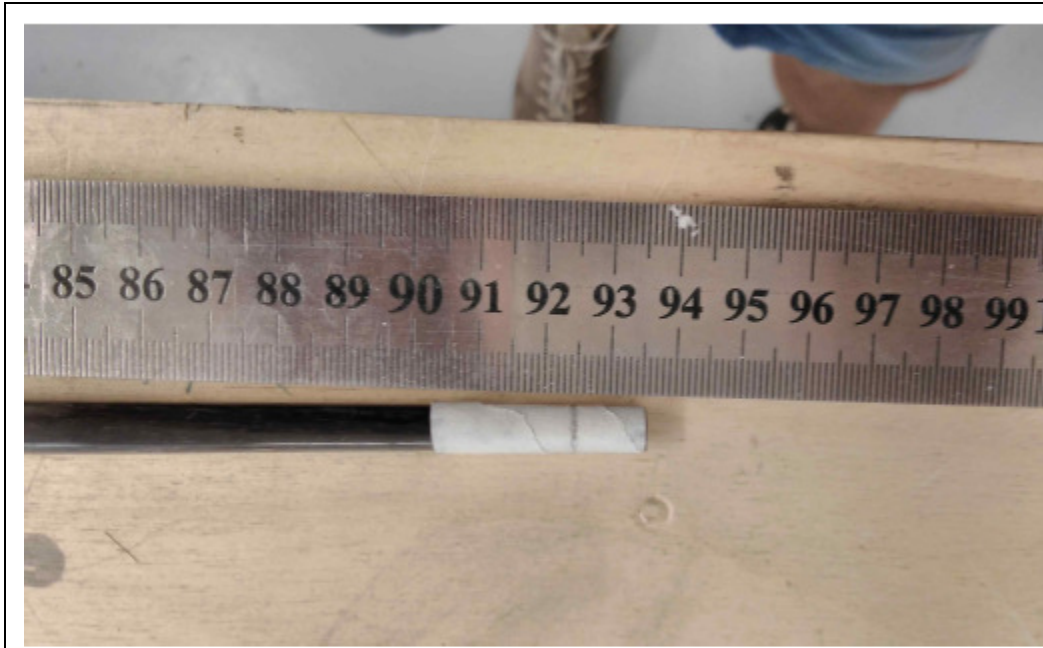


FLITZEBOGEN-2

Assembly instructions



Trim the end of the fuselage to the length of 925mm from the nose. Be careful to avoid splitting the carbon fibers.



Sand the base of the stab mount in preparation for gluing it to the fuselage. Use a piece of sand paper wrapped around the tail boom.



The objective is to remove the shine from the base of the stab mount for proper adhesion to the tail boom.



Use a small round file to remove the shine from the inside of the socket on the vertical fin. The walls of the socket are very thin, so be careful not to break them.



Sand the aft end of the tail boom that will be inserted into the fin socket. Remove the shine from the surface and clean it of the carbon dust before gluing.



Temporarily attach the horizontal tail to the mount, insert the tail boom into the fin socket, and mark the location of the stab mount on the fuselage with masking tape. The stabilizer must be positioned a few mm in front of the fin.



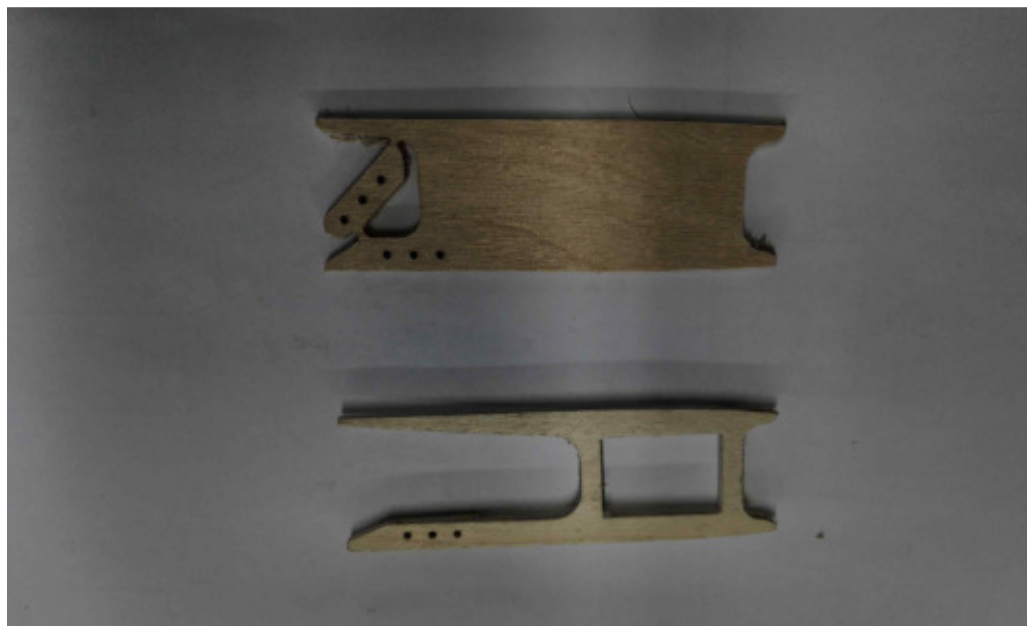
Sand the tail boom between the marked places to prepare it for gluing the stab mount.



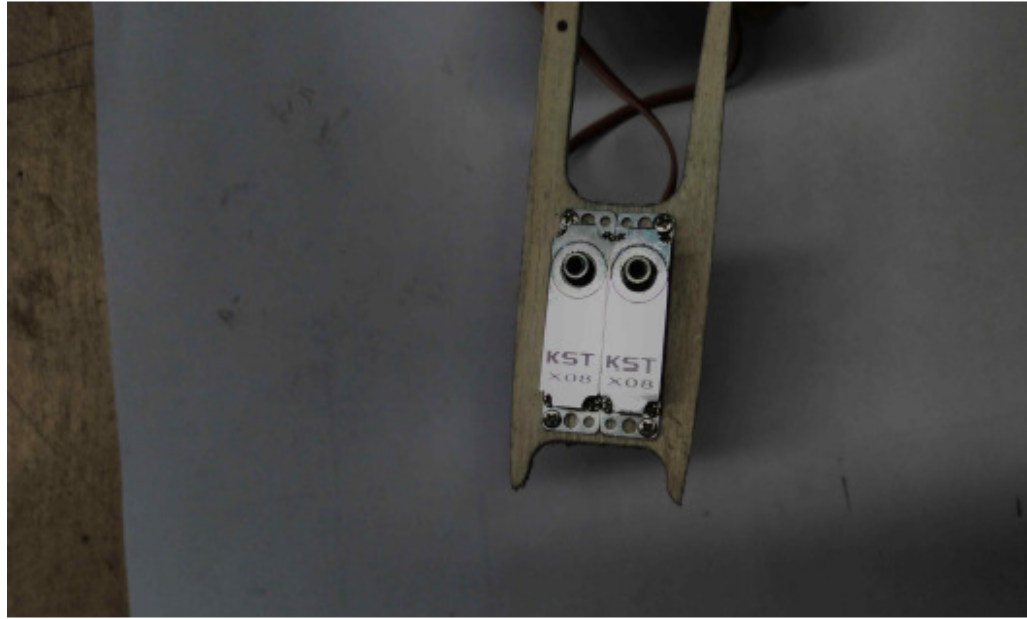
Use a Dremel tool to make a slot for the elevator control cable. The slot must be about 15mm long and positioned about 5mm from the aft mark.



Use a small flat file to widen the cable slot a little, to about 1mm.



From the supplied plywood blank, make a servo tray shaped as shown on the picture. The exact shape and size of the cutouts will depend on your selected servos.



This picture shows how KST X08 servos can be installed on the tray. The side rails serve to strengthen the fuselage walls.



