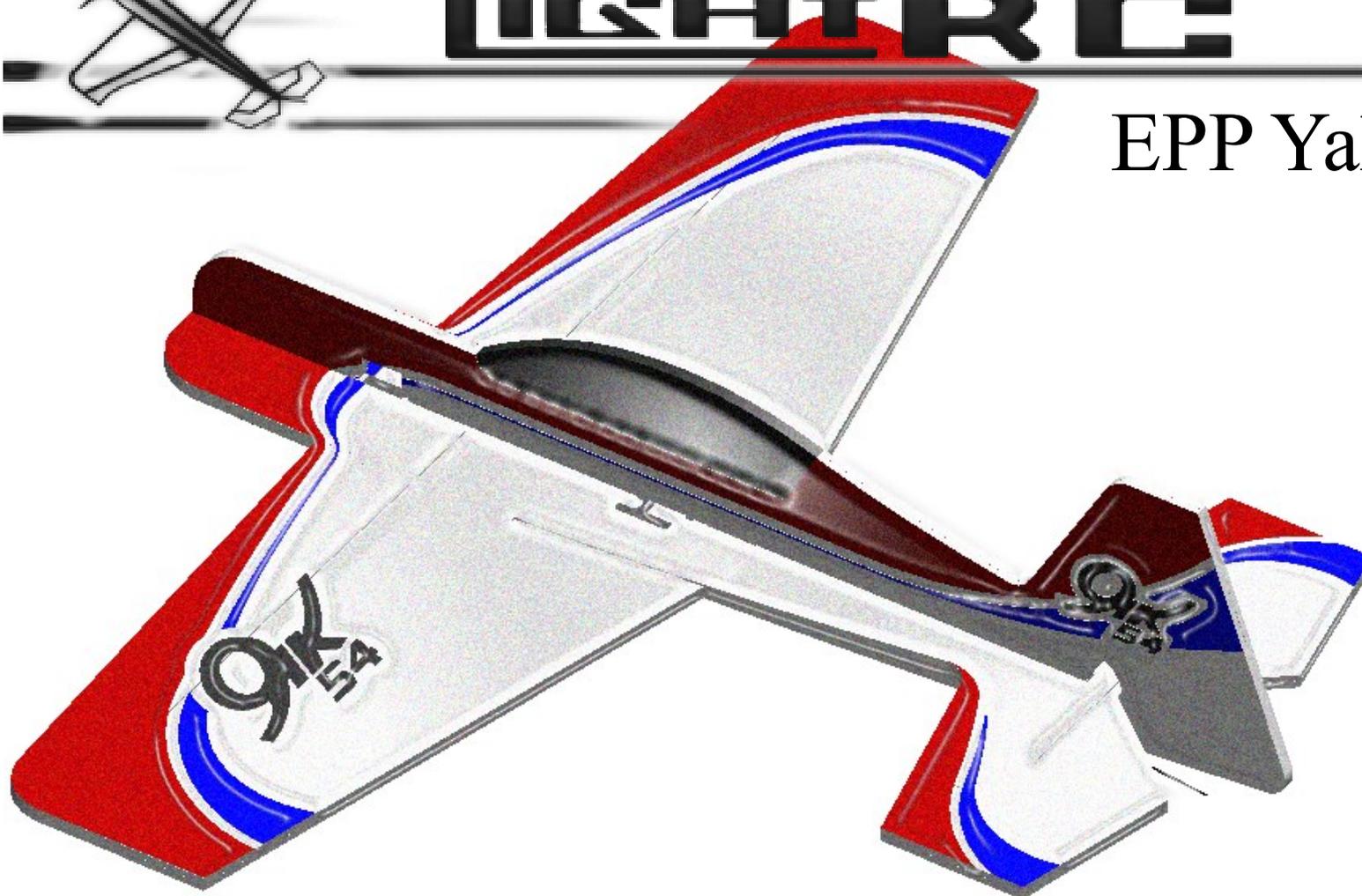




# LIGHT RC

## EPP Yak 54 25"



### Specs

AUW 3.4oz  
Width 25.22"  
Length 20.67"  
Wing Area 0.84 sqft  
Horz Area 1.38 sqft  
Vert Area 0.48 sqft

