

LIGHT RC



EPP Rebel Z 35"

Specs

AUW ~10.0oz
Width 35.28"
Length 34.67"
Wing Area 1.44 sqft
Horz Area 2.35 sqft
Vert Area .91 sqft

Suggested Hardware

<50g 150 watt Motor
12-18 amp ESC
Servos <8g (4)
3s LiPo (600-800mAh)
4ch Radio/Rx

Color - Top

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

Color - Bottom

- White
- Black Checkers
- Silver Checkers
- Other Checkers

Light RC EPP Rebel Z 35"

- 1) Glue Wings to Horizontal Nose (Wing Spar (6mm x 1mm flat, 35-1/4")
- 2) Glue Lower Vertical Nose to Lower Vertical Tail
- 3) Glue Horizontal Nose to Horizontal Tail
- 4) Glue Upper Vertical Nose to Vertical Tail
- 5) Glue Canopy to Upper Assembly
- 6) Glue in Elevator Stiffener (3mm x 1mm flat, 14.-3/4")
- 7) Glue in Aileron Counter Balance Stiffeners (1mm round, 2-1/2")
- 8) Glue Lower Vertical Assy to Wing Assy
- 9) Glue Carbon Chassis Stiffeners
- 10) Glue Landing Gear Struts (6mm x 1mm flat, 7.75")(Insure Panels are Perpendicular)
- 11) Glue Rear Landing Strut onto Tail (3mm x 1mm flat, 5")
- 12) Build Control Rods
- 13) Insert Servos and Control Arms
- 14) Glue Upper Assy to Wing Assy
- 15) Check the Gear Length (Does Plane Set Level)
- 16) Glue Wheel Pants to Gear Legs
- 17) Install Remaining Electronics
- 18) Install Motor Mount Tubing

CG set to 2.25" behind Wing Spar
Target AUW 10.5 oz

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.

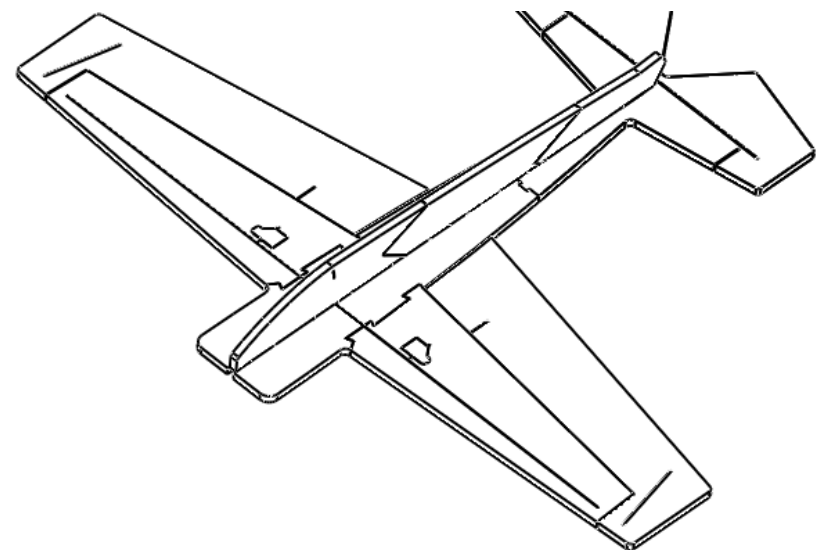
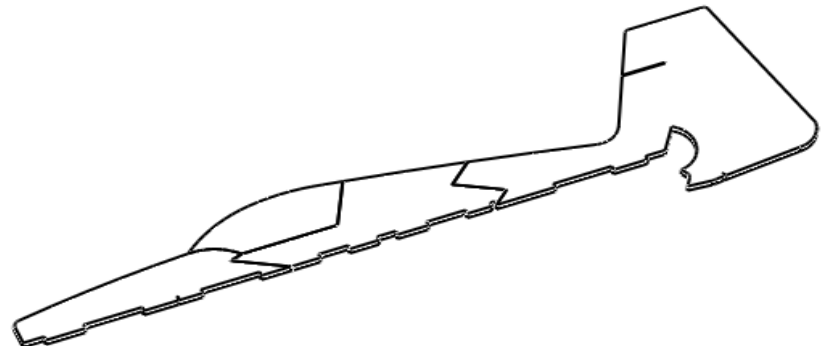
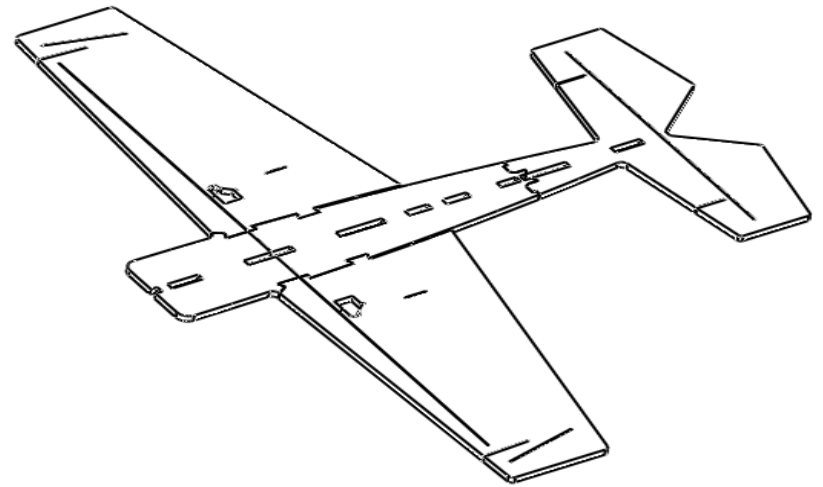
Once all the glue has set, glue the wing spar in (6mm x 1mm) and the elevator spar in (3mm x 1mm). Then glue the aileron counter balance spars into the bottom of the wings (1mm rod)