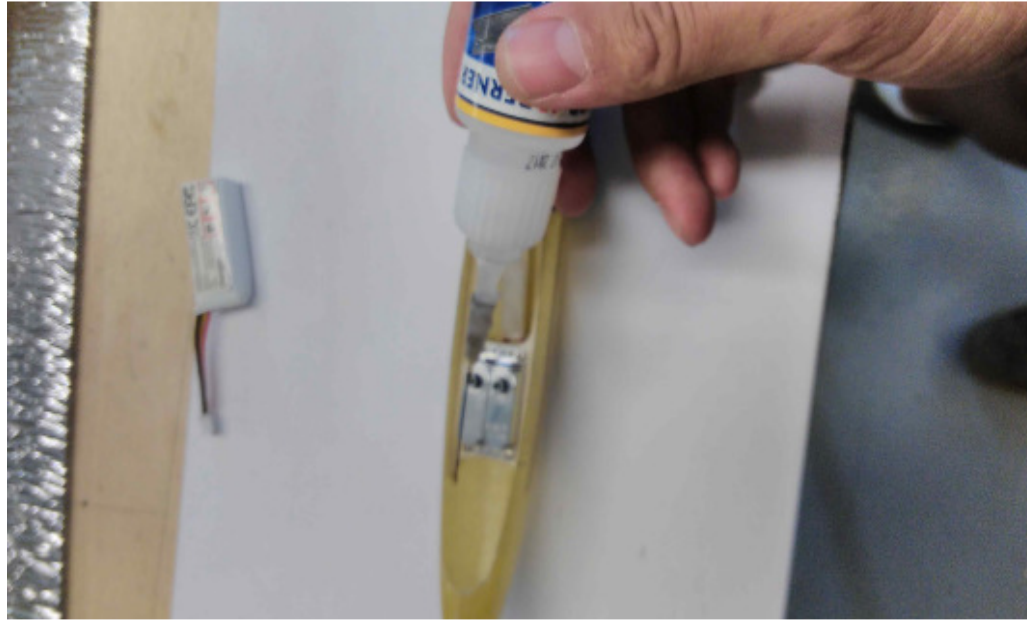
Sand the side walls of the fuselage in places where the servo tray will be glued.



Trial fit the servo tray inside the fuselage. It may require some trimming/sanding on the outside to fit well inside the fuselage nose. The servo tray must not spread out the side walls of the fuselage. Use the nose cone to verify that the shape of the nose is not distorted by the servo tray. Sand the outer edges of the tray until no visible distortion is present.



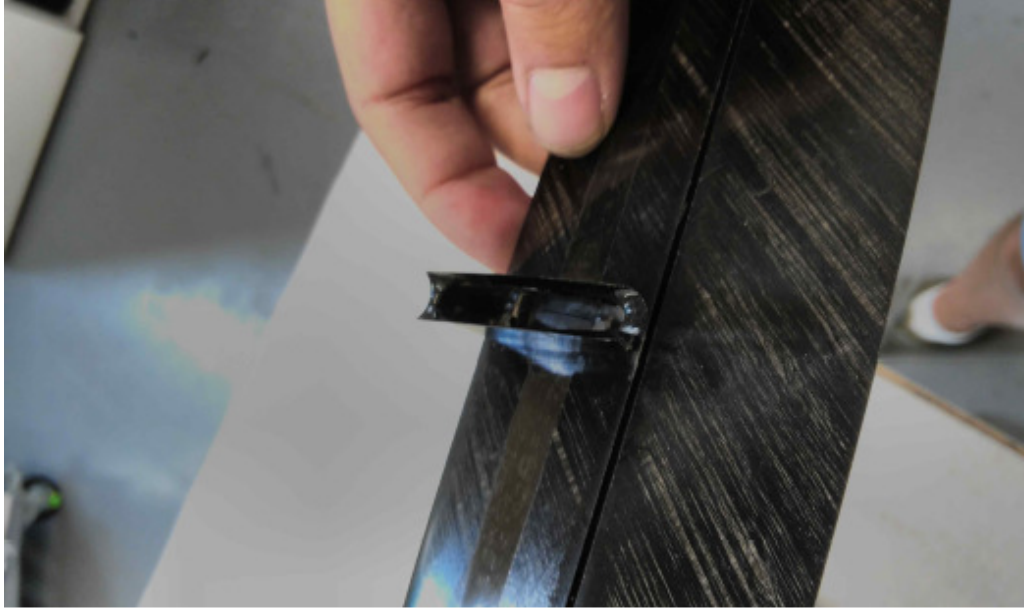
Position the servo tray square to the fuselage. Use a ruler across the wing saddle to verify the squareness.



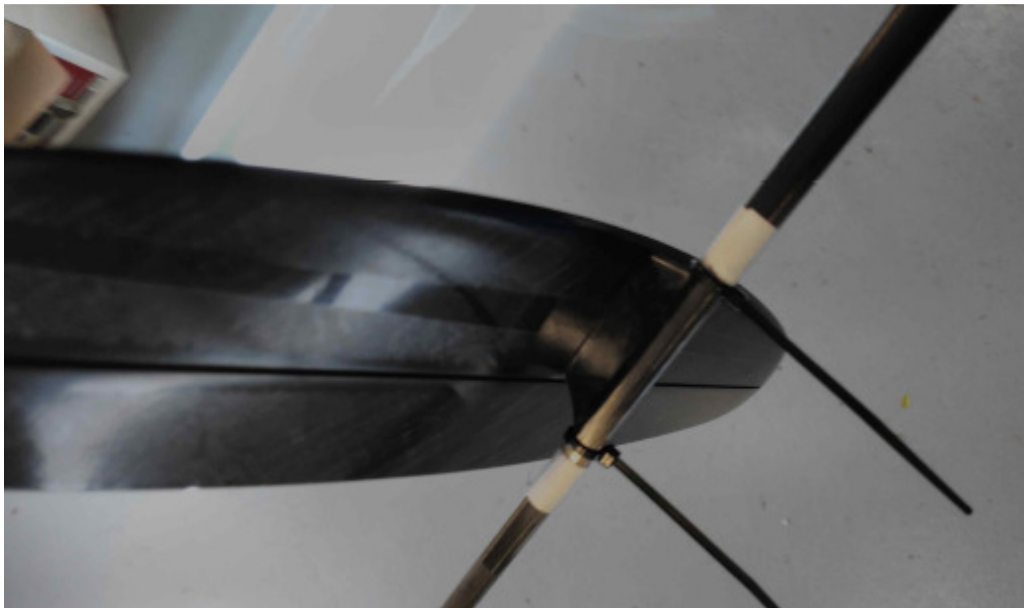
Apply CA or bonding epoxy to the joint between the servo tray and the fuselage walls.



Mix some bonding epoxy for attaching the tails.



Apply some epoxy to the stab mount base surface.



Use plastic cable ties to temporarily fasten the stab mount (with the stabilizer attached) to the tail boom.

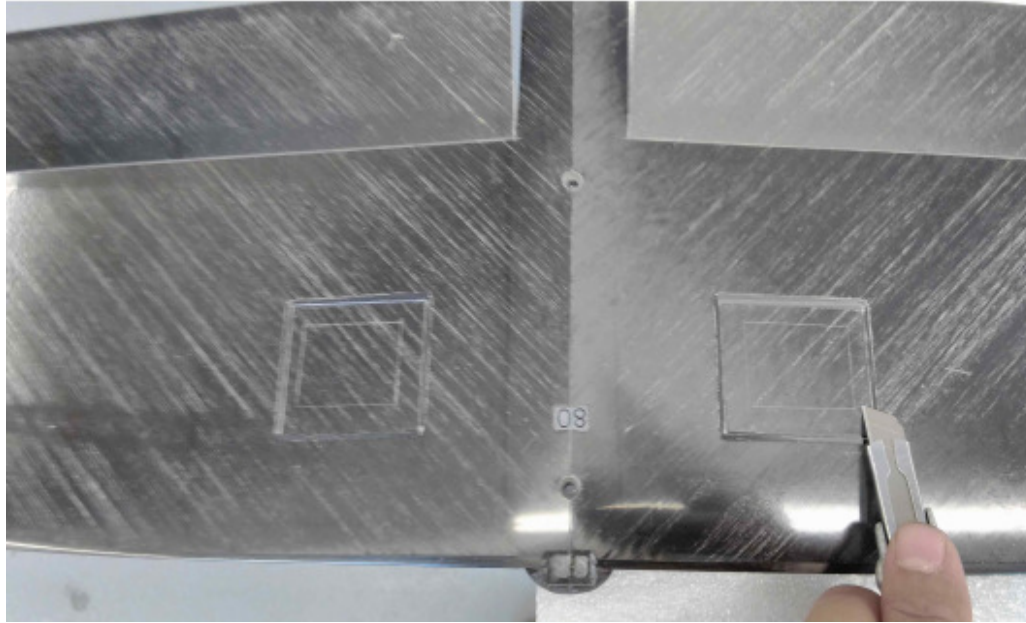


Apply some bonding epoxy to the tail boom and inside the fin socket.



