Carman Enclosure Manual 2021

Jonathan Rosenblum

The carman electronics enclosure is almost complete. It will need some minor adjustments to ensure it is full use ready. It is constructed of 3003 sheet aluminum at bent parts, and 6061 aluminum at the electronics panels. These are screwed together by 6-32 screws into press fit nuts. The enclosure contains the electronics for the Carman and SCADA systems, as well as the motor controller.

Things to consider

The enclosures main requirements are that it contain the electronics for the Carman system, the SCADA system as well as the motor controller. For the Carman section, the high voltage and low voltage electronics must be kept separate via a garolite sheet. This is a rules requirement. The enclosure cannot have any nuts in it. As a result, press fit nuts were fitted into the sheet metal.

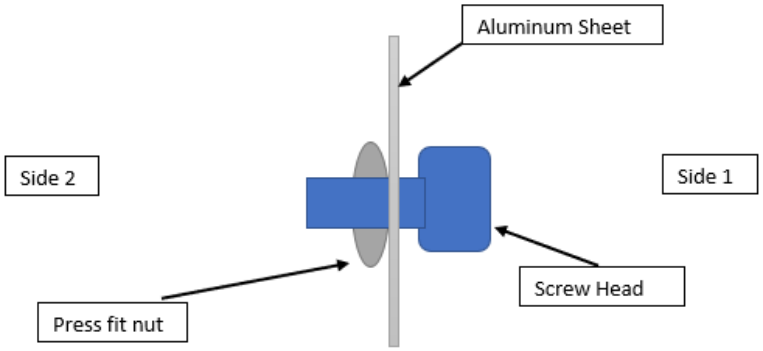
The enclosure also must be water resistant. It currently has several small holes in it. These are in the corners of the GLV lid, as well as between the front screen panel and the front TSV lid. These should be sealed before any water testing occurs. I recommend using tape in order to waterproof the edges, as it is not permanent.

The bottom right side of the enclosure is currently panel-less. This is because the electrical engineers may need to run more wires into the enclosure, and as a result a new panel may need to be manufactured. If no new panel is necessary, just close up the area with a hole-less panel to keep it water proof.

Assembly

As of writing the enclosure is fully assembled with the Garolite sheeting on the way. If the enclosure needs to be reassembled for any reason, ensure that the screws are put into the panels all simultaneously, and then slowly screwed in all at once, so that the screws all act as clamps to hold together the shape of the enclosure.

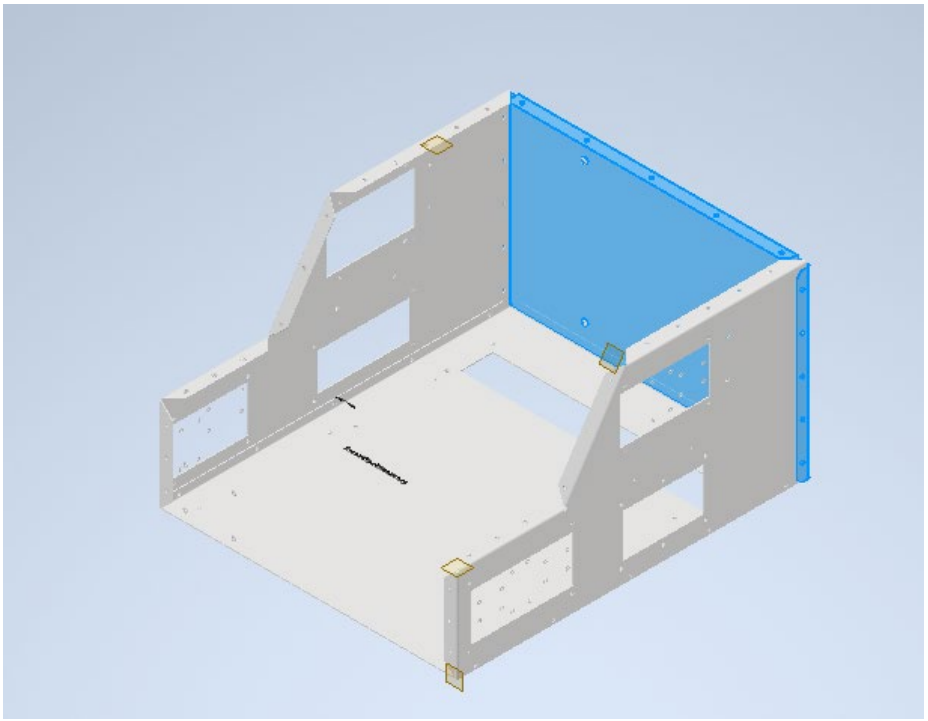
The screws are held in by press fit nuts. These nuts are pressed into a side of the aluminum. The head of the screw must be on the **other side** of the aluminum sheet



