

Image #1 -- External view of avbay attached to the payload bay where the main parachute would be.

Things to note:

- You can see the screw where the avbay is attached to the payload tube. This is a 2-56 stainless steel screw that gets screwed into a 2-56 lock nut which is glued inside the avbay tube. There are two of these screws on opposite sides.
- Since the payload tube is somewhat transparent, you can see the forward aluminum bulk plate inside.
- There is also a hole in the avbay for the 2-56 shear pin. Again, there are 2 of these on opposite sides.
- Also visible is the aft end bulk plate which you will see in more detail in subsequent pictures.



Avbay Side View -- just the avbay without the payload tube attached, similar to the 1st image.

- The forward end of the avbay has a Kevlar shock cord attached to it so you will always be able to tell forward from aft.
- If you look closely on the left side, about 1/2" down from the top of the tube, you can see the hole and black epoxy inside the avbay for the 2-56 screw to hold the payload tube to the avbay.
- You can start to see how much is on each bulk plate, but end views will show it better.



This is a view directly down on the aft bulk plate showing all of the stuff attached:

- Charge tube, custom 1/4" copper tube with a cap on the bottom. Attached to the bulk plate with a 2-56 stainless steel screw via hole in the cap and the bulk plate is tapped.
- Two nuts for the avbay rails. Rails are 8-32 and all parts are stainless. These line up with the sled. This end is normally not disconnected so the nuts have blue Loktite on them, along with a silicon seal washer and regular washer between the nut and the bulk plate.
- Stainless steel welded eye bolt -- the smallest I could find (I do not remember the size)
- 2 wire electrical block held to the bulk plate by another 2-56 stainless screw where the bulkplate is tapped. This is a special small size block and even that needed to be carved a bit on the edges to fit. You can see the wires which go from 1 side of the block and pass through the bulk plate in another hole, which is then sealed off with hot glue.

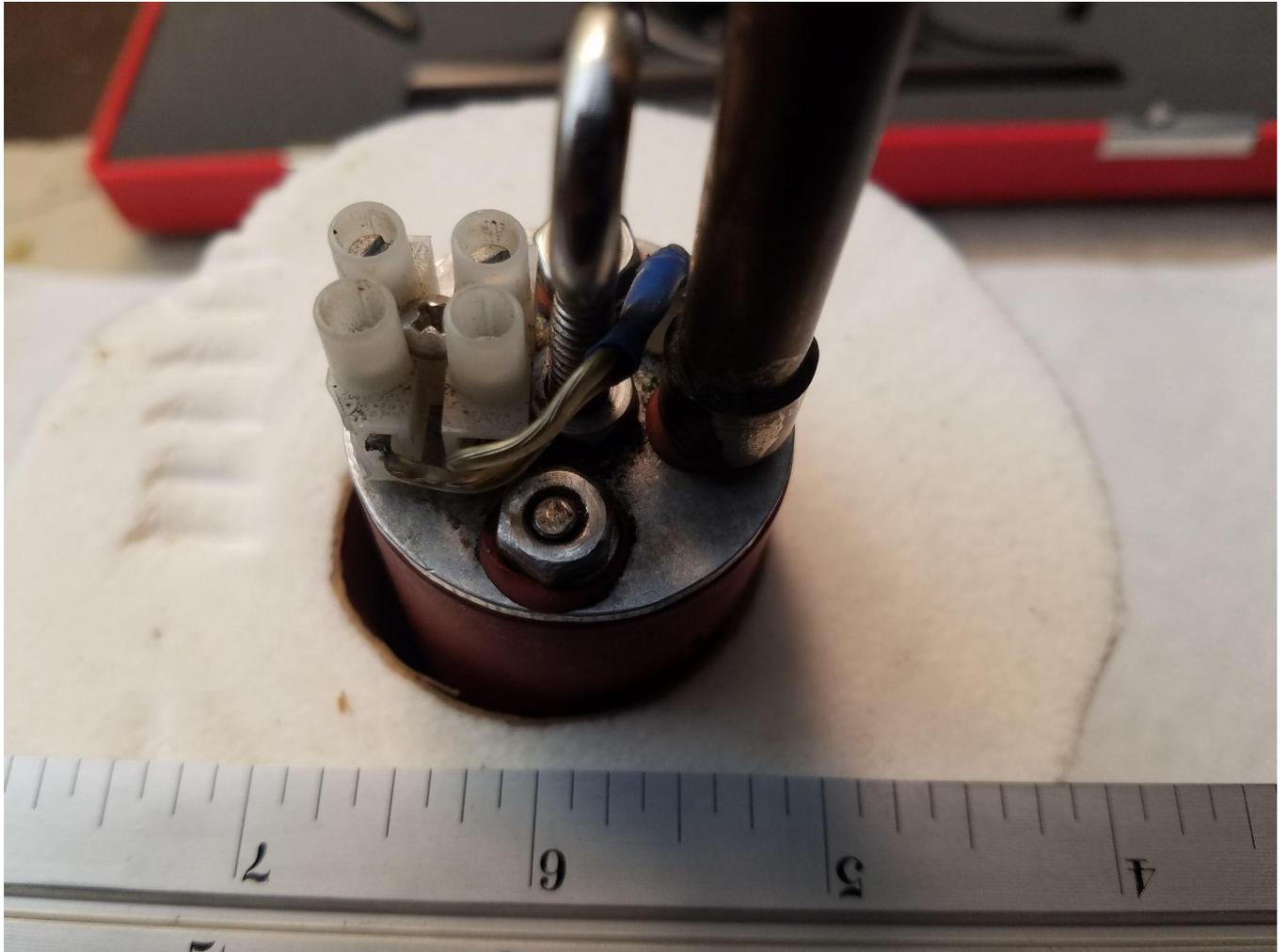
There is another view of this from the side angle.



