F-18 V3 Planview

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Hardware & Materials List

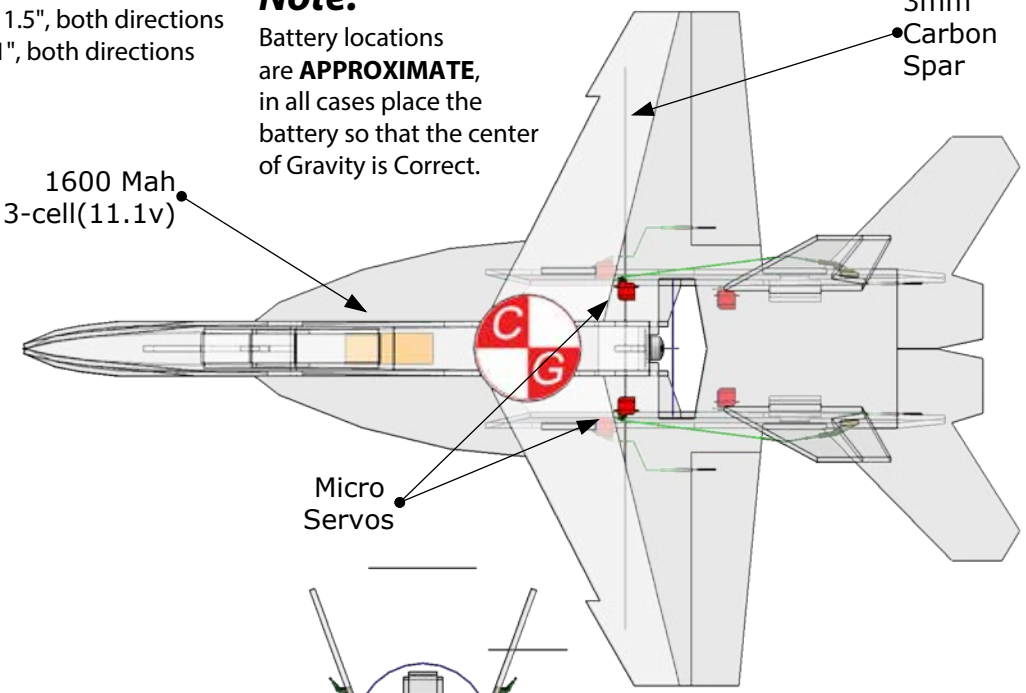
Power System:
(1) 2200KV Outrunner
(1) 30 AMP Speed Controller
Propeller:
(1) APC 6x4E
Battery:
(1) 1600 mah 20C 3-cell (11.1v)
Radio System:
(1) 5 Channel Minimum
Servos & Accessories
(6) Metal Gear Micro Servos
(6) Control Rods with Clevis
Carbon:
(1) 3mm Tube, 1 meter in Length
Foam:
(2) 27x39 inch 6mm(1/4") Depron Sheet or equivalent
Wood:
(1) RCP Wooden Motor Mount(Below)
(6) RCP Control Horns (Below)

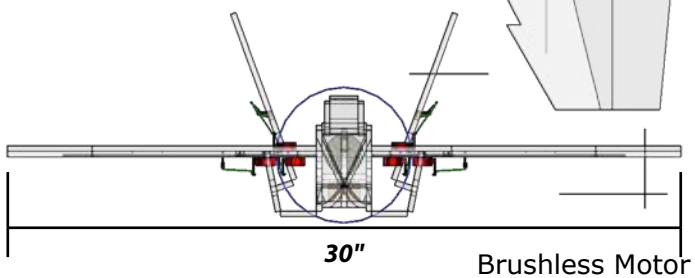
Setup Information

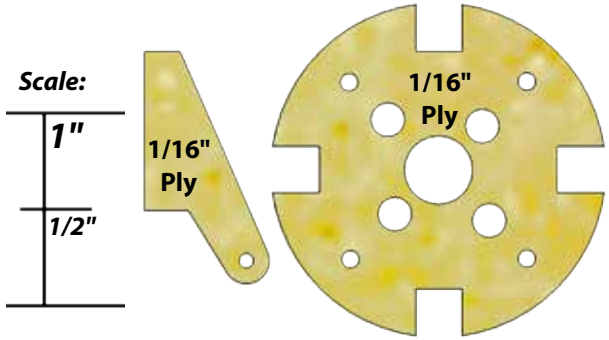
Control Setup:
Throws:
Elevator: 1.5", both directions
Aileron: 1", both directions

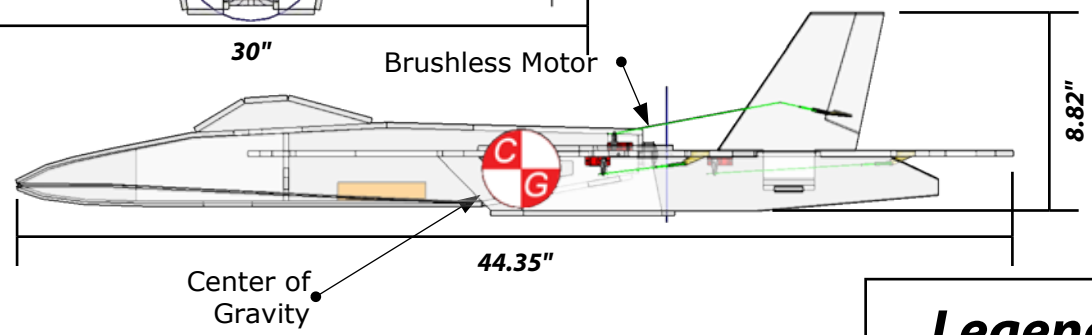
Note:

Battery locations are **APPROXIMATE**, in all cases place the battery so that the center of Gravity is Correct.









F-18 V3
Length: 44.35" (112.6 cm)
Wingspan: 30" (76.2 cm)
Wing Area: 3.3 sq ft (0.31 sq m)
Weight: 16 - 26 oz (450 - 740g)

Find the parts & tools you need:
www.RCPowers.com/partslist

Hang out with other pilots:
www.RCPowers.com/community

Legend:

Propeller = *Blue*
Control Rods = *Green*
Servo Locations = *Red*
Battery(s) = *Orange*

Print From Home (Tiled)
Printing Instructions

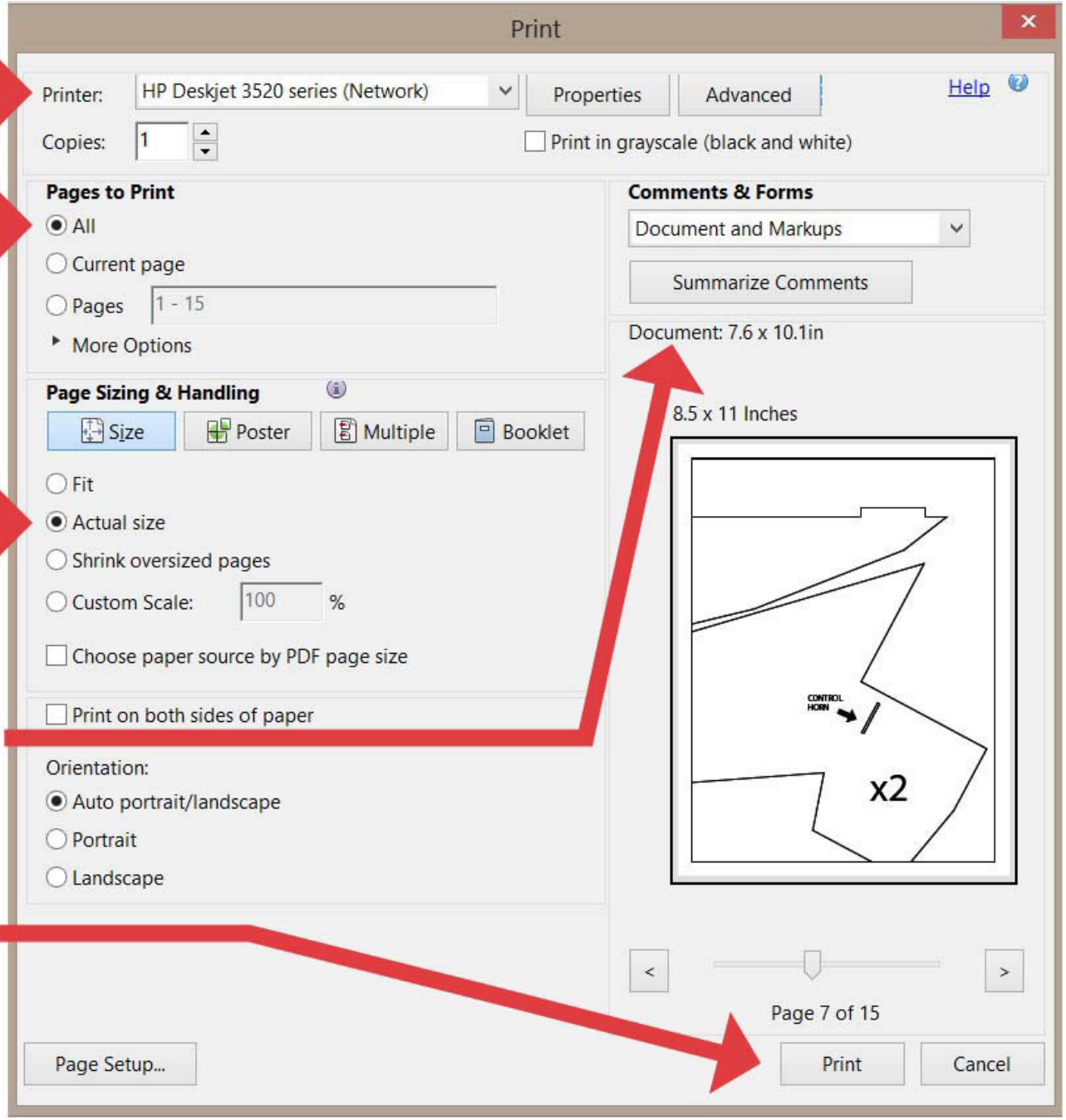
Step 1: Select Printer.

Step 2: Set all pages to print.

Step 3: Select "Actual Size".

Step 4: Check Document Size (7.6 x 10.1 in.)

Step 5: Print!



1) Print Plans From Home (Tiled Plans)

- Print out your plans from your home printer. There is a helpful resource here if you need more info.

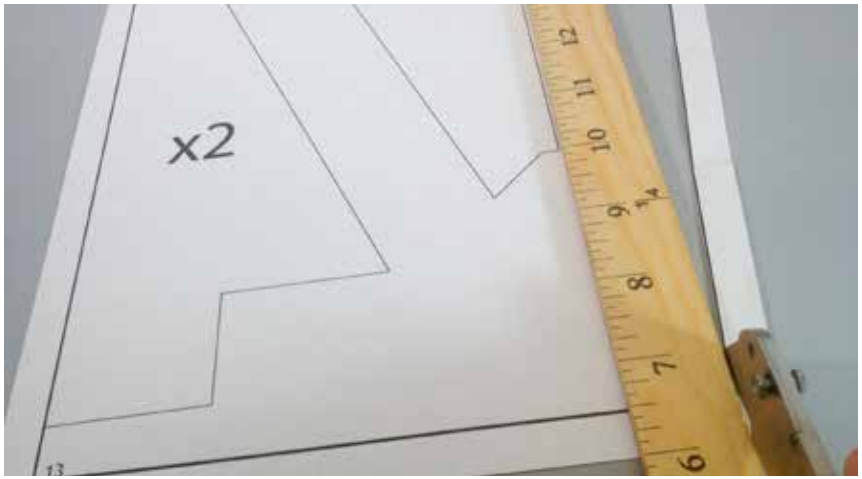
- Using a straightedge and razor blade, cut on the inside of the black lines as pictured.

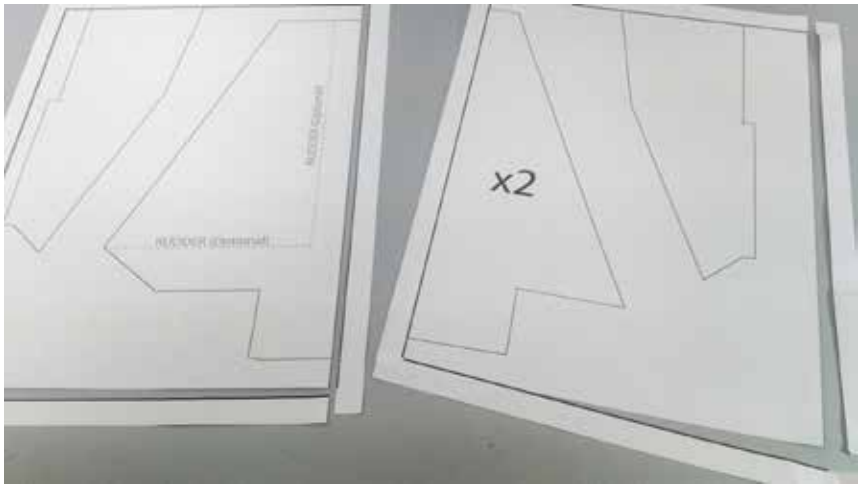
- You only need to cut off the *right* and *bottom* side of each page as pictured.

