GMRC 2010 contest Plane - Assassin build **Rev:3**

Notes:

Do Not cut wing leading edge; we are using a fin on each wing tip. There is a starting fin pattern to help you along. (Must have two fins on your wing)
References to using hot glue, in these instructions, can be substituted by any glue.

-  Cutting foam with a hot wire leaves some melt fibers on the foam. I put the white fibers on black foam so you can see it. These are normal. 235.5 KB · Views: 383
-  Rub two of the EPP parts together to remove the fibers off of the wing and elevator cores and use your finger nail to pick of any that remain. 122.1 KB · Views: 312
-  These are the EPP parts of the EPP Pinata. The wing is solid 1.3 lb EPP foam and the elevons are 1.9 lb EPP.The wing tip and elevon angle still need to be cut. 48.2 KB ·
-  This nylon construction string is available at most hardware stores. It is very strong and hardly stretches. We use it to make a shock absorber around the wing. ***(must be installed)***
-  3 
-  Using a hot glue gun with on a low temp setting with multi temp glue sticks,

glue the two wing halves together. 72.1 KB · Views: 525

-  The foam insulates the glue so it takes longer to cool. Hold in place until cool. 47.1 KB · Views: 459
-  The Velcro strap set up is to secure the battery and ESC. I make sure everything fits before starting to tape. *(this method is suggested – but battery must be secured in place)*
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- Putting a piece of construction string around the wing spreads out the impact force. Use a razor blade and cut a 1/4" deep slit around the wing core.
- The string will go around corners
- .....and across the motor mount area.
- I am using the gold string so you can see it. We normally use white to better match the foam. Press the string into the slit in the foam with a small Phillips screwdriver.
- Put the string the entire way around the wing. Overlap it several inches and pull it tight. Glue the string in place. Regular fast CA glue will work on #1.3 EPP foam.

