

This model is for your personal use and not for resale. It is designed with stiffness needed using 6mm depron foam only and Aerotech G-12 32mm rc rocket motors only. **CG location with loaded motor in place ready to fly should be 13.5" from the front of the wing slot.** Since this is a rear mounted motor model, the model must be balanced with a loaded motor for boost as this is the most rearward CG possible, as the motor burns the model will become more nose heavy and stable.

Refer to the pictures on how they go together, it is expected you are comfortable with an aileron controlled airplane at speeds of 60-70mph, and that you have scratch built models before.

Weight is critical for this model to use this particular motor. I used exactly these parts. Use of different foams or tubing/nose cone, or use of epoxy or hot glue will quickly lead to an overweight condition.

Parts required:

6mm depron for wings/tail

34" long 3" lightweight BT300 tubing from BMS

8.75" long 3" lightweight BT300 tubing from BMS

4" long BT300 coupler tube from BMS

PNC300K from BMS

3.75" long BT-56 tubing from Estes

.047 music wire for pushrods

Two rail buttons/weld style or brad head t nuts for mounting the rail buttons

Two wing skids(dubro or great planes) for the bottom of the fuse to protect from landing.

Blenderm tape

Receiver(I used AR-400)

1s 450-500mah battery (I use eflite 500mah battery with jst connector and use a jst to receiver adapter wire from grayson hobbies)

Adapter wire to connect the battery to the receiver

2 HS-65HB servos

3/16" carbon tube for wing spar, one 36" long, one 24" long, one 12" long

½A dubro control arms with backing plates or similar. You will need to buy longer screws that are approx. ¾" long.

https://www.hobbyzone.com/building-supplies/hardware/linkages/micro/dub924.html?gclid=EA1aIQobChMII-aF6eLA1gIVRZR-Ch2A_A4KEAQYBCABEgLuRPD_BwE

Print out the parts tracings, they have a 6" ruler to be sure there is no shrinkage of the tracing, print with no margins and no page scaling.

Cut out depron surfaces. Depron has a better side and a less shiny side, I used 1.5 sheets of 6mm depron, making right and left sides of the tail and top and bottom halves of each wing to laminate so that the shiny side was on both sides of the tail/wing.

Using 3m-77 spray adhesive on both sides of the vertical stab, let it dry for a few minutes then join.

I taped the bottom wing halves with blenderm tape and then 2" packing tape. I then used bob smith brand foam tac glue to glue the joint. Do the same for the top half of the wing.

Cut V slots in the bottom of the wings for the spars, and drag them through the slots so that they fit. Then use foam tac or foam safe CA+ to glue in the spars. I was able to recess the spars enough so that I did not need to groove the top half of the wing.

Spray the wing halves with 3m-77 spray adhesive and let dry for a few minutes, then carefully join the halves.

Sand the vertical fin and wing edges round using 220 sandpaper and final sand with 320.

Cut out the elevens, trim 2mm off of each end to provide clearance. Angle cut the leading edge of each surface at a 45 degree angle on the bottom side to provide clearance for movement. Use blenderm 3m tape to tape the control surfaces, tape the top first leaving a 1mm gap, then fold the surface over on top of the wing and tape the bottom joint.

Cut off the bottom of the nose cone base to save weight, leave 2" of shoulder on the nose cone.

Join the two body tubes using a coupler and a light amount of glue. The coupler portion should go toward the front of the model this is important for proper balance.

Mark the body tube every 90 degrees and draw lines full length with pencil.

Mark another line on the bottom of the fuselage offset 1" to the right or left of the bottom, this line will be used for locating the rail buttons offset to the side so that they don't get caught on landing.

Mark the bottom rear of the body tube at 3" from the end, then angle cut the rear of the tube from the top to the bottom 3" mark with an exacto and then sand to a clean edge.

Mark and cut the body tube for the vertical stab and wing approx. 12mm wide, to fit your particular foam thickness. Slot for the vertical fin should start 3" from the end and be 6" long

Slot for the wing should start at 6" from the rear and be approx. 27" long..