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 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.

The elevator servo pocket will need cut into the horizontal fuse.



Cut and glue in the 1mm round carbon stiffeners. The layout as shown will result in a very stiff airframe, that exhibits good aileron authority as well as minimal wing flutter. Use a square to keep all parts perpendicular as you go. It is important that the fuse is straight and square for this step.

Now cut two Gear Legs from the 6mm x 1mm strip 7-3/4" 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 should glue to the aft surface of the wing spar where the foam parts glue together. Check Fuse perpendicularity again, if good glue the Legs in place. Check for square often as you go.

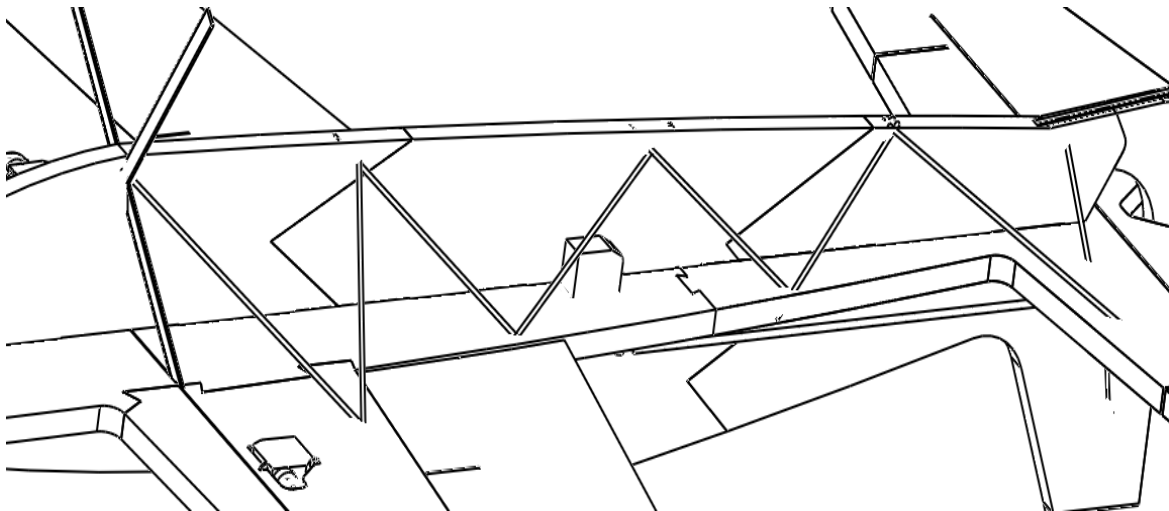
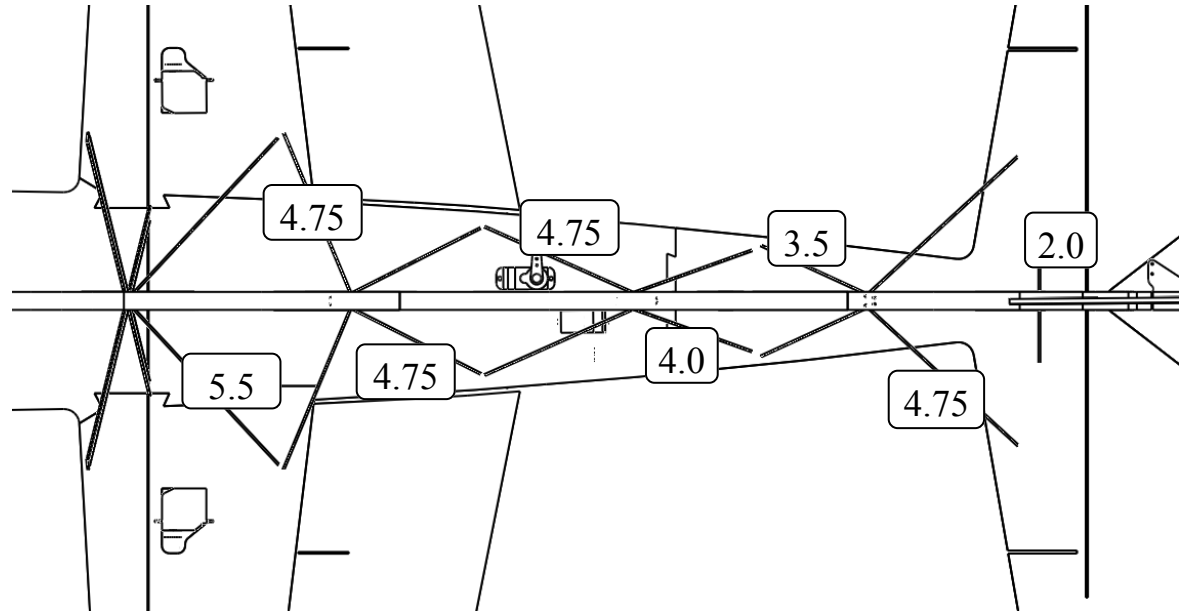
