



Wildman Rocketry

STANDARD DUAL DEPLOYMENT

Dual Deployment (DD) has become the go-to method of recovery for high flying rockets. Building a Dual Deploy rocket requires a booster section loaded with a drogue chute and a payload section loaded with the main chute. This allows the apogee charge to separate the rocket and deploy a drogue chute then release the main chute at a lower preset altitude. This means the rocket will fall much faster and drift much less, making a shorter walk for recovery.

In the directions, Step 3 is to build an av-bay. See our set of Av-Bay Directions for tips on how to build a durable, easy to use av-bay for this step, or build it your way!

DD is a great way to maximize your flight and minimize your recovery time. Be safe and happy flying!

Parts list:

<u>Kit:</u>	<u>Necessary Items:</u>	<u>Optional Items:</u>	<u>Needed Tools</u>
Nosecone Eyebolt for Nosecone Nosecone Coupler Nosecone Bulkhead Av-Bay Coupler 2x Av-Bay bulkheads Vent Band Payload Tube	Completed Av-Bay (see Step 3) Recovery Harness Parachute Nomex® Chute Protector 2-56 Shear pins Plastic Rivets	Quicklinks	Drill or Drill Press Clamps Masking Tape Epoxy 60 or 80 grit sandpaper

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STEP 1: PREPARE ALL PARTS

1.1: Wash all fiberglass parts

All fiberglass parts should be washed in a mild detergent, like dish soap (1.1a). This will clean off all the mold-release agent and dust from the cuts. Simply fill a sink or bucket with soapy water and wash the parts like you would wash the dishes. Rinse with clean water and dry them off.



1.1a →

1.2: Dry-Fit all parts

Make sure your coupler will slide into the payload tube without too much difficulty. This might require some light sanding of the coupler. Sand and try fitting it until you can get the coupler into the payload tube without too much effort and can get it out by hand. After you sand, be sure to wash the payload tube to get all the dust out; a clean coupler slides better...

1.3: Prepare Av-Bay Coupler

1.3a) First, prepare the coupler by drawing lines equally spaced. This can be done using the fin slots of your kit. These lines will help later when drilling vent holes.



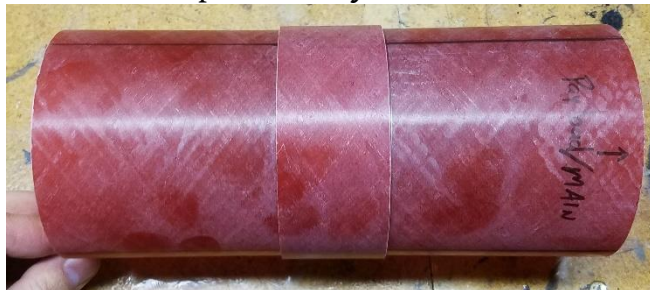
1.3a →

STEP 2: ATTACH VENT BAND & DRILL HOLES

2.1: Attach Vent Band

2.1a) Measure out where you want the Vent Band to be located on the Av-Bay coupler. This could require having your sled (Step 4) already built so you can align vent holes with switches. Or, you may want to make your vent band directly centered. Or you may want to attach it slightly above center to give more coupler length to the booster-side of your rocket.

2.1b) Slide the coupler where you want it on the vent band.



2.1b →

2.1c) Mark the location of the vent-band by wrapping masking tape around the coupler on one side of the vent band. This is a good time to mark which side of the coupler goes into the nosecone (see 2.1d)



2.1c →

2.1d) Slide the vent band off the coupler



2.1d →

2.1e) Sand the surface of the coupler where it will bond with the vent band. After sanding roughly, use acetone to wipe off all the dust.

2.1f) Smear epoxy where the vent band will adhere



2.1f →

2.1g) Twist and slide the vent band into place. Excess epoxy should squeeze out onto the masking tape you placed earlier.



2.1g →

2.1h) When the vent band is in place, peel away the masking tape, leaving little to no excess epoxy to wipe away. Then set this aside to cure. Be sure to set it laying down as the vent band may slide if it is set vertically.