### Suggested Hardware

40 watt Motor  
6 amp ESC  
Servos 5.0g (1) 3.5g (2)  
2s LiPo  
4ch Radio/Rx

Dualsky XM2212CA or XM2212RTR  
Dualsky XC0610BA2 or Hobbywing 6A  
Power HD 1370A or Hobby King 3.7g  
240 mAh

### Color

- White
- Red w/ Blue
- Burgundy w/ Orange
- Orange w/ Blue

# Light RC EPP Yak 54 25"

- 1) Glue Wings to Horizontal Nose
- 2) Glue Lower Vertical Nose to Lower Vertical Tail
- 3) Glue Horizontal Nose to Horizontal Tail
- 4) Glue in Wing Spar ( 3mm x 1mm flat )
- 5) Glue Upper Vertical Nose to Vertical Tail
- 6) Glue Canopy to Upper Assembly
- 7) Glue in Elevator Stiffener ( 1mm round )
- 8) Glue in Aileron Counter Balance Stiffeners ( 1mm round )
- 9) Glue Lower Vertical Assy to Wing Assy
- 10) Glue Landing Gear Struts ( Insure Panels are Perpendicular )
- 11) Glue Rear Landing Strut onto Tail
- 12) Insert Servos and Control Arms
- 13) Glue Upper Assy to Wing Assy
- 14) Check the Gear Length ( Does Plane Set Level )
- 15) Glue Wheel Pants to Gear Legs
- 16) Install Remaining Electronics
- 17) Install Control Horns and Control Rods
- 18) Install Motor Mount Tubing

CG set on Wing Spar

Throws:

Ailerons

Elevator

Rudder

Target AUW 3.4oz

The flatter the building surface the straighter the plane will build and fly. It can be a good idea to protect the build surface (table) from glue and scratches. First step is to assemble the Wings to the Horizontal Nose. Place the parts upside down on a flat surface. Glue the areas on the Wings each side of where the spar will pass through. Then slide the Wings into the Fuse Nose and let glue set.

