Peer Reviewed: Danny Hong

Charmaine Lum

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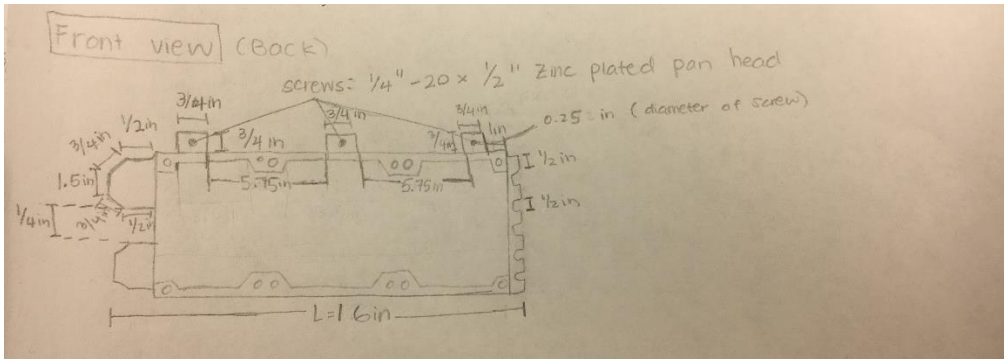
Technical Documentation

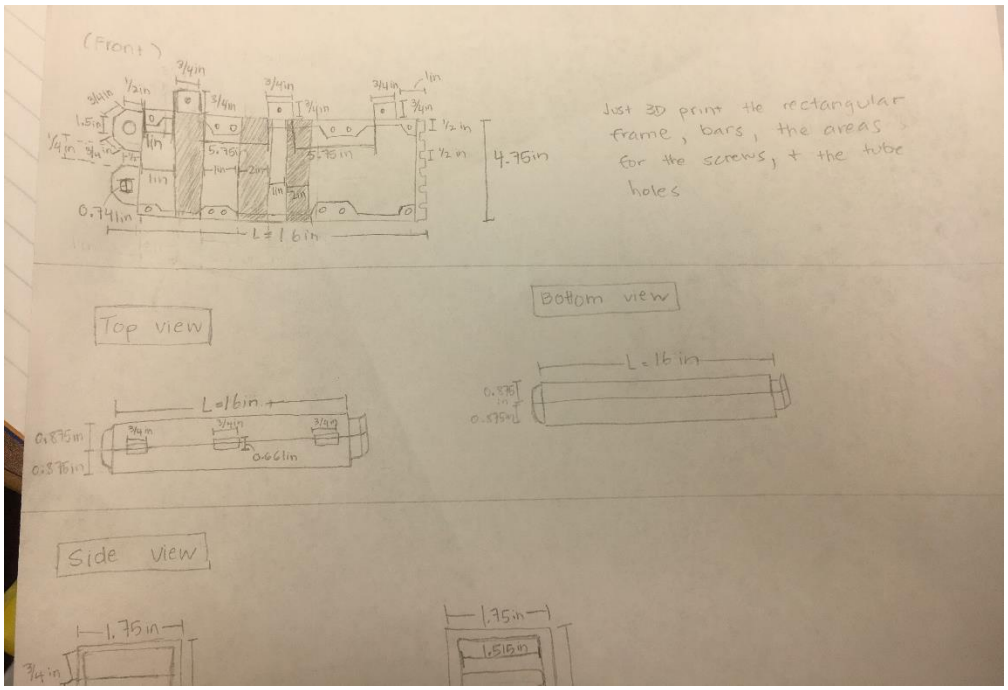
For my technical documentation, I am going to be writing about my cooling system vents. The reason why we needed to have a vent was to prevent the hardware box from overheating. There were a few proposed solutions such as a fan, water cooling system, and passive cooling. The water-cooling system was chosen because it could dissipate heat the fastest. A water-cooling system includes a radiator that is attached to the outside of the hardware box and cooling tubes are connected to allow water to travel through. Therefore, I came up with a design to have a mount that is held on by fasteners. The reason why the mount is screwed onto the ridges of the radiator is to allow easier airflow. The whole radiator was designed to extend 6 inches outward because of the way that the WAM-V is oriented, there is a triangular beam that stands in the way of having the radiator directly attached to the hardware box. Which also explains why there are only 5 fasteners on the mount; therefore, the hardware box can have easy access in being removed on and off from the WAM-V. Some of the potential risks for using a radiator are: 1. Leaking can occur from the cooling tubes and this can heavily damage the components inside the hardware box. 2. Sagging on the exterior side of the hardware box can occur because the design only hangs off the side by 5 fasteners. Previous designs of a radiator mount presented below. The direction with this design was to have bars attached behind the radiator to give the entire object more support. The design was to have two casings that had to be screwed in the middle at the top of the radiator to hold the radiator together. The mount would be held by steel beams bolted to the hardware box. The idea was not viable because the bars would block air flow and there the hardware box would not be sturdy enough to hold multiple steel bars.