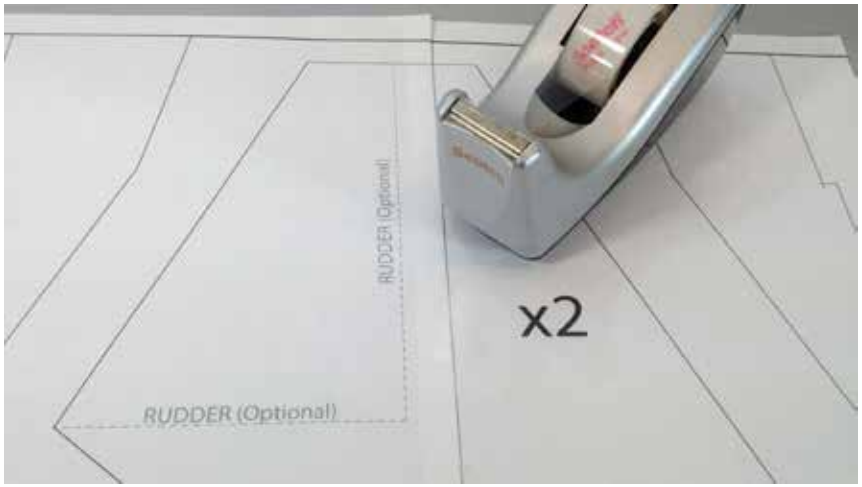
- Using clear Scotch Tape, tape all the pages together.

- You can take your PDF file to a print shop (FedEx, Kinkos, etc) and have them print it on a wide format full size printer.

- More resources on Untiled Plans here.







2) Tools Needed

- See the updated Master Parts List for all the parts and tools you need.

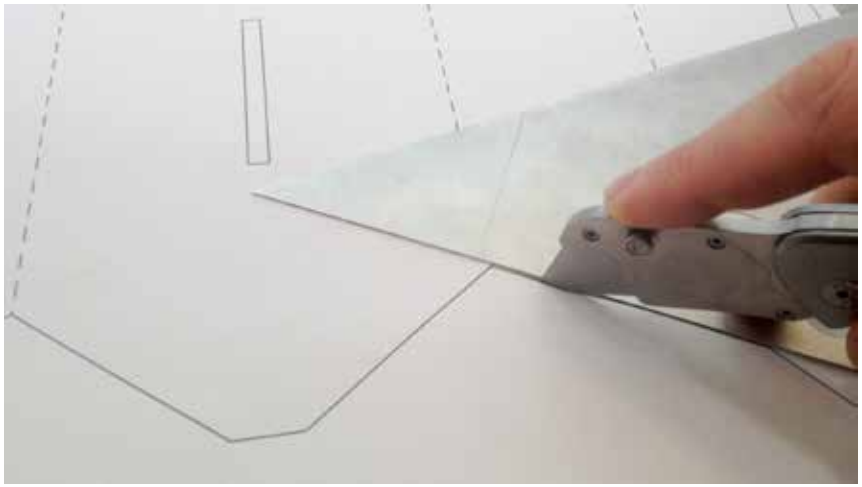
3) Spray Glue Down Parts

- Using Elmers Spray Glue, apply a very *light* mist of glue and lay your plans down on the foam.

4) Cut Out Foam

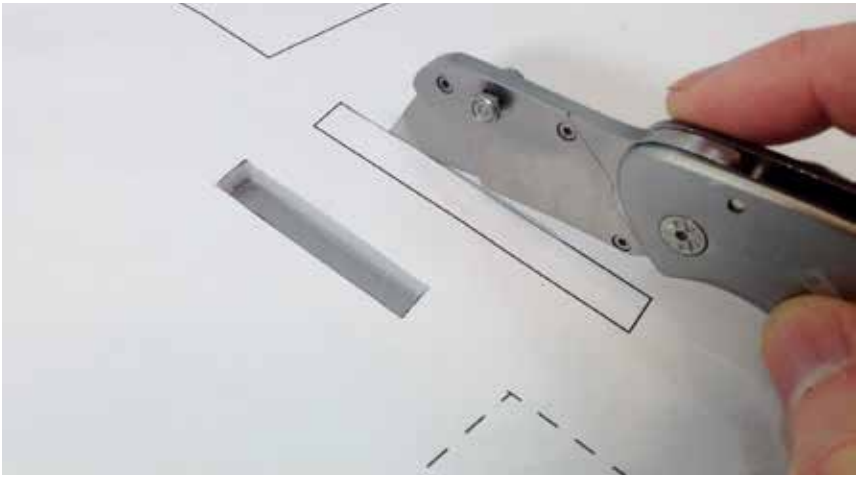
- Using a straightedge and razor blade cut out the parts on the solid lines.

- Leave all the dotted lines alone for now.



4) Cut Out Foam (continued)

- Also cut out all the notches.



5) "Score" On The Dotted Lines

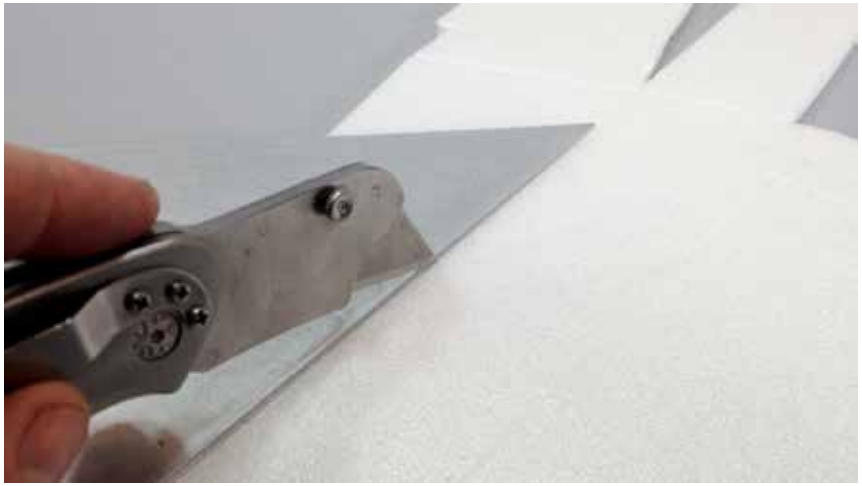
- Scoring is when you take your straightedge and razor blade and lightly run across the surface of the foam.

- Using just the weight of your hand and blade (applying no downward pressure) you are just skimming across the top.

- The goal is to cut through approximately 40% of the 6mm foam (just less than 3mm).

- After scoring along all the dotted lines, now gently bend the foam along the score lines.

- Bend the parts to 45 degrees using the score line as a hinge.



6) Reinforce Score Lines With Hinge Tape

- Cut 3/4" strips of your Strapping Tape and run them along the underside of the fold as reinforcement.

7) Combine Wing Plate Pieces

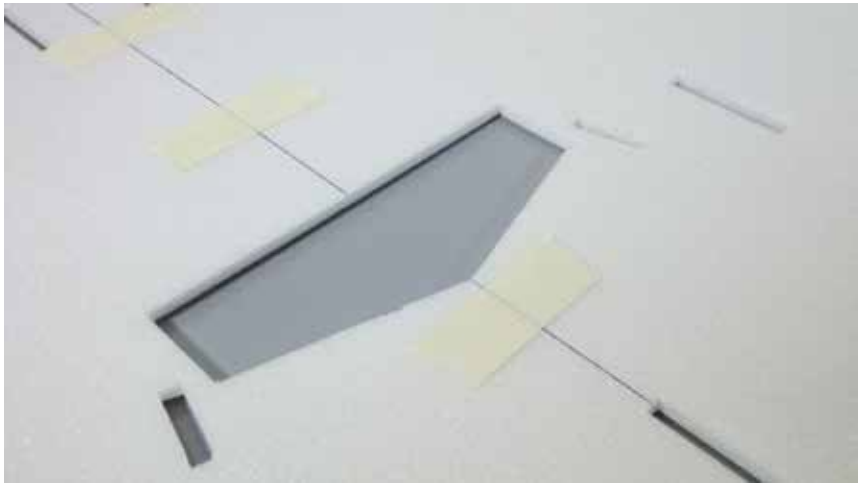
- Double check that the two wing pieces butt together smoothly.

- Trim or sand if needed.

- Glue them together using 5 Minute Epoxy.

- Tightly "pull" them together using masking tape every 6 inches.

- Put the masking tape on the top and underside.



8) Cutting Carbon Tube

- WARNING: Do not breathe the carbon dust when cutting. Treat it as you would fiber glass.

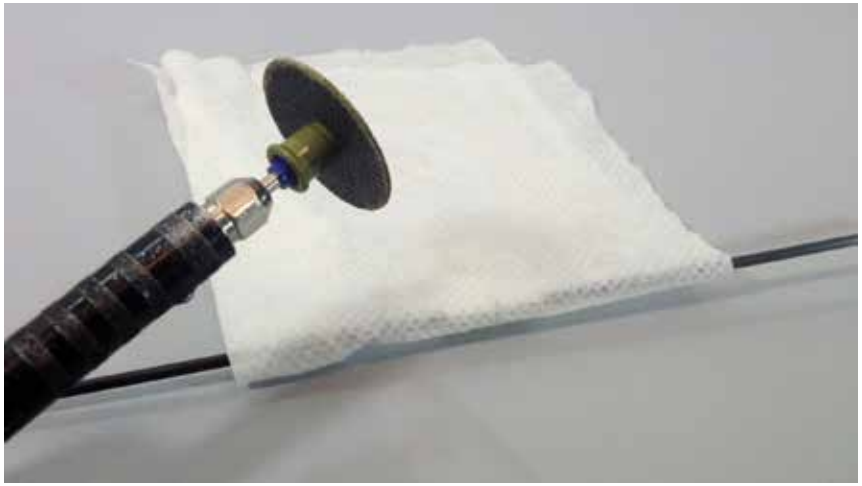
- Carbon fiber also splinters easily so do not attempt to "snip" it.

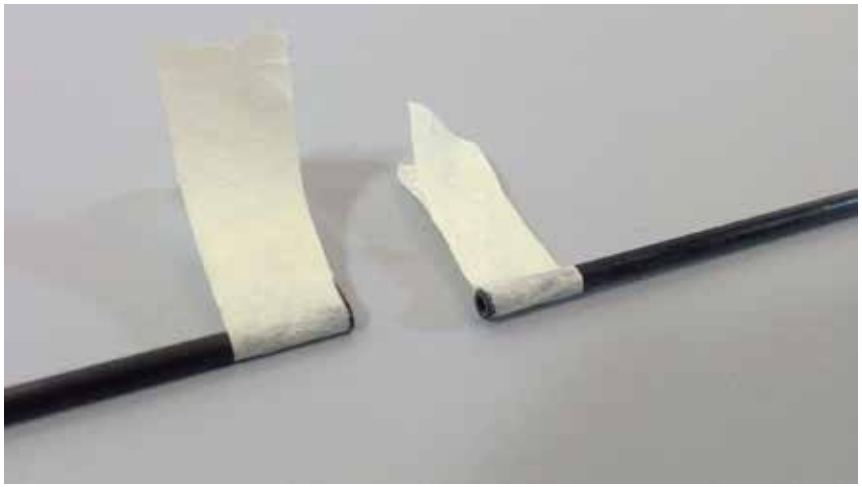
- For best results, use a fine tooth, high speed cutting machine such as a Scroll saw or Dremel.

- Wrap where you want to cut with masking tape (this will help catch some dust and keep the carbon from splitting).

- Then wrap the area you are cutting with a wet paper towel to trap more of the dust.

- Cut the carbon tube outside and use a dust mask.





9) Cut Out For 3mm Carbon Tube

- Trace out where the carbon tubes go (see your PDF plan print for exact location and length).

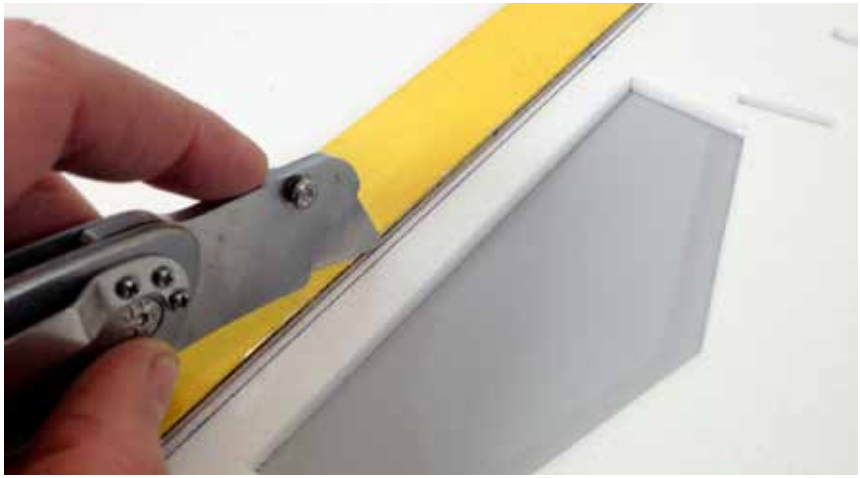
- You want a 2mm “canal” for your 3mm tube to fit tightly into.

