JTA INNOVATIONS

JTA Innovations 32” Yak 54

Please Read For Your Safety

The product that you have received is not a toy. Please understand that model aircraft have several moving parts and equipment that if misused, can not only cause harm to other materials and objects, but also to you and others around you. JTA Innovations is not accountable or responsible for any events or incidents that cause damage, injury, or even death. After purchase and receiving of this product, the customer is fully responsible for the assembly and use of the model. We cannot monitor the procedure/methods used in assembling or flying of the model. If operating in the United States, please make sure that you have membership with the Academy of Model Aeronautics and follow AMA rules. Please operate the model at AMA flying sites. If living outside of the US, please follow the rules of model aviation operation in your region. JTA Innovations is not responsible for any disregard or breaking of these rules. Prior to being shipped to each customer, airframes will be checked for any damages. We have no control over what happens during the shipping process. If any product is deemed defective by a customer, please contact JTA Innovations with proof of defect (most likely photo or video), and proof of purchase including purchase date. JTA Innovations will analyze your claim and handle the situation case by case.

We are pleased to introduce the first development of the JTA Innovations line of foamies, the 32” Yak 54. The Yak has always been a popular and classic platform within the RC aerobatic community. Designed with all styles of foamy flying in mind, the Yak is constructed with 6mm EPP which allows for controllable outdoor flying as well as nimble indoor flying. Equipped with an extremely rigid carbon fiber arrangement, state of the art hardware, durable and efficient landing gear, and flexible yet strong EPP foam, the Yak is sure to withstand the most demanding of flights. Along with the superb flight characteristics and high quality construction, the Yak is available in 2 printed color schemes designed by Matt Stringer.

Weight: Approximately 175-180g without battery
Required:
Motor - Hacker A10-9L or equivalent/similar
ESC - 10 to 15 amp ESC
Servos - 4g-12g servos (Qty. 3)
Propeller- 8-9” electric (APC highly recommended)

Tools/Supplies needed

Including but not limited to:

-Ruler

-Foam safe CA or preferred glue for construction and regular CA for linkages

-Hobby knife with blades

-Scissors

-Heat gun or lighter for heat shrink

-Assorted phillips and flat blade screwdrivers

-Assortment of small drill bits

-Drill

-Needle nose pliers

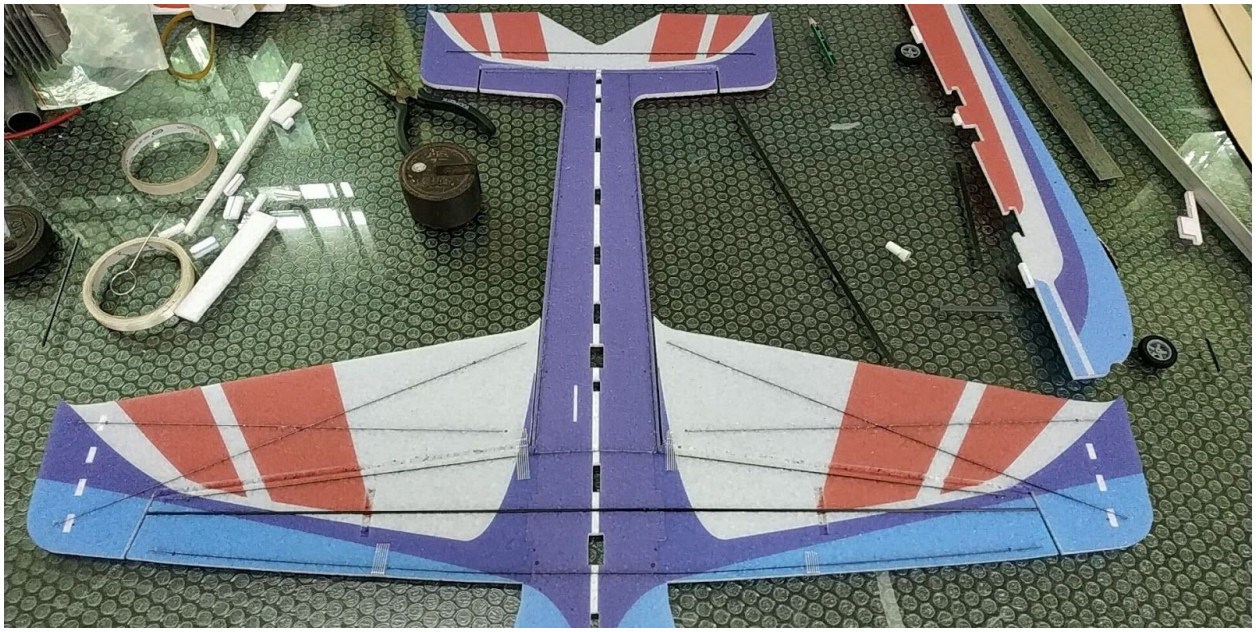
-Driver set

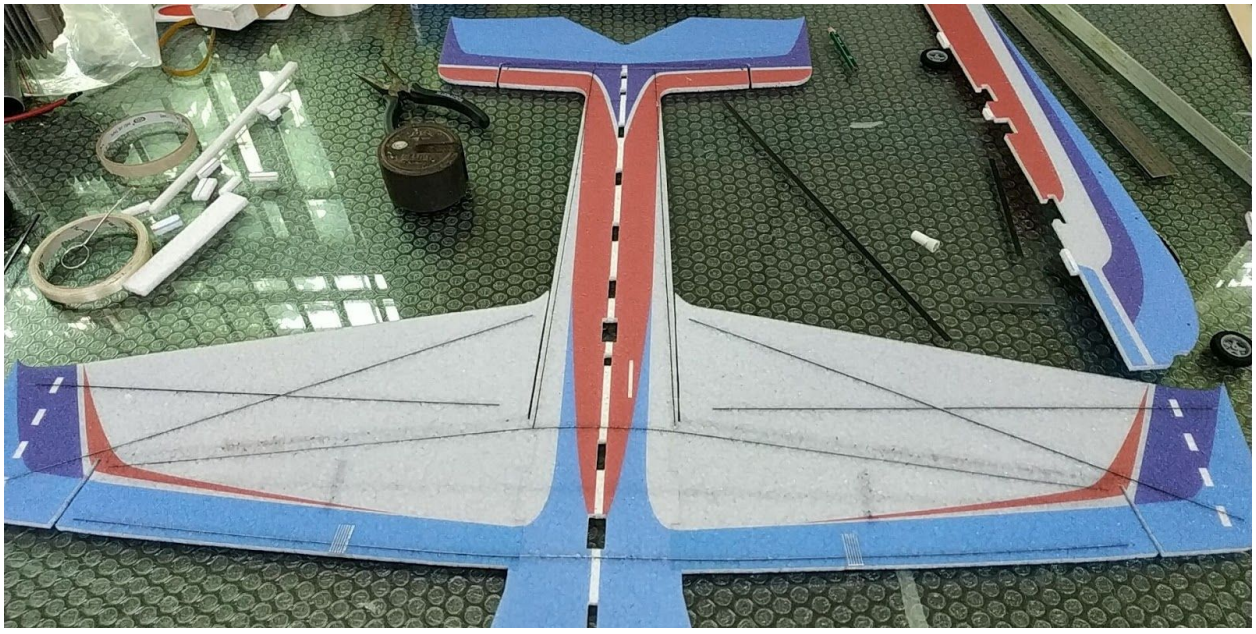
-90 degree square

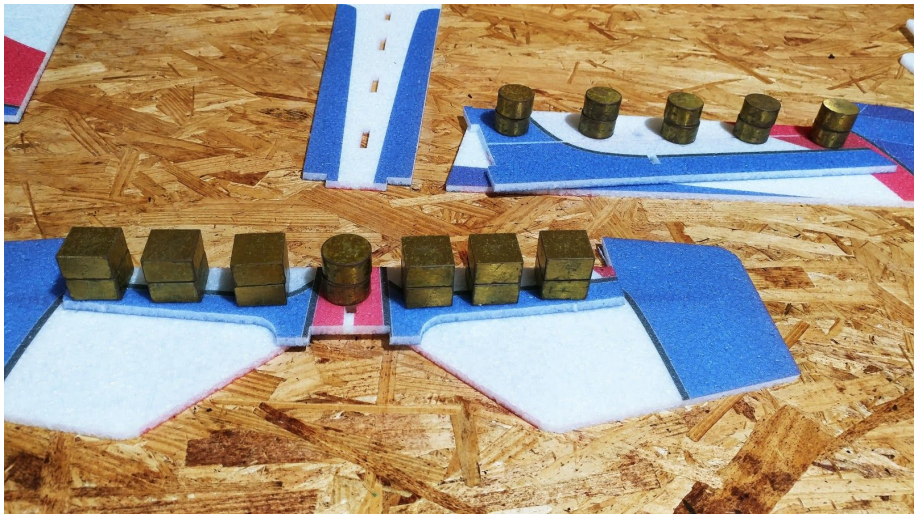
-CA accelerator

-Sandpaper

* Below are photos of the new construction version for reference. This replaces some features (aileron gusset bracing for example) that are listed later on in the manual. If you are assembling an older version, please move on to the manual where the control surface break in begins.*



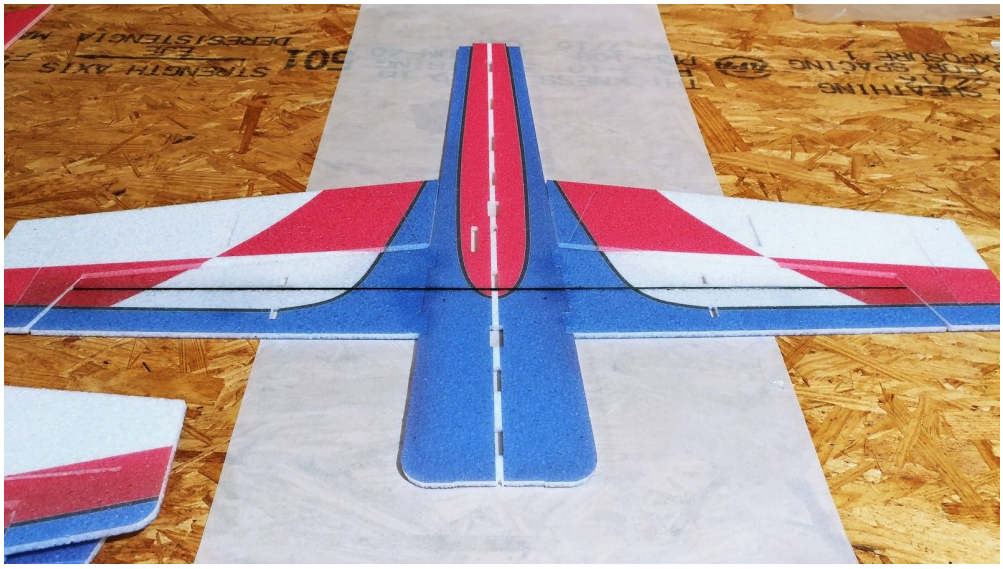




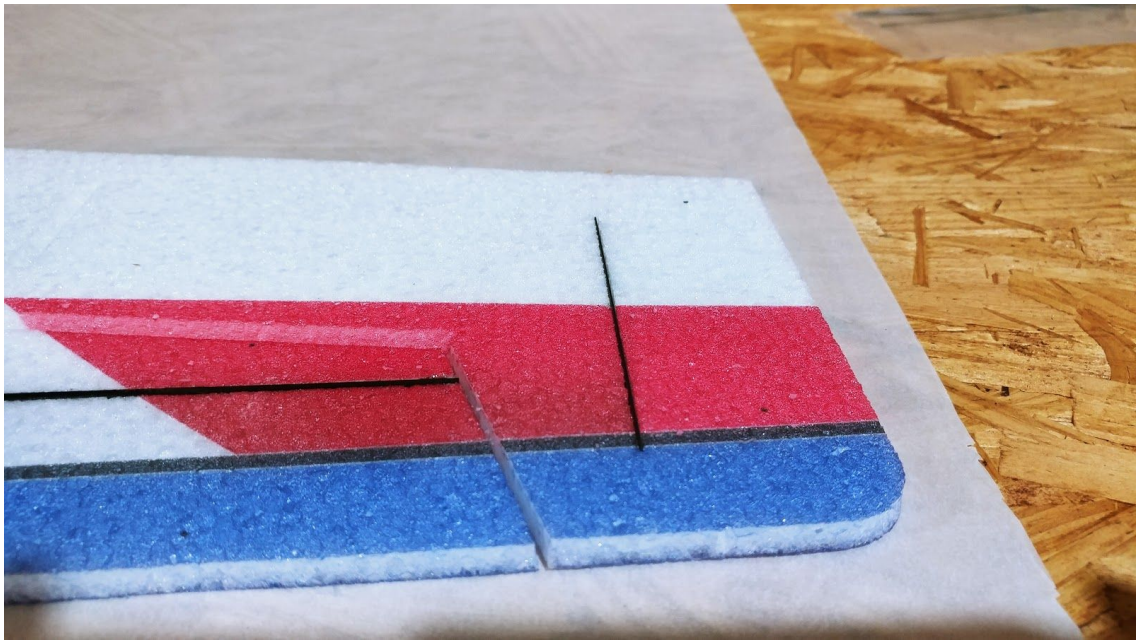
In order to get consistent full range of all control surfaces during flight and setup, we recommend that the first thing you do after unboxing is weighing down the control surfaces as shown above. Each surface will take about

60-120 minutes to complete, then you will notice that it will be easier to move the surface to full deflection.

Now, locate the horizontal piece of the fuselage as well as both wings. Make sure the fuselage is flat inverted and test fit each wing panel. After test fitting, you can now proceed to glueing in the wings to match up with the cutouts in the fuselage. We recommend using a sheet of wax paper or parchment paper to avoid the airplane becoming glued to the workbench.