(see Tip) With the Legs in place cut and glue a 5" 3mm x 1mm flat strip onto the Tail. The strip will hang past the end of the Lower Fuse, and act as a tail skid. Now glue in the small 2.0" at 45 degrees from the elevator to the tail skid. This will stiffen the lower rudder hinge. After gluing the landing 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. Use a straight edge to cut slots in the control panels for the control horns.

The Elevator Control Horn will need the slot cut near the Vertical Fuse.

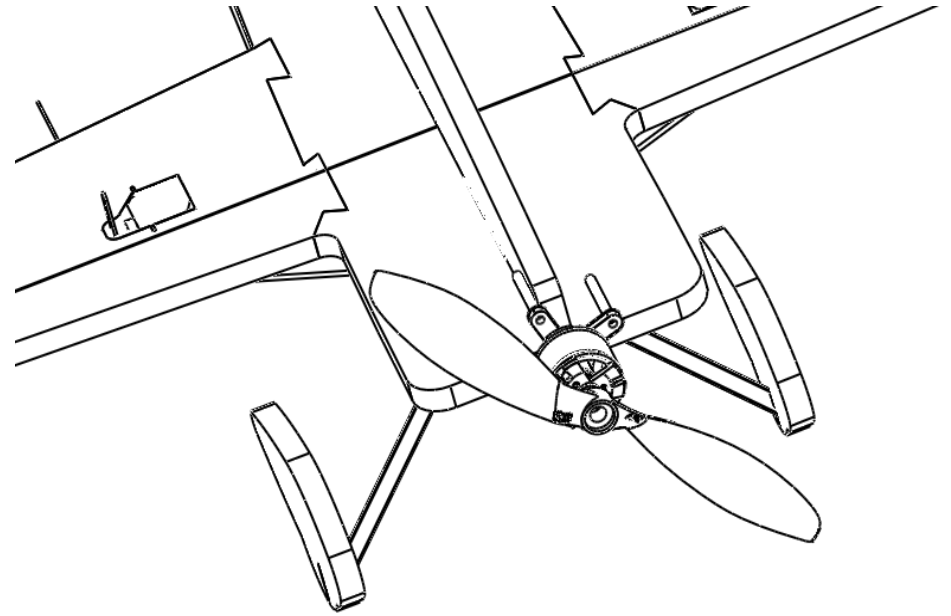
The Elevator, and Aileron horns install on the top side. Install and glue the horns in, then glue in the servos. Build the control rods using the included wire for z-bends, 2mm tubing, and adhesive lined heat shrink. Z-bend should have a 3/4" leg behind the "z", length and the heat shrink cut to 1/2".