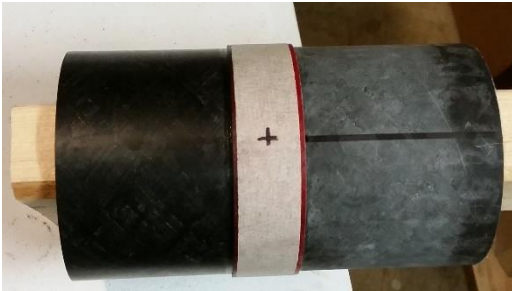


2.1h →

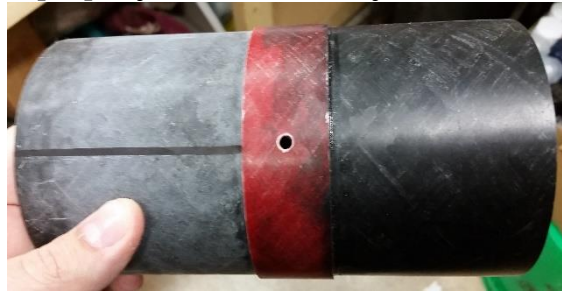
2.2: Drill Vent holes in Av-Bay

2.2a) Place a piece of masking tape all the way around the vent band. Along the lines marked at the beginning of the build, mark halfway up the vent band.

2.2b) Drill 3 11/64" vent holes for the av-bay (or other properly sized holes, see your altimeter manual).



2.2a →



2.2b →

2.3: Drill Rivet holes in payload tube

2.3a) Place a piece of masking tape around the bottom of the payload tube. Using the lines on the av bay, mark 3 drill holes 1½" to 2" from the top of the vent band.



2.3a →

2.3b) Then, with the payload tube flush against the vent band, rotate the av-bay/coupler 60° (halfway between the marks), and drill the holes for plastic rivets. For plastic rivets, each hole should be 5/32". Be sure to drill a hole, then place a rivet in the hole before moving to the next one.



2.3b →

2.3c) After drilling all the rivet holes and vent holes, sand inside the av-bay coupler to clear out any loose fiberglass strands, and you can use a small file to make sure the vent holes are clear of all fiberglass.

2.4: Make a Key-Mark

2.4a) With the rivets in place, it's a good idea to make a key-mark to make alignment easier later. Place a piece of tape over the vent band and payload tube. Use a dremel cutting wheel to cut a very shallow line across both. Remove the tape.



2.4a →

STEP 3: BUILD YOUR AV-BAY

This is a good point to build your av-bay and get it ready for use later in the build.

STEP 4: NOSECONE

4.1: Nosecone Tip

4.1a) Your nosecone comes with a tip already attached. Using a long screwdriver, remove the tip.

4.1b) Apply threadlocker to the bolt threads then screw the nosecone tip back on as tightly as you can.

4.2: Nosecone Coupler & Bulkhead

4.2a) Gather the parts you'll need (nosecone bulkhead, eyebolt, washers, locking nut)

4.2b) Attach the eyebolt to the nosecone bulkhead. Be sure to use washers to protect the bulkhead.



4.2a →



4.2b →



4.2c) Prepare the inside of the coupler and the edges of the bulkhead by first sanding them and then cleaning them with acetone.

4.2d) Smear epoxy on the inside of the coupler, then slide the bulkhead into place, twisting it to ensure full coverage. You can set the assembly up on paper cups or something similar to ensure that when the epoxy settles it makes a fillet against the coupler.



4.2d →

4.3: Attach Nosecone coupler

4.3a) Prep the surfaces for bonding. Sand the inside of the nosecone where the coupler will bond to it. Sand the outside of the coupler where it will bond with the nosecone. Then clean both with acetone.



4.3a →

4.3b) Smear epoxy on the inside of the nosecone



4.3b →

4.3c) Slide the coupler into the nosecone with a twisting motion. Once it is in as far as it will go, continue twisting to ensure that the entire surface will be covered with epoxy.



4.3c →

4.4: Drill Shear Pin Holes

4.4a) Place a piece of masking tape around the top of the payload tube. Using the lines on the coupler, mark 3 drill holes 1½" to 2" from the top of the payload tube.