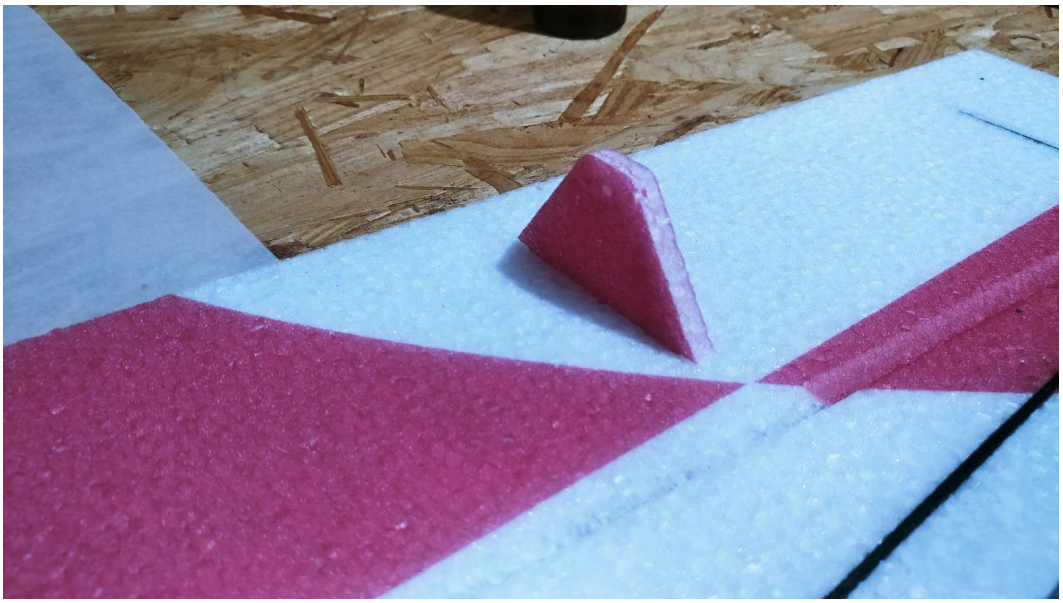


Now that the wing is glued, locate the wing spar. This is the square carbon fiber that will be the length of the wing itself. Test fit into the slot in the wing and make sure it is flush even at the spots where the wing joins with the fuse. Once this is done, you can then glue the spar in. Make sure that it is not sticking out passed the wing on either side.

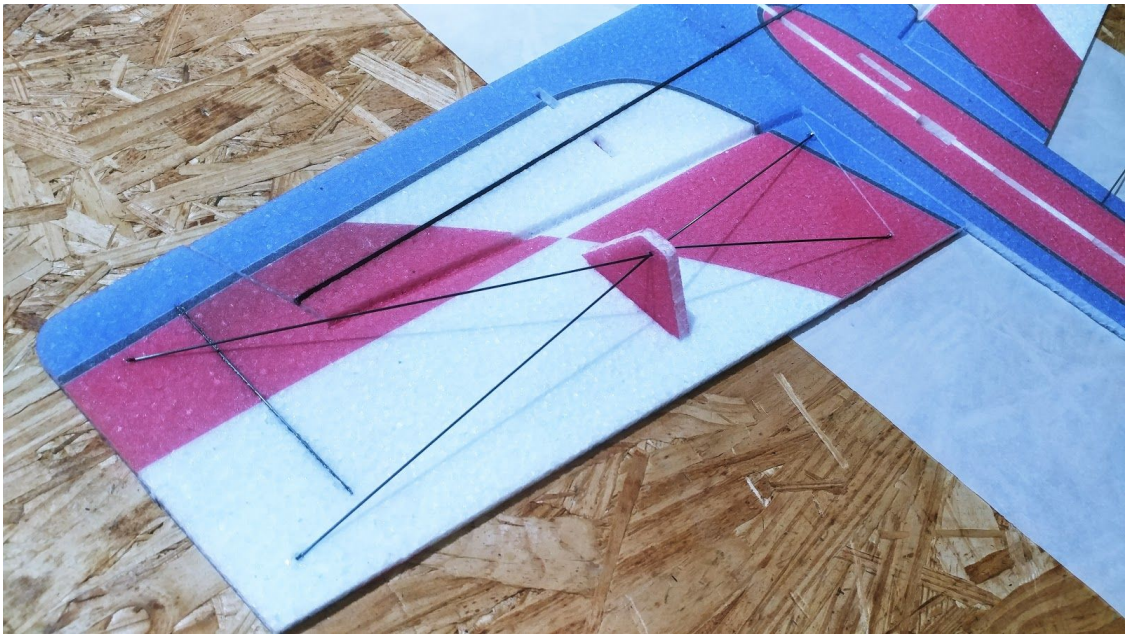


Next, provide support for the aileron counterbalances by locating the 95mm long flat piece of carbon fiber. You will

notice there is a cutout for this piece. Test fit, glue, then repeat for the other aileron.



Locate the triangular joiner that will be placed on the underside of each aileron. Once you make sure that it fits clean and snug into the cutout, you can glue this piece in and repeat to the other side.

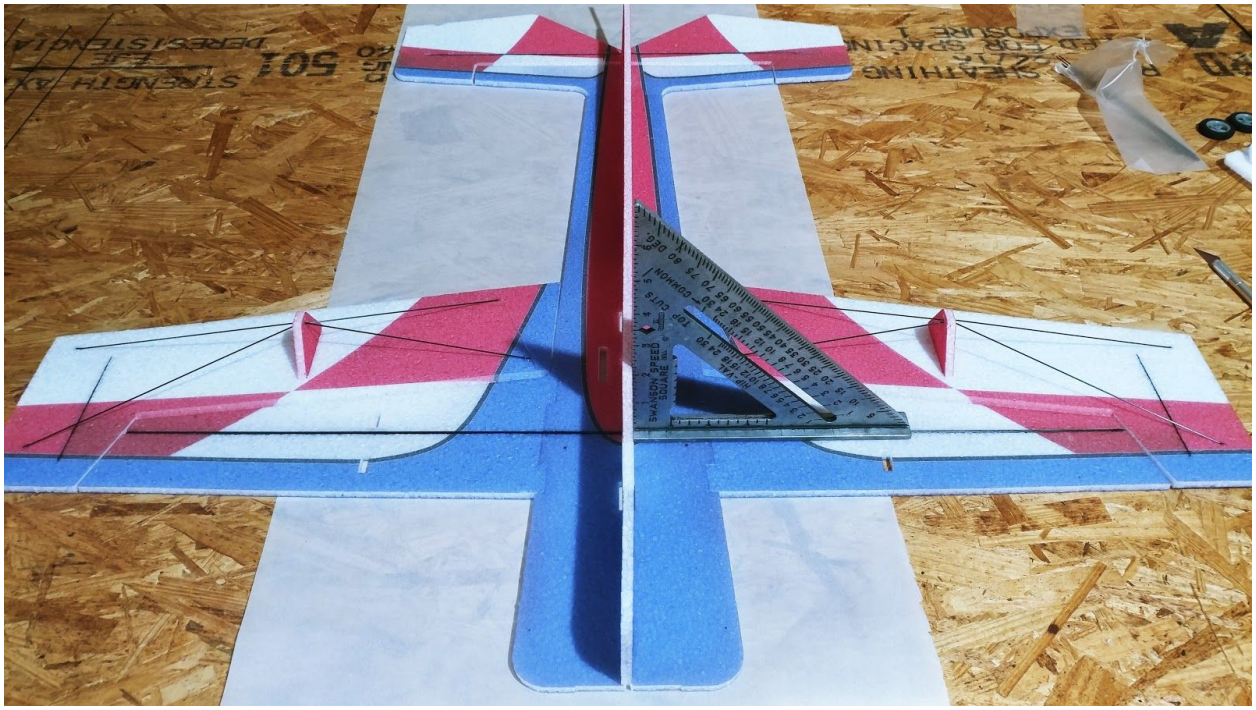


With the joiner in place, you can now begin the process of bracing the aileron. This will include four carbon fiber rods in the configuration shown above. The lengths for each are 190mm, 170mm, 140mm, and 155mm. The carbon rods will

be pre-cut. You may also be able to spot the black dots where carbon can be referenced for placing. Be sure to provide a good connection for the carbon by poking through the foam.

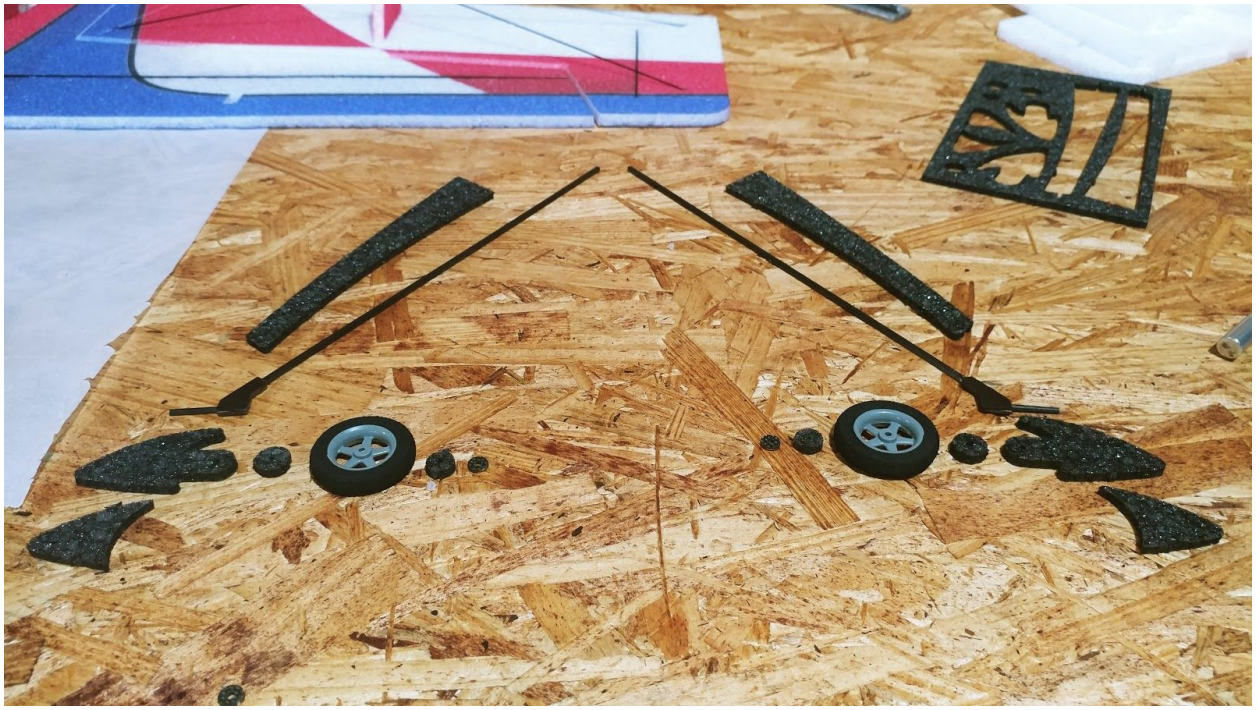
Test fit the horizontal stab/elevator into the rear of the fuselage. If all is well, glue into place making sure that it is flush with the fuselage and flat with the rest of the airplane.

Locate the carbon fiber elevator spar. It will be square just as the wing spar is and cut to fit the cutout in the elevator. Length will be 400mm.



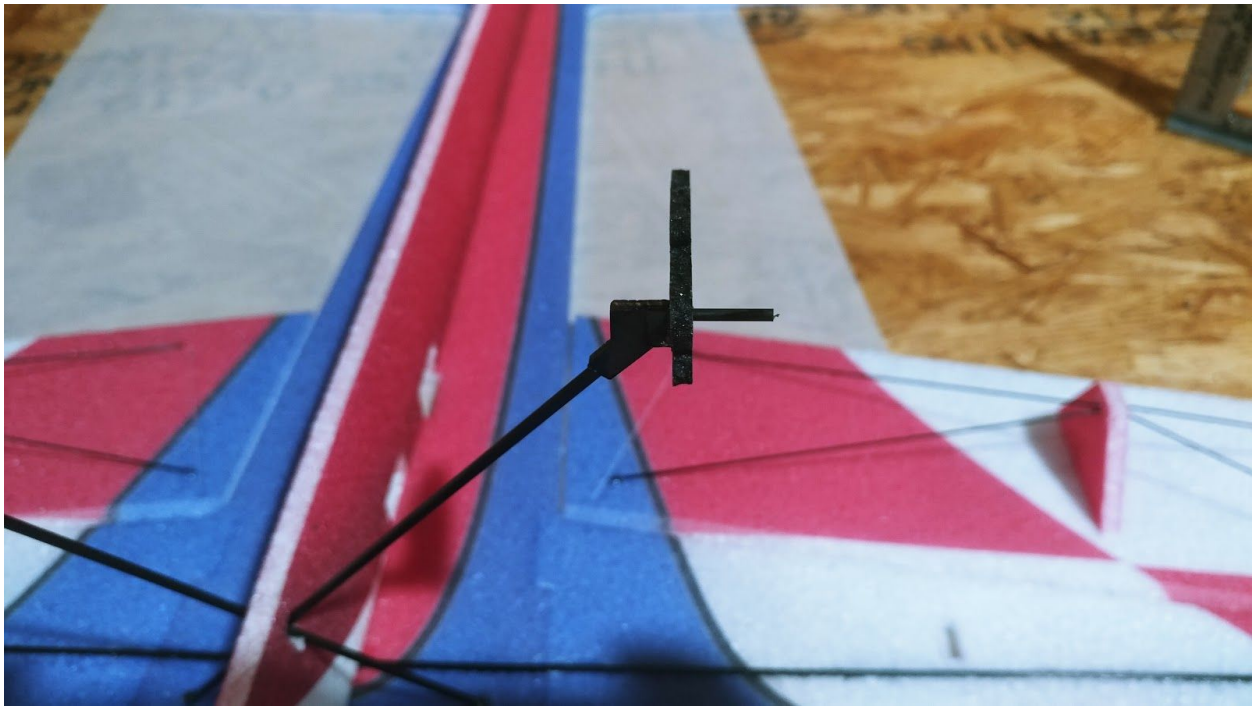
Making sure that everything is 90 degrees and flat, it is important to test fit the underneath side of the vertical fuselage. The fit should be fairly snug, so do not glue any spots until you know that each tab will be inserted fully along the fuse. Once this is complete, you can then apply glue along the edges. When placing back in, once again make sure that it is adjusted at 90 degrees to the rest of the airframe. There is no need to apply glue to the edges that will cover the servos.