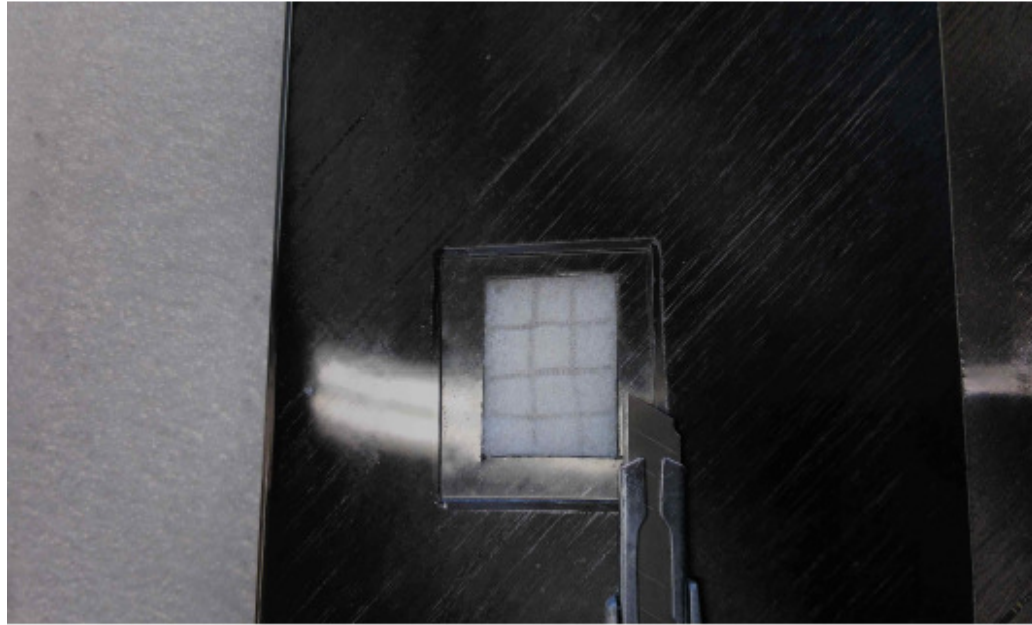
Slide the fin onto the tail boom. Wipe off the excess epoxy that is squeezed out.

Attach the wing to the fuselage and sight the tails relative to the wing. Square off the tails and leave them until the bonding epoxy fully sets.

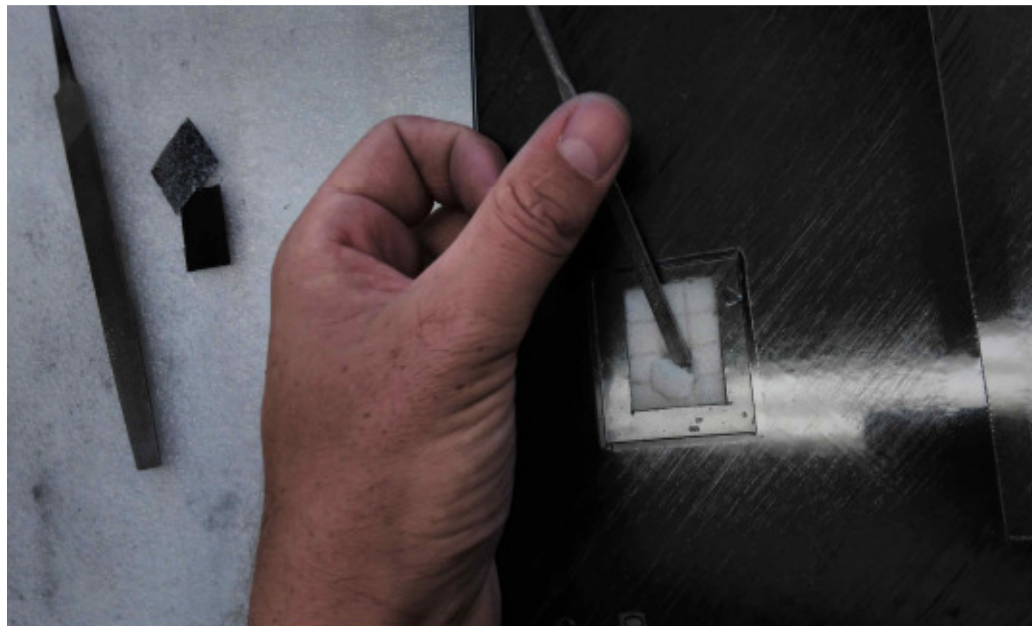


Make servo wells in the wings. The wings have indentations for the servo covers. The indentations are designed for KST X08 servos (most of the other suitable servos have smaller footprint). The servo locations are selected such that the spar strength is not compromised. The aileron pushrod channels are made in the foam core at the factory prior to forming the skins.

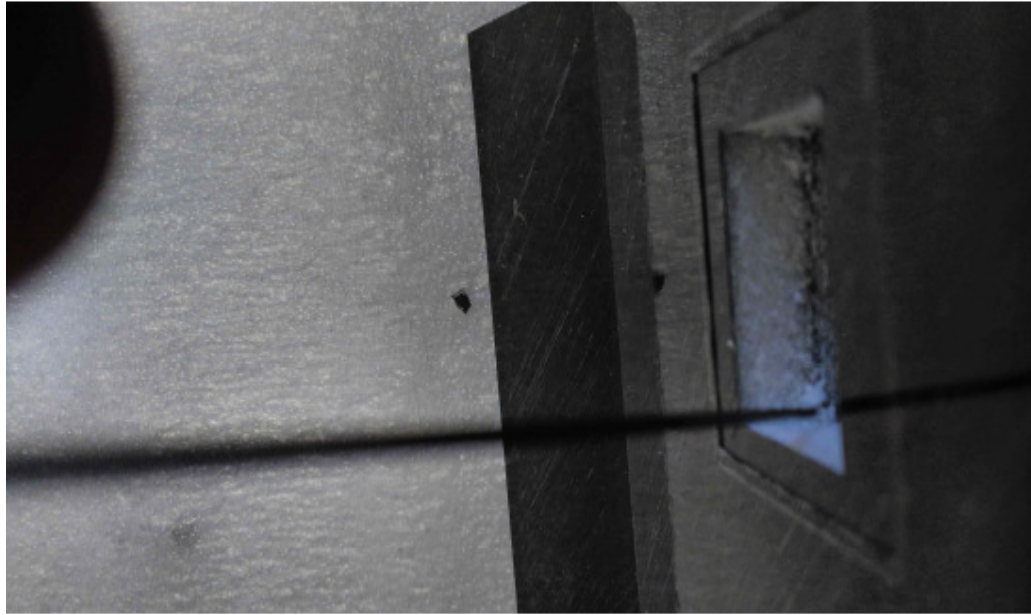
When cutting the servo wells, avoid cutting through the opposite skin.



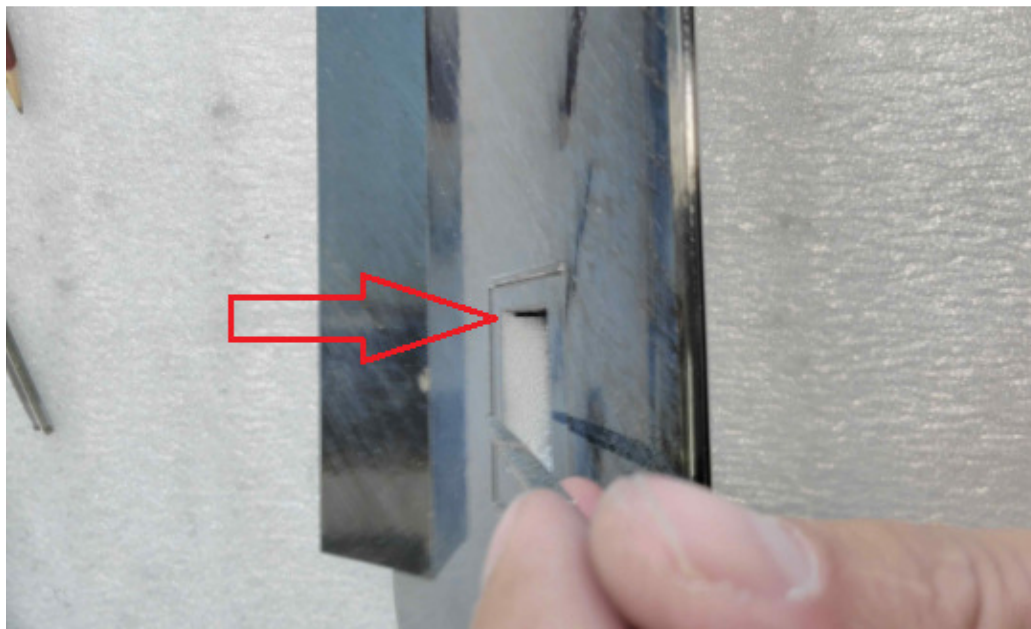
Carefully cut the skin and remove the rectangle, opening the foam.