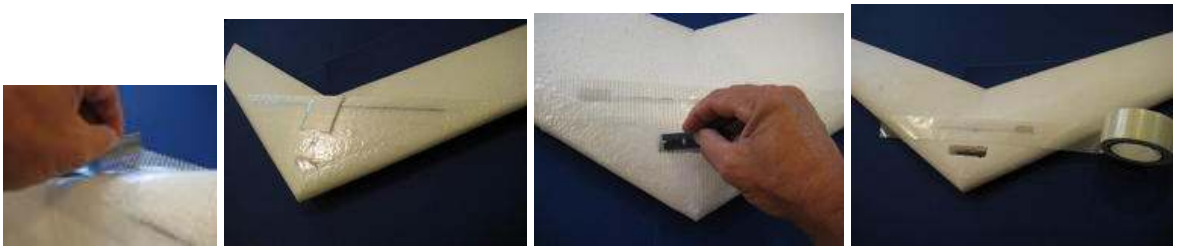


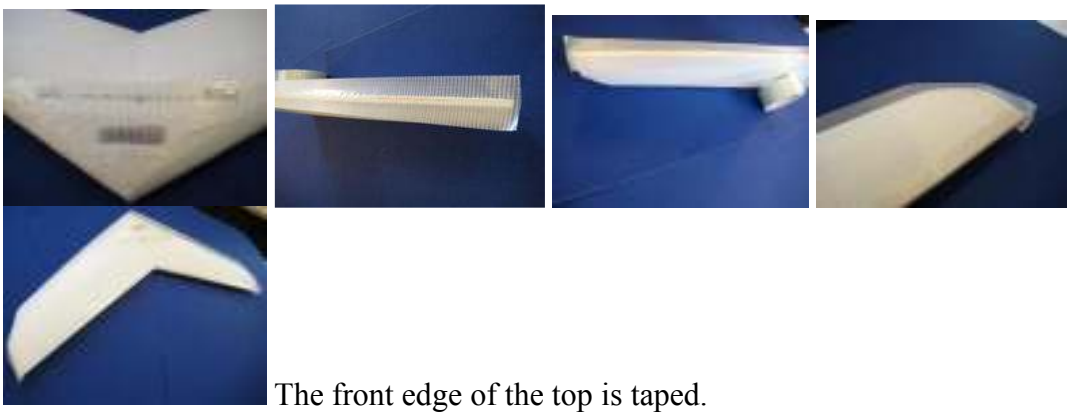


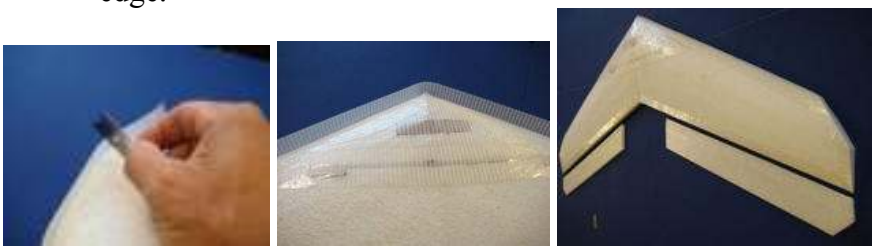




- Tape the elevons on all sides with the bidirectional tape. If you don't tape all sides the elevons will not be stiff enough to control the plane.
- Tape the bottom of the wing. Go back to front so the edges are layered and don't peel back. Overlap the tape 1/4". Tape over the carbon spar, Formica and battery slot but not the wing tips.

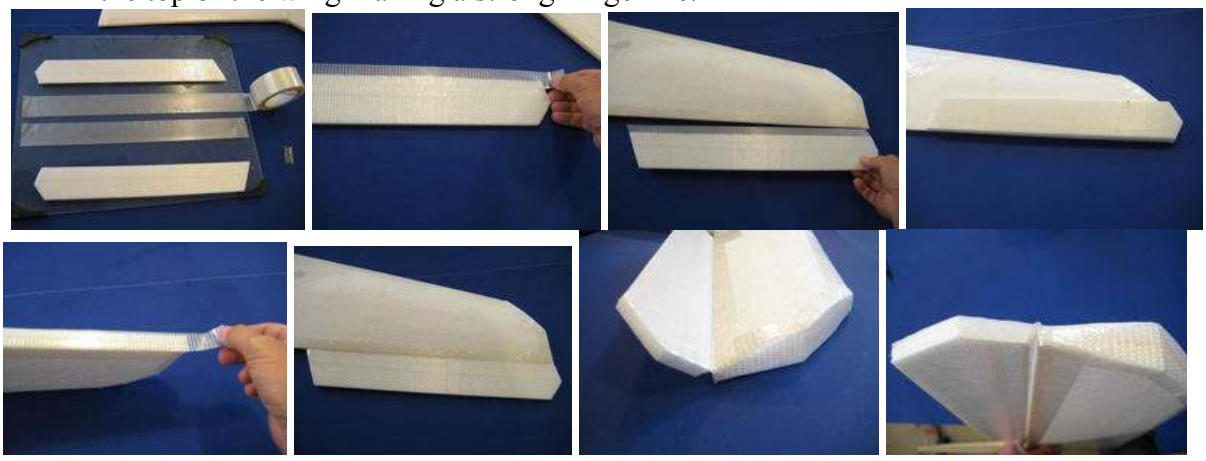


- Trim the tape at the edge. It will be covered by a piece of tape along the leading edge later.
- Continue taping forward until the center of the bottom is covered. We don't tape the entire wing to save weight behind the CG. The exposed EPP wings are tough.**(You may tape entire wing)**
- Do the same thing on the top of the wing. Tape over the servo and battery openings and cut them out later.
-  The front edge of the top is taped.
- Tape the trailing edge of the wing core by centering a piece of tape down the back and then wrapping it around the core
- This tape covers the construction string that is imbedded and glued into the wing.
- Wrap the corners for strength and durability
- The trailing edge is now taped and a single piece of tape has been put along the entire leading edge.



- Slit the tape on the corners to get the tape to lay flat
- The tape on the leading edge will cover all of the loose ends that were made when the top and bottom of the wing were taped
- The weakest place on the plane is the trailing edge between the elevons. The shock string helps to reinforce this area and I also put extra tape here top and bottom.
- Cut out the radio and battery compartments on the top. The tape helps hold the battery in place on the bottom.
- We are ready to attach the elevons. I hinge the elevons with a 1" wide piece of tape on both the top and bottom of the wing. I cut the tape into 1" strips on a sheet of glass.
- Glass makes a good cutting surface for the tape and for other coverings.
- Take the piece of tape and stick it along the top front edge of the elevon.

