

EFLITZ F5K build log



I received the model in a big cardboard box which contained a second big cardboard box inside. Shipping company was kind and did not hurt the package, but I like the idea of being well protected. Inside, there was one wing, one elevator, one rudder, all in protective bags (sold separately) one fuselage rolled in foam and a bag of accessories.

General impression of the model is outstanding. Andrey's build quality standard is very high so parts, even though slim, feel very solid and are mould aligned.

I decided to purchase the manufacturer suggestion of power train:

- Cobra 1507 motor and 20A ESC
- Custom 7in carbon prop and spinner for 2S.
- Team Black Sheep 2S 300mAh 70C
- KST 08 V5.0 servos all over with tabs for the fuselage and without for the wing.

Andrey sent the ESC already configured I am amazed how well the ESC controls the motor, noise is the lowest I ever heard and control at very low RPM is impressive (but not really needed).

Tail

Started by the tail as it is usually an easy part and helps building confidence. The only tasks here are installing the control horn and the spring as I preferred pull spring for both surfaces.

Springs are 0.4mm steel wire (included) bent in C shape, I preferred to use 2 per surface,

being the short legs 15mm and the long one 40mm. One end is inserted in the fixed part, spring is bent 180 degrees and the other leg goes in the movable part. In this model spring must deflect rudder to the left and elevator up. No glue or tubes were used.

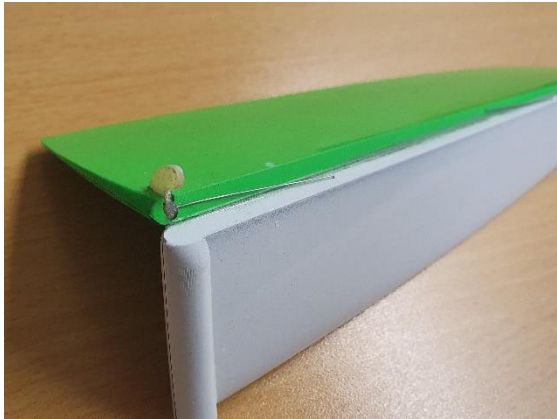


Insert the rudder and bolted the elevator to their places. With a pen, mark where the control horns should be (special attention in the elevator as clearances are small).

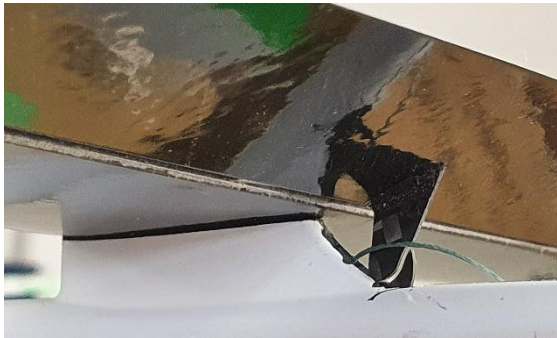
Add some masking tape around the mark and using a fine cutting disk (Dremel or Proxxon) cut the surface and the foam to the horn size. Be careful, it is easy to mess up here!



Foam is removed and horn glued in position with Epoxi. As you can see, I accidentally used one the aileron horn in the rudder, no big deal.



After curing I checked the elevator horn was too big for the slot and would limit deflection. So I sanded the horn 1mm and enlarged the opening in the fuselage a bit until free movement was achieved. This would be easier to be done before installation.



Finally, drilled a 2mm hole to the boom right side at the elevator pylon region for the rudder steel cable. The drilling was as angled as I could in the nose direction.



Fuselage

Start from the motor. A predrilled, glass firewall was provided and I bolted the motor with the supplied 3 Allen bolts (top bolt is omitted on purpose). Then the motor

assembly, using the canopy opening, was pushed all the way to the nose and prop installed. I noticed the spinner base would contact the fuselage, so I removed the assembly and sanded the model nose 2mm short. I could have sanded the firewall a bit, but I knew it would not be perfect I liked the way it sealed around the fuselage.



Push the motor again and voila! No friction and very small gap.



From the inside add 2 drops of medium CA and rotate the fuselage until the firewall has glue all around (that's why I liked the sealing), finally add filler (speedy pulver). Epoxi would be fine too.



Note the motor final position in relation to the fuselage edge.



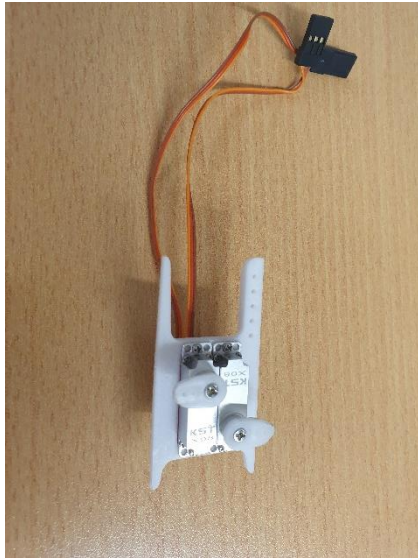
I decided to have all electronics apart from battery in the front compartment, so I reduced the motor leads to 45mm and soldered directly to the ESC and soldered the battery connector to the longer battery wires.