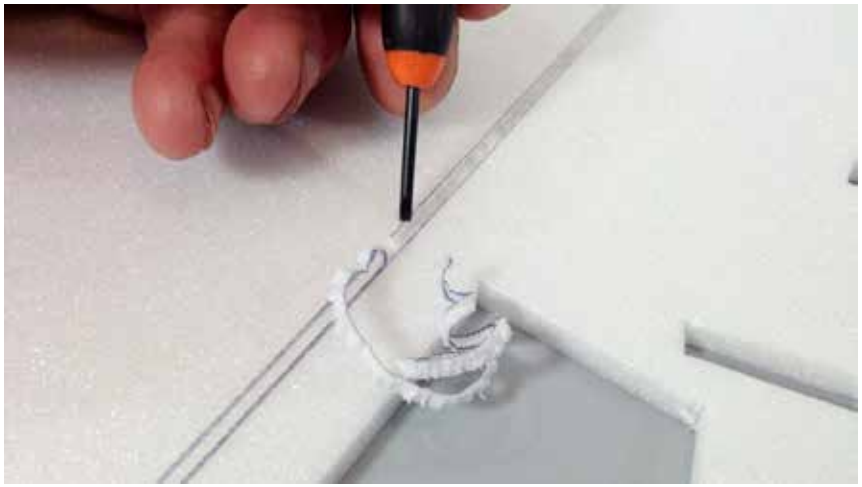
- Using the same “scoring” technique you used previously simply score along the lines where the carbon tube goes.

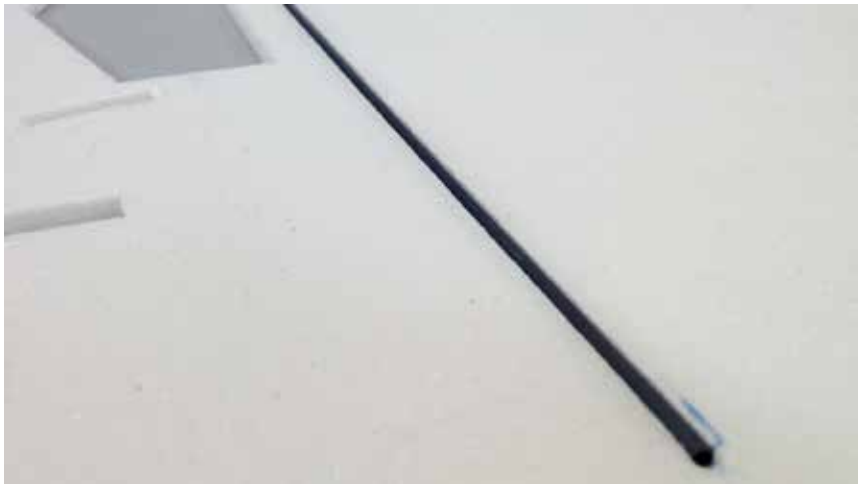
- Use a 2mm standard screwdriver to "pluck" out the foam.

- Run your carbon tube back and forth in the groove to compress the foam to fit.

- Dry fit the carbon tube before glueing to insure it’s flush with the surface.







10) Glueing 3mm Carbon Tube

- Once the carbon is flush, run masking tape along each side of the canal.

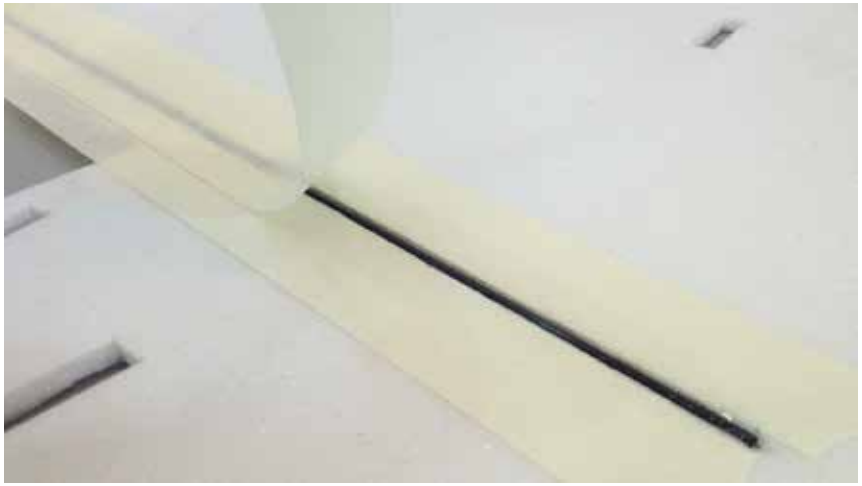
- Slather 5 Minute Epoxy thoroughly and evenly through the canal.

- Press the carbon tube firmly into the canal.

- Cover the tube with masking tape.

- Place flat weights (such as large books) on top while drying.

- Wait 20 minutes for a good drying and then peel the tape off.



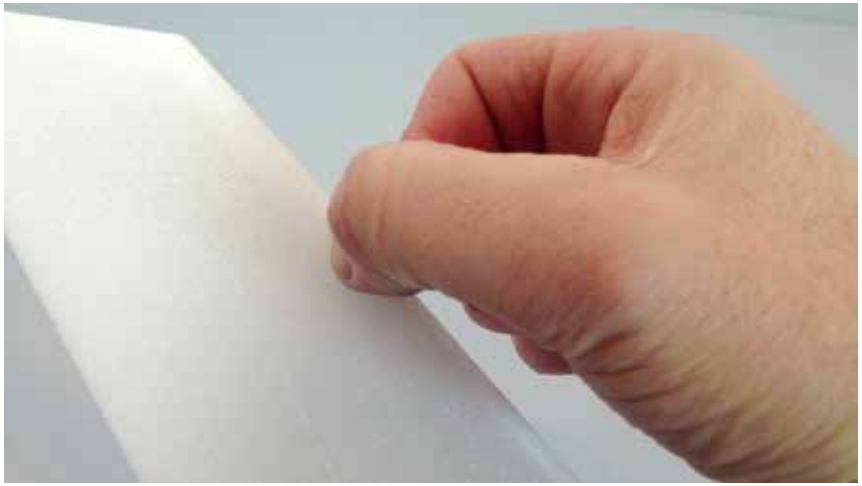
11) Round All Leading Edges

- Surfaces to bevel/sand: *Wing, prop slot, vertical and horizontal stabilizers.*

- You can use a razor blade to lightly take the edge off and then sand smooth with fine sandpaper.

- After you are done beveling the edges, pinch the new edge with your fingertips and run them along the length of the edge, squeezing and pressing the foam.

- The plane still flies fine even if you leave the edges square. Any roundness you do is extra credit, so don't sweat it.



12) Bevel Control Surfaces

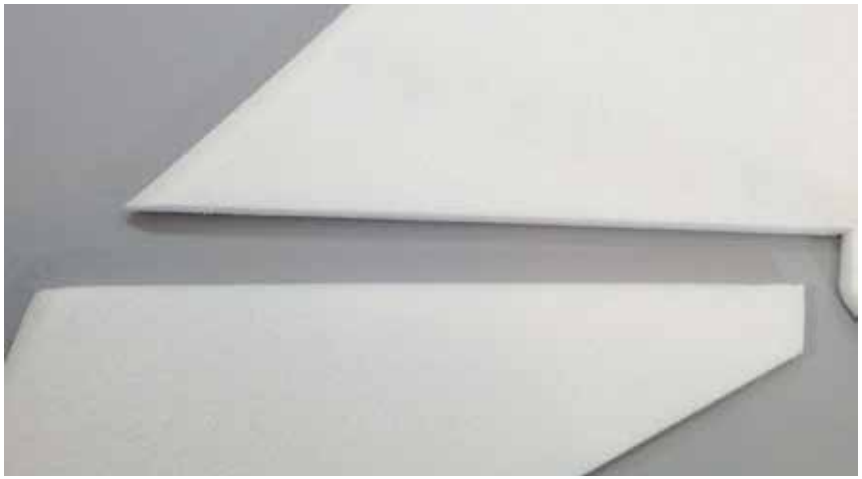
- Cut out the control surfaces you intend to use. We are using elevons only for the stock build.

- Practising the beveling step below on some scrap foam first is recommended.

- Using a brand new razor blade and straight edge, cut a bevel along the edge as pictured.

- Repeat this process on the opposite edge as pictured.

- About 30 degrees bevel for both sides will give you 60 degrees of movement (more than enough).



13) Hinge Tape All Control Surfaces

- Apply the Strapping Tape along the top of the joint as pictured.

- Our general rule is apply about 2 inches of tape every 2 inches.

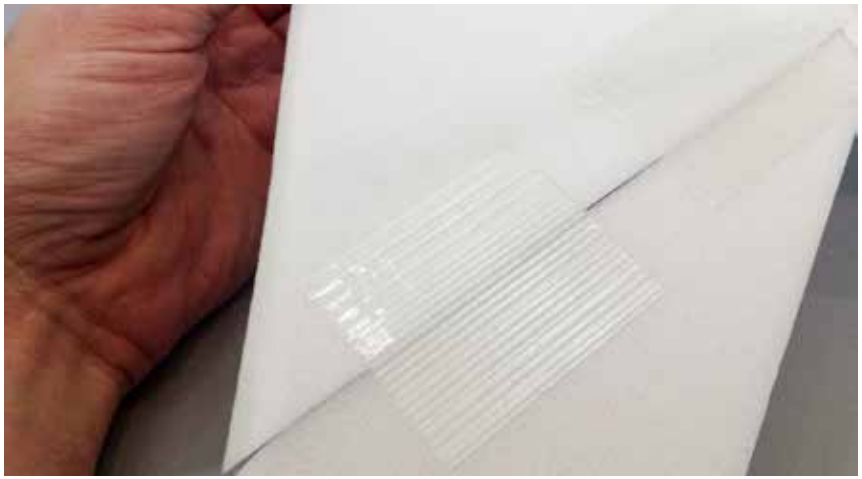
- Make sure to have the threads in the tape running parallel with the hinge (horizontally).

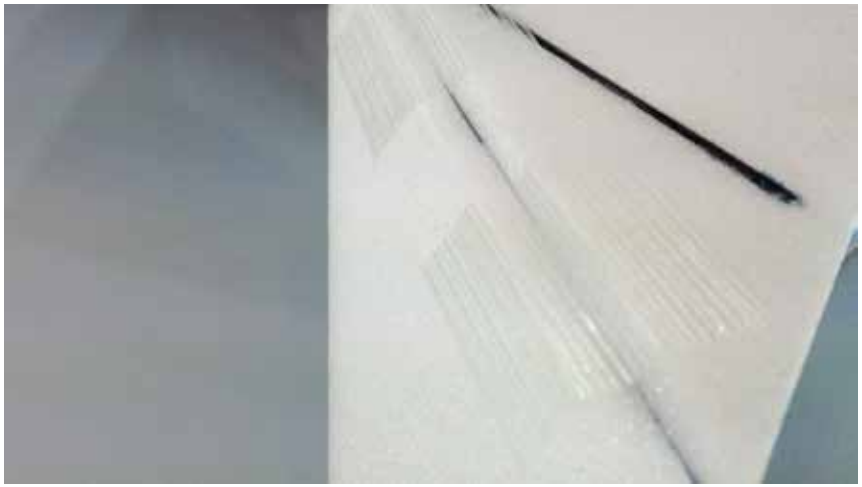
- Next carefully apply it along the bottom of the joint as pictured.

- Be sure to have the control in the "open" position while applying to insure full movement.

- If needed, tear off the tape and take another try until your controls look as pictured.

- When all done, trim1/8" of foam off from the inside of the elevon. This is so the parts don't rub in flight while the wing is flexing.