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.

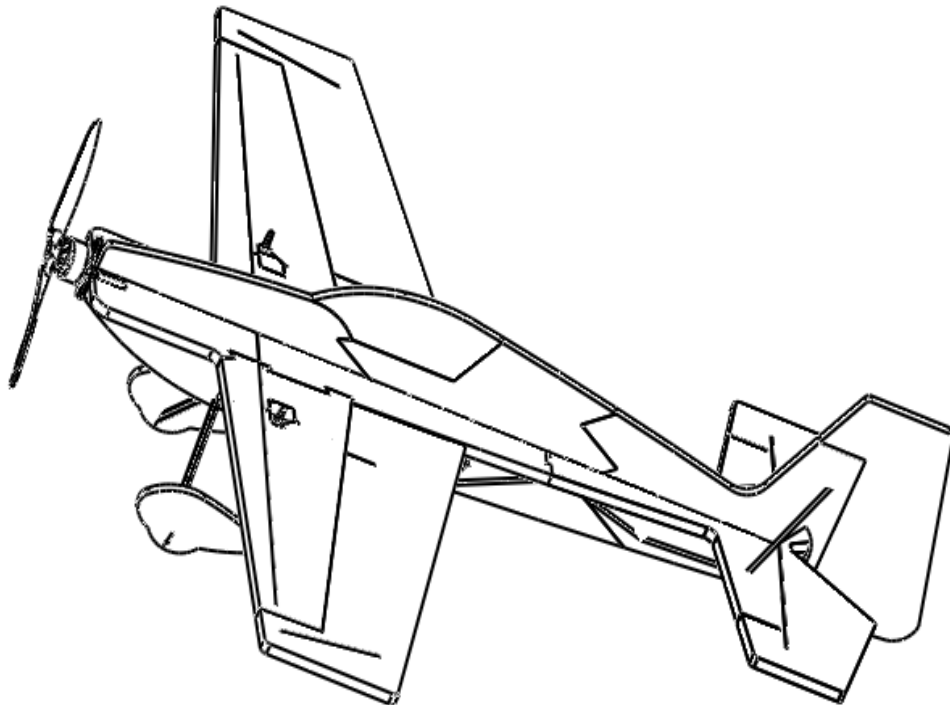
Note the top side rudder bracing. Using the left over lengths of 1mm rod create a brace from near the lower elevator brace to the rudder at about 1/2" away from the hinge.

The plastic tubing is used to mount the motor. Pay attention to which sides are use in the picture. This arrangement uses the torque from the motor to push into the foam in flight. It is recommended to use low temp hot glue here.



Create mounting “pads” by reinforcing the mounting area with a later of hot glue. A thin layer surrounding where the tubes meet the foam to about 1/4” away will increase durability greatly. The tubing itself 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!



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 wrap 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.



When using lighters or other heat source near foam or other heat sensitive materials such as covering, use a heat shield. An R/C shop tool that should be handy for this is a razor saw blade. Anything steel will delay any heat from damaging your plane long enough to do simple soldering, heat shrink tubing, etc.

A spoon would also work well, but is harder to prop into a good place.

Aluminum can be used, such as foil, but beware that it will transfer heat much faster and not provide as an effective barrier.

See <http://www.lightrc.com/foamy-build-tips/> for more