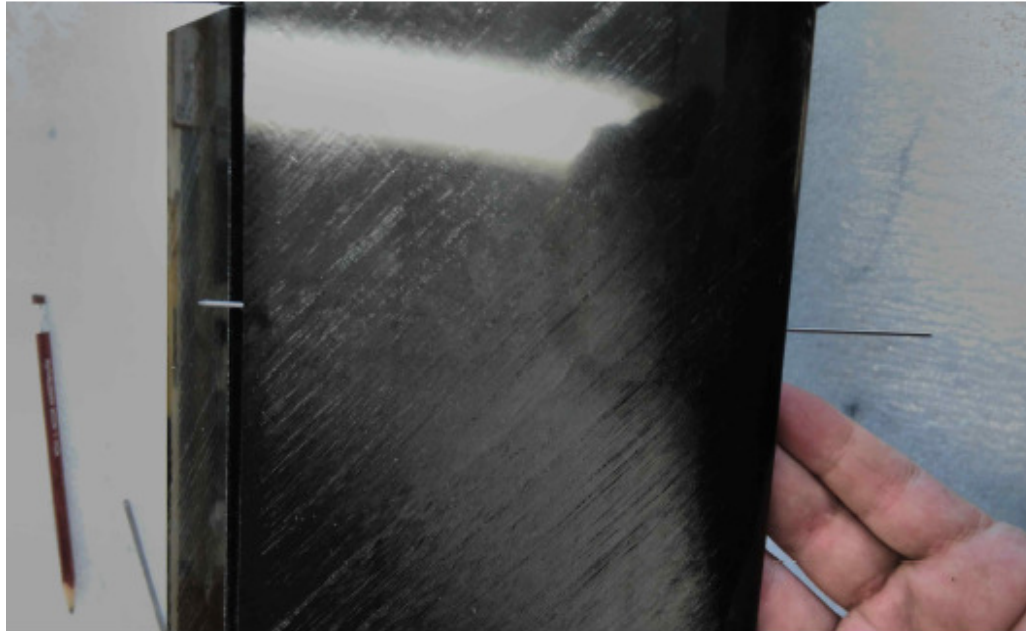
Divide the foam that needs to be removed into squares. Using a small paddle knife or a flat file, remove the chunks of foam from inside the well.



Continue cleaning out the foam from the well. Use a Dremel tool or small files to square up the walls and clean the bottom of the well. Scrape the top skin carefully to maximize the available depth for the servo installation.



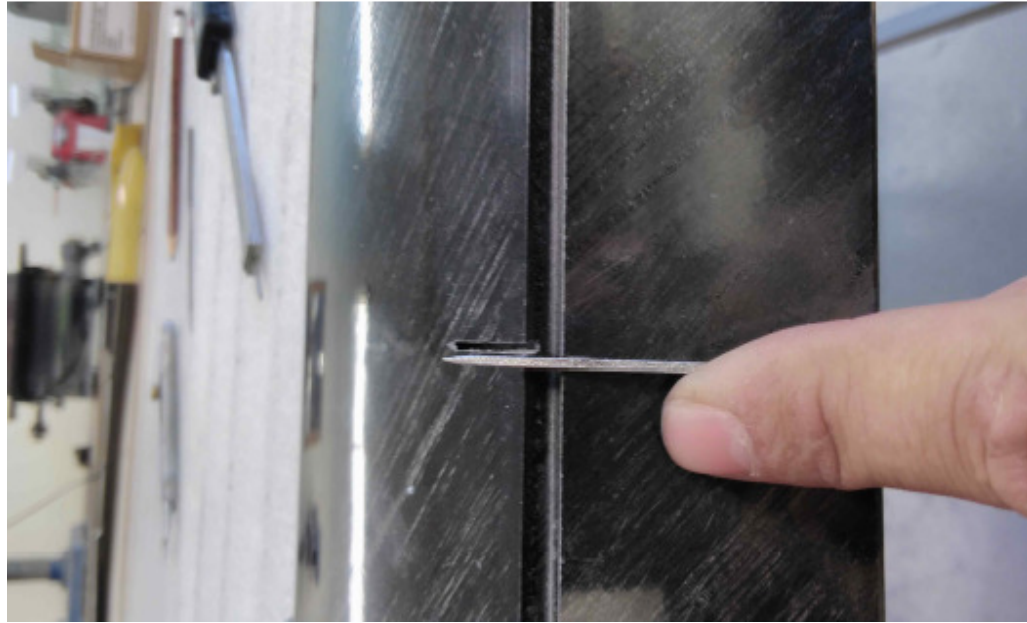
After clearing the foam from the servo wells, you will see the pushrod channels in the foam, near the outer edge of the servo pockets (shown with an arrow on the picture). The channel must be extended all the way to the bottom skin using a flat file.



Slide a sharpened piece of music wire through the pushrod channel in the foam, and carefully puncture the skin near hinge line.



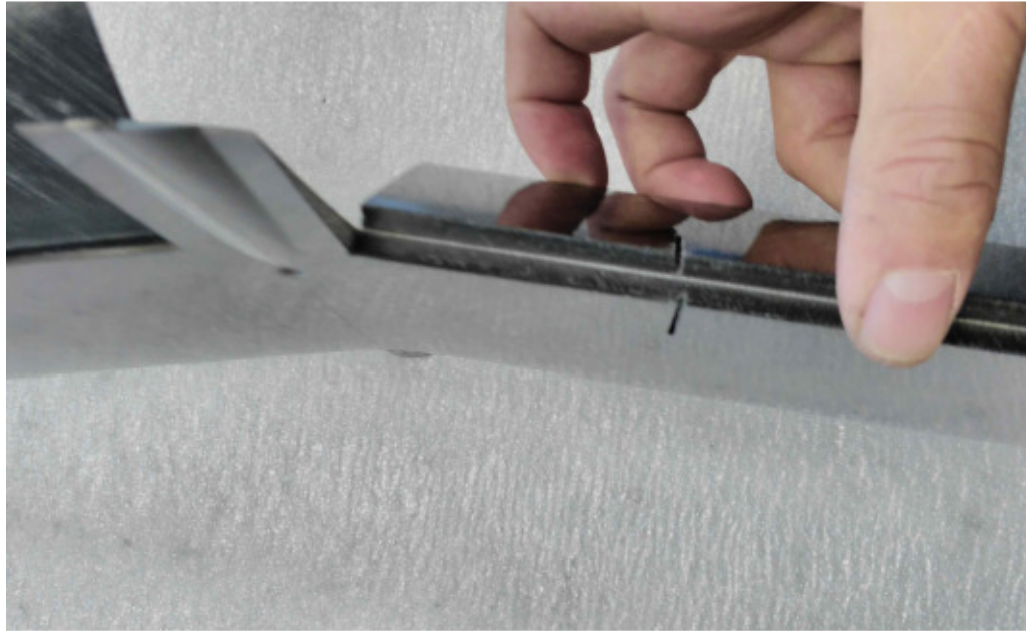
Using a needle file, extend the slot in the skin to make an exit for the aileron pushrod.



Offset the aileron slot from the pushrod slot a little to allow for the pushrod bend radius. Using the same flat needle file, make a slot in the aileron. The foam core in the aileron already has a machined slot, you may be able to see it in the reflected light on the skin. The slot is offset towards the center of the wing.



Finish the slot for the aileron horn,



Here you can see both slots, in the main wing and in the aileron. The aileron slot must go all the way to the opposite skin. Carefully clear the foam from inside and trial fit the aileron horns.



Using a file or sandpaper, clean up the edges of the aileron control horns.



Sharpen a piece of the pushrod wire (1.2mm) and drill out the holes.