As shown in the photo above, a flat piece of carbon fiber will be used for the tailwheel purpose and allow the aircraft to rest and taxi on the ground without coming in contact with the foam. This will be glued to the bottom vertical piece of the fuselage. The length of this piece is 60mm.

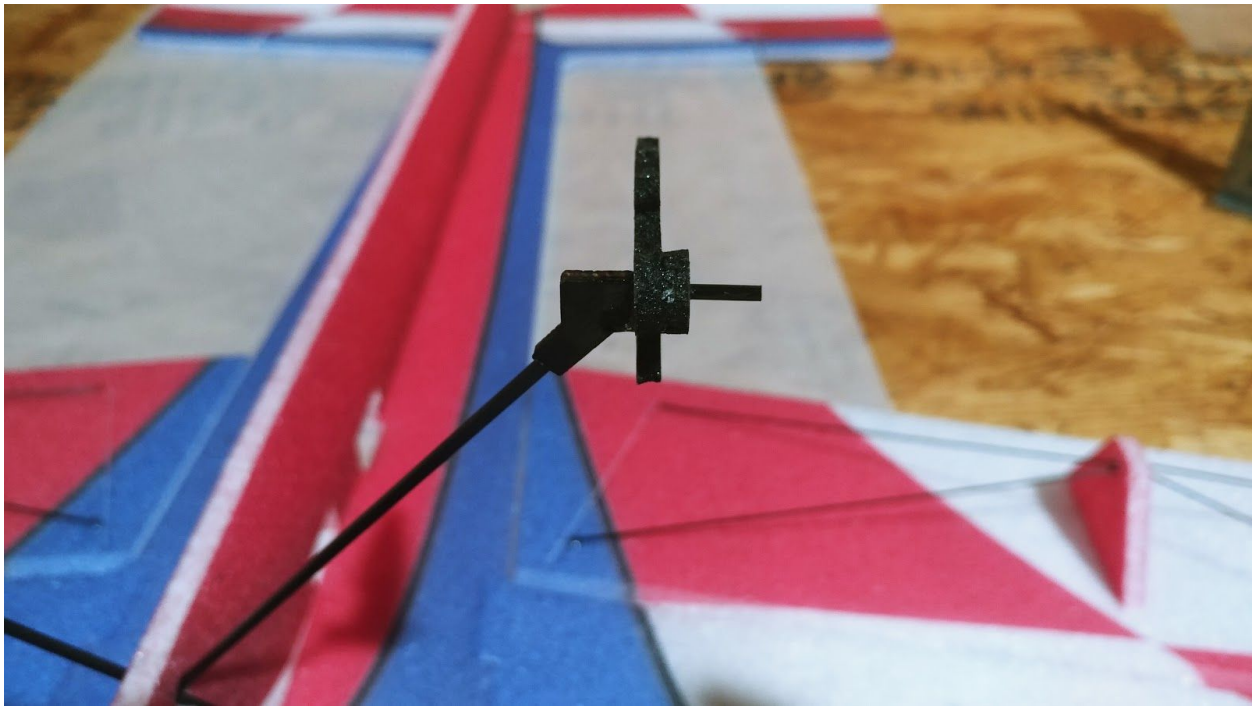


Shown above is the entire assembly for the landing gear. The square carbon fiber landing gear is already glued into the axles. You will find the wheels as well as three total collars (2 foam pieces, and 1 wood/carbon laminated piece).

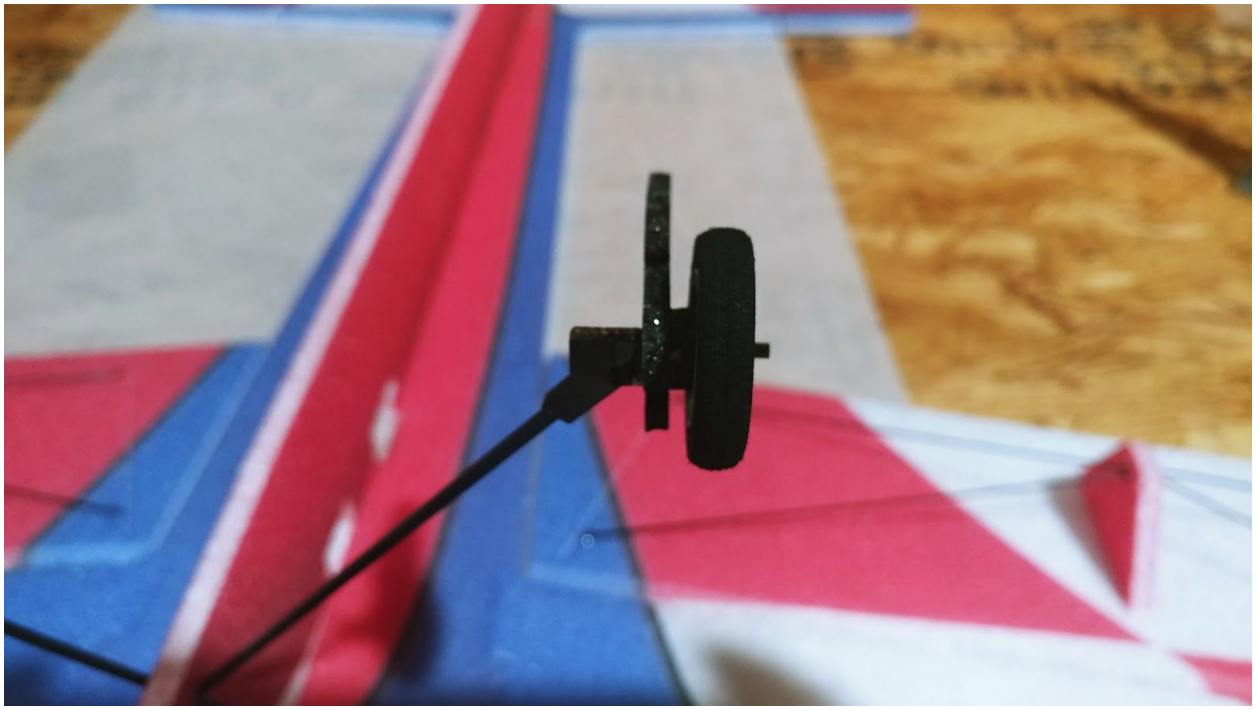
Along with the EPP wheel spat, there is an additional piece of EPP that is the same shape that will be glued together to provide strength for the rear part of the spat. The photo above shows the two pieces glued together.



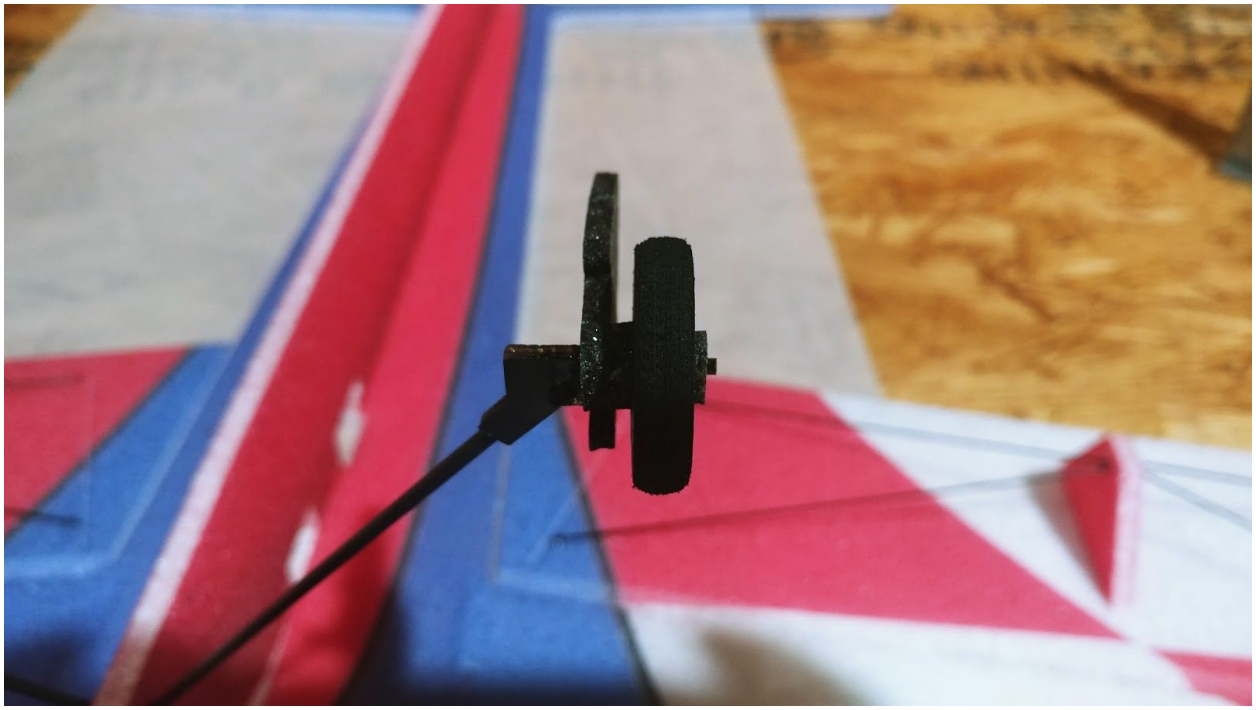
The wheel spat will be the first thing that is put on the axle. This will go all the way flush to the landing gear/axle joiner. Add a drop of glue to put this into place once it is positioned to your desire.



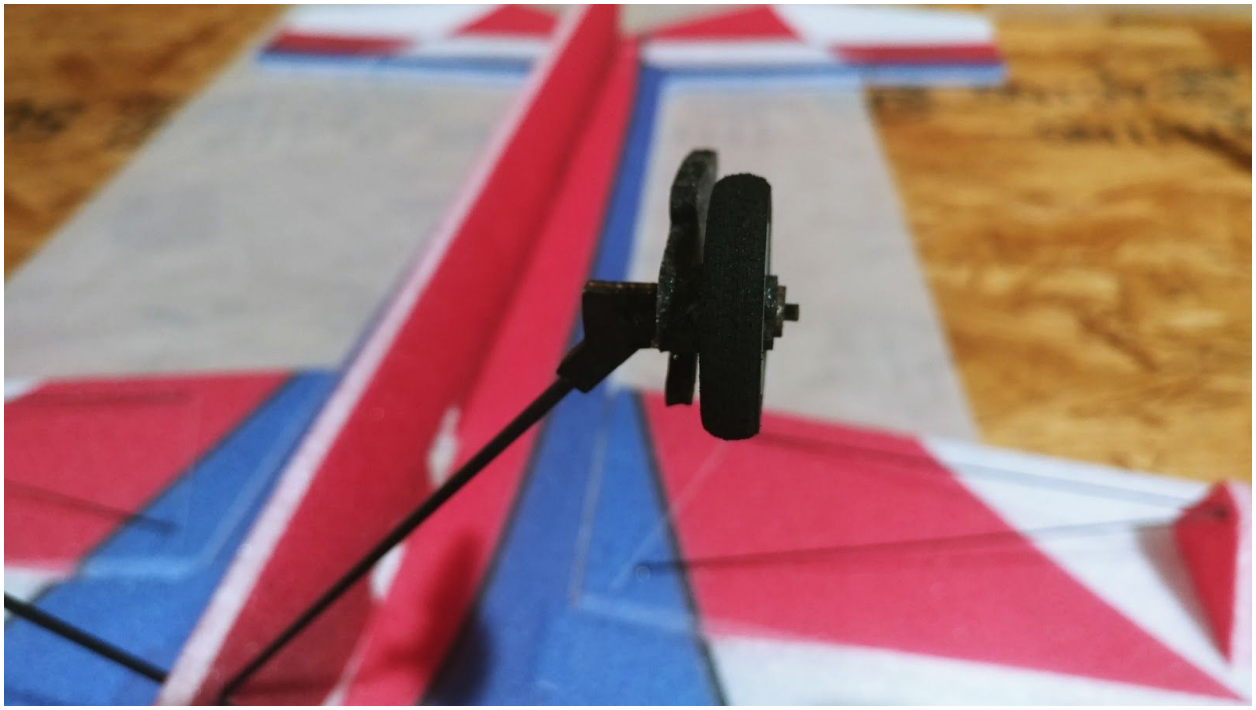
Next will be sliding on the larger foam collar. Add just a small amount of glue to hold this into place against the wheel spat.



Now, the tire/wheel is ready to be placed on the axle. Do not add any glue so that it can rotate freely around the axle.



Next, slide on the smaller piece of foam that will act as the collar on the outside of the wheel. Once again, do not add any glue to this piece.