4.4a →

4.4b) Then, with the nosecone flush against the payload tube, drill the holes for shear pins. For 2-56 Shear pins, each hole should be 5/64". Be sure to drill a hole, then place a shear pin in the hole before moving to the next one.

4.5: Make a Key-Mark

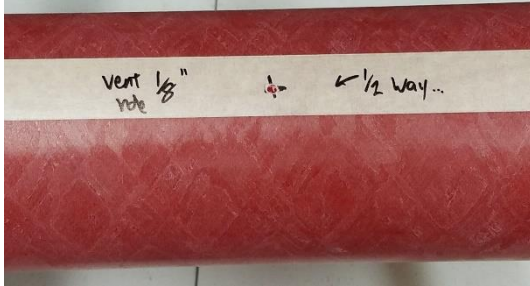
4.5a) With the shear pins in place, it's a good idea to make a key-mark to make alignment easier later. Place a piece of tape over the nosecone and payload tube. Use a dremel cutting wheel to cut a very shallow line across both. Remove the tape.



4.5a →

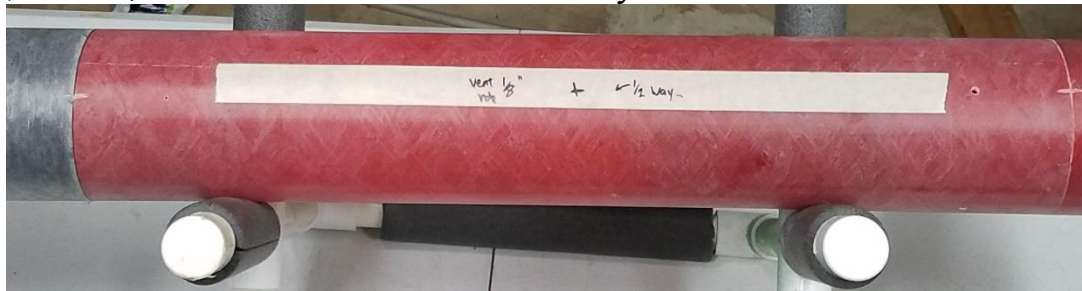
4.6: Drill a Vent Hole in Payload Tube

4.6a) Measure $\frac{1}{2}$ way between the top of the av-bay bulkhead and the bottom of the nosecone bulkhead.



4.6a →

4.6b) Drill a $\frac{1}{8}$ " hole on that mark to vent the Payload Tube.



4.6b →

STEP 5: ASSEMBLY FOR FLIGHT

After everything has been assembled and painted, it's time to get ready to fly!

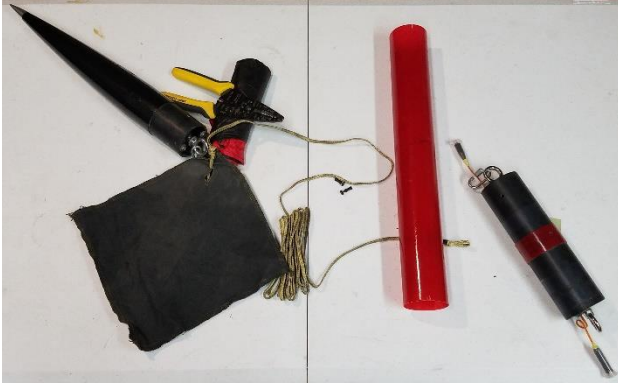
5.1: Prepare your av-bay

5.1a) Prior to assembling the payload, prepare your av-bay with the electronics and ejection charges.

5.2: Prepare Recovery Gear

5.2a) Attach the end of the harness, the parachute, and the Nomex to the nosecone eyebolt.

5.2b) Roll your parachute into the Nomex blanket and z-fold the remaining shock cord



5.2a-b →

5.2c) Run the other end of the harness through the Payload Tube and attach it to the av-bay eyebolt. Then attach the Payload Tube to the av-bay using plastic rivets



5.2c →



5.2d) Load the harness into the payload first so that it rests at the bottom. Then, stuff the parachute bundle into the payload and finally slide the nosecone into the payload tube

5.2e) Once the nosecone and payload are together, use shear pins to lock the nosecone in place. Your Dual Deploy is now ready to be attached to the booster section of your rocket.



5.2e →