

Project Empoleon Notes

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The submarine chassis design that we propose is comprised of four main parts: Top frame(yellow), Lower frame (silver), Body (black), and base(silver). The role of the pillars adds structural support as well as adding to visual integrity. The pillars are made of PVC with an overall rounded shape containing an interior circular cutout to make room for the thrusters. The pillar will be made of PLA. The pillar has a height of 9 inches, an interior radius of 2.25 inches, and a length corner to corner of 8.65 inches. The pillar has a mass of 5.06 pounds. Four pillars are used in total to give support. The top will be removable from the pillars to help give access to the interior. The brackets to secure the thrusters are modified existing parts to ensure rigidity and security for other parts. The top blocks and the aluminum foundation plate form a rigid structure for the chassis as a whole. There exist some small waterproofing grooves for the top blocks of the sub and holes in the foundation plate as well as the top blocks for mounting purposes. Handles also exist to provide ease of mobility for the submarine for casual and competitive use. Because the foundation plate and the handles are made of aluminum, HSMworks simulations and toolpaths exist to cut out the foundation plate for 2-4 handles as needed. There is existing support through the X-bars attached to the lower frame of the Concept. Using U bolts is a possibility but using L-brackets would be the best plan of action for securely attaching the X-bars to the base of the concept. Also allowing for us to keep the assembly of the concept cheap and simple. Overall, this chassis design integrates functionality, manufacturability, and mobility in a relatively simple package sure to compete with our contenders. This is only phase 2 of the concept and the entire design is subject to comment and change. If anyone wants to join the ongoing project you are welcome.