As you can note, drone ESCs do not have BEC so they do not have the red wire going to the RX. The reason I liked the suggested power train is that it operates very well in 2S. Hence, I installed the red wire, soldered to the battery wire terminal of the ESC and added the pin to the RX connector. This means RX and servos get battery voltage directly from the source, so it only works with 2S!



It is time for the servos. Bolt two KST 08 V5.0 to the supplied tray and prepare two servo arms.



Then inserted the 6ch RX together with the ESC and plug them. This allows positioning the servo tray with sufficient clearance for RX removal. CA was applied followed by filler. Note battery is installed being servos.



At this stage, building was looking great and I went for the steel cable guide tubes (supplied). Tube was cut in half which means it could guide the cables past the wing. I took

a length of 1mm steel wire, inserted in the tube and with magnets positioned it.



Then apply thin CA to the outer part of the tube and let the model rest vertically while curing.

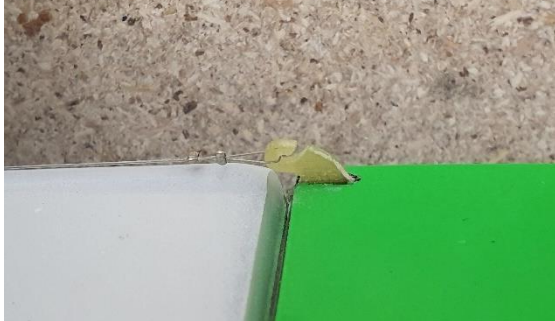
I was proud of the technique until I realized the wire, which was much longer, than the tube was now glued to the fuselage side as the glue ran all the way past the tube. After 5min of panic I rotated (don't pull!) the wire and it broke loose. I repeated the process to the other guide with much less extra wire and worked like a charm.



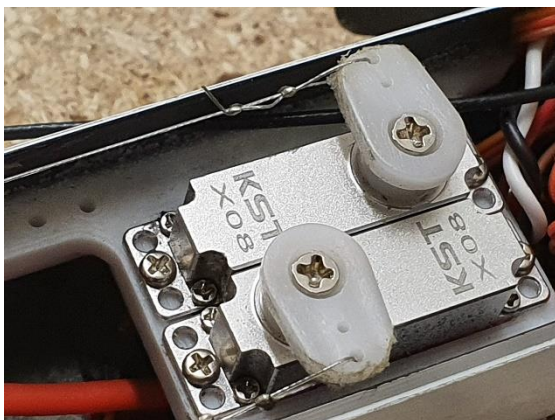
I pushed the steel cable through the tube and then realized there was no way that cable would exit in the hole I drilled previously for the rudder. I knew the cable was there, but I had to find a way to catch it. So, I bent 0.4mm wire tip in U shape inserted the hole and started moving and spinning it inside the fuselage pulling from time to time. After 3 tries, to my surprise the cable followed the wire through the hole.

Elevator cable was much easier as you can see it by the pylon opening and either use the same technique or a tweezer to pick it.

For the elevator make a loop with a safety string. Since I wanted to keep the rudder removable a small slit was cut in the control horn, similar to the elevator and looped the steel wire in the elevator.



At the other side, cable is looped around the servo arm and crimped, note this is the last adjustment in length of the control chain.



Fuselage is built!

Wing

The only task in the wing is to install the servos and the linkage to the ailerons. I followed Oleg's instructions as in <http://www.olgol.com/Flitz/build.html>.

Start by the cut-outs: add tape to the inside of the cut followed by adding another to the outside and removing the first one. This way you can see where the cut-out line will be.

With a NEW blade cut the carbon and the foam and with the same blade spend 5min cleaning all foam from the pockets.



Insert the control wire in the factory cut slits, supplied 1.2mm steel, and push it.



With help of light reflection you can see where it would exit in the top skin trailing edge, mark that position. Mark a position 15mm in front of it and drill the skin.



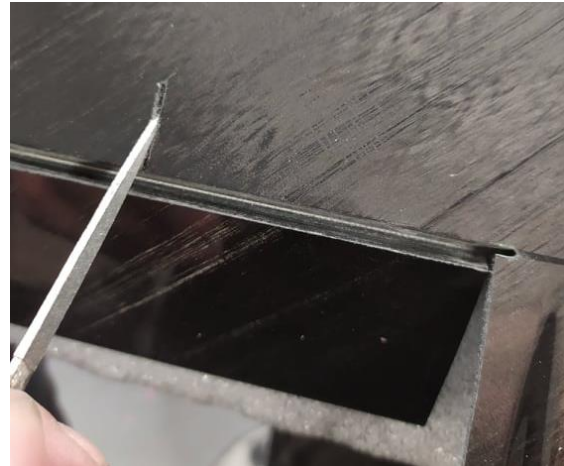
Alternatively, measure the distance from the rod to the center of the wing and reproduce it in the top skin.