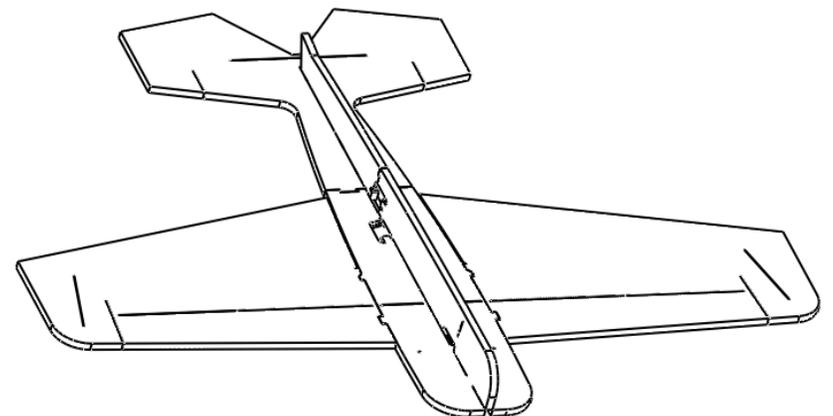
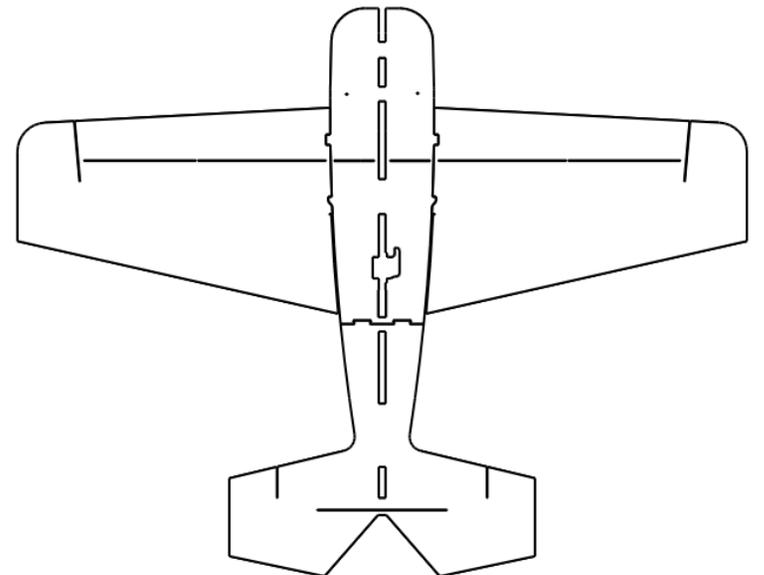
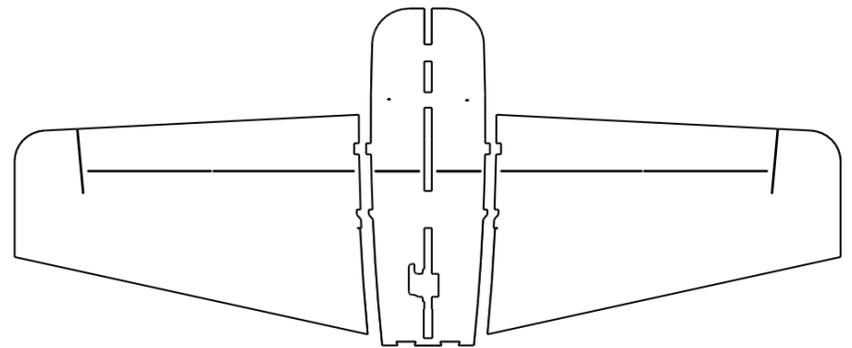
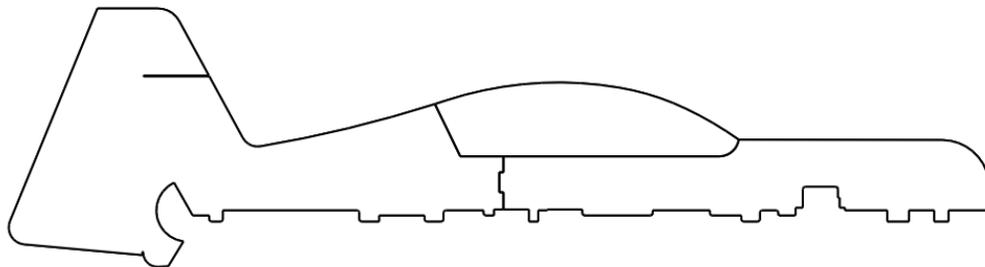
Next glue the lower parts of the vertical fuse together. While this is setting glue the Horizontal Tail to the Wing Assembly.

Once all the glue has set, glue the wing spar in (3mm x 1mm) and the elevator spar in (1mm rod). Then glue the aileron counter balance spars into the bottom of the wings (1mm rod)

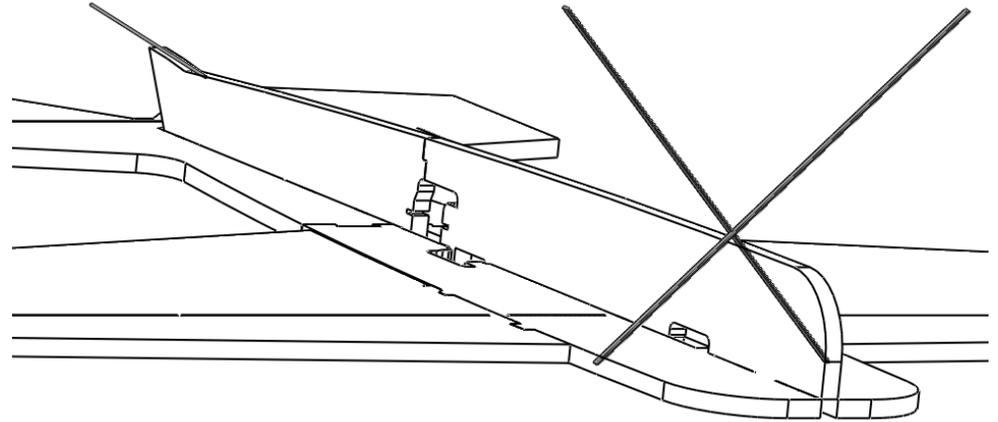
Glue the Upper Nose to the Upper Tail, Then glue the Canopy to the Upper Assembly.