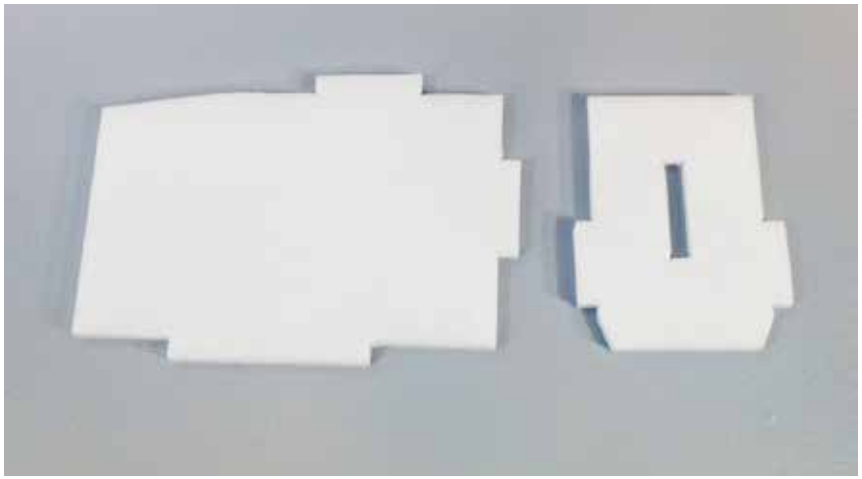
14) Glue Nose Frame

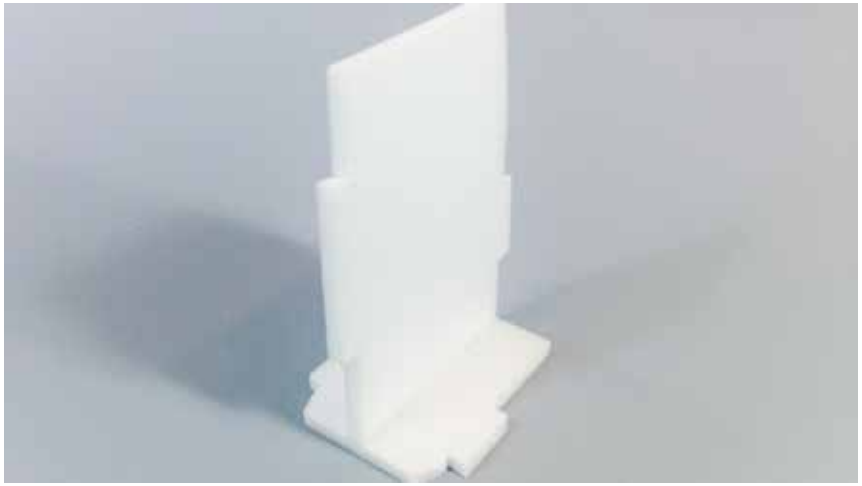
- First lay down the parts pictured and insure they sit flat and snug. Trim or sand if needed.

- Now spread 5 Minute Epoxy along all the joining edges.

- Press the parts together firmly and pin down as needed to prevent gaps in the glue joints.

- For optional added strength, after the Epoxy dries, run a bead of hot glue along the joints.



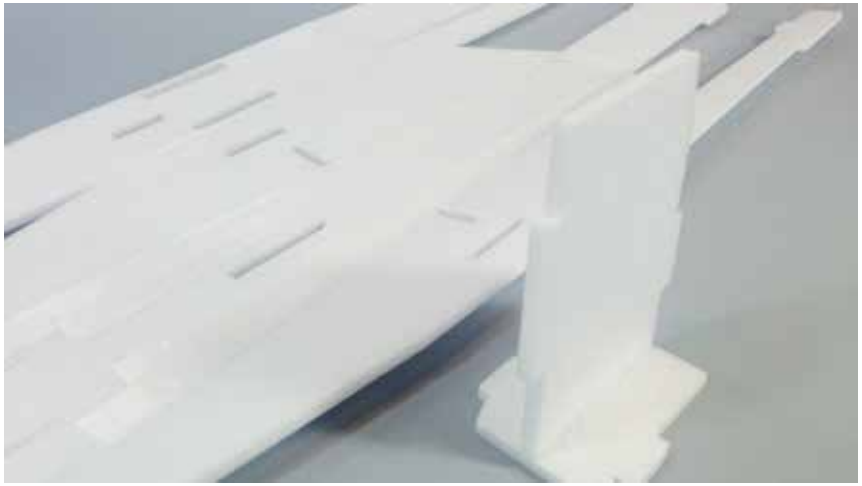


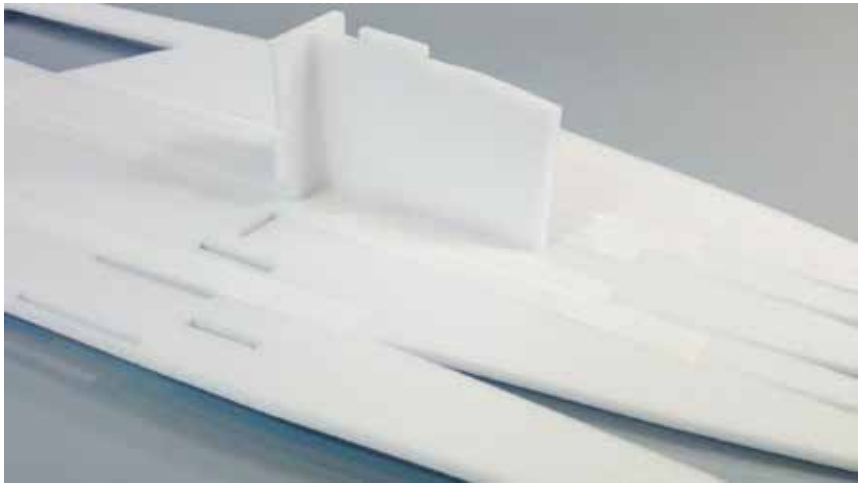
15) Join Nose Frame And Skin

- Repeat the gluing steps as you did above....

- Fold the nose skin around the nose frame using the notches as a guide.

- Be sure to have these parts facing the right way. Examine the picture closely.





16) Glue Nose Piece

- Repeat the glueing steps as you did above...

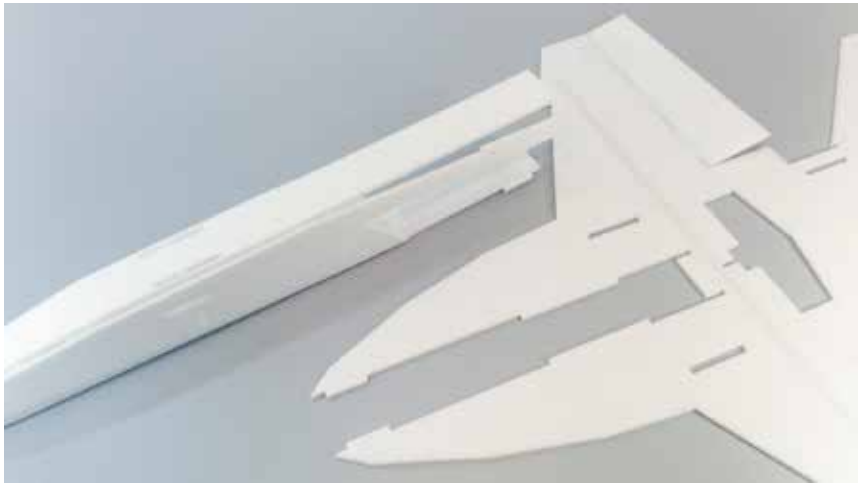
- Bend the piece so that it wraps around the nose correctly before applying glue.

- Glue the nose tip ends together using hot glue. You'll have to bend them slightly, this is normal.

17) Install Nose Onto Wing Plate

- Repeat the gluing steps as you did above...

- Make sure the nose and wing plate are flush with each other.



18) Install Engines

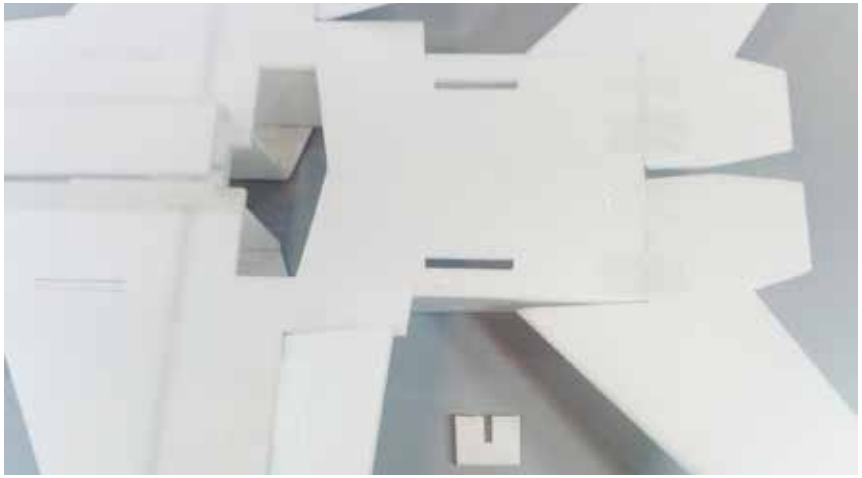
- Repeat the gluing steps as you did above...

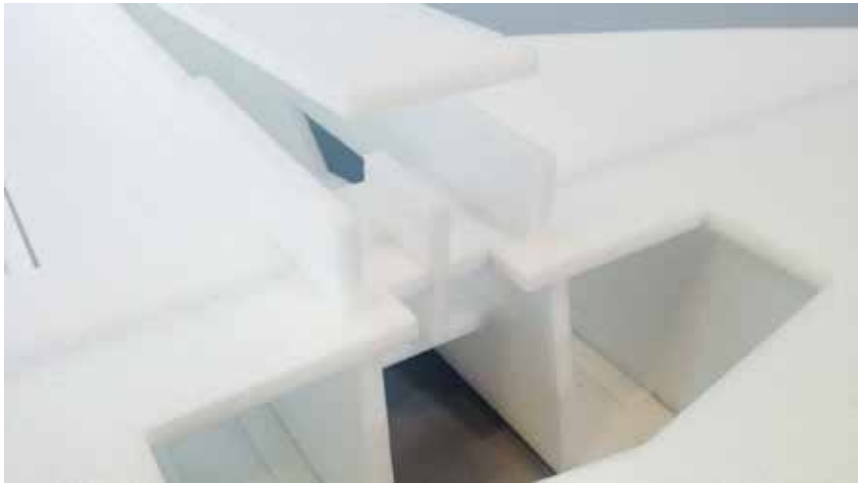
- Study the pictures well and make sure all the notches are aligned and all the glue joints are strong.

19) Install Motor Mount Support

- Repeat the gluing steps as you did above...

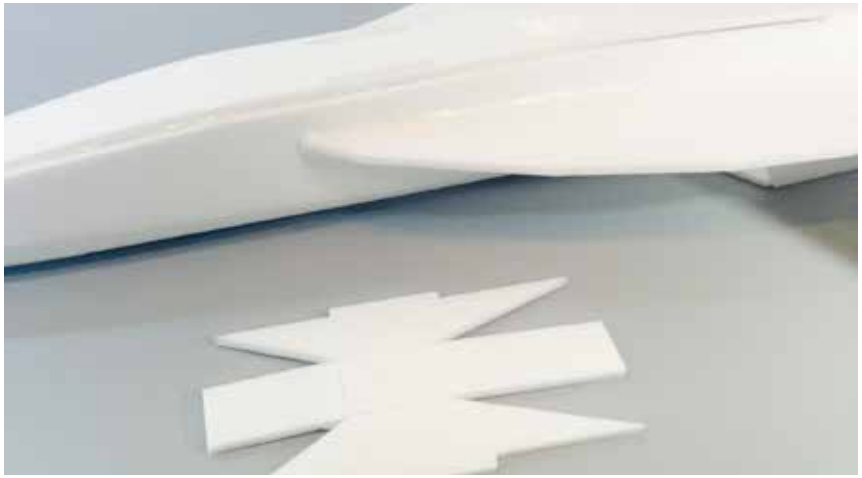
- A little extra epoxy is a good idea for this part for added strength.





20) Install Cockpit

- Fold the cockpit together and glue it to the fuselage, using the notches as a guide.



21) KF Airfoil (Optional)

- We do use and recommend the KF2 (single step on the top as pictured) for this plane.

- Use hot glue to attach the KF airfoils to the top of the plane.

- Measure 3/4" back from the leading edge on the top of the wing, mark the line with a pen.

- Draw a second line 1/8" up from the bottom of the wing and mark the line with a pen.

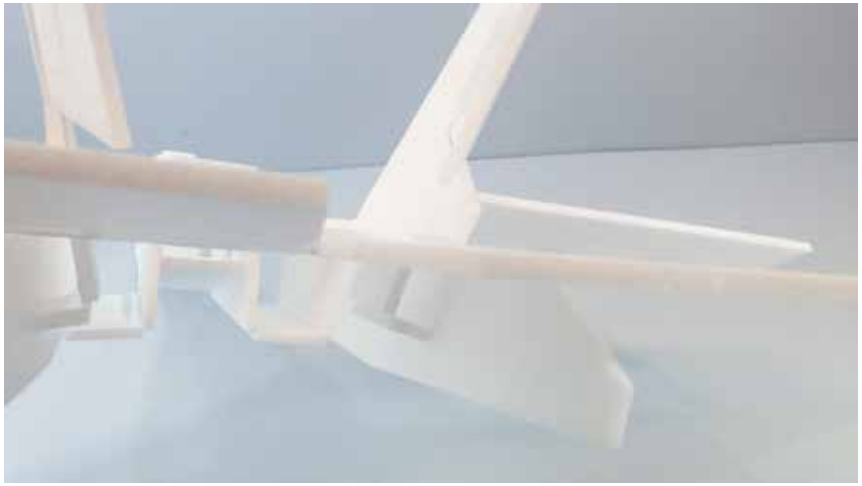
- Use a razor blade to cut between the two lines you made.