Mark the horn position, offset sideways from the rod.



Later realized this prevented flap full movement so a slot should be cut and finished with a file.



Mark and cut the horn location just like you did for the tail.

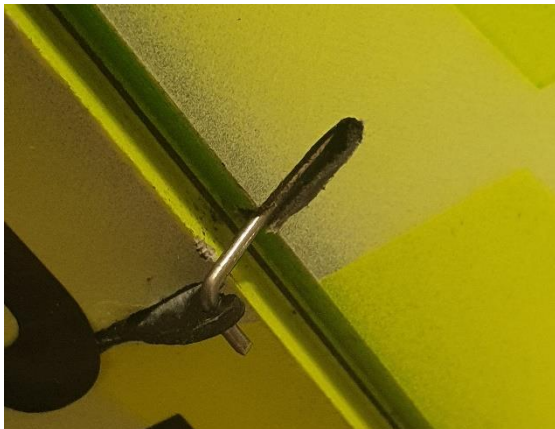


Prepare your servos by centring them and cutting the servo arm to the first hole. When inserting the servo arm to the servo make sure to offset it from center position, this way you have more throw capacity to deflect the aileron/flaps down than up. Bend the push rod 90 degrees attach it to the servo arm and install in the wing channel. Insert the horn and mark where the push rod has to be bent,

account for the curvature radius. Remove the rod and bend the second 90 degree. I have bent mine slightly in the z axis so it accommodated better to servo position.



Install the rod entering from the top skin slit, attach to servo and horn. Make sure servo is centred, servo arm is offset towards the leading edge and glue the horn, as you see the pushrod has to move lower than the top skin for full flap deflection.

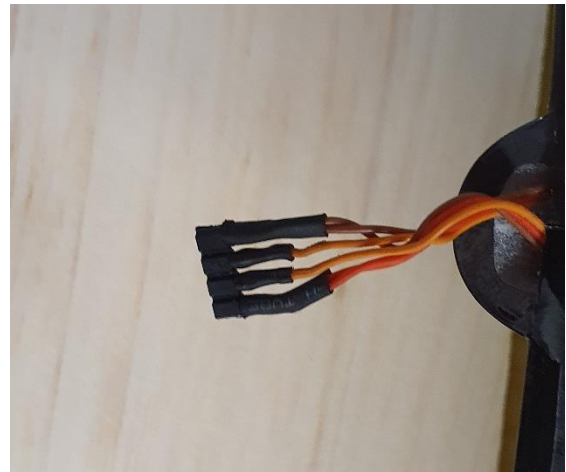


I used Oleg's suggestion of servo mounting by filling the spaces in the servo pocket with light balsa.

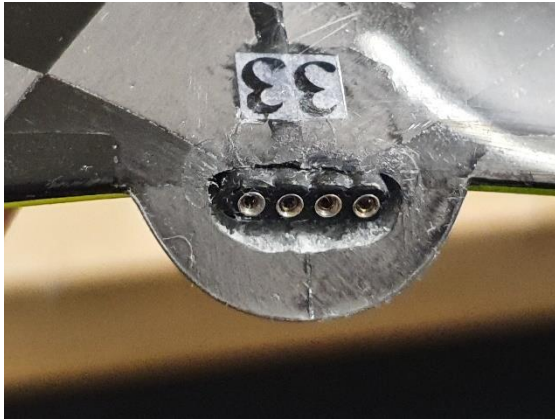


Balsa is glued with CA to the wing while servo receives a couple of epoxy drops. Since they are metal casing it is easy to remove with some heat. Don't forget to cut the servo plugs and push the wires towards the centre of the wing (channels are factory cut in the core).

I soldered the female plug (supplied in the kit) to the servo wires keeping positive and negative in the edges. I then add a small piece of heat shrink tube to the plug



Push the plug back and glue to the wing.



In the fuselage side reproduc the wiring with the male plug and added a longer shrink tube to the connector with several shorter tubes to keep wires together.



Mill with a Dremel the connector exits in the fuselage and inserted the wires. Connect the wing and mount it with bolts. From inside the fuselage apply a drop of CA to the shrink tube of the connector gluing it to the fuselage. After curing apply epoxy (with a stick) to the interface between connector and fuselage.



In case you, like me, forget where positive and negative are know that there is no continuity between positive and signal but there is a high Ohmic, continuity, 1.6k between signal and negative, at least in KST 08 servos

Finally, trim the wing servo covers and attach them with clear tape.



Bingo, you are ready!

My model has a lot of decoration and is standard layup. All up weight is 278g (with logger), just 3g above FAI minimum.