The elevator spar depth should be set to a depth that will allow the elevator control horn to install fully. (Elevator horn is the shortest horn and has a slot for the spar)

When the glue on the spars has set, glue the Lower Fuse to the bottom of the Horizontal Assembly. Use a square edge to make sure the two assemblies are perpendicular. Use a straight edge to keep the fuse straight front to rear. Some easy to find squares would be CD cases, rulers, etc.

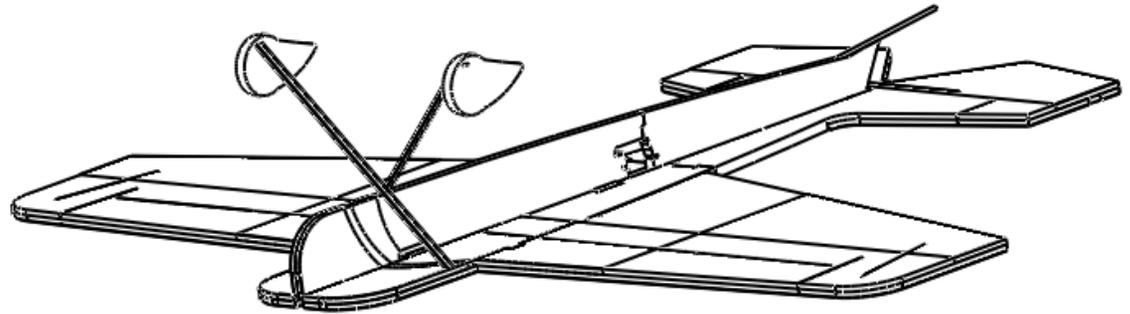


Now cut two Gear Legs from the 3mm x 1mm strip 6.375" long. Then place the Legs on the Fuse and check alignment. The Legs set into small cuts on the horizontal, ahead of the Wing, and a notch on the bottom of the Lower Fuse. The Legs should have a minimal stagger. If one side is forward of the other then swap places at the Lower Fuse. Once the Legs are ready to glue, check Fuse perpendicularity again, if good glue the Legs in place. Check for square often as you go. (see Tip)



With the Legs in place cut and glue a 3" 1mm rod onto the Tail. The rod will hang past the end of the Lower Fuse.

With the landing carbon in place, turn over the plane and check that the plane sets level. If the plane does not set with the Wings horizontal, trim the high side Leg. Cut small increments checking results after each cut. When satisfied glue the Wheel Pants onto the Gear Legs. (see Tip)