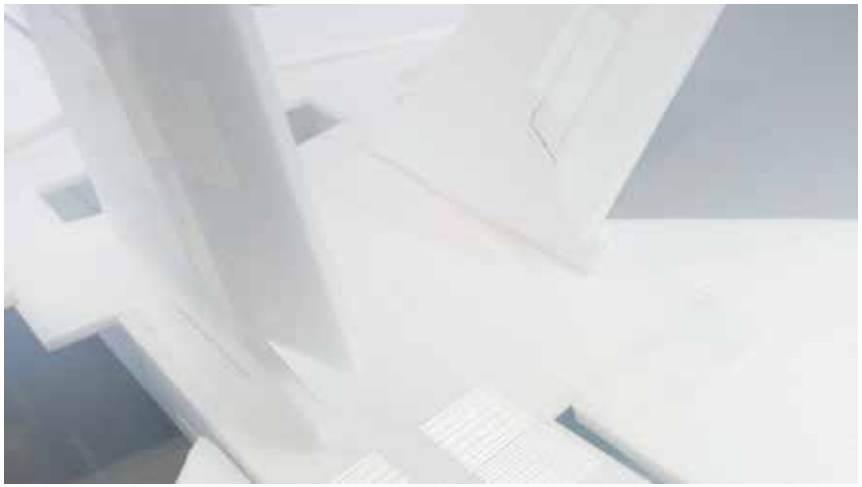
- Use some fine sandpaper to quickly smooth out the edges.

22) Install Vertical Stabilizers

- Dry fit these parts to ensure all is working well before you glue them down.

- Repeat the gluing steps as you did above...



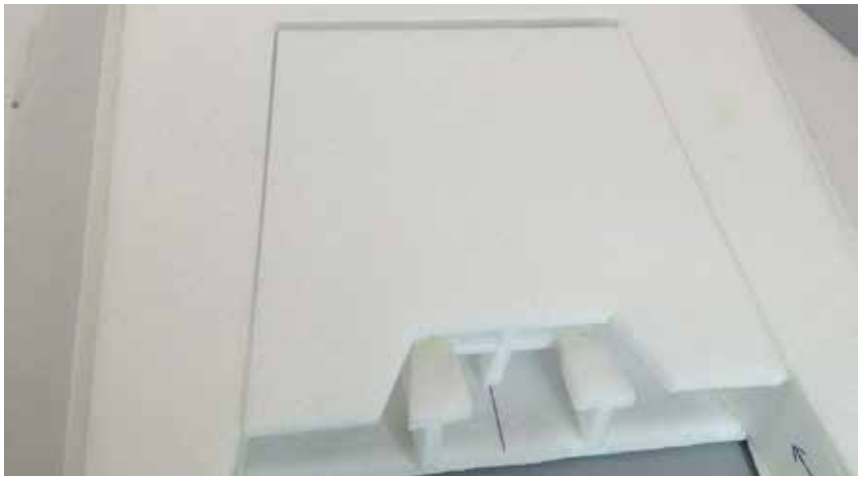


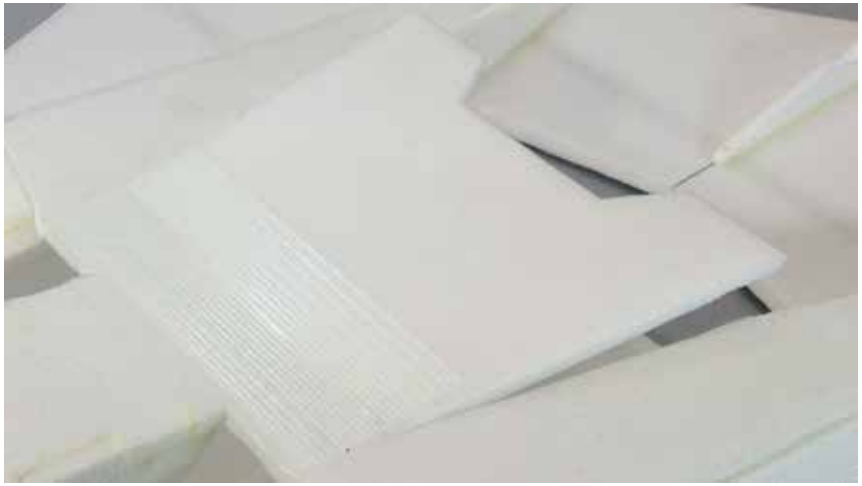
23) Cut Out & Hinge Hatch

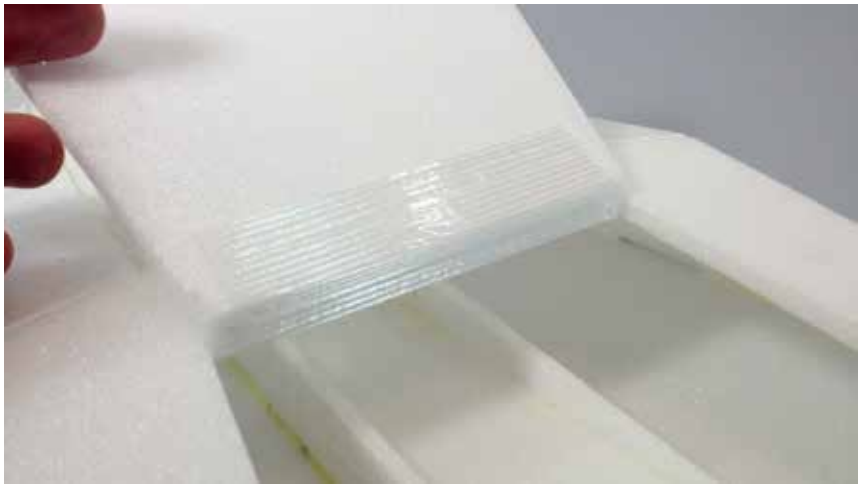
- Cut out your access hatch.

- Do NOT bevel the edges for the hinge.

- Put Strapping Tape on the top and bottom of the hinge as pictured.







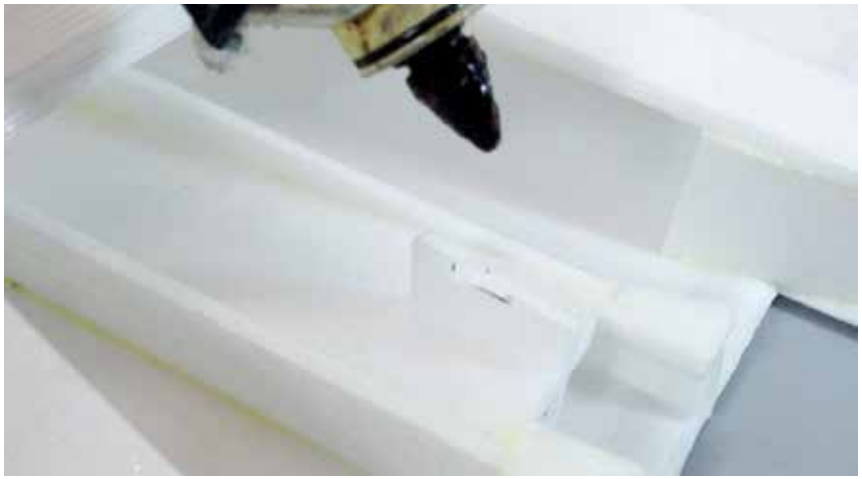
24) Install Hatch Magnets

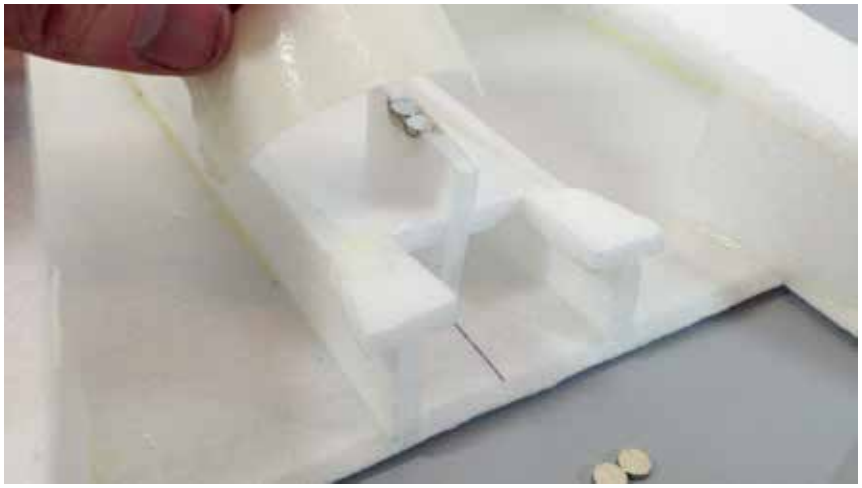
- We use 1/4" x 1/16" magnets.

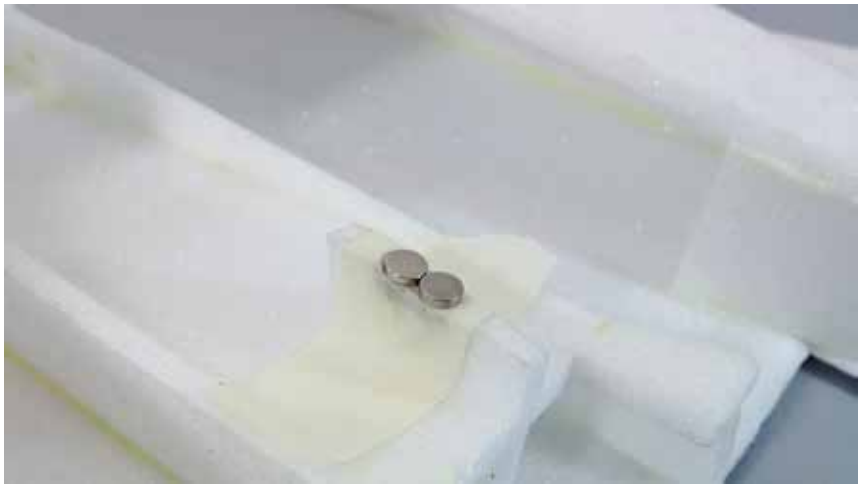
- Cut out a notch behind the motor mount and hot glue down magnets as pictured.

- First, hot glue down the magnets behind the motor mount and then cover them in masking tape as the glue dries.

- Now, drop your top set of magnets onto the ones you just glued down and covered with tape.







24) Install Hatch Magnets (Continued)

- Close the lid and press down on the magnets so they dent the underside of the top hatch.

- Find the dent marks and measure out where top magnets go.

- Use the same technique as laying carbon to "pluck" the foam for top magnets.

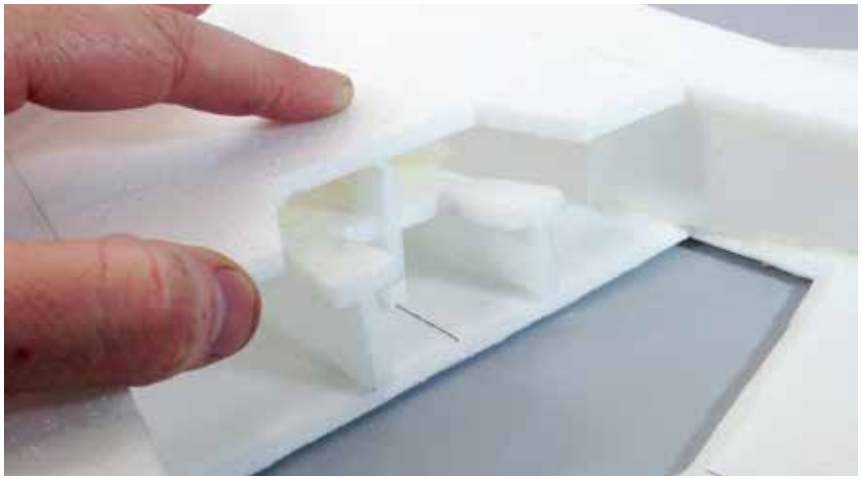
- Put some masking tape between the magnet sets.