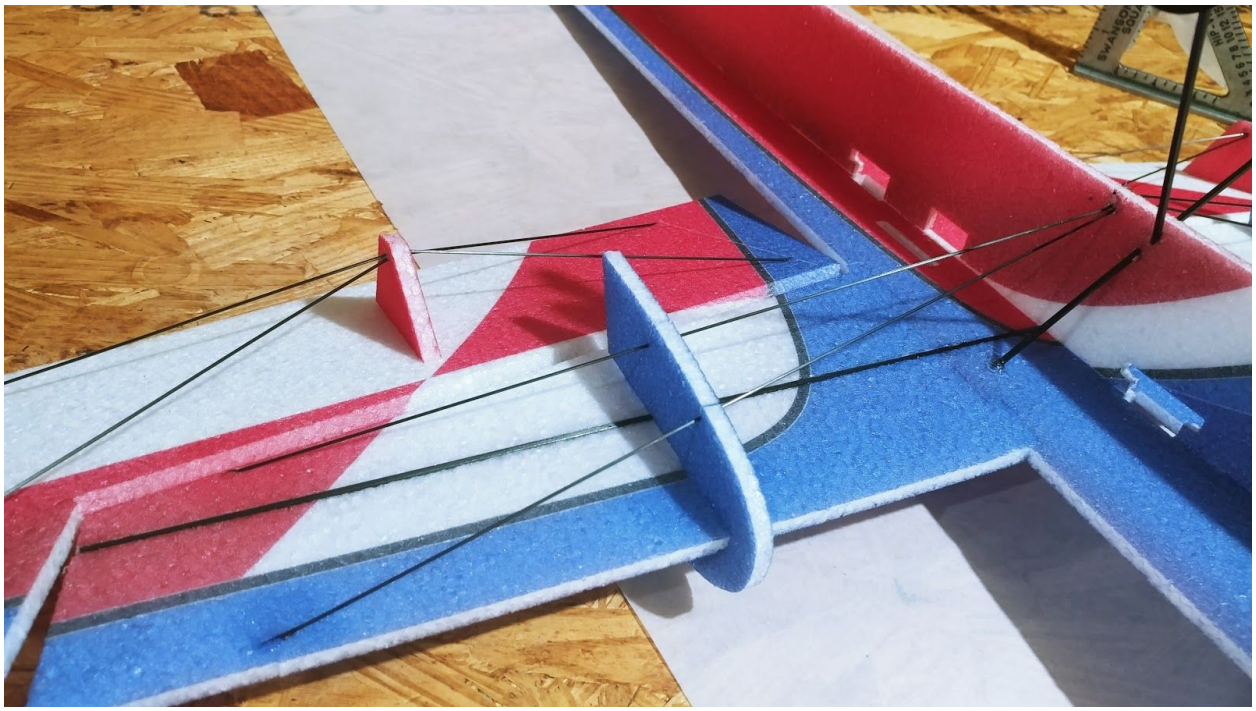
Lastly, apply the small wooden collar that will hold the wheel onto the axle. You can add a small drop of glue to ensure that this piece will not slide off.

Pictured above is the landing gear mounted on the airplane. You will notice that each landing gear side is crossed through to the opposite side of the airplane. You should be able to find two slices in the vertical fuse that will indicate where the carbon landing gear will slide through. Make sure

that the landing gear positioning is correct to allow the airplane to sit level on the ground. Once this is confirmed, you can then glue in the carbon fiber into the opposite sides of the wing as well as where the two pieces of the landing gear join in the fuse.

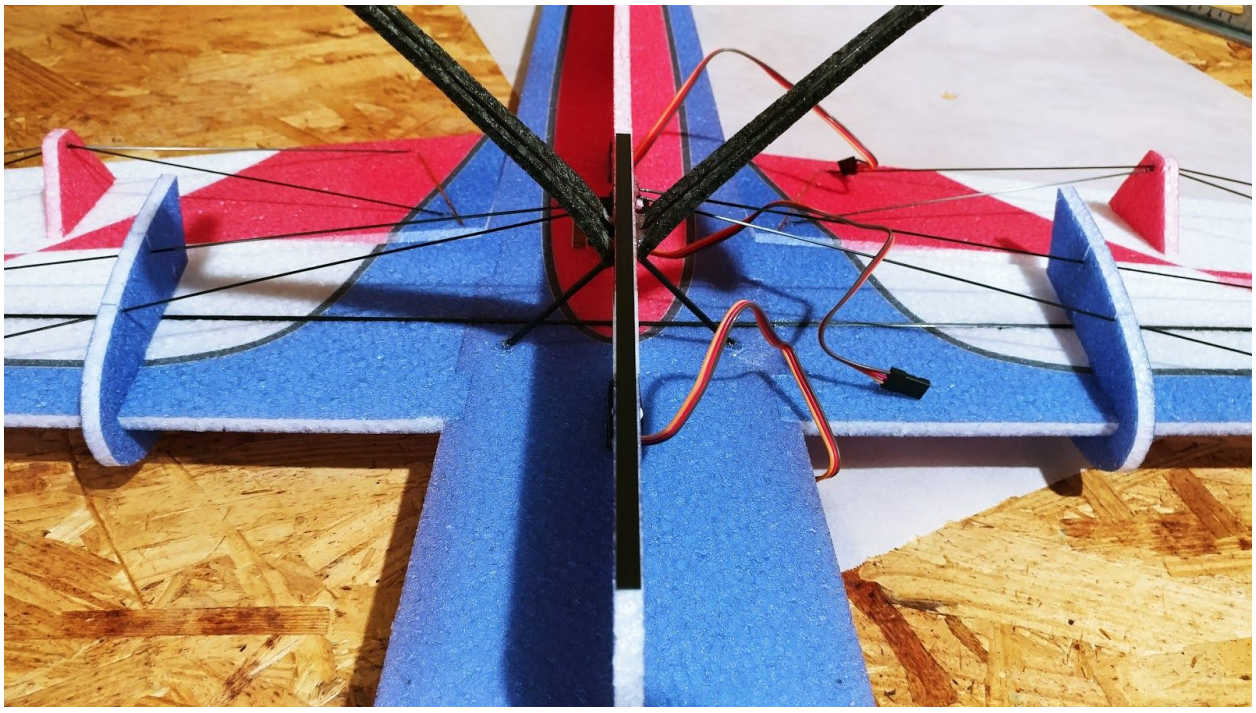
Now, you can apply the foam landing gear covers. Once you make sure that the carbon fiber rod of the landing gear is fully inserted into the slots, you can apply glue to the connection at the bottom of the cover as well as at the top where it joins the fuselage. Also, make sure to put glue along the landing gear to ensure the covers will stay flush.

Locate the 2 side force generators. You will notice that one side of each SFG has cut outs. Make sure that these cutouts are facing the bottom as this is where the carbon fiber bracing will be passing through on the bottom of the wing. Make sure that the SFG fits snug and flush with the wing. Apply glue to all 4 tabs, then repeat for the other wing.

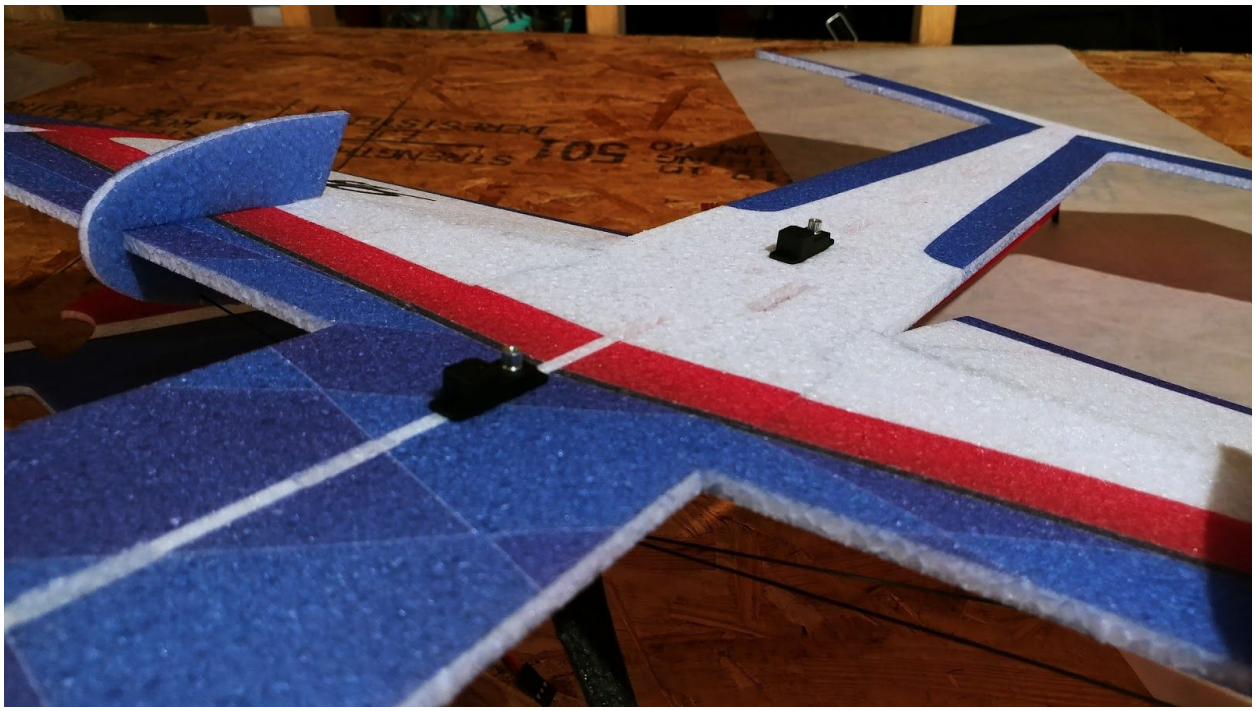


This is the configuration for the wing bracing. In total, there are 2 pieces of carbon fiber used per wing to accomplish this.

Make sure that the carbon bracing is slid all the way down into the slots on the bottom of the SFG. These braces are 300mm long. Repeat this process for the other wing.

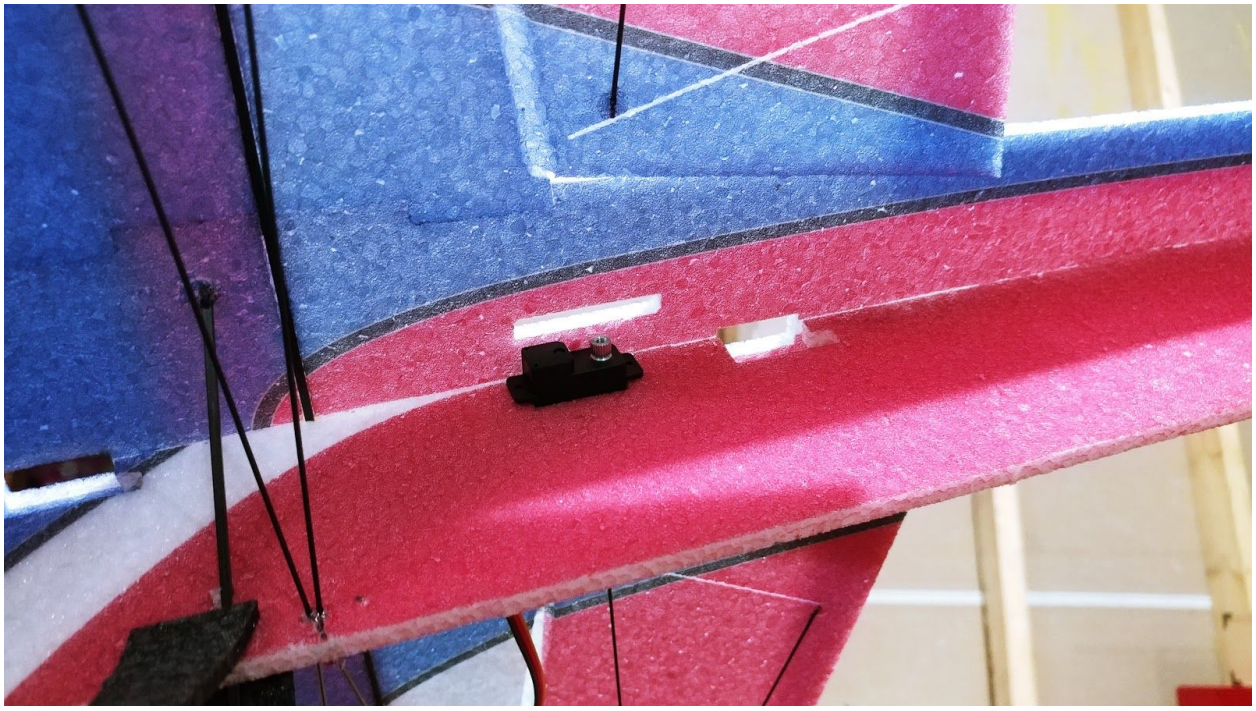


This 190mm flat carbon fiber piece will be used to strengthen the bottom of the fuselage from the front of the fuse through the landing gear location.