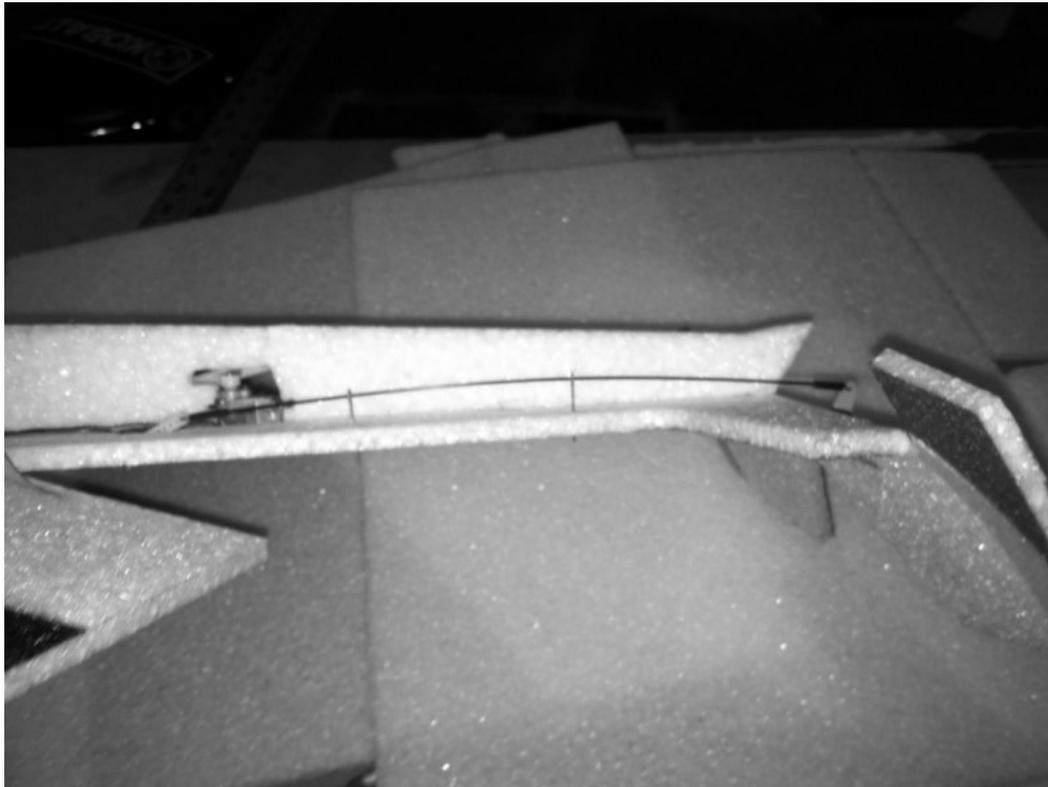
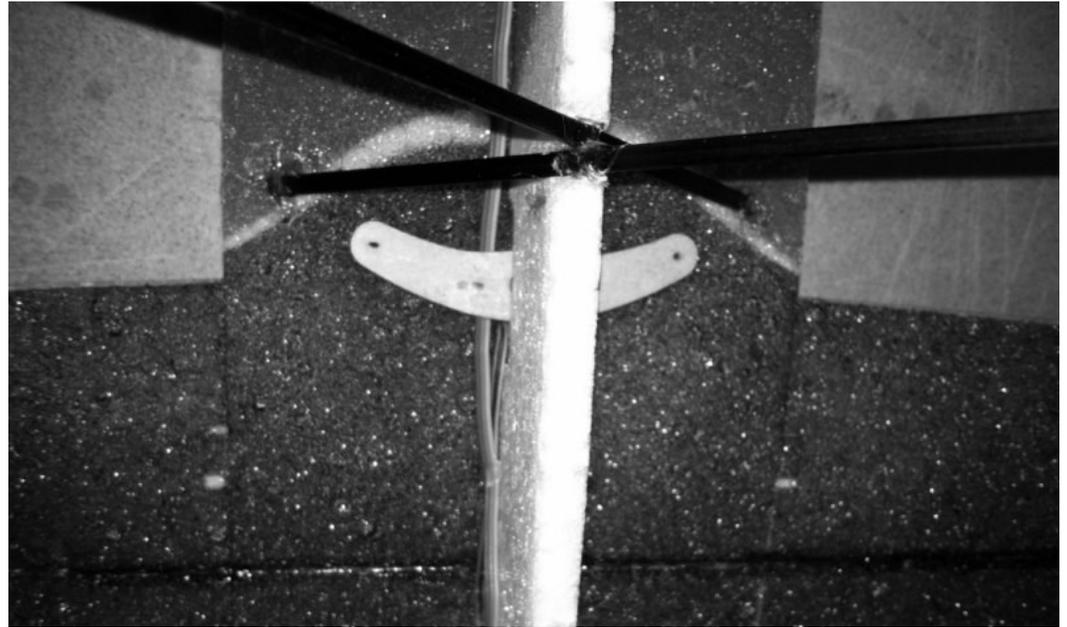
Install your servos, but do not yet glue. With servos in place power them up and install servo arms. Glue the included aileron servo arm onto your aileron servo arm. The arch should be orientated so that the control rod attach points are closest to the nose of the plane. Use a straight edge to cut slots in the control panels for the control horns. Keep the aileron horns as far inboard as possible. The rudder horn will likely mount near the bottom of the rudder. Use a straight edge to help you determine the best place for the horns.