Same aft bulk plate as in the previous email except this time an angled shot.

- You can see how tight things are
- Better view of the wire between the block and through the bulk plate
- Better view of the 8-32 nut with the washer and seal washer below. The bulk plates are tapped with 8-32 thread so these nuts are just to prevent the all thread from turning and to hold the seal washers in place.
- Better view of the bolt holding the block to the bulk plate.

The eyebolts are M5. MAC Performance has M5 eye nuts.



This is now a picture of the forward bulk plate. It is almost identical to the aft bulk plate so there is not a lot to learn here.

- The only major difference is how much the all thread sticks out since this is the side where I unscrew it to open up the avbay.



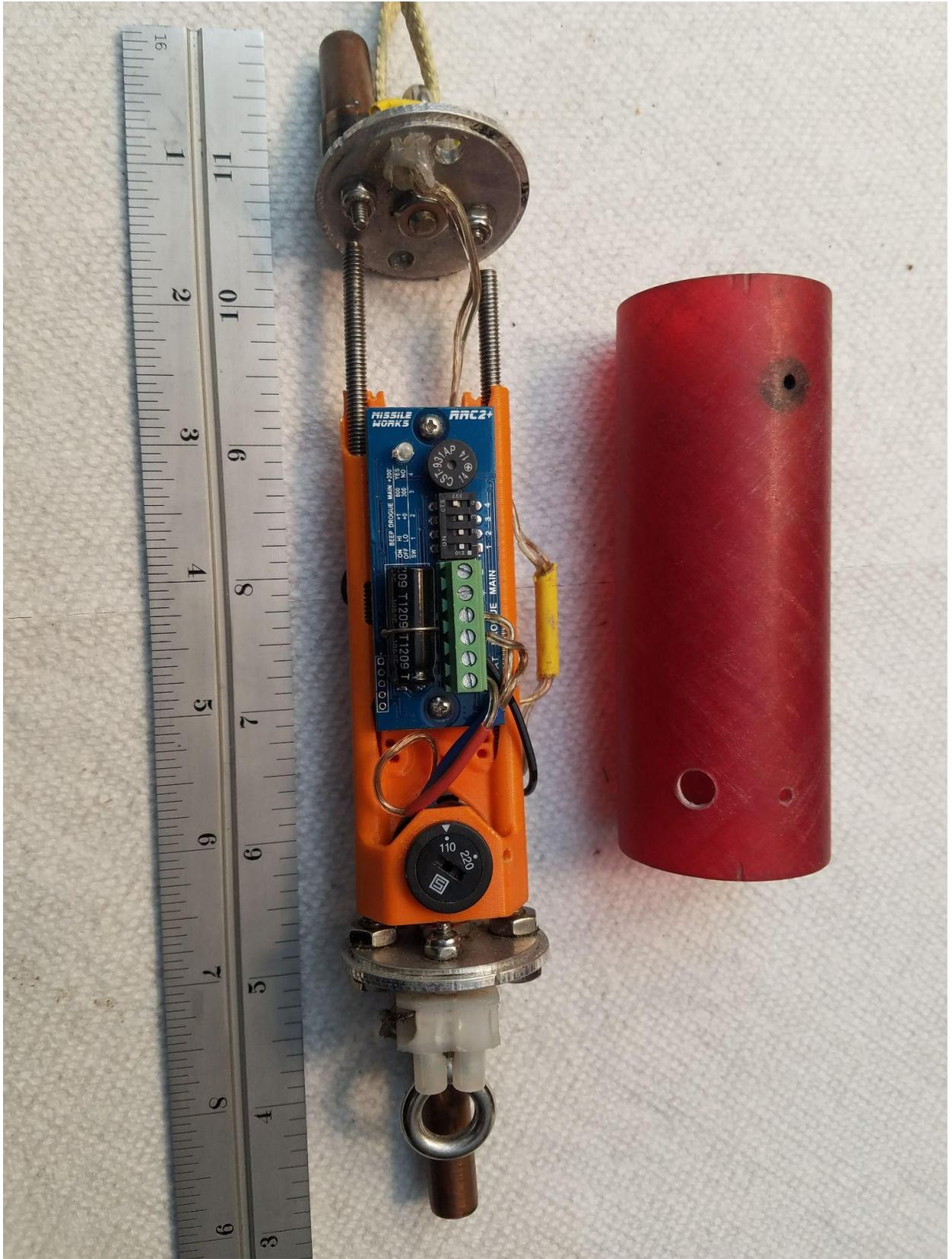
Here is the same forward bulk plate but shown at an angle.