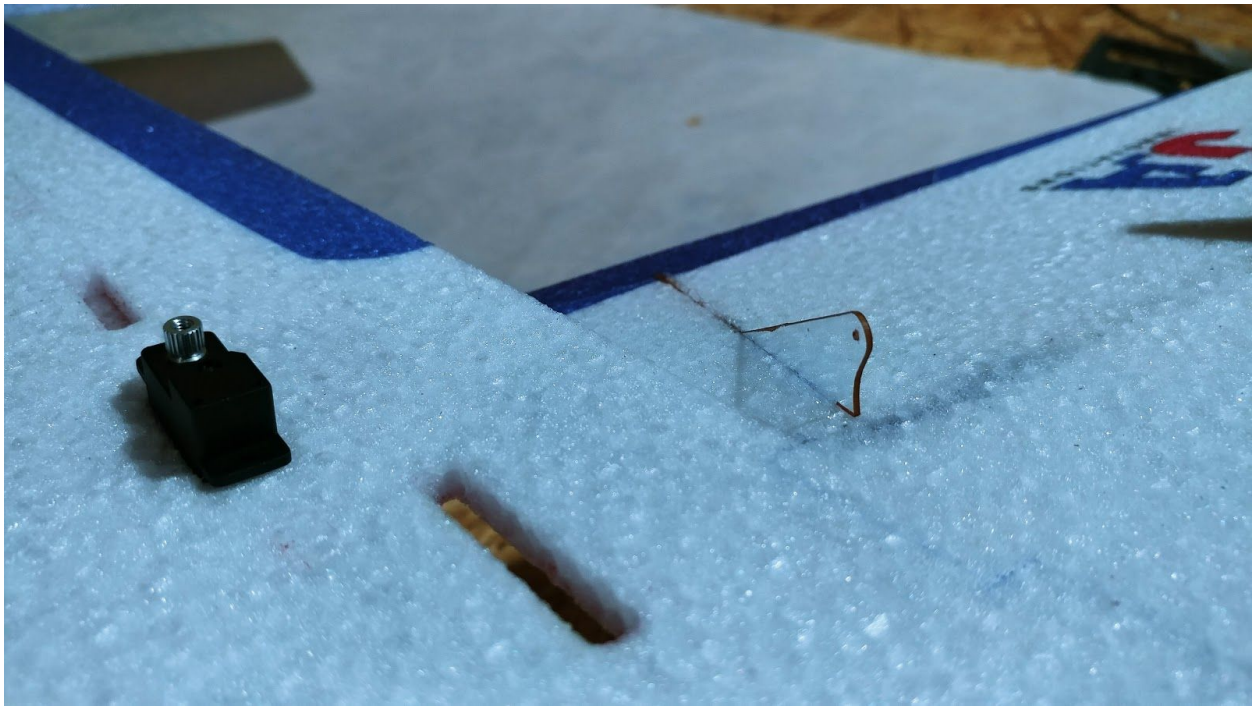


You can now place in your servos into the appropriate locations to test fit. Do not glue at this time as it may be

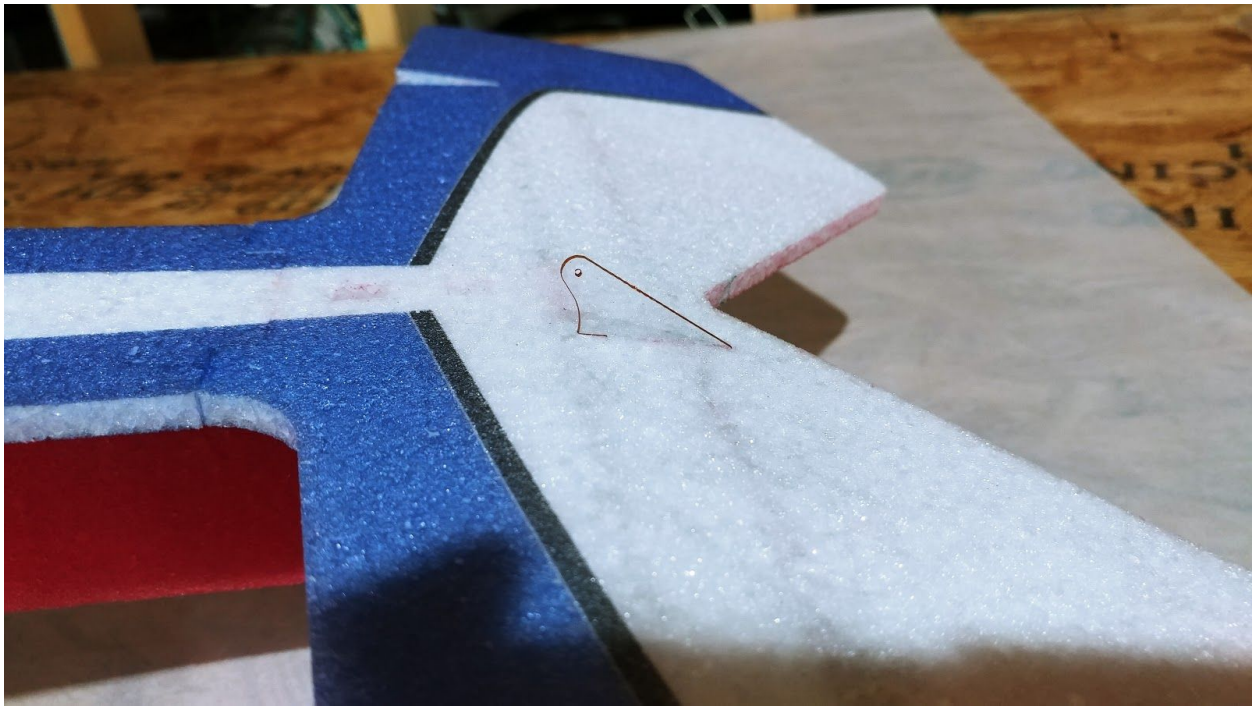
easier to apply the servo arms when the servo is not installed in the airframe. The aileron servo will be the most forward and the rudder servo will be the farthest aft. These two servos are shown above.



This is the location for the elevator servo. It will be placed between the aileron and rudder servo and on the underside of the fuselage. The servo arm will be pointed up as the control horn will be placed on the top of the elevator.

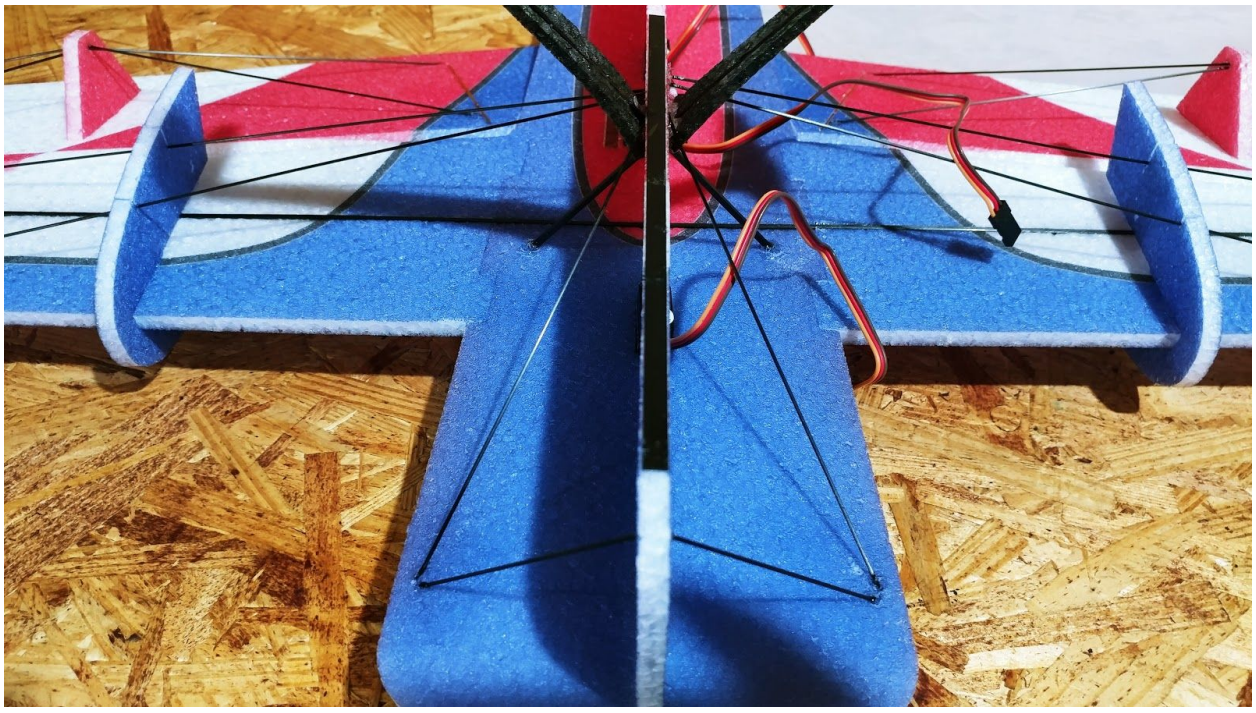


The control horns will be placed and glued into the slots of the appropriate control surfaces. Make sure when applying the control horns that they are flush and that the hole for the linkage is directly above the hinge line. It may be a good idea to scuff the sides of them with sandpaper. Shown above is one of the aileron control horns.

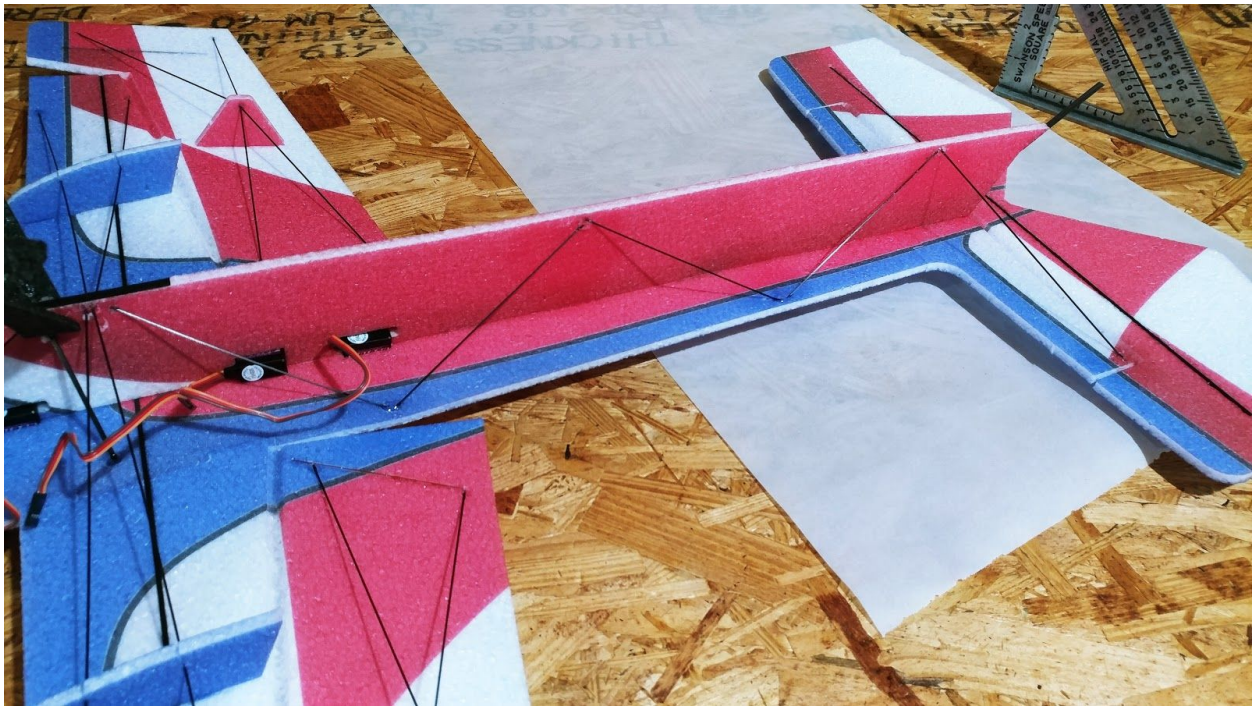


The elevator control horn is the shortest and will be placed as shown above. You will notice a small square shaped cutout on the underside. This is meant to be placed around the spar of the elevator that was installed earlier.

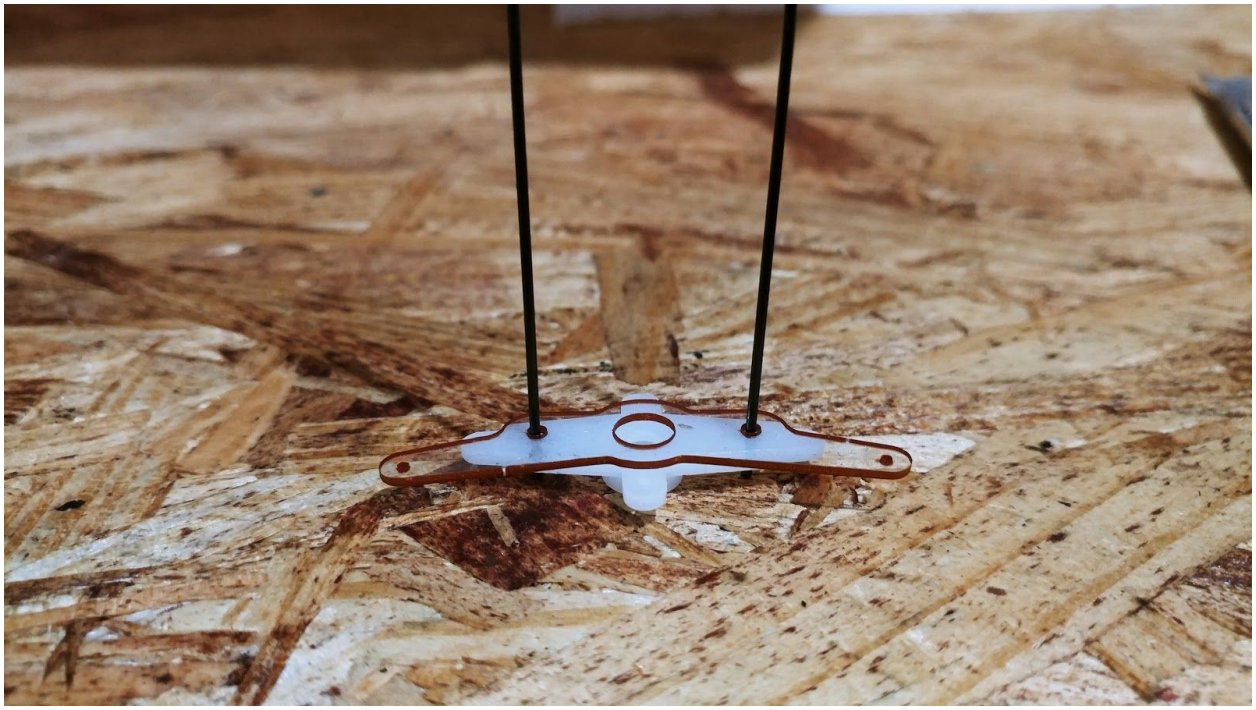
Shown above is the carbon fiber arrangement that will be used to brace the fuselage. Most will be used for the underside, but some will be used for the top in a later step.