Install the rail buttons, make a hole for the flanged nut x" from the end and Y" from the front on that offset line. You should be able to reach inside through the wing slot to install the rail button and t nuts. Do this now before installing the wing.

Sand the vertical fin motor tube slot so that it has a good friction fit. I cut and installed a 1/8" ply thrust plate into the end of the motor tube so that the hot motor casing is not pushing directly on the foam.

Make sure the vertical fin will slide into the slot into the wing and that the 1" cutout for the motor tube will also fit.

Install the wing in the wing slot, then test fit the vertical fin to make sure it fits through the wing slot and sits flush on the bottom of the fuselage and the top of the fin is flush with the body tube. Sand or trim to fit as needed.

Glue in the vertical stab using thick foam safe CA+ or foam tac glue and make sure it is perpendicular to the wing and straight along the body tube. Apply fillets on inside and outside lightly with foam safe CA+ or foam tac glue.

Make sure the wing is centered and glue in place using foam safe CA+ along the body tube/wing joints to hold it in place, don't overdo this step and add a lot of weight.

Test fit the motor tube and make sure it seats fully, glue in place using foam safe CA+ and fillet as needed.

I made four 1" square plates from .03 styrene sheet or you can use 1/64" plywood to reinforce where the control arm goes through the foam.

Glue these on the top and bottom of the control surface approx. 1.5" from the inboard end of each control surface. Install the control arms using longer screws and plates provided so that the front of the control arm is at the hinge joint and the arm is on the bottom of the surface.

Install the servos on the bottom of each wing. I used dubro foam wing mounting servo hardware, the servo mounts to spikes which go through the foam and have a cap to capture them on the top side of the wing. It also uses foam double back tape to hold the servo. I reinforced the top and bottom of the post flanges with foam safe CA+ as well.

Make two pushrods approx. 4" long, with a z bend on the end, install the pushrod into the furthest hole from end of each arm and make sure the surfaces are approx. neutral and there is no slop in the surface. You can use your radio to fine trim the neutral setting.

I used 125% throw for elevator and 85% for aileron. Set up your radio on the flap setting and switch so that the elevators have a slight down trim for boost position and about 1/2" up trim for glide position, you can adjust after the first flights.

I taped my nose cone shoulder for a snug fit.

Make holes and install the landing skids, the rear will go approx. 2" from the bottom end of the body tube and mount into the vertical fin stab, the other will go at the coupler joint and mount through the coupler.

I cut a 1.25" by 2.5" long hatch on the bottom of the body tube to install the battery and receiver. I cut two flaps, one on each side to route the servo wires through into the body tube then plugged them into the receiver. I mounted the receiver with Velcro inside the rear of the pocket against the bottom of the wing so that it does not interfere with installing and removing the battery.

I put Velcro into the open area for the battery.

You can hinge the front of the hatch with blunder tape and I made a little lip using depron foam to mount magnets to the hatch to keep it closed and made a little finger tab using blunder tape to open and close it. See Pictures.

I used flat black testors spray paint which does not melt the depron foam for the bottom and tail/wing trim sections. Do not spray too close to the model. I used two cans of paint which added ½ ounce of weight. I did not paint the body tube white but left it natural, I did need to paint the nose cone white first as it was somewhat transparent.

I use trim vinyl for markings, stickershock23 does great custom markings. I used a fine sharpie pen for panel lines.

Once you apply the vinyl markings use a hot hair dryer to soften it and push it down with your finger and it will conform nicely even over paint.

Install a loaded motor and balance as per the model specifics, do not fly them tail heavy. Built using the materials and component specified I did not need any weight for balance. Slightly nose heavy is ok, tail heavy is not. Add weight as far forward into the nose as possible to minimize the amount needed if required and secure with glue.

My model empty but ready to fly is 22 ounces and 26.5 rtf with G-12 motor, much heavier than this and you reduce the boost altitude significantly.

I launch on a vertical rail, keep control of the model, keep it going vertical and counter any roll, you can push forward slightly to make it go upwind as needed. As the motor burns out push over horizontal and flip in the up trim as the model slows. Trim as needed for a gentle glide, set up for landing and flare for a soft landing.