Building An Altimeter Bay

This is a guide that describes one way of building an Altimeter Bay, there are many other ways. After you have built one, you will tailor it to what works best for you.

NOTE: Please read through all the steps here to see the how and why before starting.

(1) Lay out the parts on the bulkhead. We are using Dog House Rocketry 2position Terminal Blocks and 1.5g Charge Wells. My preference is to have the Charge Well and Terminal Block on opposite sides to give me room to work with. As you layout the parts keep in mind that there is mounting hardware on the interior and you want to ensure that does not interfere with the coupler.

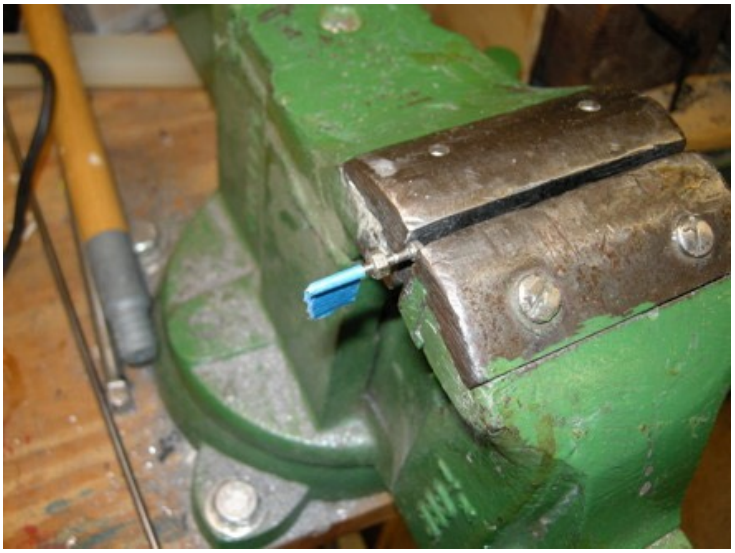
(2) Place masking tape on the bulkhead and mark the mounting holes. Note there are two holes for the Terminal Block, one to mount the Terminal Block, the second for the wiring passthru.

If you did a good job with the layout on the first one, the second will match.

(3) Bolt the two Bulkheads together and drill the holes straight through both Bulkheads.

(4) Drill the holes through both bulkheads. I use a #19 for the charge Well and a #33 for the Terminal Block and wire passthru.

(5) When I did a trial fit of the Terminal Block, the screws were too long (they can used on up to 1/2" thick bulkheads). So to keep the interior of the Bay less cluttered I decided to trim the screws a bit. I measured the amount to trim, then mounted the screw in a vise. Using masking tape I marked where to cut (hard to see in picture). I then used a Dremel (or hacksaw) to cut the screw. Note that I put a scrap nut on the screw. This make is easier to clean up the cut threads. I also use a file to break the sharp cut edges before I remove the nut.



(6) With everything trimmed and ready to install, I liberally coat the screws and part with silicone caulk then install the Charge Wells and Terminal Blocks.

For the Charge Wells, I also coat the head of the screw so when I put the screw in well it does a good job sealing the hole. The caulk helps prevent blow back on the Charge Wells. I use caulk anywhere there is a hole in the bulkhead.

Dog House Rocketry provides NyLock Nuts with their Charge Wells and Terminal Blocks so a threadlocker is not needed. If you are using another brand you may need a thread locker.

(7) When mounting the Eye use a liberal amount of Blue Threadlocker (Medium Strength) on the exterior nut. I use high strength (Red) theadlocker on any items that I do not intent to ever separate. This will prevent the nuts from unscrewing. Again use Silicone Caulk around the threads and washer when mounting to the bulkhead to prevent blow back from the charges.

(8) Here is a completed bulkhead. You can see some caulk around the Charge Well. I let these sit till the caulk and threadlocker have setup.

With the Bulkheads finished, I can continue with the electrical items. I am using the wiring from Dog House Rocketry Altimeter Bay Kit.

(1) I am using the Rotary Switch that came with the kit so I drill a 1/2" hole into the Switch Band. I prefer to use a Forstner Bit becuase with a little practice it tends to cut a cleaner hole. I like to keep the Bay uncluttered so I trim the switch wire so when the switch is installed the connector will stick out an inch or two from the coupler. I use white wire for switches.

This is a tight install into the 54mm coupler so I have soldered the wires at right angles to the switch and close to the switch body. I have also trimmed any excess solder lug on the switch and I have coated the solder lug/wire with a couple coats of liquid electrical tape (Home Depot) to reduce the chance of the switch lugs contacting anything when inserting/removing the sled. Normally, I would use heat shrink over the wires and solder lugs but this is too tight.

(2) I assembled one end by securing a steel threaded coupler and threaded rod to a bulkhead using threadlocker. In this case I used high strength threadlocker because I don't expect to disassemble this assembly. I also have added wiring by feeding it throught the hole, stripping a 1/4" or so and tightened it into the Terminal Block. I only need 2"3" of wire at this end as it will connect to the sled.

Note: The hole where the wires pass through needs to be filled. I have used epoxy, Silicone caulk, etc here. It is important that the hole is sealed well.

(3) The other bulkhead is the removable one and is wired up the same way. The wire is trimmed to just what is needed.

