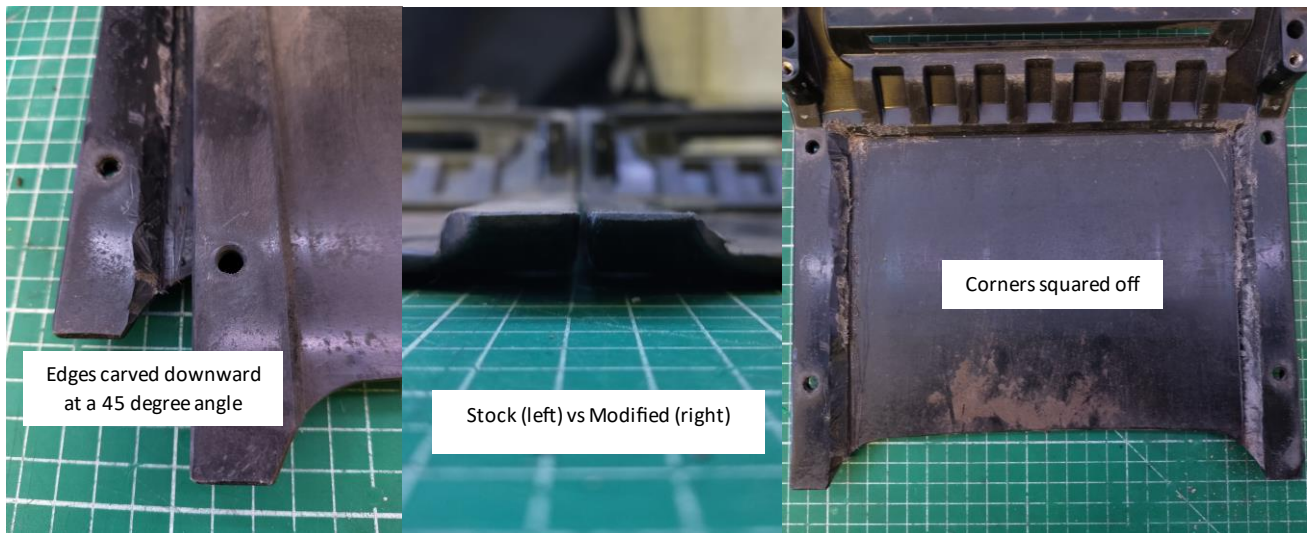


If you're 3d printing a casing yourself, make certain to use appropriate inserts. M3 on the top, M5 from the underside, and generic M3 nyloc nuts along the tail lip. The specifics for the M5 inserts are 153-IUCC-M5-1, and M3 are 153-IUB-M3-1.



The Nyloc nuts are 5.5mm from flat edge to edge. I recommend using 10mm M3 countersunk torx bolts across the entire lid. I recommend printing the casing with Bambu Labs PAHT-CF filament on an X1 Carbon with the engineering bed.

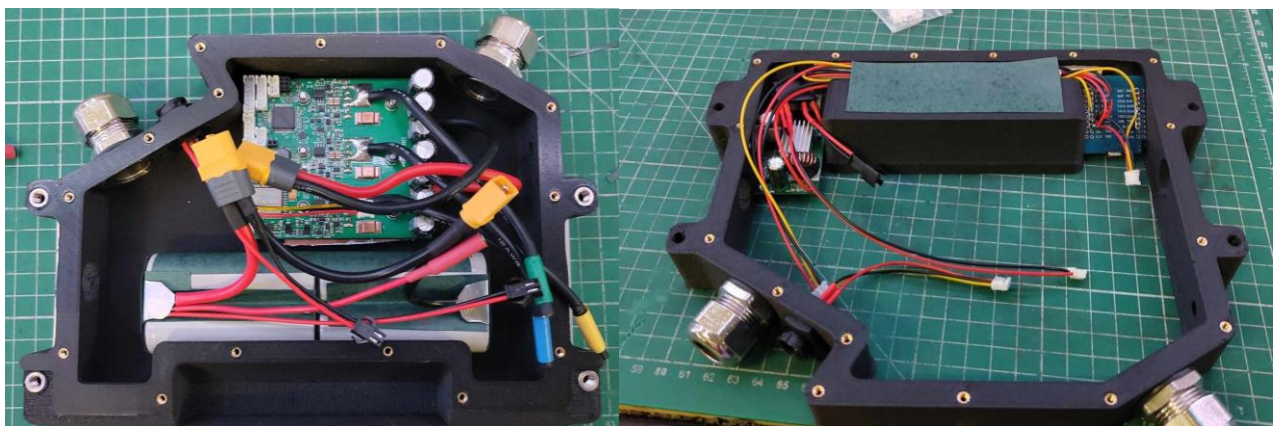
In order to fit the casing to a rear bang bumper, 2mm spacers are required, as are the following bumper modifications:



Once modifications are made, test fit the bumper to the board with the 2mm spacers. If fitment is not flush, continue to remove material until fitment is correct. Material should not need to be removed from the tailside of the bumper, only the rail side edges and corners.

Controller Casing Specifics:

This Controller can be constructed with most VESCs, but it's primarily aimed towards a Lil Focer V3/Tronic 250R footprint and a 2s2p booster. Here are some images of a controller during assembly.



The leftmost picture shows a controller assembled with a 2s2p booster, the rightmost showing a WLED control system, both the converter and Esp32, tucked on either side of the handle.

The VOW XR controller is intended to use a 19mm pushbutton and a GX-16 charge port. They attach with mounting plates to allow for interchangeability depending on if other ports are desired.

Two M20 inputs exist for motor and battery cable glands/plugs, and the footpad input is a Switchcraft 6 pin DIN connector the same as stock XR.

It is modelled to be 28mm tall internally, allowing plenty of room for most VESCs, but the Tronic 250R will require the use of an extended underside lid and an associated notch cut into the front bumper to accommodate its tall capacitors.

A topside plate is attached over the heatsink to allow airflow through the LED window and under the footpad, it is necessary to use this part.

If you're printing your own controller, the same inserts are use as per the battery casing.