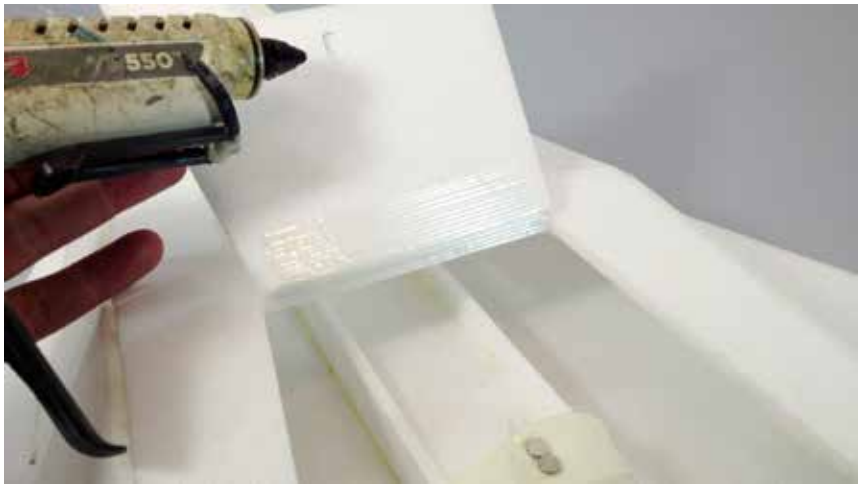
- Now dry-fit everything to make sure it all lines up right.

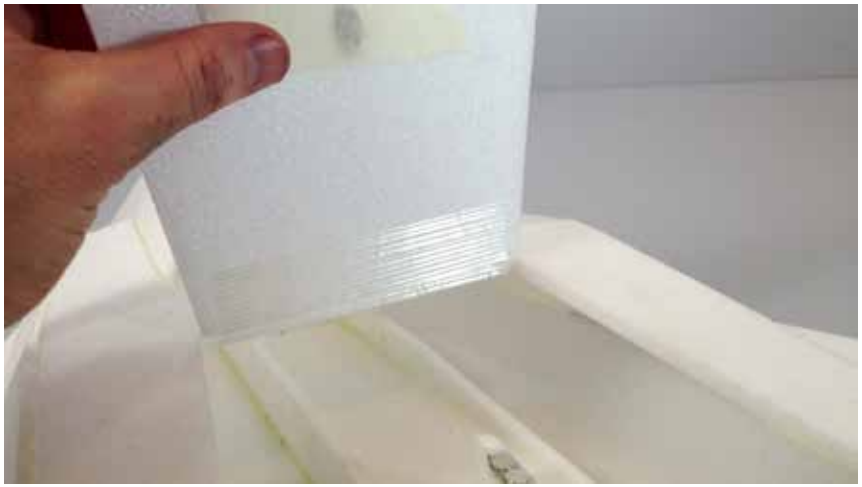
- Keep the masking tape between the magnet sets and hot glue the top set in.

- Close the hatch and let it dry in the closed position to insure 100% fit.

- The masking tape will stop it from being glued together.







25) Install Motor Mount

- The prop needs to be about in the middle of the prop slot (not too close to either edge).

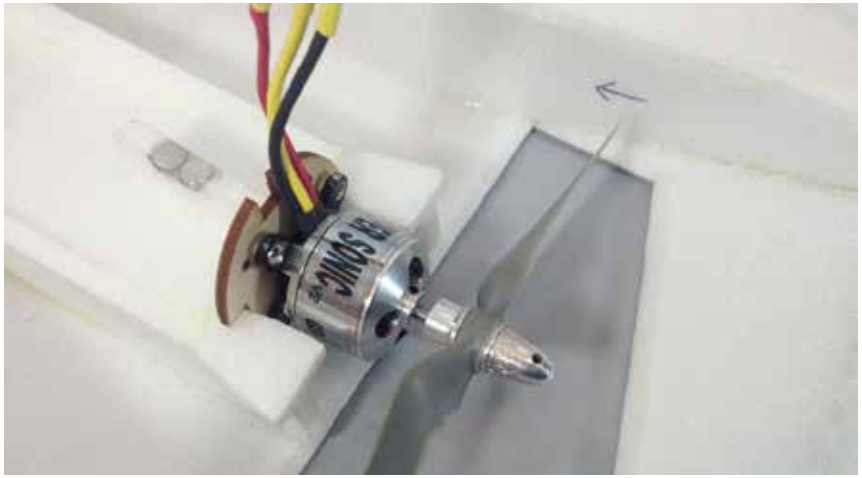
- It's ok to custom cut your prop slot larger or into a different shape if needed.

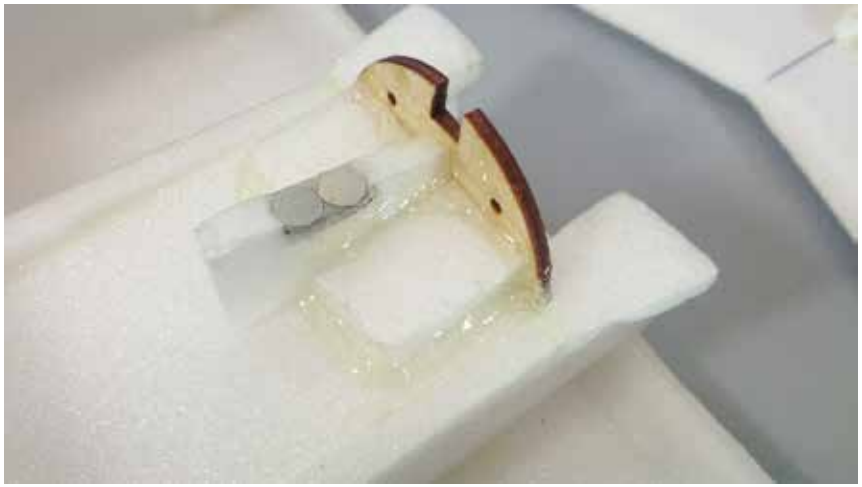
- First dry fit your entire motor, prop, and mount assembly to see how it all fits before screwing and gluing.

- Epoxy down mount using masking tape and pins to hold it. Make sure the mount dries straight.

- Extra 1" squares of foam are recommended to glue down as pictured for extra support.

- Now seal with hot glue. You want the motor mount "too strong" not "strong enough".

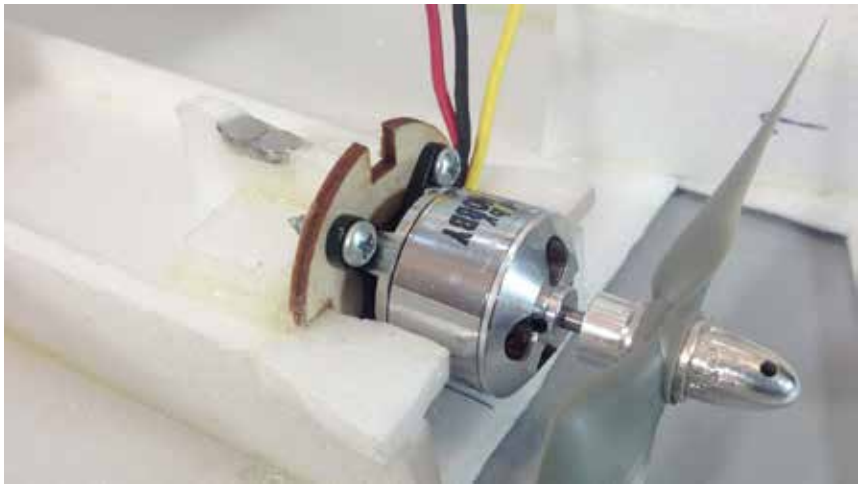




26) Install Motor

- Screw the metal mount to the motor using the screws provided with your motor.

- Then screw motor with metal mount to your plywood mount using #6 x ½" size screws or nuts and bolts.



27) Epoxy Control Horns

- The control horns will go about 2" from the inside of the control surface as pictured.

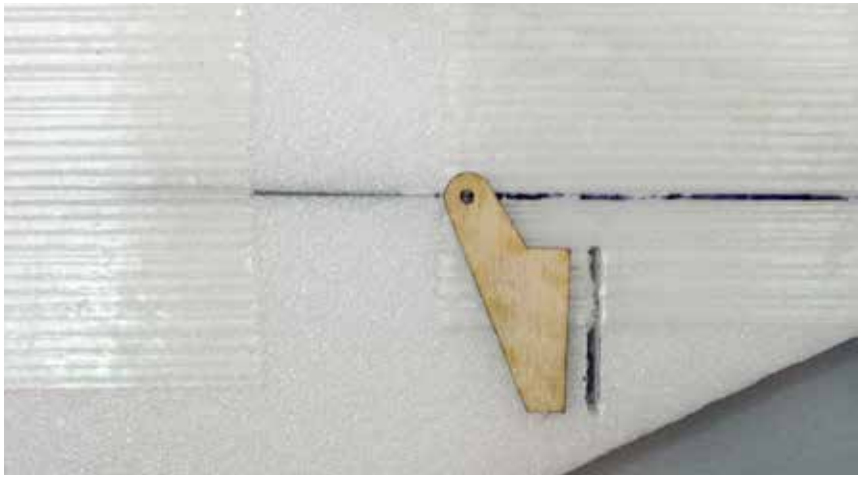
- IMPORTANT: The hole of the horn needs to be directly over the hinge line as pictured.

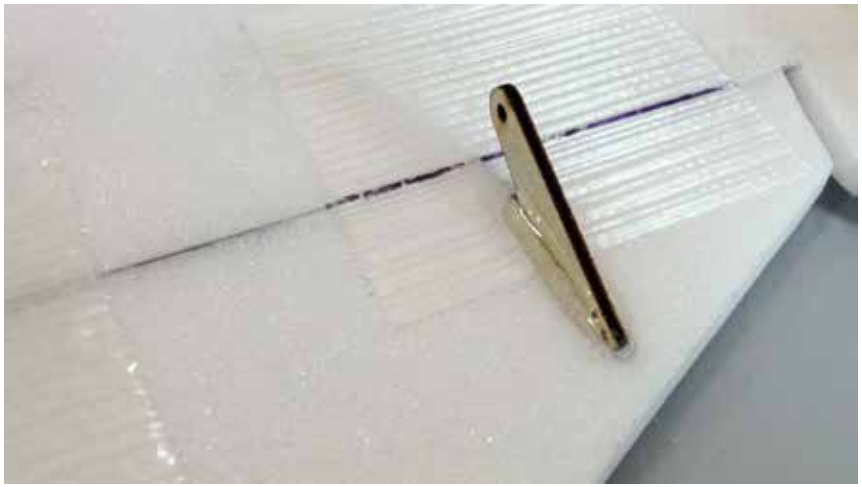
- The control horn needs to go 90 degrees from hinge line as pictured.

- Measure and cut a tight slot all the way through the foam for the control horn to glue into.

- The bottom of the horn should lay flat and flush with the bottom of the foam (top of the table).

- Generous amounts of epoxy are going to hold it in the best.





28) Install Control Rods

- We use Dubro 2-56 control rods and clevises for all our planes.

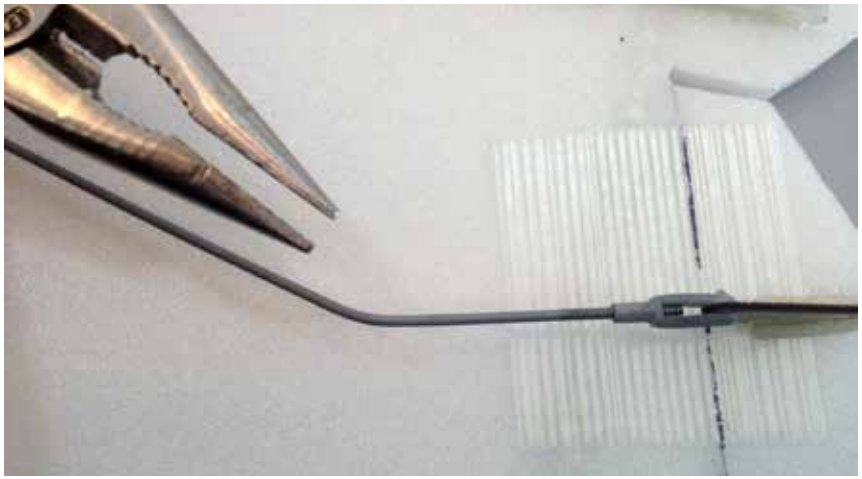
- Its best to put the servos close to (or in front of) the center of gravity.

