

Introduction

I have recently started flying indoors and was looking for a small durable plane. I came across a delta wing model called a SuperFlea. This model is constructed entirely of EPP foam and uses twin GWS-40 ducted fans for power.

The kit comes with one big block of EPP foam that has all the components cut out. This includes two wing half's and the ailerons. There is an extra block included for the canopy.

The Build

There was quite a bit of foam slag over all the components once I removed them from the block. It took a while to clean all this off but did not damage the foam surfaces. It is recommended to use Shoe Goo for all assembly. I was unsure what this was so I used Automotive Goop that I use to install canopies on other models. I applied a generous layer of goop on both wing half's and then stuck them together. It only took 10 minutes before they were secured very well.

Super Flee Flying Wing

Written by Administrator

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The next step is to cut two vertical stabs from a scrap piece of EPP. The template for these stabs is included in the instruction manual. I traced the pattern onto the foam and cut them out with a model Knife. This foam cuts much better than other foam I have worked with in the past. You then need to bevel the bottom edge of each stab and glue them to the top of the wing. The bevel is needed when they are installed on the wing they are at the correct angle. A template is provided so you can accurately position these stabs.

Next step is to install the elevons. These pieces were very hard to remove from the EPP block. During the foam cutting process it is evident that the melted foam re-stuck all the piece back together. As the elevons are quite thin care must be taken on their removal. You need to trim one end and create a 45 degree miter on the other end. These elevons are tapered so care must be taken to cut and install them the correct way. I simply taped the top surface of the elevons to the wing. The manual suggest using shoe goo under the tape. However, I used filament tape and it stuck very well to the EPP foam by itself.

Next step was to cut out pockets for the servos. GWS pico servos in my case. I used a Dremel with an end mill cutter to carve out the required pocket. After mounting centering the servo horn I again used Goop to glue the servos in place. I then installed the control horns into the elevons in a location directly behind each servo. The supplied horns are glued into the elevons using Goop.

This took 24 hours to dry. I would use a different style of horn that had a backing plate if I were to build another one of these kits.

1/32 piano wire is then used to connect the servos to the control horns. These control wires are quite long and being only 1/32 diameter means they bend very easy during a push operation. The manual instructs you to put two zap straps through the wing around each control rod at its mid point. I used a ball link pushed into the wing to accomplish the same effect.

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I then mounted the two ducted fans onto the wing. There is a template provided to ease installation. A slot is cut into the wing, one for each fan unit. This slot allows the front lip of each fan to be recessed into the wing. The fans are then glued into position using Goop.

Attention then turns to the canopy. This needs to be shaped to give it a better look. I cut a pocket into the underside of the canopy to accept the receiver. I used a 4 channel GWS unit. Another large slot is cut into the side of the canopy to accept the battery. I am using 830mah 2 cell LiPo cells from Apogee. Once the canopy was prepared, I trial fit all the components including battery to determine where to position the canopy to provide proper CG adjustment. Once determined, I used goop to glue in place. The receiver is glued under the canopy so it can not be removed after gluing so make sure all your wires are connected.

That completed the assembly. I just left the speed controller out in the open for better cooling. I am using a GWS ICS-100 controller. I wired both fans in parallel. With my two cell LiPo pack these fans draw 8.3 Amps total at full stick. The speed controller is only rated to 5 amps so we will see how long it lasts.

First Flights

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I thought I would try taking off from the ground on the first flight. At full power the SuperFlea would slide on the Gym floor but would not move fast enough to get airborne. On the second attempt I hand launched the model. It hand launches well. I launched it a 45 degrees and it just flew out of m hands. In simple circuits is flies well. Rolls were very fast but there is a nasty diving tendency during the inverted section. I could not perform very good loops. They looked more like flips once the plane is vertical. There is not enough power to push it over the top. Inverted flight was terrible. I could not maintain it for any length of time. This first flight lasted about 8 minutes.

On the next flight I added a tail skid from another model to the nose of the plane. This provided less contact area between the wing and the gym floor. I was now able to accelerate and actually take off from the ground. The nice thing about flying with the fans is there is no prop to hit obstacles. I experimented with landings on the gym walls. This proved to be way too much fun! I then experimented with low speed characteristics. At very high angles of attach the Superflea slows down considerably. It will just float along. However, the fans soon run out of thrust so I could only hold the plane in these attitudes for short periods. If held for too long in would slowly sink to the floor.

I got a little too wild on the third flight. I tried to bounce the plane off the basketball hoop backboards. I had a lot of crashes. I then tried to sink it into the hoop. On my last attempt both fans disintegrated.

Conclusions

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I was amazed at how much punishment the little plane can take. With all the walls I hit there is not the slightest sign of damage. The plane is very tough. The fan units seem to be the only weak link. I wish I could get a little more performance out of the model, however, it is still a blast to fly indoors.

This plane comes in various sizes and with different propulsion options. You can find all the product offerings at

<http://www.superflyrc.com>