Install and glue the horns in, then glue in the servos. Build the control rods using the included wire for z-bends, 1mm rod, and adhesive lined heat shrink. Z-bend should have a 7/16" leg length and the heat shrink cut to 3/8". The Elevator standoffs will attach to the horizontal foam, the rudder standoffs into the vertical foam.

Install the control rod with the standoffs spacing in about 1/3 the total distance. Make sure the carbon is in a straight line from the arm to the horn. When confident of the placement make cuts with a razor. DO NOT glue the standoffs until later.

The aileron servo horn gets glued onto the existing servo arm. Hot glue works well, it is easy to remove later as well.

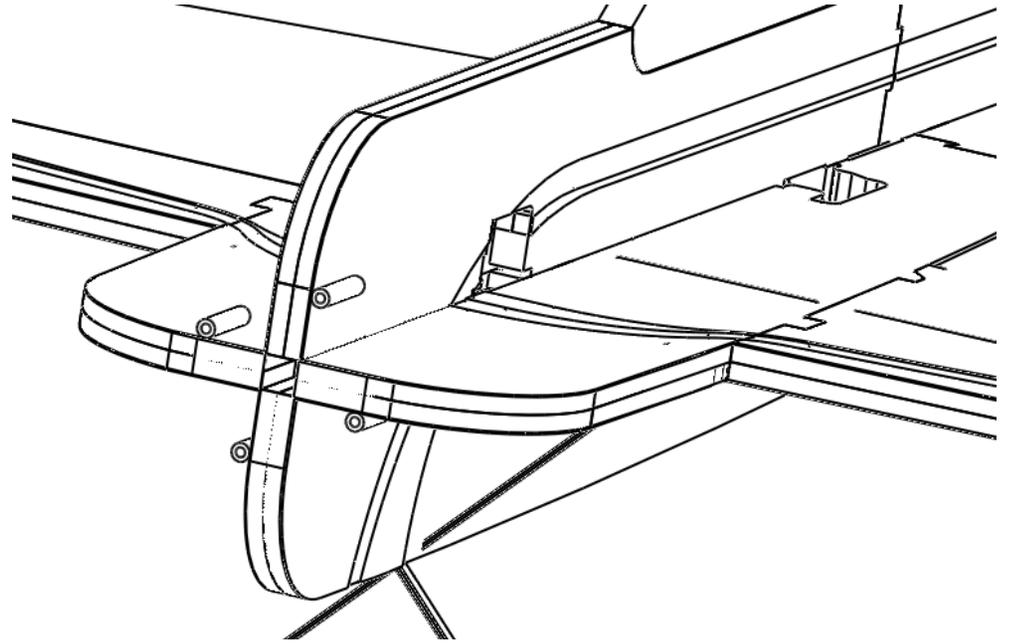
The aileron control arm should be installed with the control rod holes closest to the front of the plane.



Build the control rod attaching it to both the servo and the control horn. To avoid melting foam use a thin piece of metal to shield the foam from heat. A razor saw works very well for this. Another more common device would be a table spoon. Anything to block heat for a short time. The glue in the heat shrink tubing is a thermal set, reheat as many time as needed to get the control rod lengths right.

With the standoffs still loose, move the range of motion. Note the arc created as shown in the picture to the left. Slide the standoffs to a position the minimizes the arc differences when moving from full up-center-down positions. The goal is to create the best balance between loaded positions and centered.