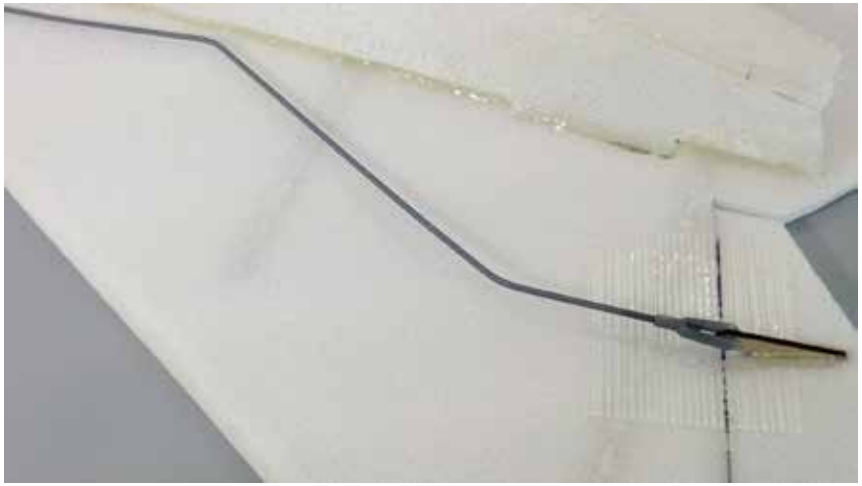
- First, measure out and mark where you want your servos to go. (Install the servos AFTER your control rods are done)

- Then make a rod to fit. Bend the rod with needle nose pliers.

- The "servo end" of the control rod will make a tight Z-bend as pictured.

- Screw the clevis half way down the threads so you have maximum adjustments at the field.





29) Install Servos

- Now you have your control rods 100% done and your servos ready to be installed.

- Attach the clevis to the control horn and let your control rods show you EXACTLY where to cut out for the servo.

- Trace out (error on too tight) and then cut out a spot for your servo. Make sure it's snug.

- Glue down with hot glue.

- "Zero out your servo" by turning on your radio, centering the trim, and ensuring the servo is mechanically centered.

- Install control rod on the servo arm and then attach the servo arm to the servo.

- Adjust linkage if needed with the clevis threads.

30) Install Battery Velcro

- Lay down sticky Velcro for your battery inside the full length of the compartment.

- More than enough Velcro is best so you have more ability to move your battery around.

- Moving your battery forward or backward is how you will adjust the center of gravity (CG).

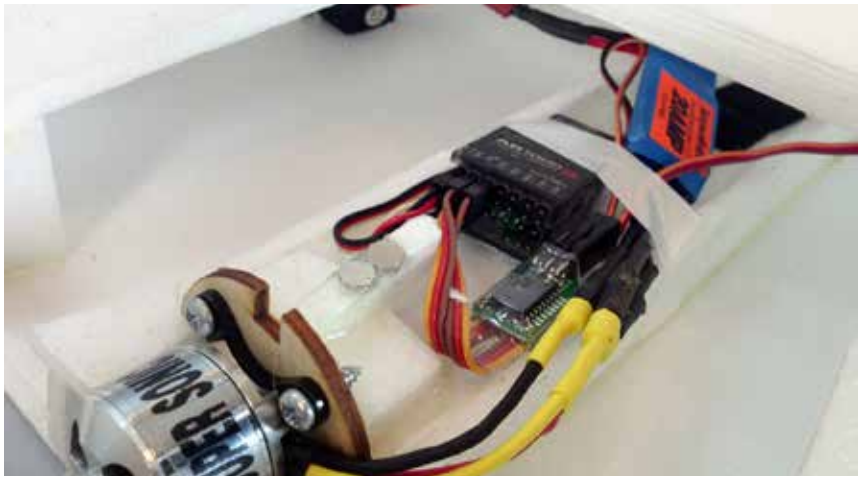
- Put the opposite Velcro on your battery.

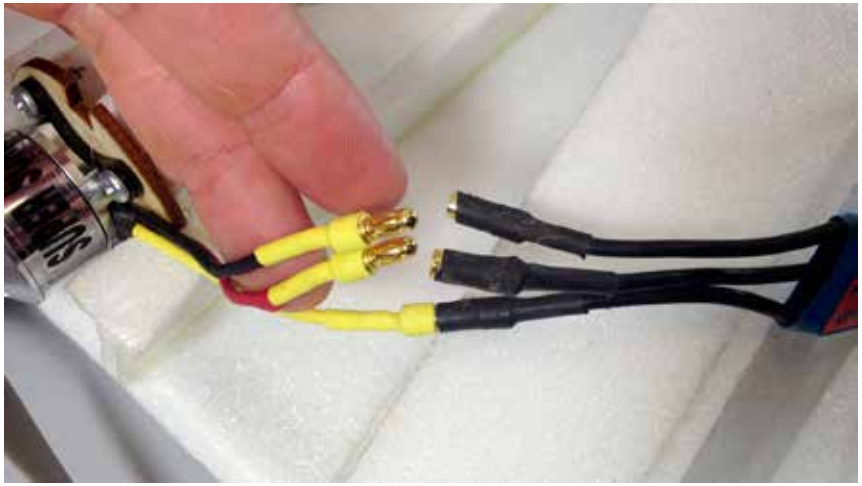
31) Tape Down Wiring

- Plug in the ESC to the motor and tape down the wires.

- If you need help soldering, see this helpful thread.

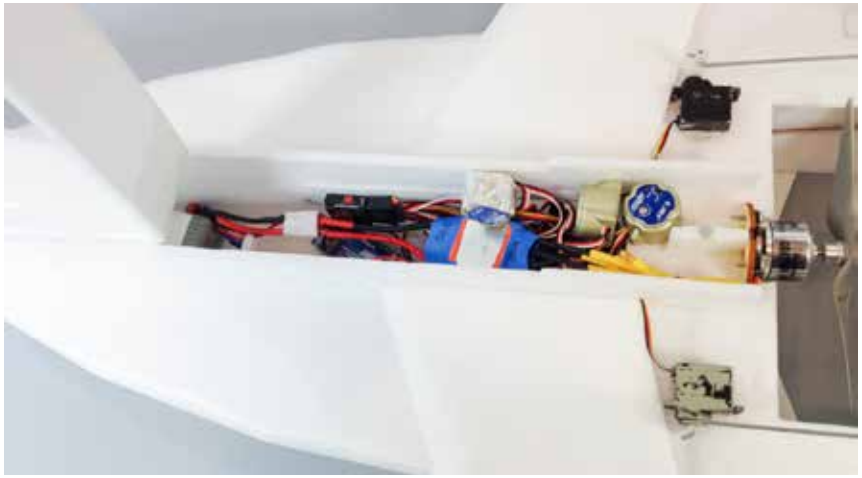
- If your motor is spinning the wrong way, just reverse any two of the ESC wires.

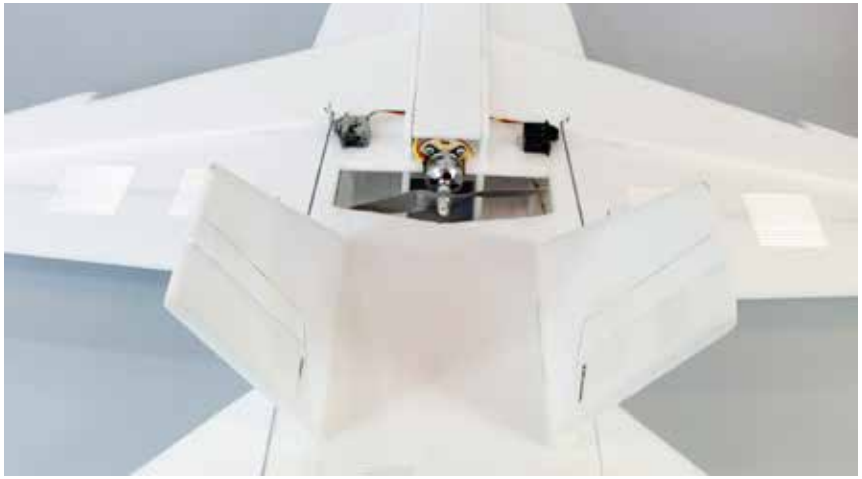




32) Overview Top

- Here are some pictures of the finished model, ready to fly.





33) Overview Bottom

- Here are some pictures of the finished model, ready to fly.

34) Control Throws

- For the recommended stock set up, have all controls deflecting 1.5".

35) Painting

- We use Testors paint because it's one of the few paints that doesn't melt the foam.

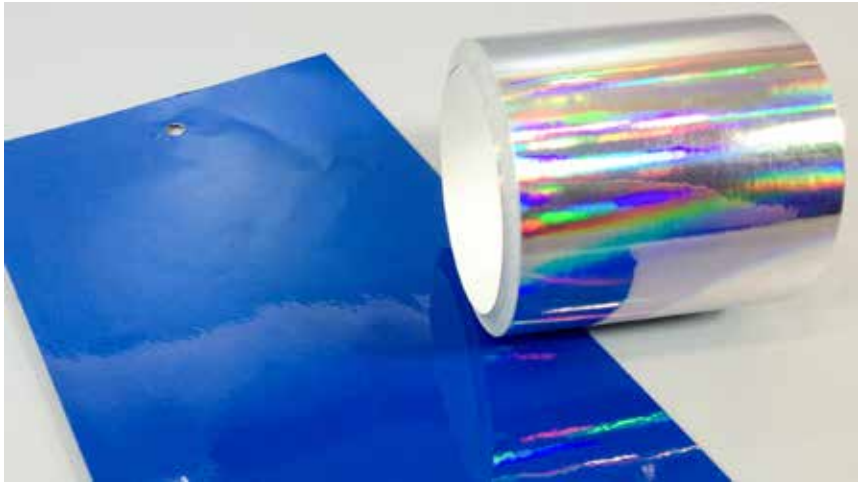
- Shake can well and hold 12" away and spray a light coat.

- Let it dry and repeat. Best to practise on some scrap foam first.

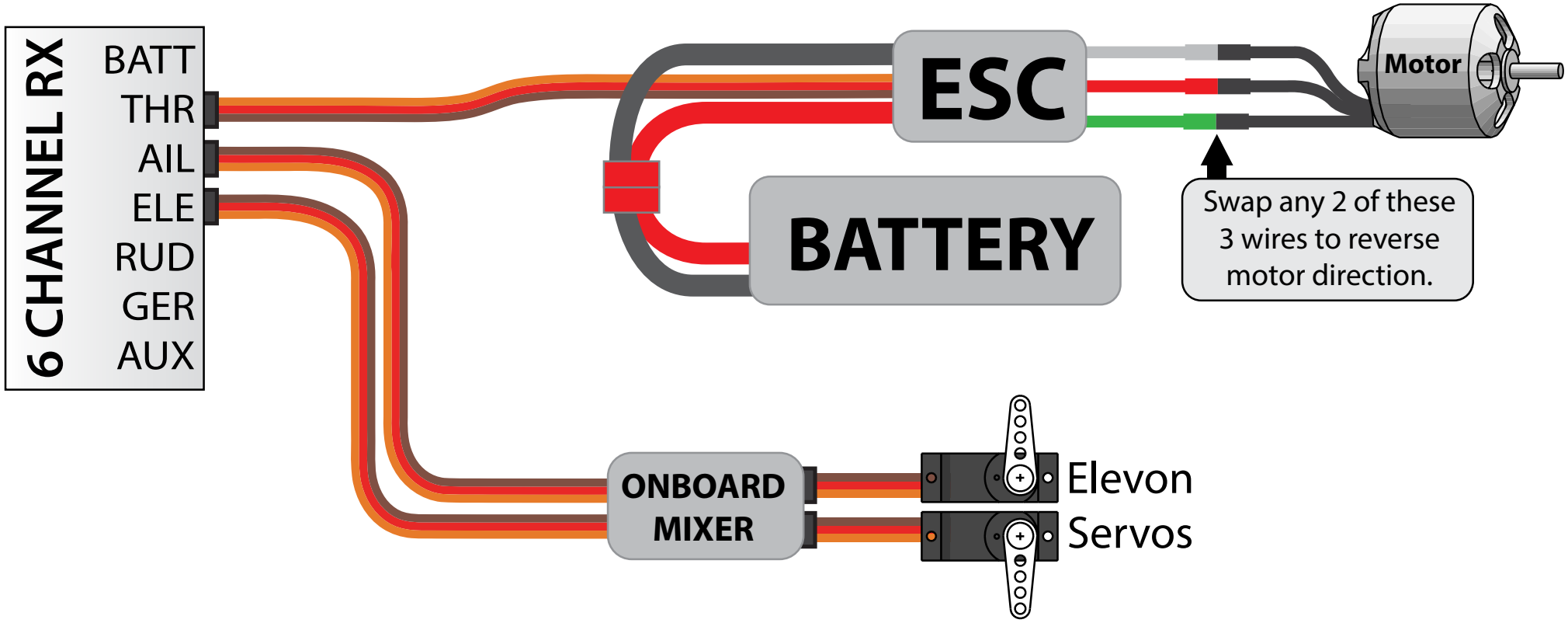
36) Taping

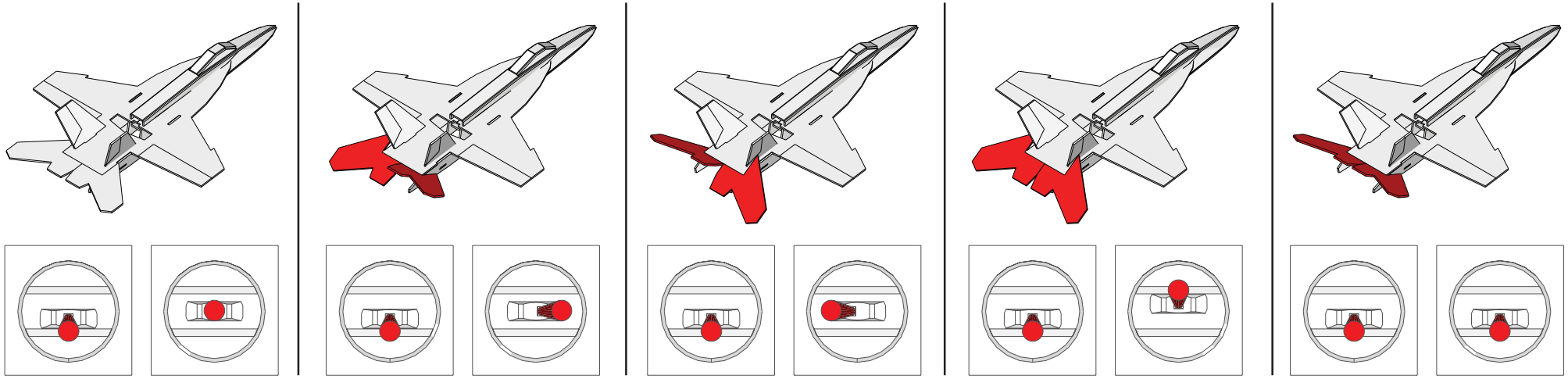
- We use the *"3 inch Rainbow Sheen"* tape for the cockpits.