Shown is the configuration for the underside bracing of the “cowling” area. The two most forward pieces are 80mm, and the pieces that extend to the landing gear are 145mm.



You can now brace along the underside of the fuselage. The 4 pieces that are the same length are 125mm. The long piece that extends from the fuselage to the horizontal stab is 155mm.



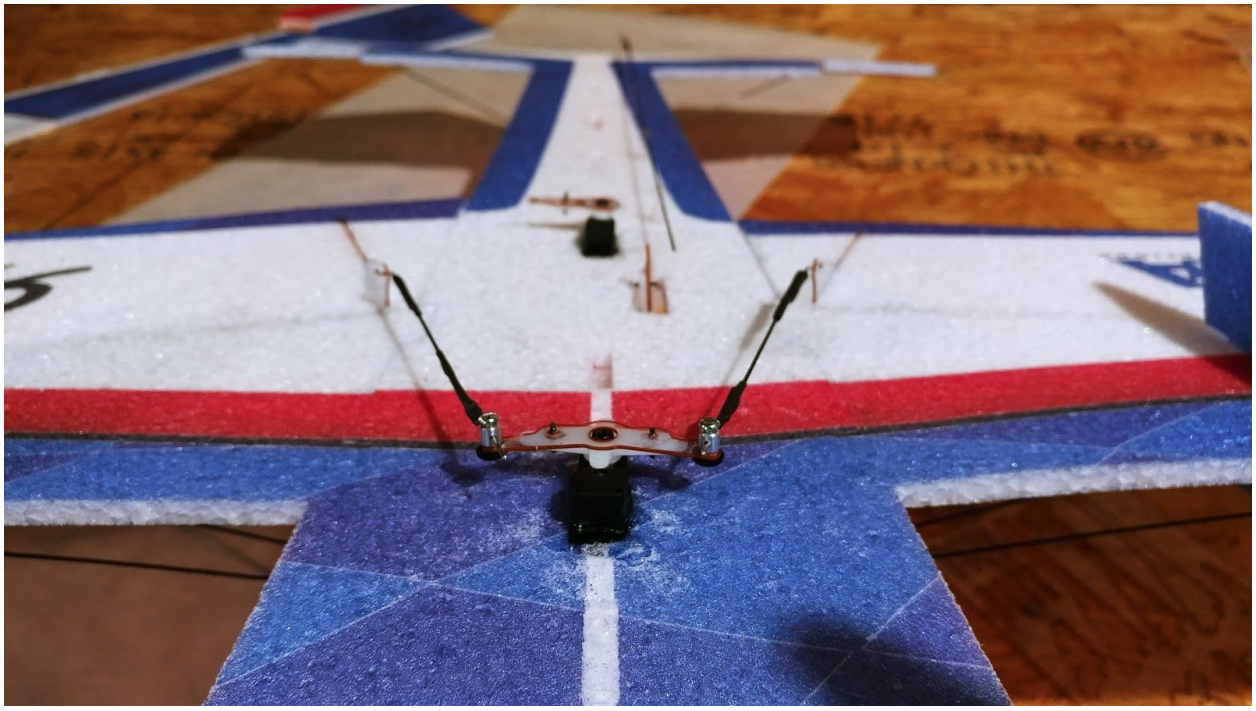
In order to extend the length of the servo arm to provide maximum travel to the control surfaces, you may be interested in using the supplied servo arms. Glueing them to the plastic arms that are provided with the servos will

accomplish this. Shown above, carbon fiber rod is placed through both arms to provide strength to the connection. Once fixed in place, you can cut the carbon fiber to a shorter length. You may also be interested in placing carbon fiber in two holes per side of the servo arm. To do this, drill a hole to allow the carbon to pass through.

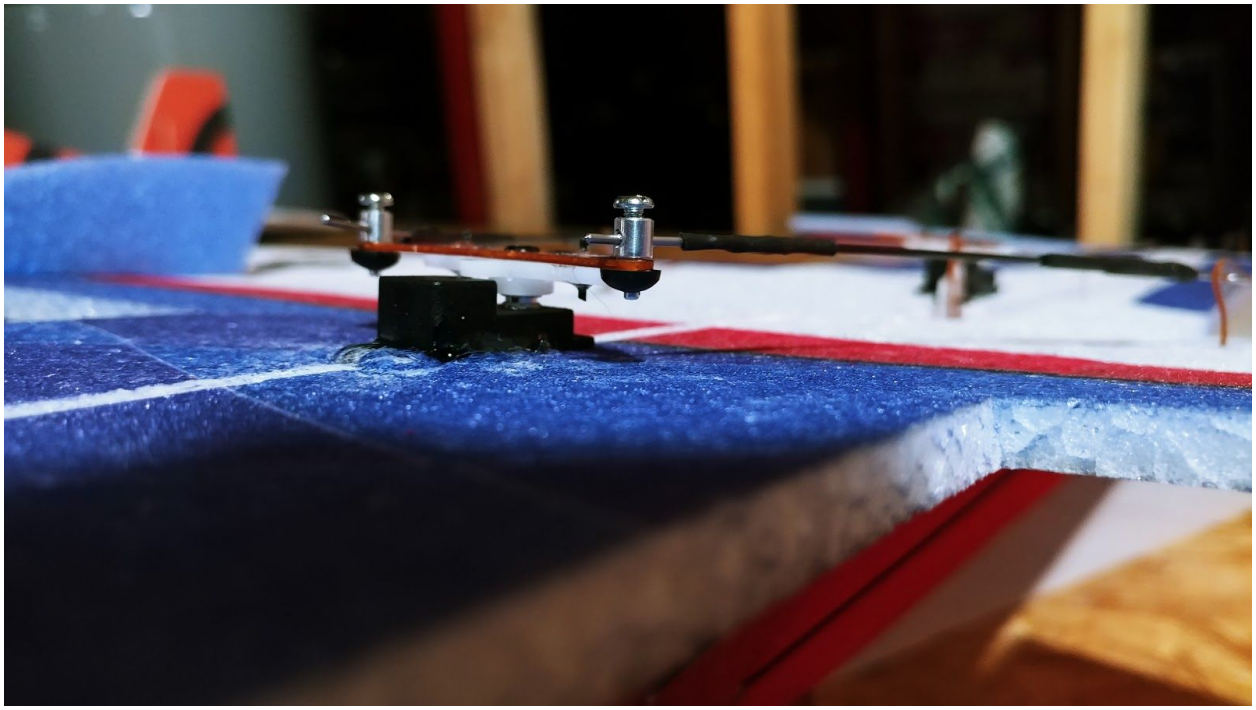
The mini EZ connector as shown above will be used to connect the linkage to the servo arm. It will be easiest to place these on the arm while it is off of the servo. Put the top

piece through the hole in the arm, then fully clamp the bottom piece around the pin. The flat side of the bottom piece will be pushed against the servo arm. Leave the top screw loose for now until the control linkage is slid through.

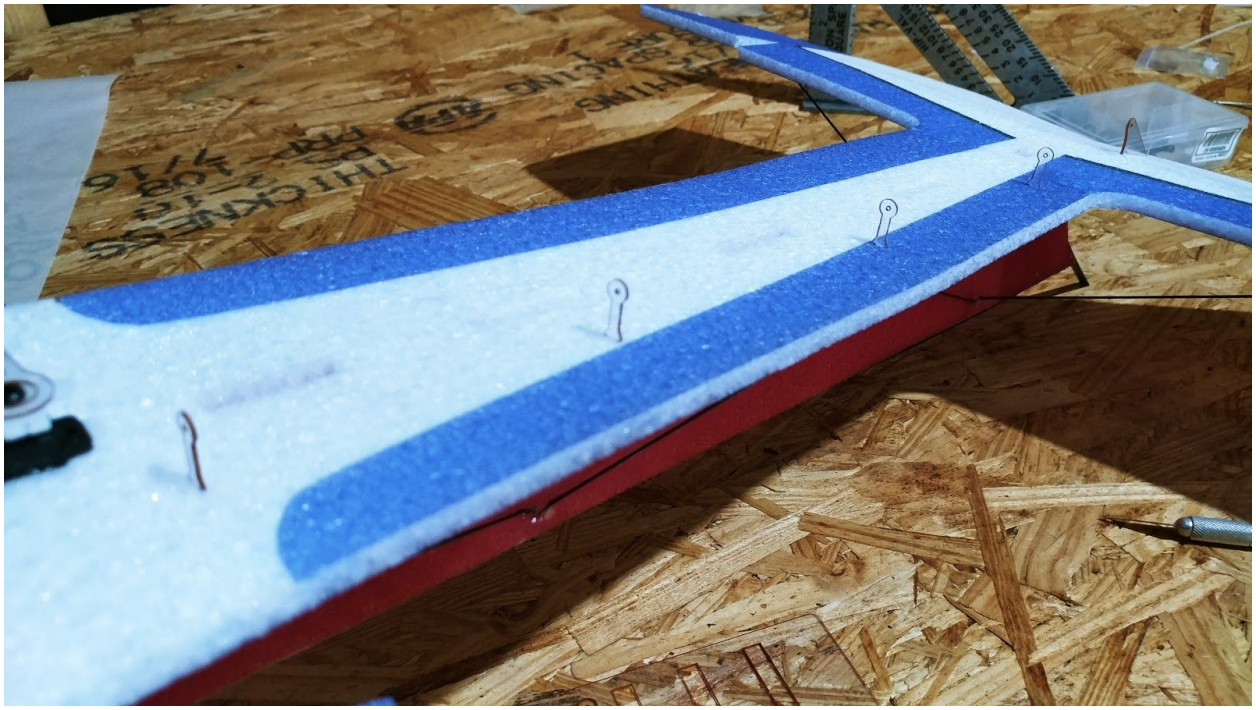
Above are what will be used for each end of the control linkages. The Z bend will be inserted into the control horn while the straight end will be slid into the opening of the mini EZ connector on the servo arm.



This is the full linkage assembly and configuration for the aileron servo setup. You will notice that each end of the linkage is secured to carbon fiber inside heat shrink. Before heat shrinking, scuff the carbon with sandpaper, then use *REGULAR* CA to join the carbon fiber to the metal pieces, then slide the heat shrink over to secure the connection. Once the servo is powered up and centered, you can keep the EZ connector screw backed out to adjust the linkages. Once the surface is centered while the servo is powered, you can then tighten the screw on the EZ connector. The carbon fiber linkages will be cut to length using one of the three 400mm long carbon fiber rods (the other two will be used for the elevator and rudder)



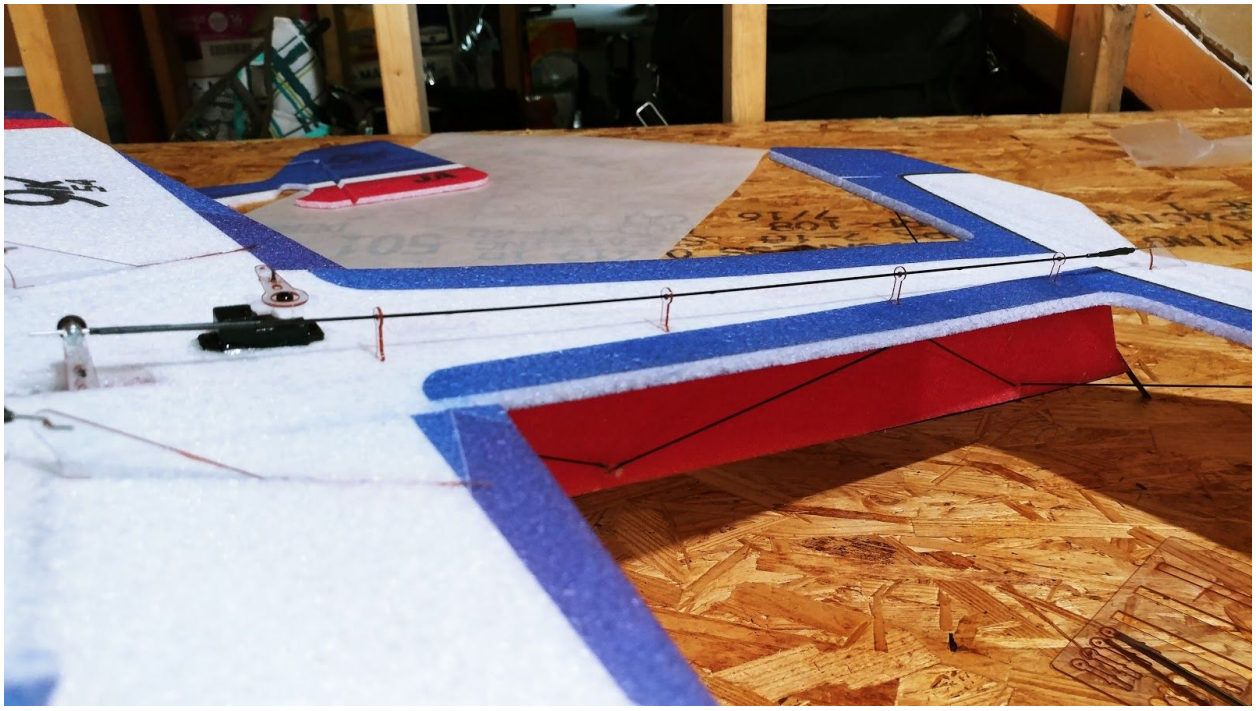
Above is another photo showing the use of the mini EZ connector. These will be used to clamp the linkage to the rudder and elevator servo arms as well.



For the elevator linkage, test fit the small guides into the cutouts as shown above. There are 8 total in the kit (4 for elevator, 4 for the rudder).