For the electronics panels ensure they are mounted on the inside of the enclosure, not the outside. As the panels are internally mounted for waterproofing purposes.

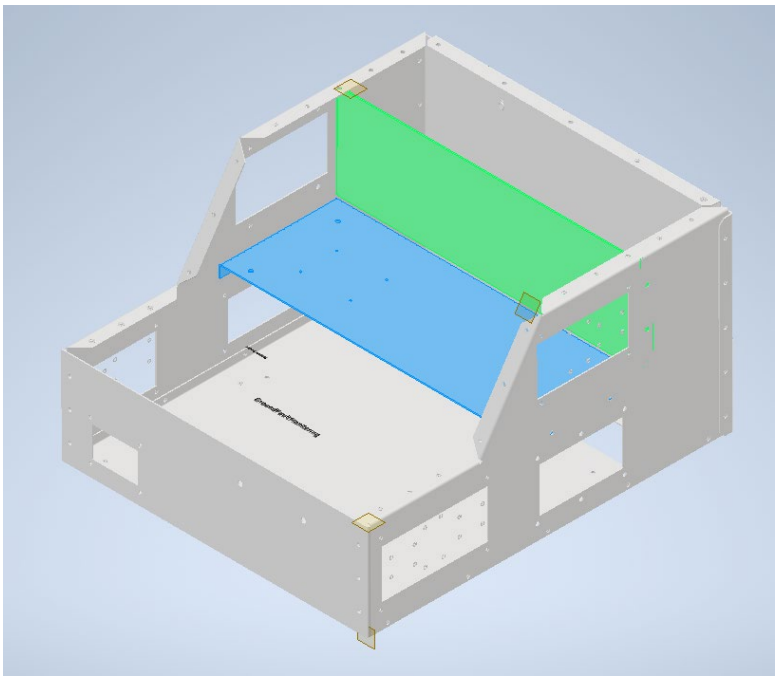
Assembly Instructions:

1. **Assemble the sides and back.**

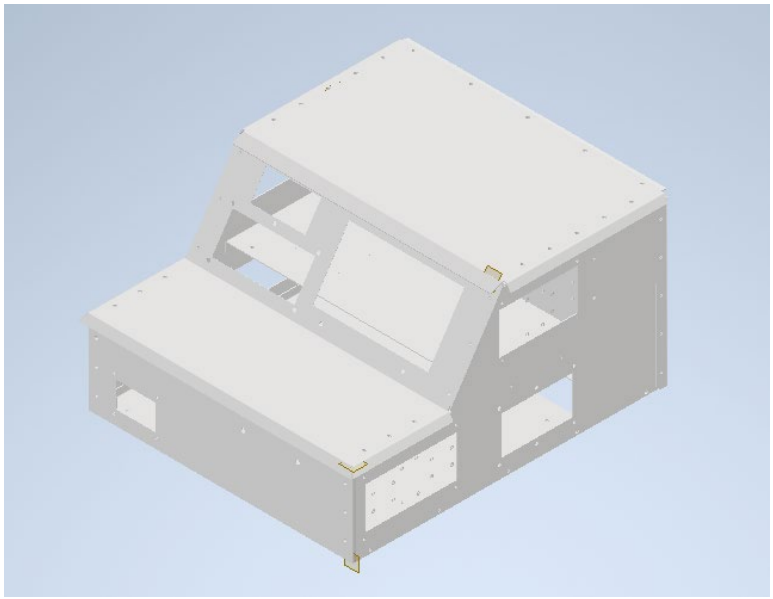


The screws heads should be on the outside of the enclosure. The back panel wraps **around** the sides. The sides are outside of the bottom panel.