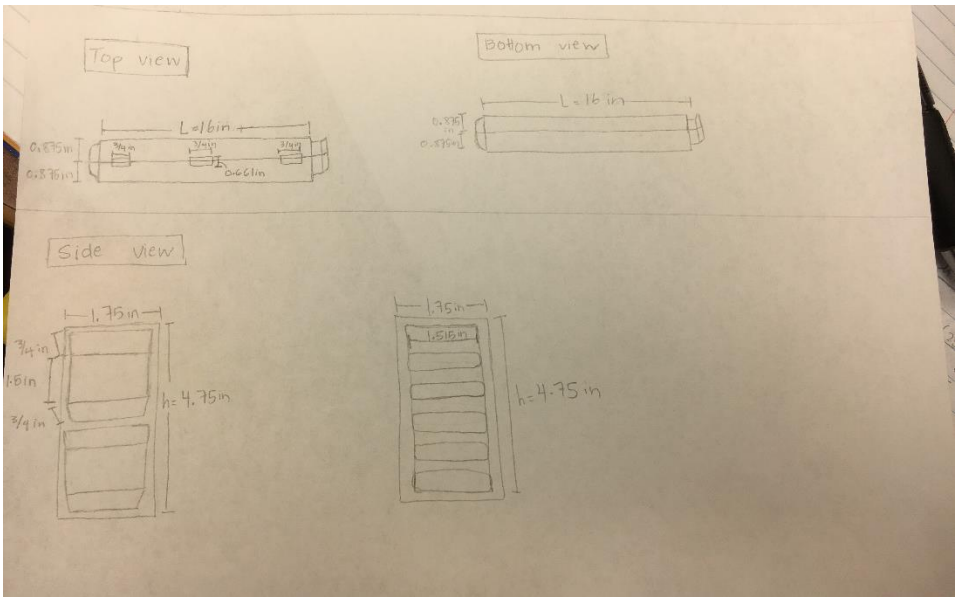
Dimensions for the radiator mount for the original design:

- 0.75 inches in diameter for the screw where it will be mounted to the hardware box and 5.75 inches spacing apart.
- Entire length of the mount will be 16 inches, width is 4.75 inches, and thickness is 1.75 inches
- Cooling tubes holes will be approximately 0.25 inches apart

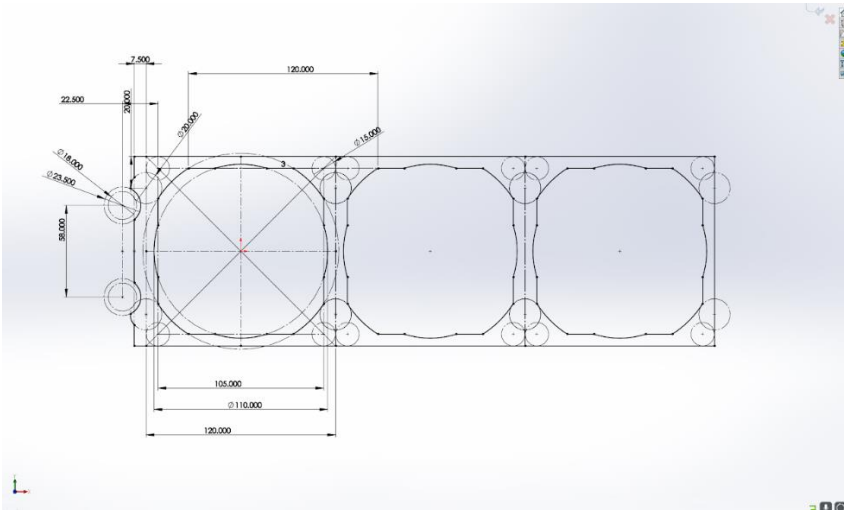
Schematics for Original Design of Radiator Mount:







Schematics for the New Design:



Procedure on Installing the Mount:

To install the mount, use five 1/4 in fasteners through the mount and the hardware box. Inside of the hardware box, use 10-15 washers to hold the fasteners in place and then use plated nuts to secure each of the fasteners. Use Philips screws at each of the 12 openings on the radiator to attach the frontside of the mount to it. Three fans will be installed on the front by screws too. The purpose of the fans is to blow hot air out as the liquid from the cooling tubes cool it.