- You can see that the all thread sticks about 3/4" to 1". When I cut the all thread, I intentionally make them different lengths. In this picture, the near one is longer than the far one. So when I am assembling them, I only need to line up one side at a time rather than both at the same time; much easier. Also, because of how tight things are, the eye bolt interferes with the spinning of the nuts. So I need to tip the bulk plate to one side, creating more space on one side while I tighten that nut. Then tipping the other way to tighten that nut. This gets repeated until both nuts are below the eye bolt eye.
- You can also see how the all thread pieces are stacked up. First to go on is the silicon seal washer, then a standard stainless steel washer, followed by a nut. This lets me compress the seal washer and prevent exhaust gasses from coming in.



This is the altimeter side of the sled in the avbay.

- Only 1 altimeter fit, the RRC2+
- I bought the sled which was 3D printed but I was not that impressed as it kept chipping and breaking - look at the top where the #8 rails are.
- There is a standard 110/220 switch hole and that is what I installed.
- You can also see some of the details related to the backside of both bulk plates.
- The wire to the main parachute are long enough so that I can expose the screws and disconnect them to remove the forward bulk plate and completely remove the coupler tube.
- There are 5 things I want you to notice on the avbay coupler:
 1. About 1/2" down from the top, you can see the hole for the steel screw to hold the payload bay to the coupler. You can also see that I used black epoxy to hold the lock nut in place. I roughly scuff up all surfaces of the lock nut so the epoxy grabs better. The two lock nuts have a big influence as to how the sled is oriented. There are 2 holes and nuts 180 degrees apart.
 2. About half an inch from the bottom, you can see the 1/4" diameter vent hole which is also in front of the 110/220 switch. There are 2 holes of this size, 180 degrees apart, but only 1 will be in front of the switch. The other is to allow the pressure inside to be stable.
 3. Also about half an inch from the bottom is the 2-56 unthreaded shear pin hole. The placement here is critical because the shear pins, once screwed in, cannot interfere with the parts inside. There are 2 of these 180 degrees apart.
 4. Back at the very top there are 2 small notches cut in the coupler. When I first assembled the coupler and both bulk plates, these 2 notches were cut along with extending these notches into the edge of the bulk plate. This is how I exactly align the bulk plate with the coupler tube. There is only 1 pair of notches at the top.
 5. On the bottom there is a single notch cut, done as the top was done but with only a single notch. This way I can identify the notches differently from the top and bottom. There is only a single notch at the aft end.



Here is the battery compartment for the altimeter. It is a LiPo battery and I had to figure out which coupler was needed for the battery. You can also see how much the sled was damaged and how much it needed to be notched on both ends to fit with the bulk plates.

The coupler tube is in exactly the same orientation as the previous picture but see the single notch cut in the side of the aft bulk plate that would get aligned with the corresponding notch in the coupler.



This is a picture of what is connected to each stainless steel #8 rail, outside the avbay. The red silicon seal washer (McMaster-Carr PN 99604A103) goes against the bulk plate and has the standard stainless steel flat washer above it. Then the stainless steel nut is used to compress everything so the seal disk does seal off the hole.

Any nut which is not a lock nut that I do not want to turn has blue LocTite on it; standard procedure for all my avbays. The silicon seal washers are also standard for all my avbays, with my standard size all thread being 1/4-20 and the appropriate sized seal washer.