Shown above is the elevator linkage connected to the Z bend using the same process that was used for the aileron (CA, then heat shrink over top). Also notice the guides for the linkage are slid over the linkage but not yet glued in. They will be glued in once the centering is done and the linkage is

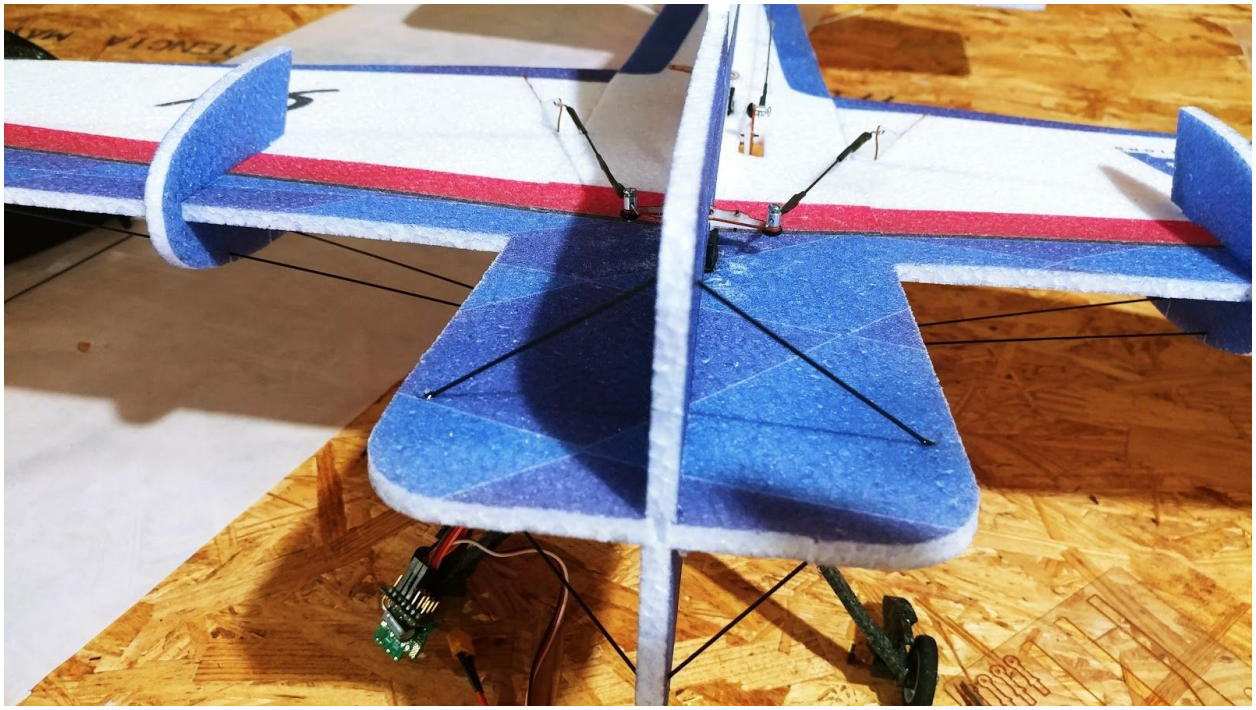
connected to the EZ connector on the servo arm. This is because heat shrinking still needs to be done and if the guides were glued in while heat shrinking was attempted, it may be too close to the foam causing the foam to melt.



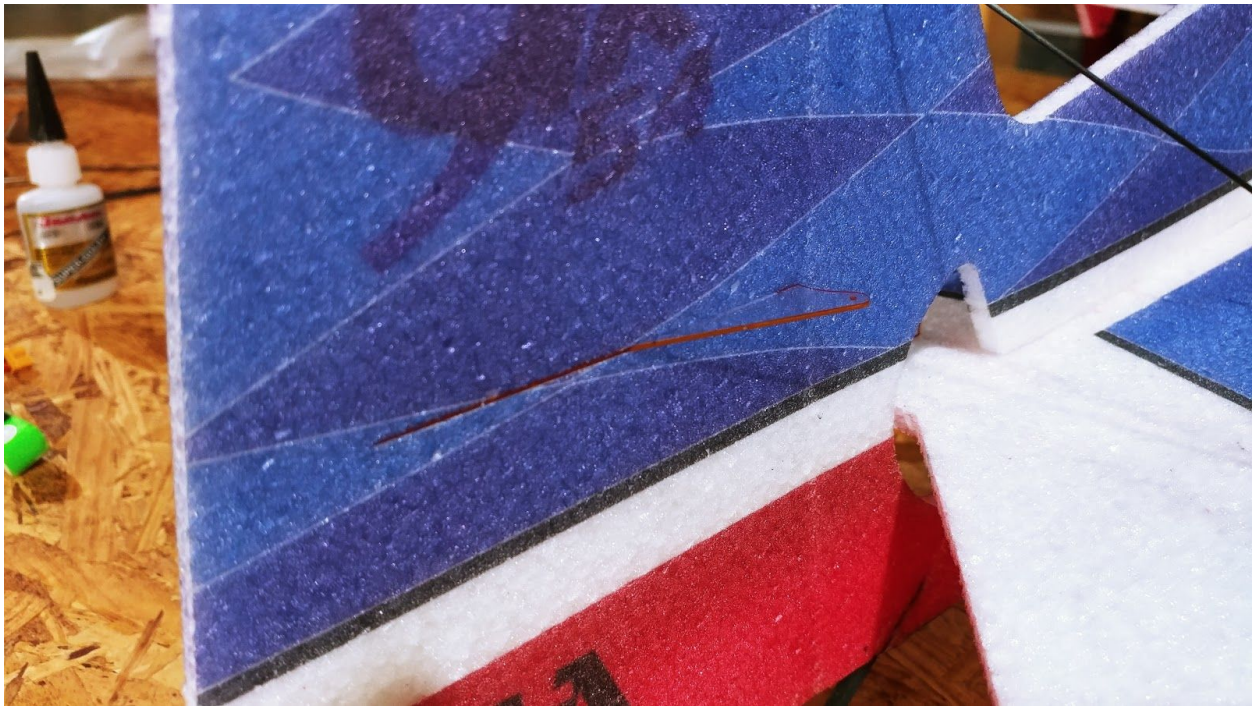
Once the servo is centered, and both sides of the linkage are glued and tightened with heat shrink, you can now glue in place the guides for the linkage. It is best to put a small bit of glue inside the cutout then place in the guide. Make sure that they are all standing straight up and flush with the fuselage. If the linkage is getting stuck in one of the holes, use sandpaper on the linkage to ever so slightly slim the carbon.

Now that the aileron and elevator servos are centered and linked up, you can install the upper half of the vertical fuselage. Just as the rest of the pieces prior, test fit first before glueing. Depending on the servos being used, you may need to cut the foam around the servos to allow a flush and snug fit all the way along the fuselage. Make sure that it is mounted 90 degrees to the horizontal part of the fuse. It is also important to position the front of the fuselage equal to the rest (not too far forward or back), and same with the rear of the fuselage near the vertical stab.

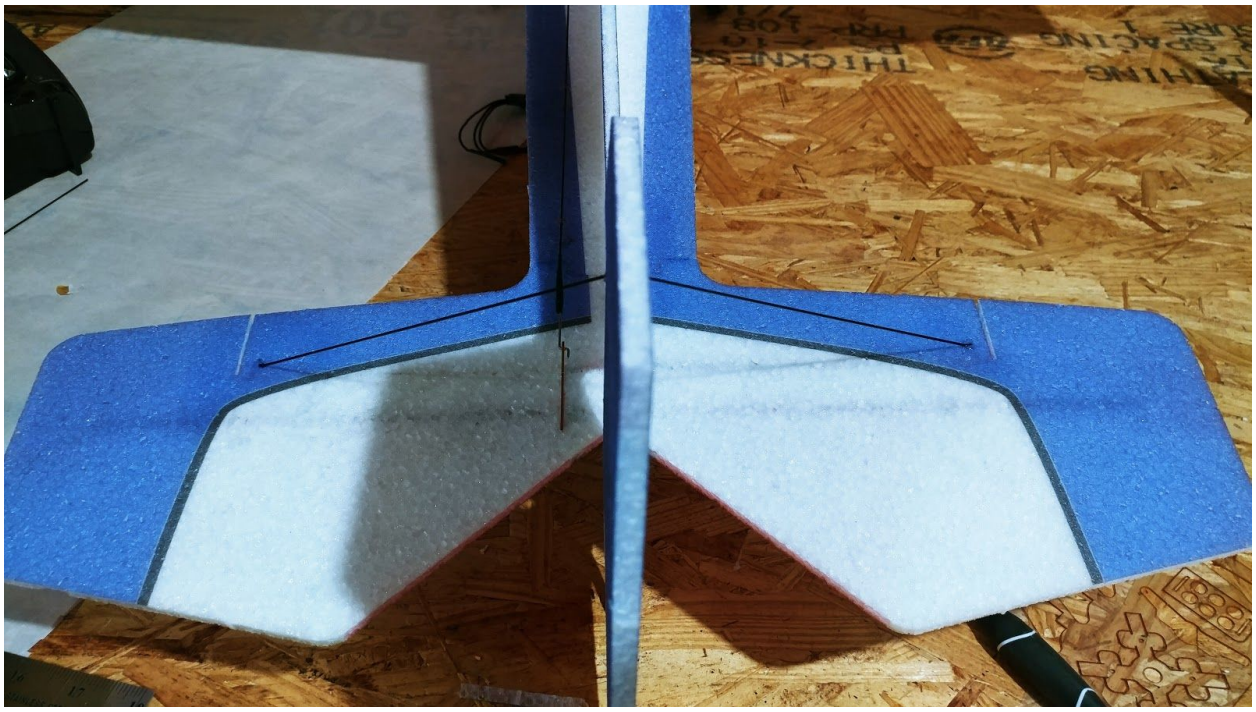
Notice the joining of the top of the fuse to the bottom of the fuse at the point of the tailpiece. Make the connection so that the bottom of the fuse is one straight line all the way to the trailing edge of the rudder. This is because the amount of down elevator travel depends on the placing of this.



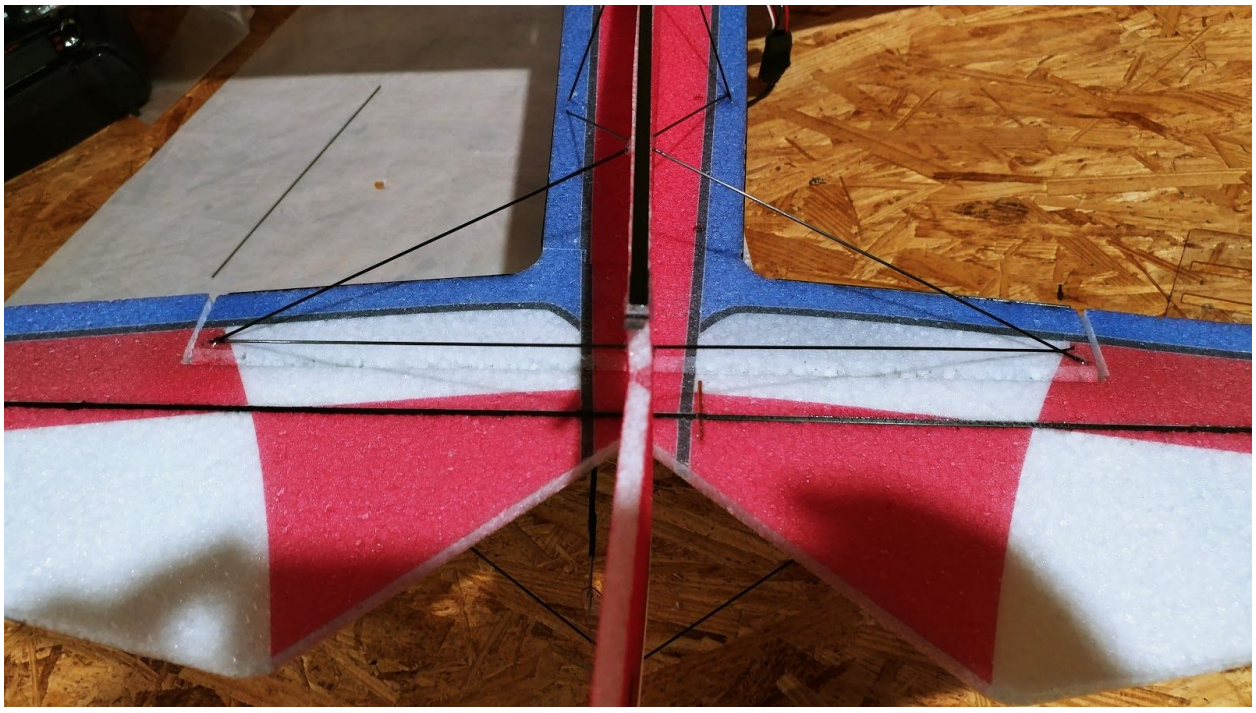
Once the top fuselage is fully glued in place, the bracing for the top can be started. Shown above are the two 80mm carbon rods used for forward bracing of the aircraft.