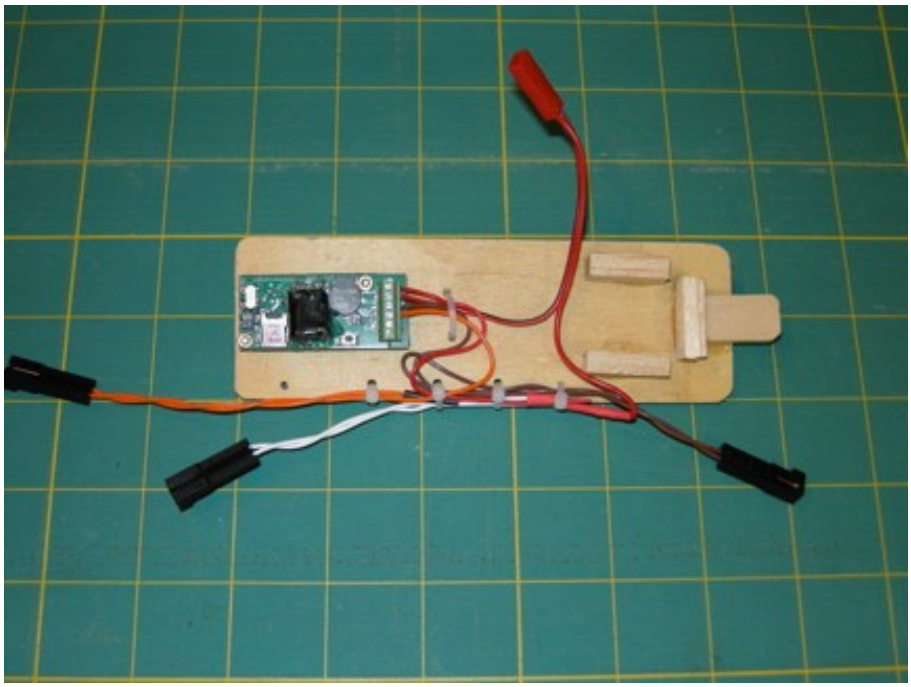
(4) I have modified the removable bulkhead to have a small tiedown using a cotter pin. Since this bulkhead will be removable, I will use safety wire to prevent the large Screw Eye from inadvertantly unscrewing in flight or while spinning under a chute.

(5) It is secured by spreading the arms and filling the hole with 5min epoxy. Note: You can see in the picture that the screws were trimmed cutting the clutter and minimizing things to snag.

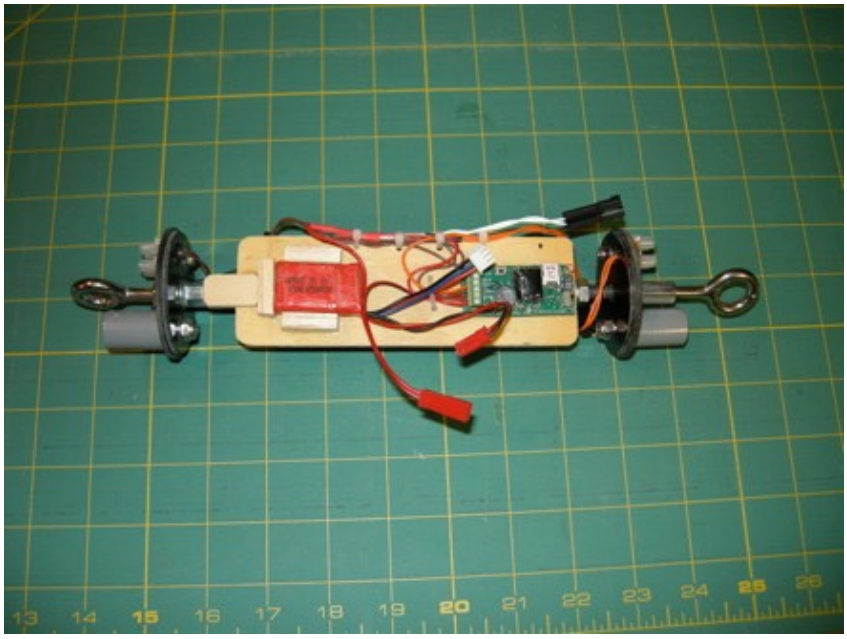
(6) I made the altimeter tray from a piece of 1/8" ply. I am using an Aluminum tube and balsa triangle stock with epoxy to secure the tube on the back side. I have drilled holes for the Altimeter and wire ties.

I am using a Raven2 altimeter. I have glued balsa blocks to act as a battery box for a little LiPo battery. I have also glued a piece of Basswood that will mesh with the steel hex coupler [see (2) above] and prevent the tray from rotating. The Raven shares terminals, so I soldered up a harness based on the wiring diagram included with the altimeter. Again, I have trimmed the wire lengths to what was needed to reduced the clutter. The battery connector is one that works with the LiPo that I am using.

Note: I have also secured the wiring with plastic wire ties to act as strain reliefs and make it easier to install/remove the sled without snagging wires. This has the benefit of minimizing wire motion at the altimeter terminal block which reduces wire fatigue.



(7) Here is the completed assembly. A couple of 1/420 nuts are used to hold the tray in place one acting as a lock nut. The white connector will hook to the switch connector mounted in the coupler. The basswood tab prevents rotation. The battery will be secured using electrical tape.



(8) Here is the installed assembly. The right side is the removeable bulkhead and the assembly is installed from the left. Note I have add mounting holes for securing the forward body tube and have added metal tape to tighten the fit with the sustainer tubing.

(9) For the removable end, you can see the lug to run safety wire through. Notice that the safety wire is wrapped around the Eye and steel coupler and secured to the lug in the direction that prevents the Eye from unscrewing. It just takes seconds to do, so I replace this wire after each flight.

This completes the altimeter bay construction hints, we hope it has been helpful. Keep on rocketin'!