- We use 5" x 36" MonoKote stickers for the stripes on the wings.



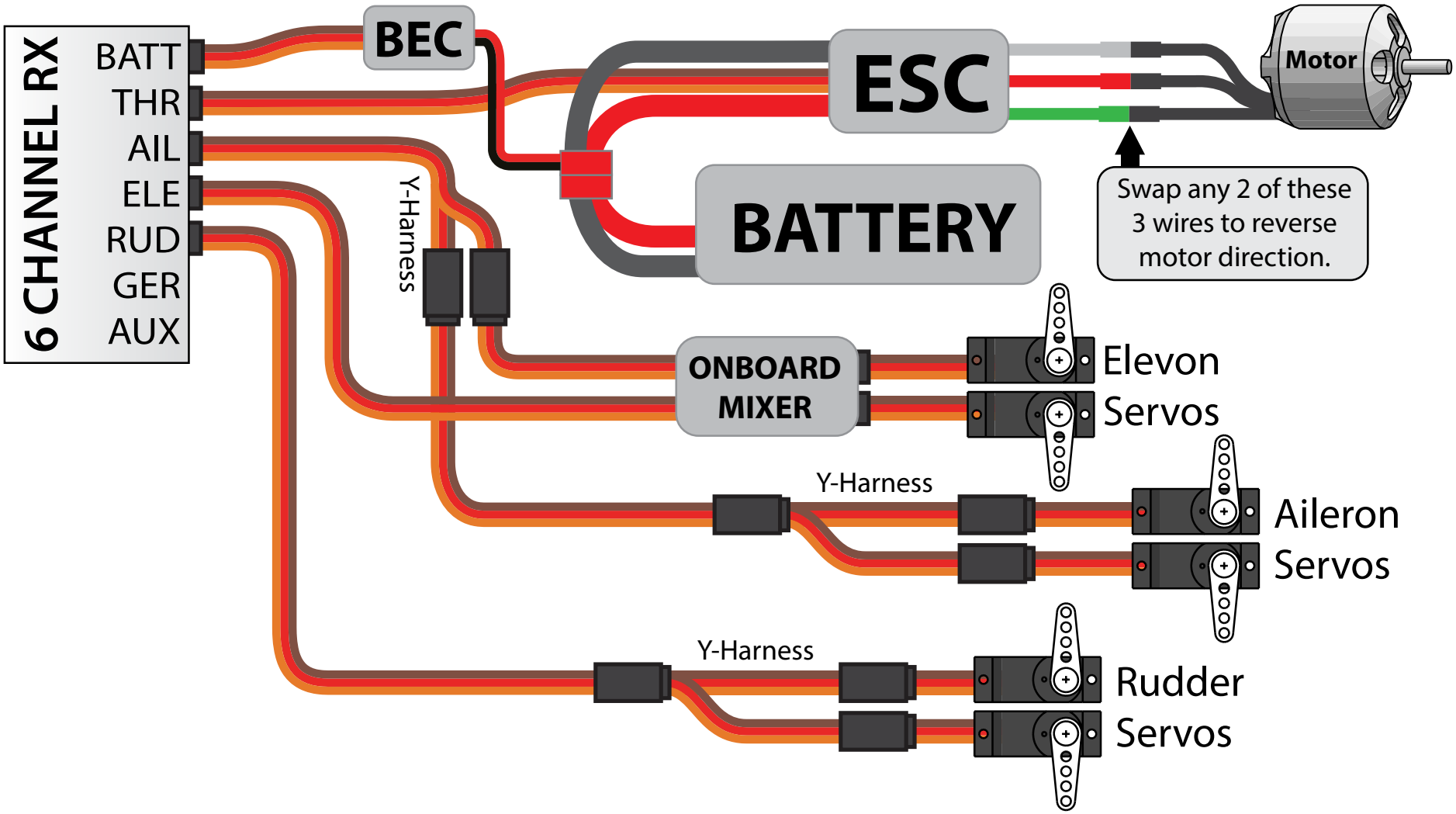
F-18 V3 Elevons Wiring Diagram

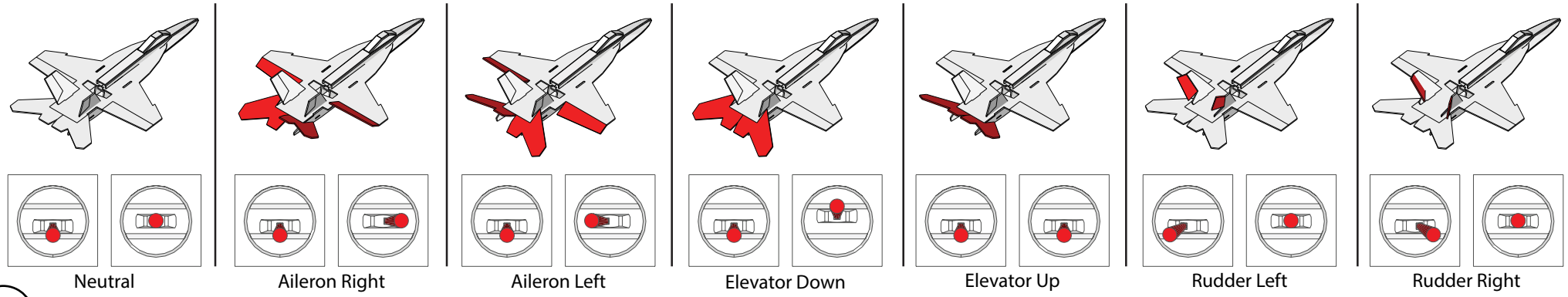




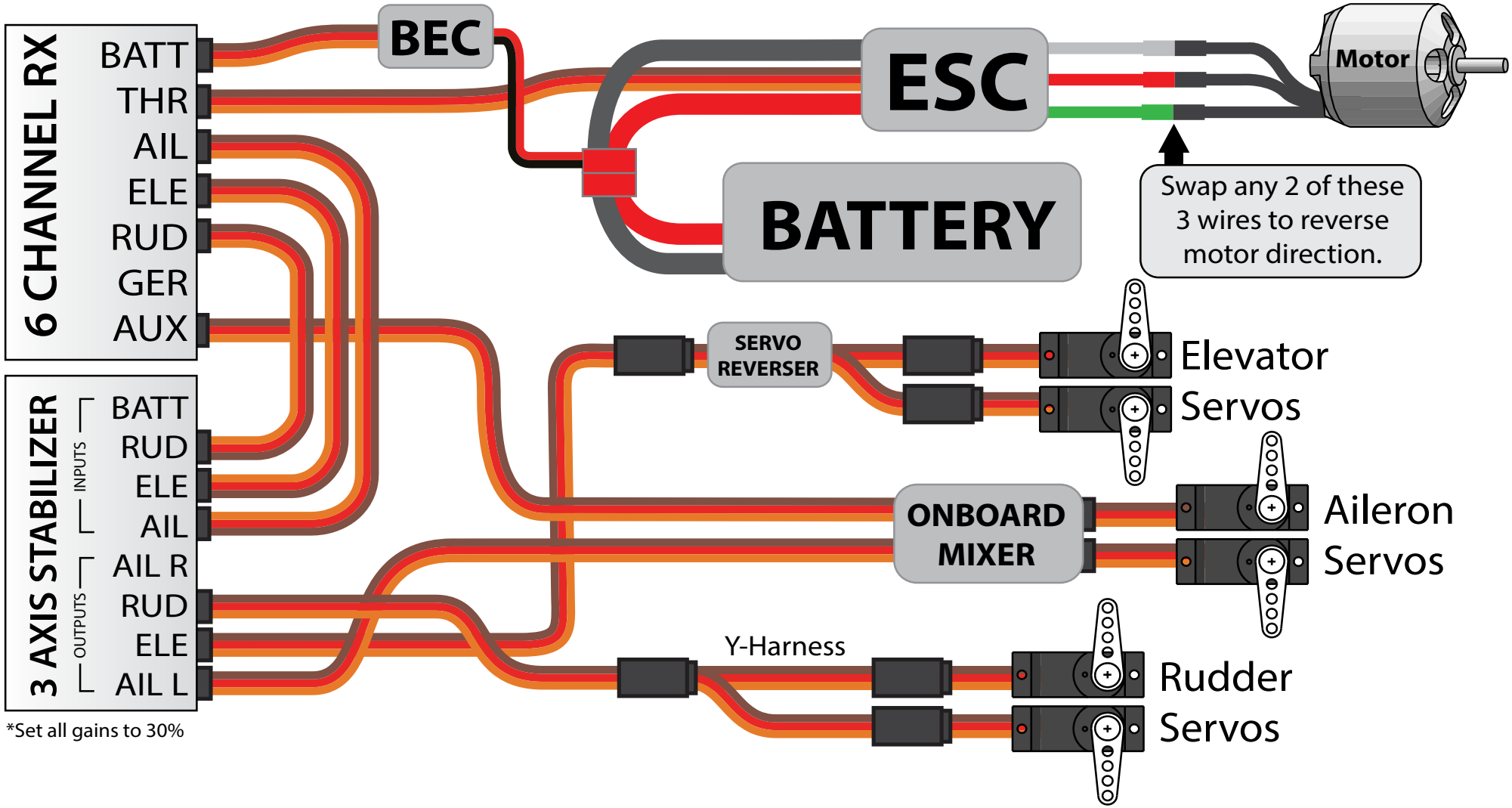
Neutral | Aileron Right | Aileron Left | Elevator Down | Elevator Up

F-18 V3 Standard Wiring Diagram

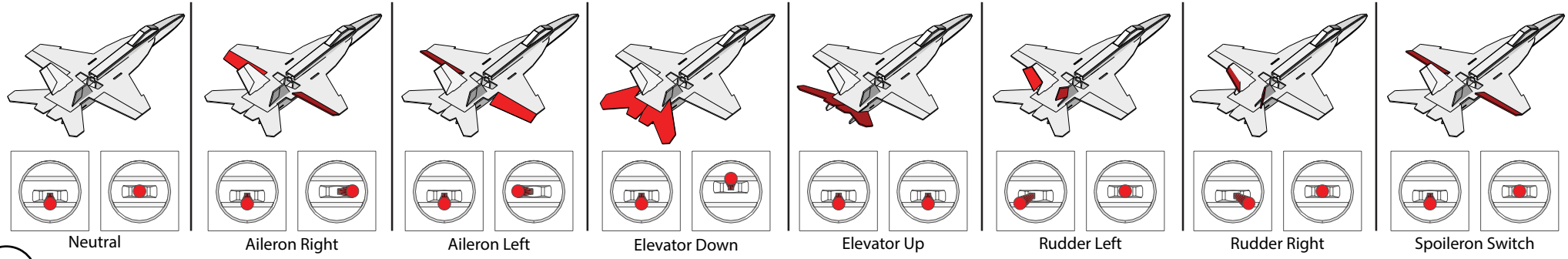




F-18 V3 Advanced Wiring Diagram



*Set all gains to 30%



I hope your build went good!

Contact us if you need anything.

Come join us on the Forum

and share some pics of your plane!