The aileron horns are supplied with the height of 8.5mm. For good stiff servos, using about 5mm servo arm (first hole in KST X08 arms), you can reduce the aileron horn height to about 7.5mm.



You can adjust the shape of the horns to your liking. Do not overdo it and do not weaken the horns too much.



Prepare the aileron pushrods. If you are using KST X08 servos, the length of the rods must be about 71-72mm. You can mark the length on the wire leaving about 3mm for both ends, then cut the extra wire off. Dress the ends with a file before bending. Squeeze the wire with pliers right at the mark and make a sharp bend. Repeat on the opposite side.



You should end up with two identical pushrod shaped as shown on the picture (C-shape, assuming the horns are offset towards the center of the wing, or Z-shape if the horns are offset towards the wing tips).



Insert the pushrods into the aileron horns (left and right, insert in the opposite direction).



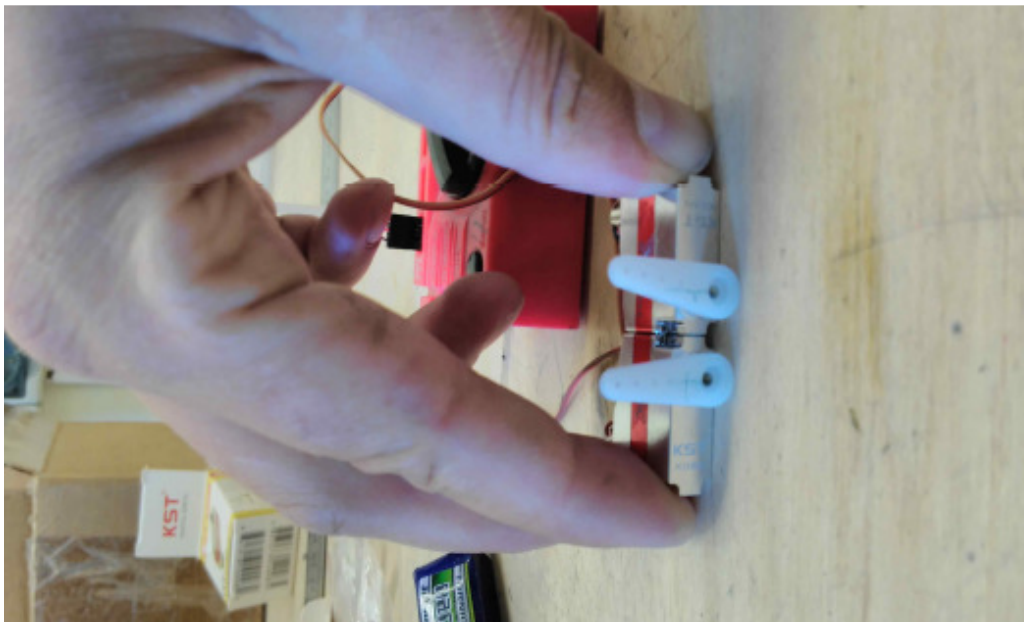
Carefully insert the pushrods through the channels in the wing, and check how the control horns fit in the slots.



Apply some bonding epoxy to the control horns and insert them into the slots.



Wipe off the excess epoxy and leave the horns until the epoxy fully sets.

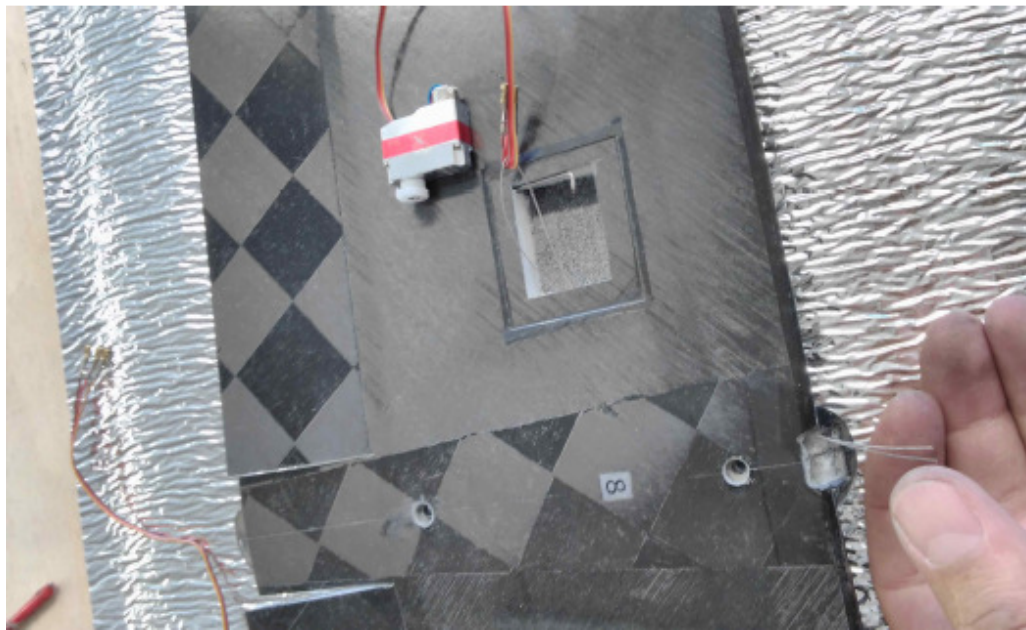


Prepare the servos for installation. Cut off the mounting lugs. Set the servos in the neutral position using a servo tester or your radio. Draw a perpendicular line on the servo arm through the axis. Mark and drill a 1.2mm hole in each servo arm for the pushrod. A 5mm distance from the axis works well with a 7.5mm height of the control horn. On some servos (new KST series) you may

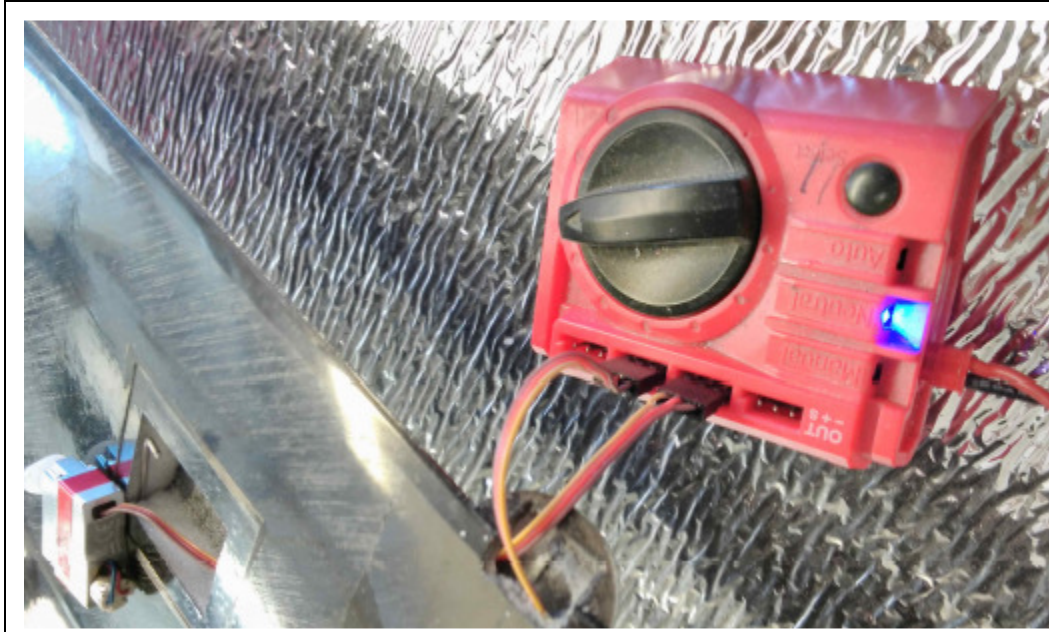
be able to use the standard holes in the servo arms (5mm from the axis).



Open up the hole for servo wires in the wing.