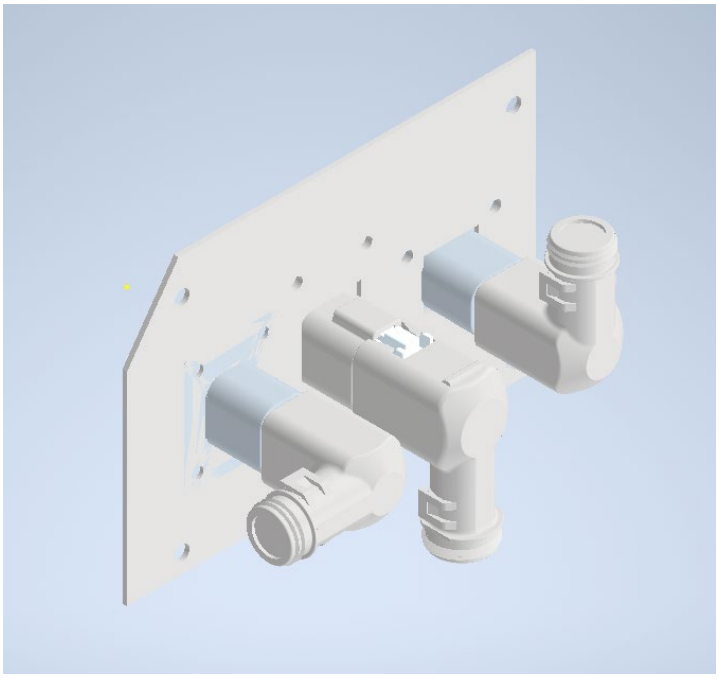
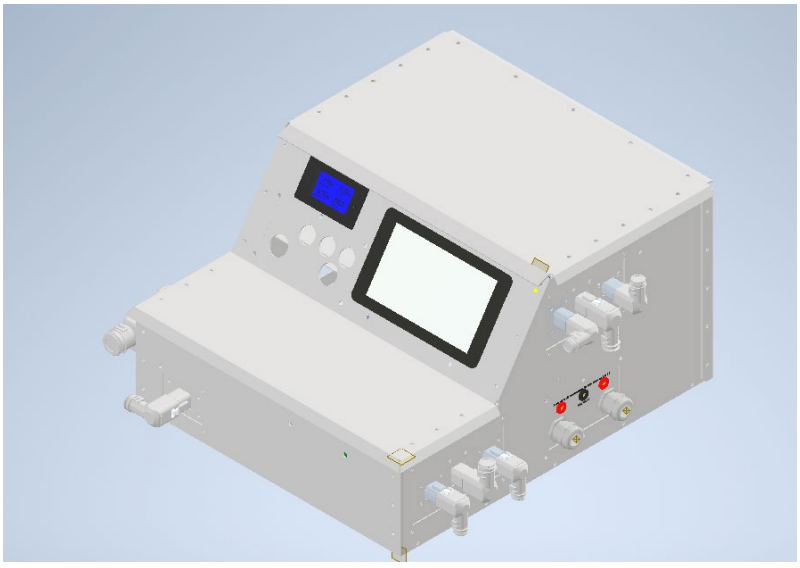
2. **Insert the Shelf and Shelf Back**



3. **Put on the lids and screen panel.**
   The top panel goes on last. All screw heads are on the outside of the enclosure.



4. **Insert the electronics plugs into the electronics panels.**
   The plugs will be mounted from the **inside** of the panel, for water proofing purposes.



5. **Remove the lid, and insert the panels into the enclosure.**
   The panels are mounted on the **inside** for water proofing purposes. Also place the mounting boards into the enclosure.