- You will be sticking tape to tape both on the elevon and on the wing core.
- Put the elevon in position and tape the hinge line leaving enough slack that the elevon has free movement. Fold the elevon back to tape the bottom of the hinge line.
- Put a 1" piece of tape down the bottom of the hinge line. The tape will touch the hinge tape from the top of the wing making a strong hinge line.



- If you have left enough space the hinge will move freely up and down and be well secured in place.
- The hinge moves freely. A view of the finished hinge.
- Iron all tape with an iron that is warm enough to heat the glue but not so hot to take the shine off the tape. The iron warms the tape and increases how well it sticks. After you iron the hinge line make sure the elevon and wing are flat and straight. If not put them in the right position and warm with an iron.
- Use an Exacto knife to cut a slot for the control horn about 1 1/2" in from the middle of the plane. Slide the horn in place so that it pokes 1/8 " out the back side
- Position it so it is at 90 degrees to the elevon.
- CA glue it in place.
- Use a hot glue gun to put a 1" ring of hot glue around both the top and bottom of the horn. This is the strongest and easiest horn we have found on the EPP elevons

-  This is the Assassin Core and elevon design. The wing is glued together the wing angle cut and the elevons are taped. 78.6 KB · Views: 460

-  The elevon comes with the bevel cut but not the length. Different flyers want to use different props so we left enough elevon for you to decide how long to make them. 27.6 KB · Views: 448
-  These are the elevons. They have been taped on all sides with bidirectional tape to make them ridged enough to work. make sure you make a right and left elevon. 96.1 KB · Views: 474
-  They are still flexible but do the job well. It's kinda obvious why they don't break in combat. 88.4 KB · Views: 454
-  This is a pattern drawn on the wing for the cut outs for the battery and the slot for the servos, ESC and receiver. 51.0 KB · Views: 462
-  We recommend the battery to be installed back 2.5" and the slot cut back 4.5". 67.5 KB · Views: 465
-  The battery slot should be smaller than the battery so it has to be wedged into the hole. I then tape or Velcro the battery to hold it in. 67.7 KB · Views: 440
-  I cut the slot with the soldering iron. 74.8 KB · Views: 436

-  The radio slot is 9" long and servo holes cut at each end. This has been cut with a soldering iron. 62.5 KB · Views: 443
-  I like to cut with a soldering iron and a jig but a box knife or sharp kitchen knife will do. 56.2 KB · Views: 450
-  I cut a servo hole on each end of the slot in line with the slot. All wires run down the slot. 67.8 KB · Views: 431
-  I cut the battery hole all the way through on this plane. I allows me to get the battery out without pulling on the wires. Tape will cover the bottom. 50.3 KB · Views: 446
-  Looks Great!!!! 55.0 KB · Views: 444
-  We are now going to install the carbon spar and the Formica motor plate that keeps the motor in proper alignment. 68.1 KB · Views: 474
-  Measure back 6.5" from the nose on the bottom of the plane and draw a line to mark the location of the carbon spar. Make sure it is a straight line and the same on both wings.

61.6 KB · Views: 450

-  Make sure that the carbon spar won't interfere with your bomb drop that will be from aprox 7" to 7.5" back. Notice the pins holding the metal yard stick in place. 42.4 KB · Views: 408
-  Using a razor blade to cut a slit for the carbon spar. You do not have to remove any foam the spar will slip in without much pressure. 52.1 KB · Views: 452
-  Press the carbon spar into the slit. 39.0 KB · Views: 417
-  Using regular CA glue (The EPP can handle it) glue the entire length of the spar. Regular CA glue works very well on EPP. CA glue on EPP does not cure instantly and you will need to let it sit for a few minutes. 41.5 KB · Views: 434
-  Hot glue the Formica. The Formica a tough laminate and keeps the motor in position and ties the carbon spar to the motor mount. 60.0 KB · Views: 450
-  Press it in place and let it cool. 53.4 KB · Views: 429

-  The spar and the motor plate are in place and ready for taping. This carbon spar was installed in a location behind the bomb drop hole but since this time we are suggesting it be 6.5" back from the nose of the plane. 64.6 KB · Views: 450

-  The 18 ga stainless steel motor mount is shown with a motor attached. A second motor mount is in the position it will be on the finished airplane. The motor will be taped on after the rest of the plane is finished. 64.0 KB · Views: 660