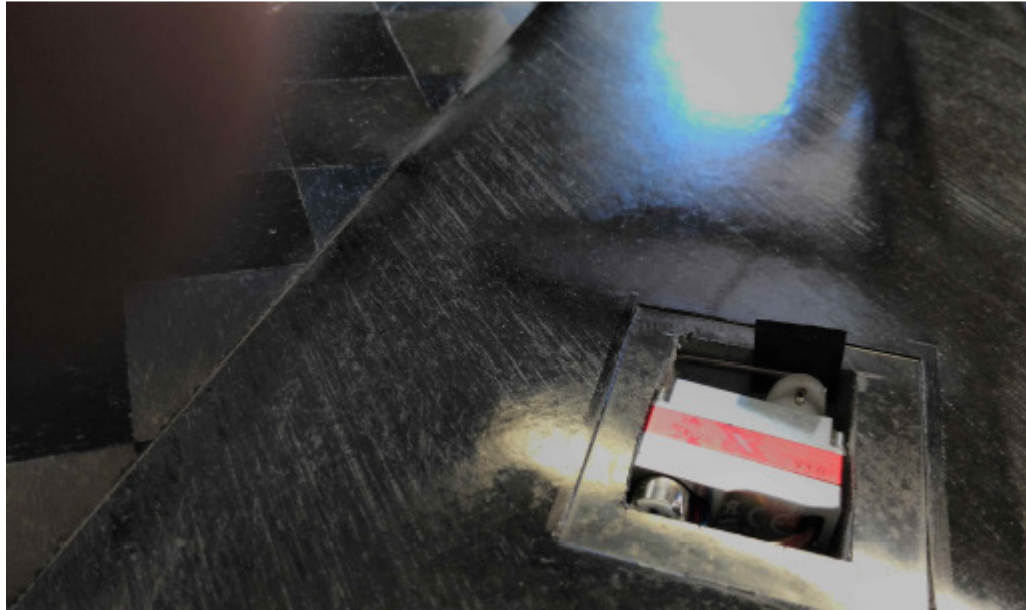
Pull the servo wires through the channel using a thin spring wire as a guide.



Connect the servos to a servo tester or a receiver, set them in neutral position.



Insert the pushrods into the servo arms. Sit the servos flat in the pockets.

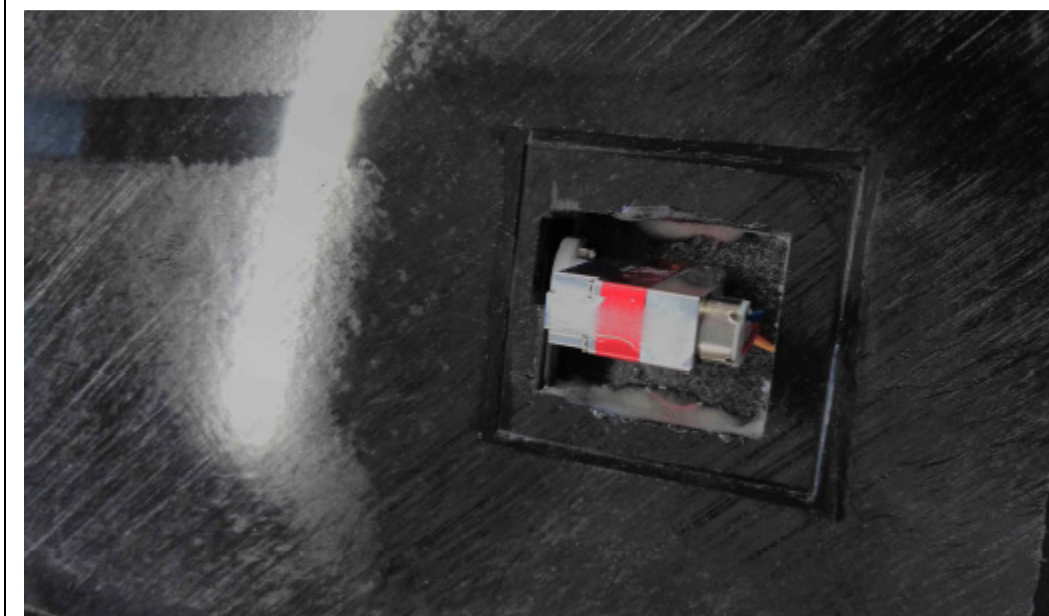


Adjust the size of the pocket if necessary. Position the servo such that in neutral servo arm position the ailerons are deflected down about 5-7mm. This should give you the total deflection down of 35-40mm and up about 13mm, measured from the neutral airfoil trailing edge.

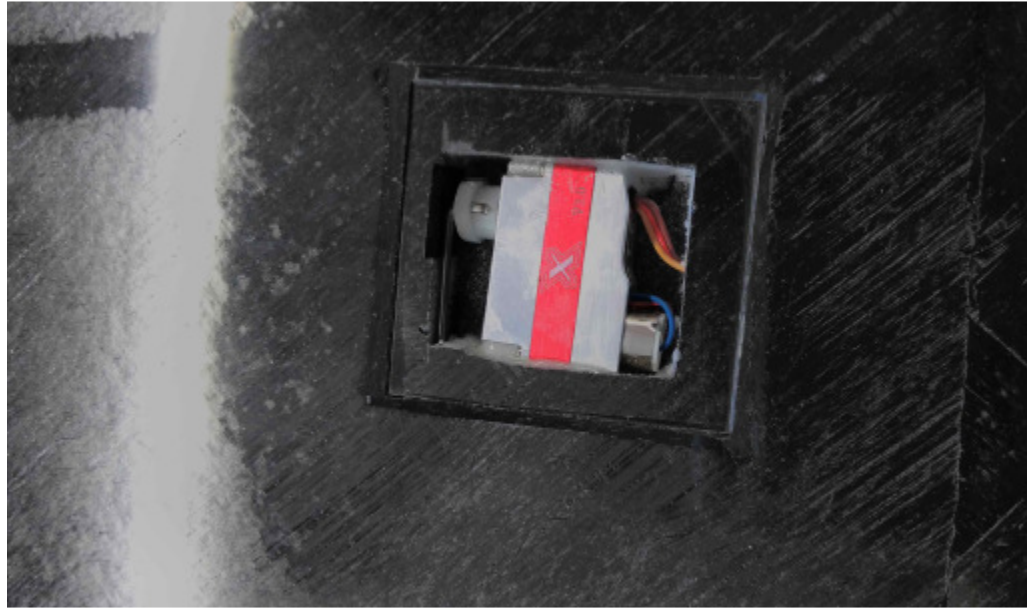
Use a piece of carbon wing skin or a very thin plywood to make keepers for the pushrods, to prevent them from coming out of the servo arms.



Use a servo tester or your radio to check the deflections.



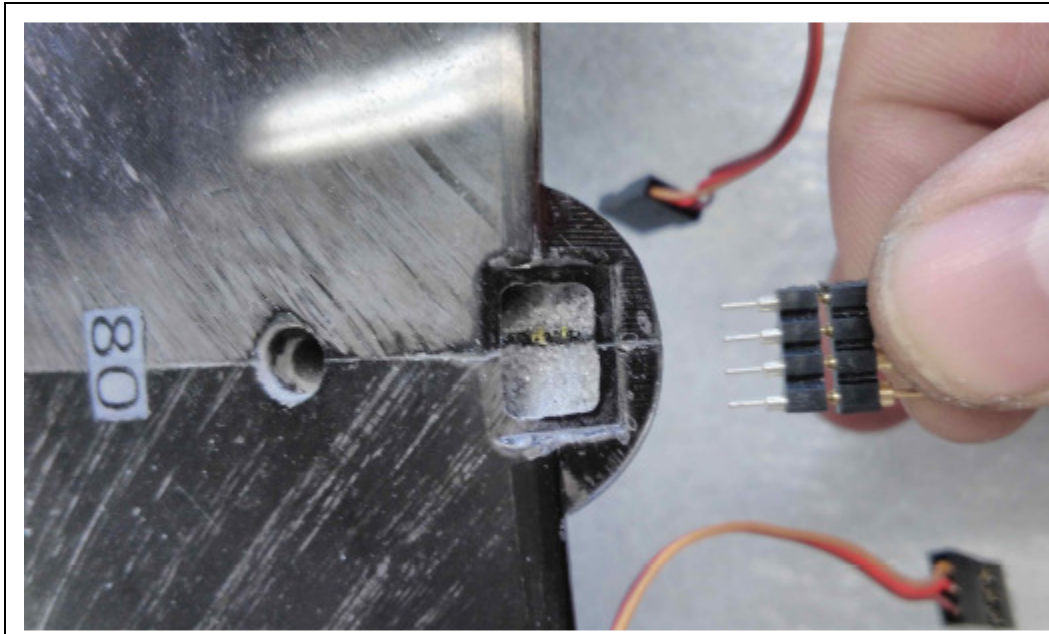
Mix some 5min epoxy with microballoons. Apply the mixture to the servo sides and to the fore/aft pocket walls.