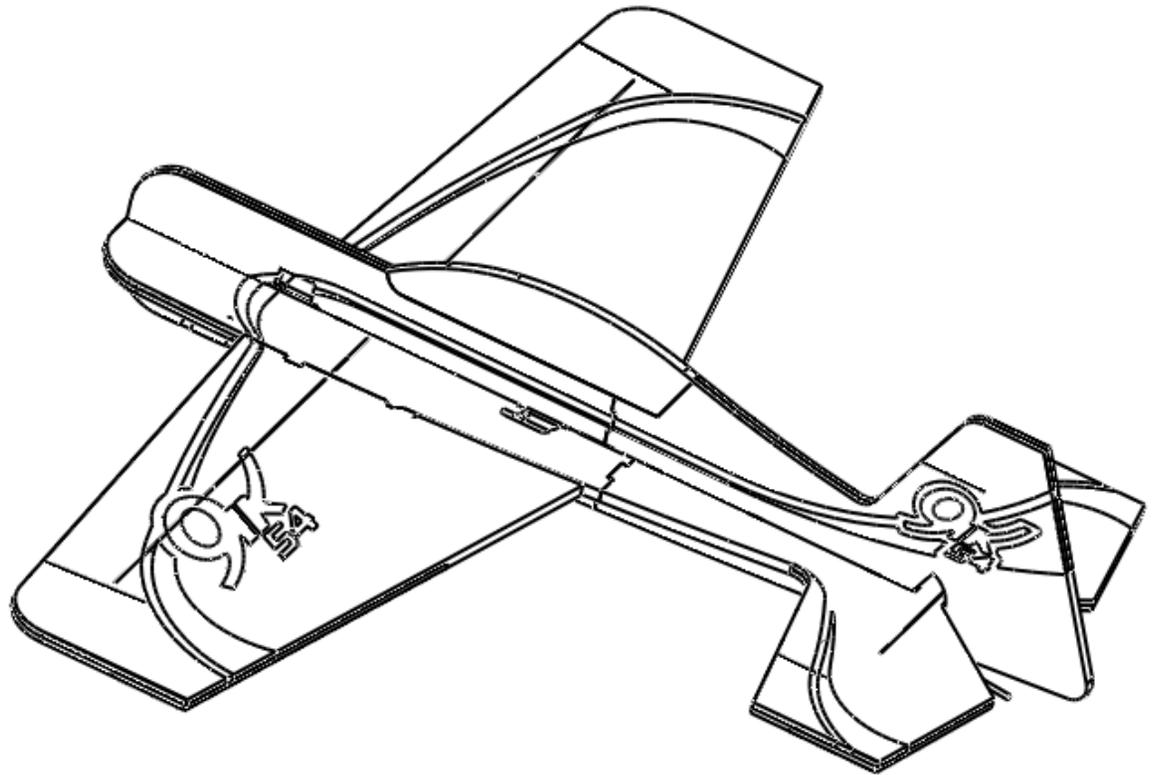
The plastic tubing is used to mount the motor. It is recommended to use low temp hot glue here. You will need only a small fillet on each side of the tubing. An easy way to get the tubes in perfect alignment is to attach to the motor first. With the tubes on the motor, position against the airframe. Rotate the tubes up to the fuse and tack with small glued spots. Check that the motor is centered up and down as well as side to side. If the motor is aligned and flush to the front of the plane then glue. The tube mounting allows for future thrust angle changes. If needed, remove the motor and trim the tubing back from the front edge of the fuse. When the motor is reinstalled tightening against the foam in different amounts creates thrust angles.



Hope you enjoyed the build!

CG set on Wing Spar  
Expo should start 5-10 points  
Higher than your normal

Throws:  
Ailerons  
Elevator  
Rudder



# TIP

Most glues can be applied and wiped with a small stick. Show here is a small scrap of 1mm carbon. Other common tools for this could be a toothpick, needle, splinter of balsa, piece of wire, or the back side of a razor. To help keep weight down, or things looking good, give this a try.

This also work great in hard to reach places. Notice the acute angle the parts meet at. It would be difficult to glue these with any glue. Using the hot glue allows needed flexibility, but the gun would never fit. Using the stick not only puts the glue where you want, it lets you easily wrapt the glue around the carbon. Creating an attractive fillet, and good bond.

Another thing to remember is this approach lets you pull away excess glue too. Most glues work well with a swiping motion. Hot glue also works well rotation as you pull away. Great for when you need to fill a hard to get to place. Glob it on and take some back off.