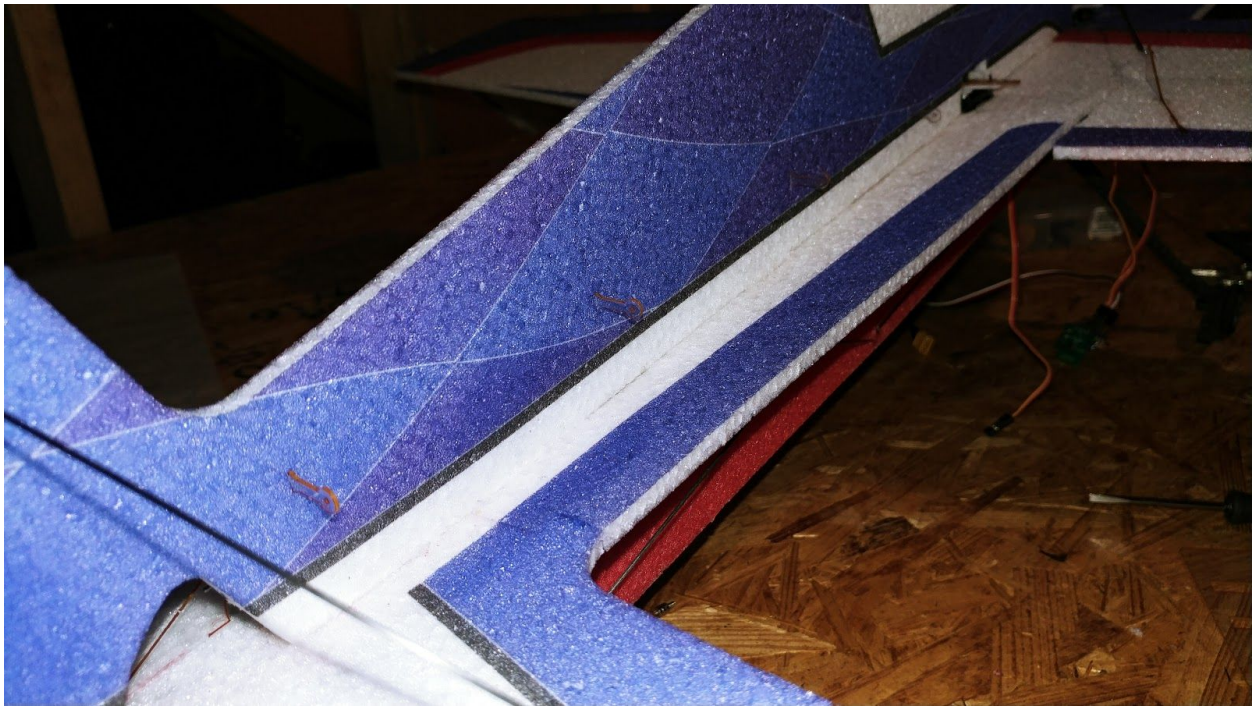
Locate the final control horn needed for assembly. The rudder uses the same type of control horn as the aileron which is on of the longer of the 4. If necessary, scuff the sides with sandpaper, test fit making sure the hole is directly above the hinge line, then glue in place. Make sure glue is used along the entirety of the control horn.



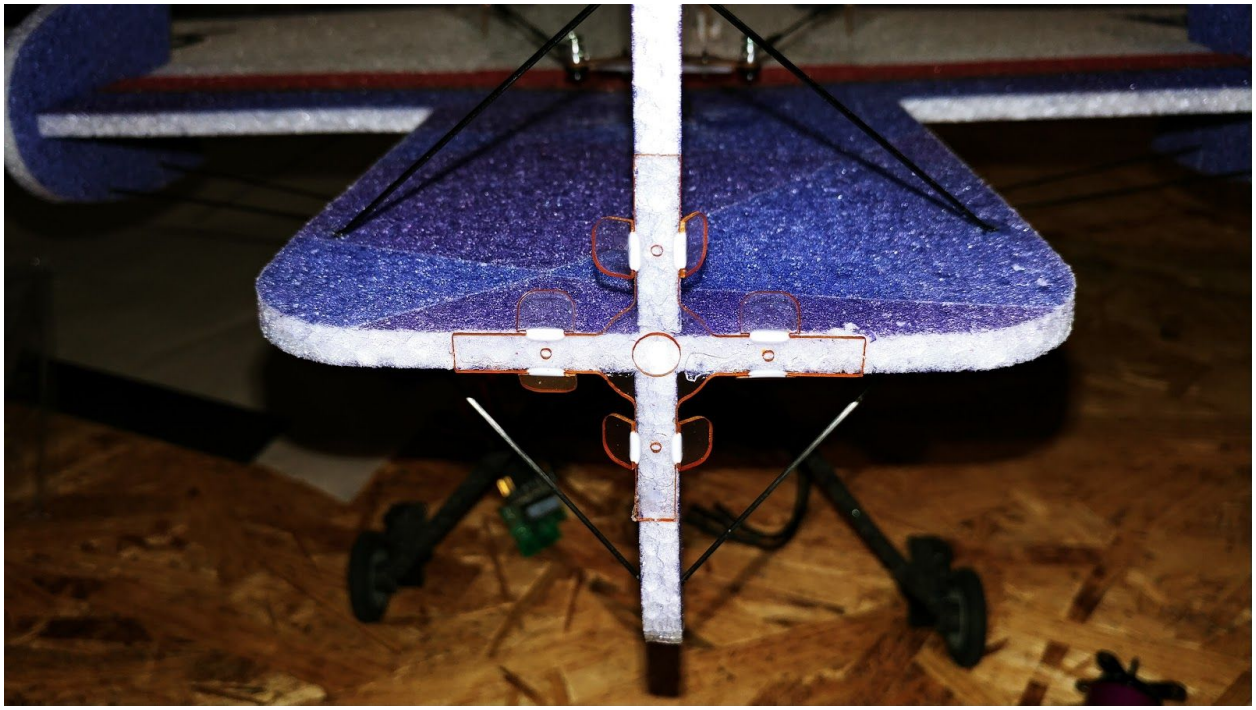
For bracing of the top of the horizontal stab to the vertical stab, 2 180mm carbon rods will be used in the configuration shown above.



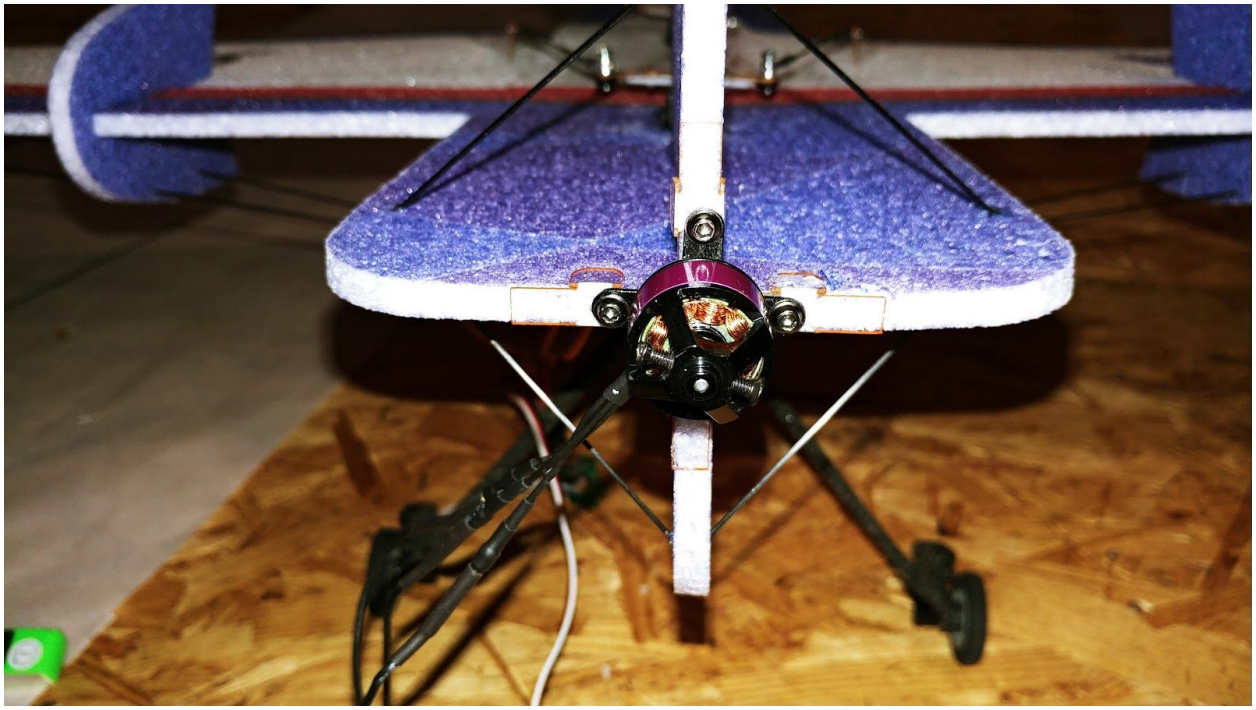
Now that the top part of the fuselage is glued in, you can finish the bracing for the bottom by including the 2 pieces that will connect the horizontal stab to the vertical stab aft of the tailpiece (behind the connection made when glueing the top of the fuse to the bottom). The 2 carbon rods are 160mm.



The rudder servo linkage connection is now ready to be accomplished using the same technique as the elevator linkage. These guides will be mounted horizontally to the side of the fuselage. Just as the ones used for the elevator, you will see the cutouts pre made in the fuselage. Do not glue them in until the Z bend and straight link are both secured to the carbon linkage using REGULAR CA and heat shrink.



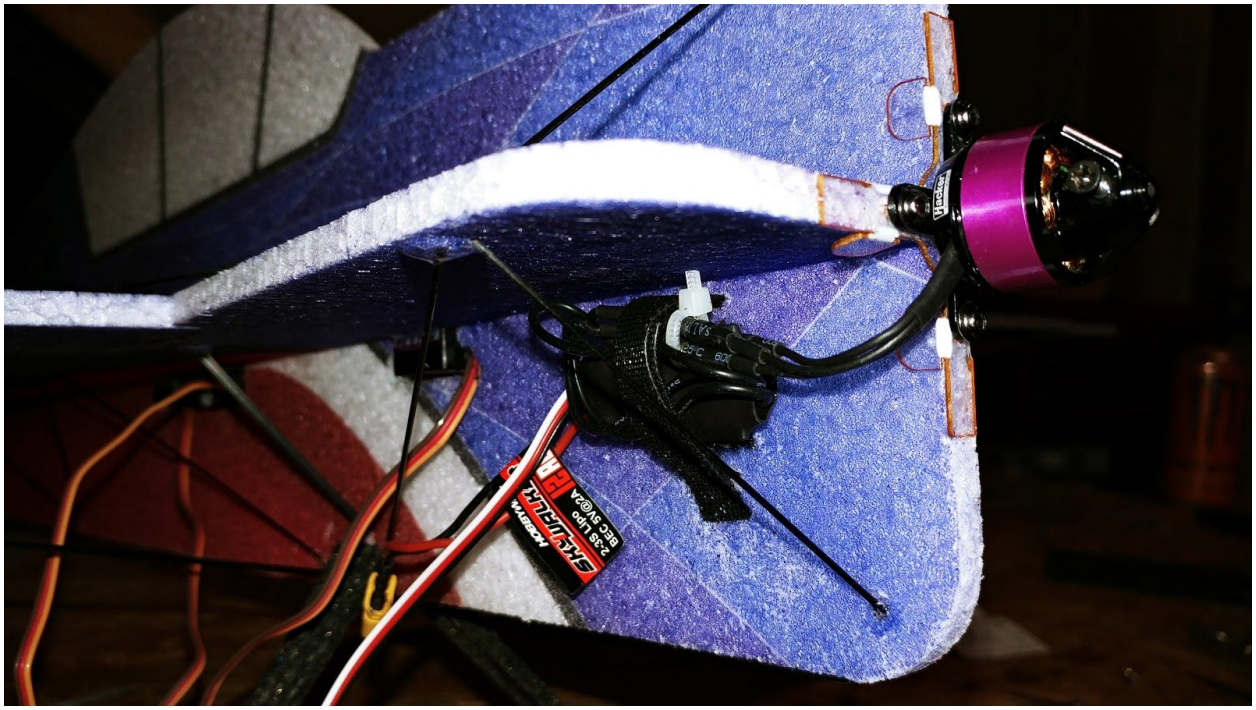
Locate the motor mount and make sure that all four ends of the mount line up to the indents made in the foam. Also when glueing on the mount as shown above, make sure is is pressed directly up against the foam and made flush. Next, bend the tabs over on each side 90 degrees and give them a hard press against the foam. You may wish to add glue to the tabs.



Line up the holes in the motor mount that is mounted on the motor itself to the mount that is mounted on the airplane. If needed, pre drill the holes needed to mount the screws.

The plate shown above is used to assist with the mounting the electronic speed controller. The plate will be glued on the opposite side of the fuse of where the ESC will be mounted. You will find the mounting location at where the slots are cut in the fuselage. If needed, slightly enlarge the slots after

the plate is glued. These slots will be guiding the velcro strap that is provided with the kit to mount the ESC.



Shown above is the ESC side, the opposite side is where the plate was mounted. Notice the velcro strap coming through the fuselage and around the ESC. A small piece of velcro may be needed to mount the ESC directly on the foam as well for the best possible strength.

If you would like, the battery can be mounted on the opposite side of the receiver and ESC to save some space. To do this, simply cut a small hole into the foam and and guide the connector through to the battery side of the airplane.
Location of the battery is personal preference and is dependent on the size and weight of the battery, as well as where the RX is located. For starting point, it may be a good idea to mount the battery in the region of the aileron servo and wing spar. Everyone prefers a different feel for their CG adjustments*

Provided in the kit is the EPP stand used to slide over the fuselage. Assembly is shown as above.

The stand fully assembled.

For any type of answer regarding assembly or other topics related to this product contact us at
jtainnovations@gmail.com

Message from Jase

Dear JTA Innovations customer,

The appreciation of you to express interest in our product is highly valued. The foundation of this business was created on passion for the hobby and is inspired by those who have helped me experience it since I was a small child. I have been blessed to meet several genuinely kind people in this hobby and I am using this business to contribute my part to the cause of model aviation. We hope that this purchase is a success for you and that it brings the type of joy to you that only model aviation provides. Please do not hesitate to contact us regarding any type of question or concern. We are anxiously awaiting your feedback of this product and I hope I will get the pleasure of meeting you in person if I have not yet already. Once again, thank you!

God bless,

Jase Dussia - Owner/Founder JTA Innovations, LLC