Sit the servos in the pocket and fix the ailerons in the deflected position about 5-7mm down. Wait until the epoxy sets. Also glue the pushrod keepers to the side wall.



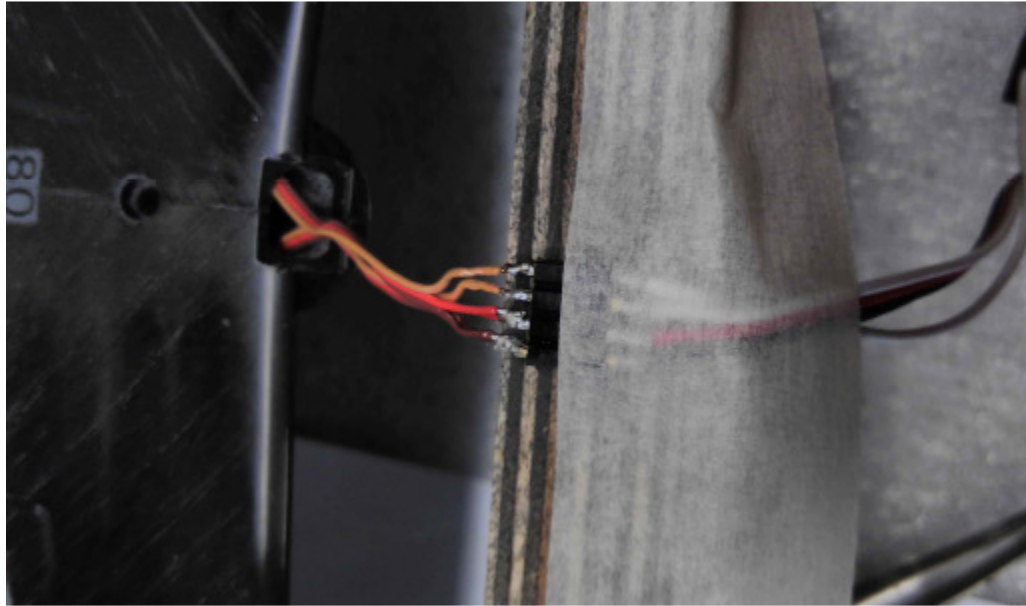
If you had to extend the size of the pockets and have too much space between the servo and the pocket walls, use balsa shims to fill the space.



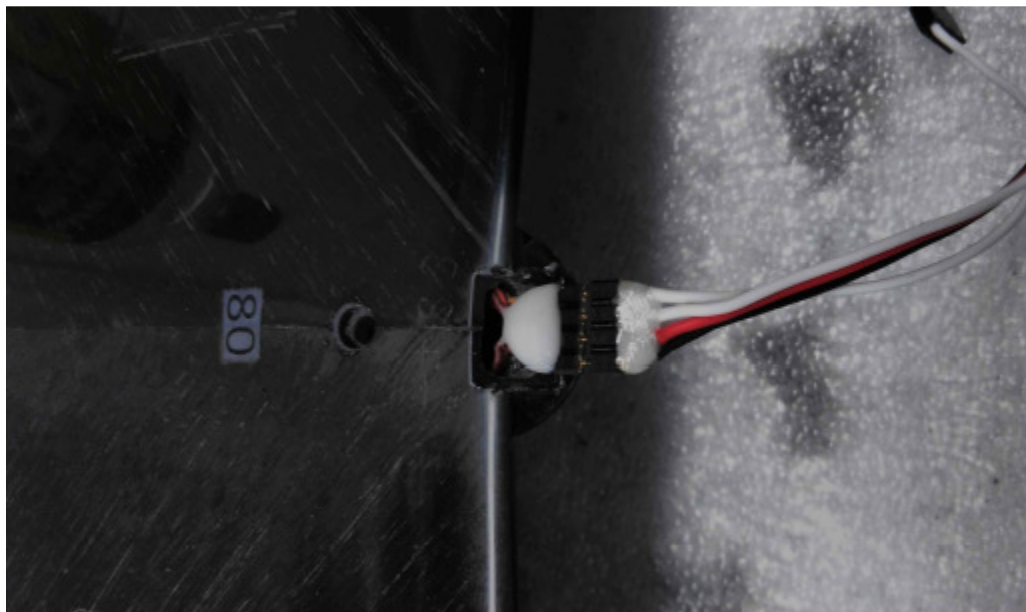
Shown on the pictures is one of the possible connectors that can be used for the wing.



Solder the wire harness that will go inside the fuselage. Use a servo pigtail and a single wire for the second servo.



Solder the servo wires to the opposite part of the connector. Connect both negative wires to one pin, and both positive wires to the second pin. Each signal wire gets a separate pin.



Before gluing the connectors, apply a liberal amount of wax to the pins and the mating sides of the connector, to avoid getting the two parts glued together. Mix some 5min epoxy with microballoons. Apply the mixture to both parts of the connector as shown.



Insert the wing part of the connector into the wing hole. Pull the servo wires from the pockets to remove the slack and allow the connector to sit deep in the hole.

Carefully insert the wire harness into the fuselage hole and install the wing on the wing saddle. Bolt the wing down and leave it attached until the epoxy sets and the fuselage wire harness gets glued in place.

It may be easier to first glue the wing part, and only then glue the fuselage part.



After the epoxy sets, you should have two perfectly mating connector parts.



The fuselage connector part glued inside the fuselage socket.



Moving on to the fuselage and tail control system installation.

The tail control horns are sized for using a 5mm servo arm, which is the smallest standard hole on the new KST X08 servos.

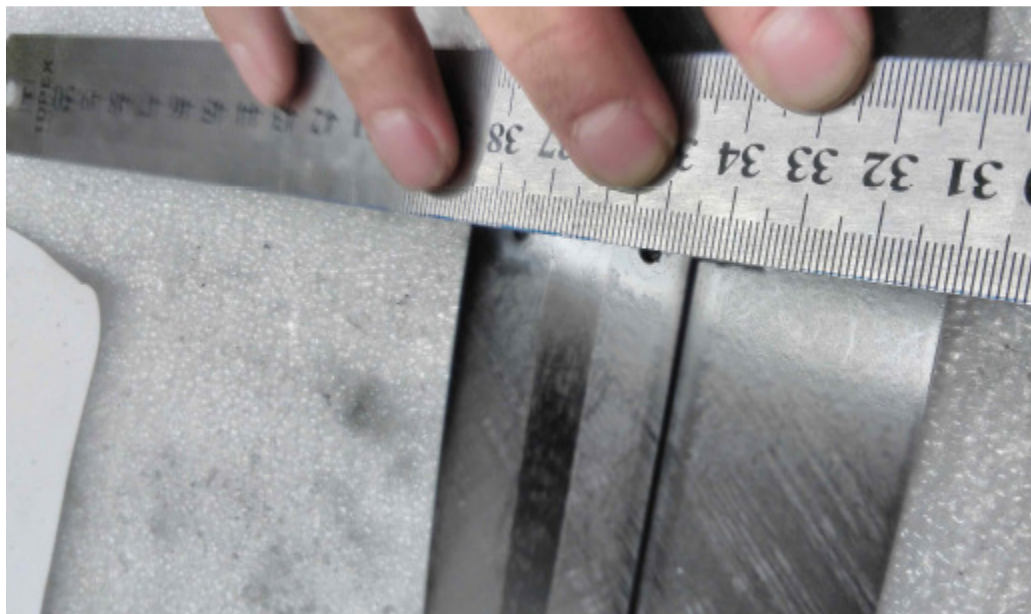
Clean up the control horns. The rudder horn can be reduced in height a little for larger deflections.



