



Wildman Rocketry

HEAD-END DEPLOYMENT (HED)

Head-End Deployment (HED), first pioneered by Wildman Hobbies, is a unique way to fully utilize the space in the nosecone for recovery gear. Instead of an empty nosecone, your rocket can be optimized while using the nosecone as functional space. If you're used to flying standard Dual Deploy, HED is basically the same setup. Think of your standard Dual Deploy setup and take out the payload tube. If this is your first experience with Dual Deploy flying, take pride, you're maximizing the potential of your rocket by using a HED setup.

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! Also, in step 4, a "PVC tool" is used. You can make this with whatever you have laying around: 1/2" PVC, wood dowel rod, etc. It's just a handy tool for reaching the inside top of the nosecone to screw in the nosecone eyebolt. Further, if you're used to twist-and-tape for electronics, you'll have to tape the wires to the vent-band or use switches.

HED is a great way to maximize your rocket in true Wildman style. Be safe and happy flying!

Parts list:

<u>Kit:</u>	<u>Necessary Items:</u>	<u>Optional Items:</u>	<u>Needed Tools</u>
Nosecone Nosecone Coupler 2x bulkheads Vent Band Eyebolt for Nosecone	Completed Av-Bay (see Step 3) Recovery Harness Parachute Nomex® Chute Protector 2-56 Shear pins	1/2" PVC eyebolt tool (step 4) Quicklinks	Drill or Drill Press Clamps Masking Tape Epoxy 60 or 80 grit sandpaper

CONTENTS

Step 1: Prepare All Parts.....	2
1.1: Wash all fiberglass parts	2
1.2: Dry-Fit all parts	2
1.3: Prepare Av-Bay Coupler	2
Step 2: Attach Vent Band & Drill Holes	2
2.1: Attach Vent Band	2
2.2: Drill Vent holes in Av-Bay.....	3
2.3: Drill Shear Pin holes in nosecone	4
2.4: Make a Key-Mark	4
Step 3: Build your av-bay	4
Step 4: Nosecone.....	5
4.1: Nosecone Vent Hole.....	5
4.2: Nosecone Harness	5
Step 5: Assembly for Flight	6
5.1: Prepare your av-bay.	6
5.2: Prepare Recovery Gear.....	6

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 nosecone 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 nosecone or payload tube without too much effort and can get it out by hand. After you sand, be sure to wash the nosecone or 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) Insert the Av-Bay coupler WITH an aluminum bulkhead into the nosecone. It's critical that you have a bulkhead for proper alignment.

2.1b) Then, slide the vent band onto the coupler and mark it's place by wrapping masking tape precisely along the bottom edge of the vent band.



2.1b →

2.1c) Remove the coupler and vent band, then mark the location of the top of the vent band on the coupler with a pencil. This is a good time to mark which side of the coupler goes into the nosecone (2.1d).

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.

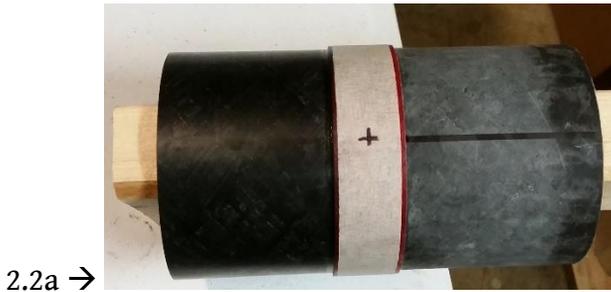


2.1h →

2.2: Drill Vent holes in Av-Bay

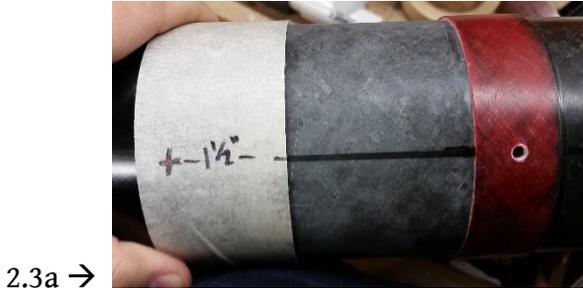
2.2a) Place a piece of masking tape all the way around the vent band. Along the lines marked at the beginning of the build, mark halfway up the vent band.

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



2.3: Drill Shear Pin holes in nosecone

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



2.3b) Then, with the nosecone flush against the vent band, rotate the av-bay/coupler 60° (halfway between the marks), and drill the holes for shear pins. For 2-56 Shear pins, each hole should be 5/64”. Be sure to drill a hole, place a shear pin in the hole before moving to the next one.



2.3c) After drilling all the shear pin 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 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 vent band and nosecone. Use a dremel cutting wheel to cut a very shallow line across both. Remove the tape.



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 Vent Hole

Since this is a HED kit, you must drill a 1/8" vent hole in the nosecone halfway between the top and bottom of the nosecone. This vent hole is critical to relieve air pressure in the nosecone as the rocket ascends. Without it, the main chute may eject prematurely.

4.2: Nosecone Harness

4.2a) Tie one end of the shock cord to the welded eyebolt before attaching the nosecone tip, then thread a nut onto the NC eyebolt, place the washer on top.

4.2b) Making a tool to hold the eyebolt is really easy... Get a length of 1/2" PVC pipe, cut a notch in the end just wide enough for the eyebolt. This way, you can thread the shock cord through the PVC pipe and have grip on the eyebolt to turn it. Keep this tool handy in case you ever need to take off the tip, make a new shock cord, etc.

4.2c) Slide the threads of the eyebolt through the hole at the tip of the nosecone. You'll want about 1/4" of eyebolt thread to sticking up above the top of the nosecone.



4.2a →



4.2b →



4.2c →

4.2d) Apply threadlocker to the eyebolt threads then screw on the nosecone tip as tightly as you can.

STEP 5: ASSEMBLY FOR FLIGHT

5.1: Prepare your av-bay.

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

5.2: Prepare Recovery Gear

5.2a) Attach your pieces such that the shock cord is attached to the tip of the nosecone, then the parachute and Nomex blanket, then attached to your av-bay. You can also attach the parachute directly at the av-bay eyebolt. This will ensure absolutely that the parachute comes out every time.



5.2a →

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



5.2b →

5.2c) When loading the parachute into the nosecone, load the shock cord into the nosecone first so that it rests at the tip. Then, stuff the parachute bundle into the nose and finally slide the av-bay into the nosecone.



5.2c →

5.2d) Once the nosecone and av-bay are together, use shear pins to lock the nosecone in place. Your HED is now ready to be attached to the booster section of your rocket, and you're ready to fly!



5.2d →