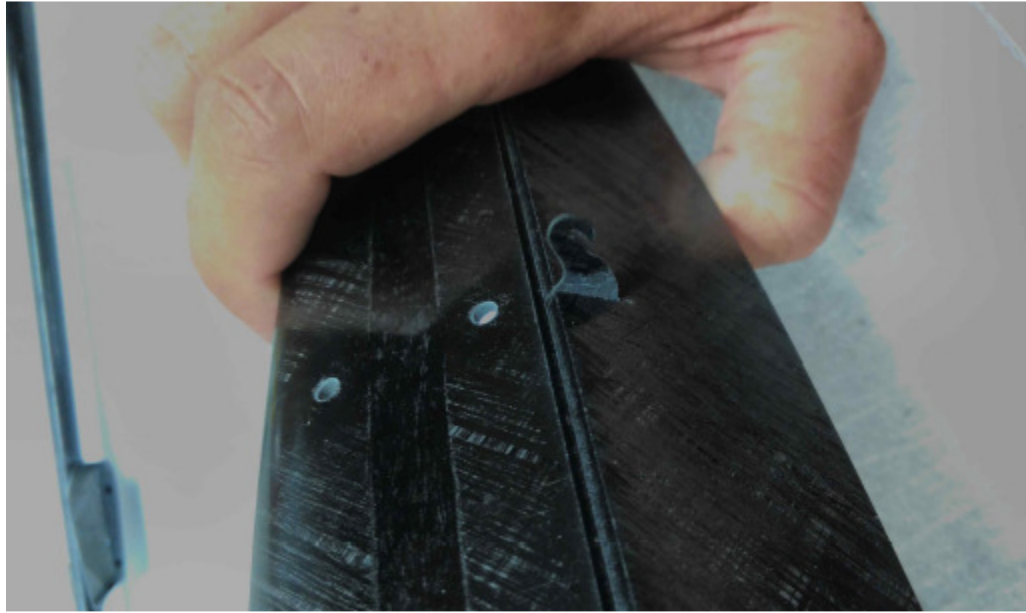
Trim down the servo arms and install them on the servos temporarily. Connect one of the cables to the servo arm.



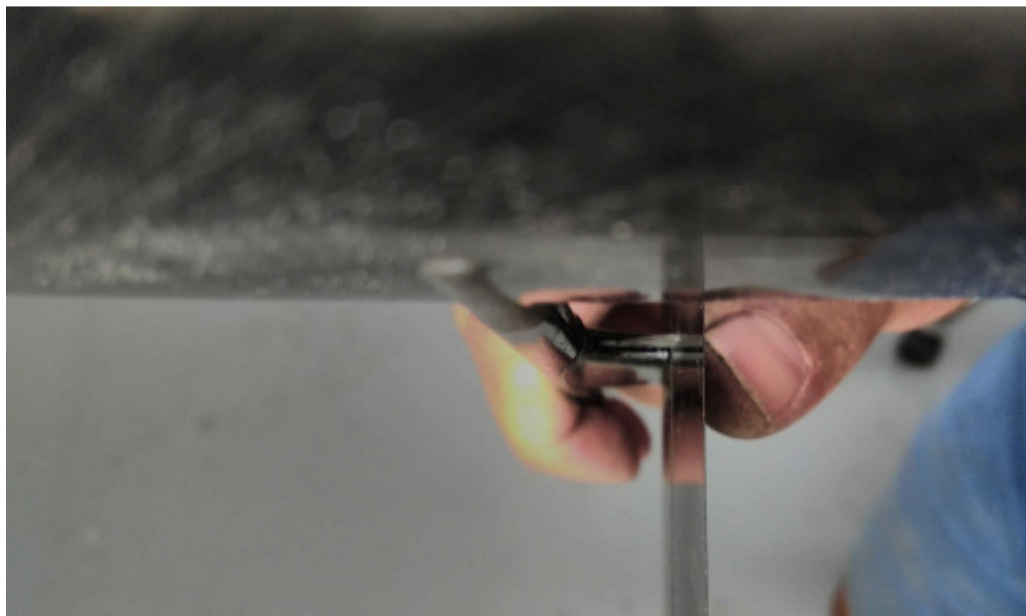
Make a slot in the middle of the rudder and install the control horn with CA.



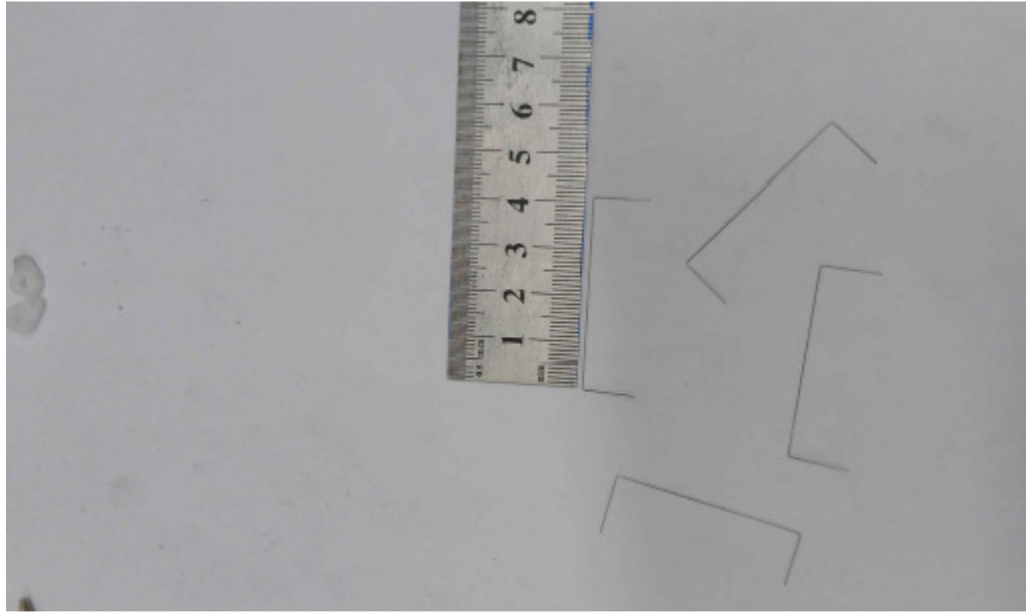
Similarly, make a slot in the middle of the elevator.



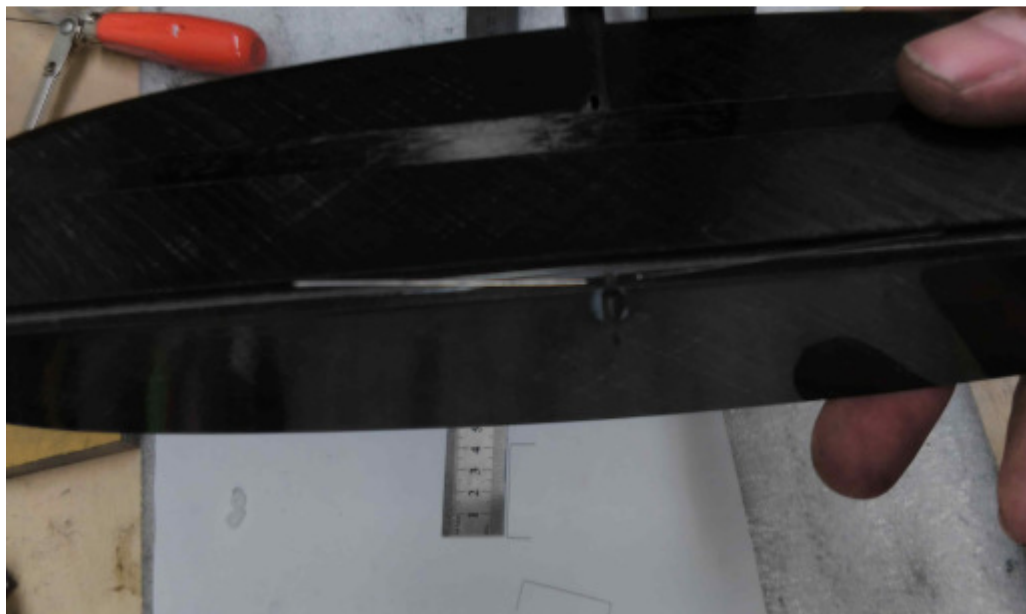
Glue the elevator control horn in the slot with CA.



The rear side of the stab mount must be trimmed off such that the elevator control horn can enter inside without interference.



Make two torsion springs for the elevator and rudder, as shown.



Insert the springs into the control surfaces such that one end of the spring is near the control horn.



It is recommended to install guide tubes for the control cables, which extend to about the trailing edge of the wing.



To install the guide tubes, use a long straight piece of music wire, about 0.8mm in diameter. Insert the wire into the tube, position it inside the fuselage, and use small magnets to hold the wire with the tube in place.

Dribble a few drops of CA onto the tube and let it run along the tube for a few (10-15) seconds. Then position the fuselage horizontally to stop the CA



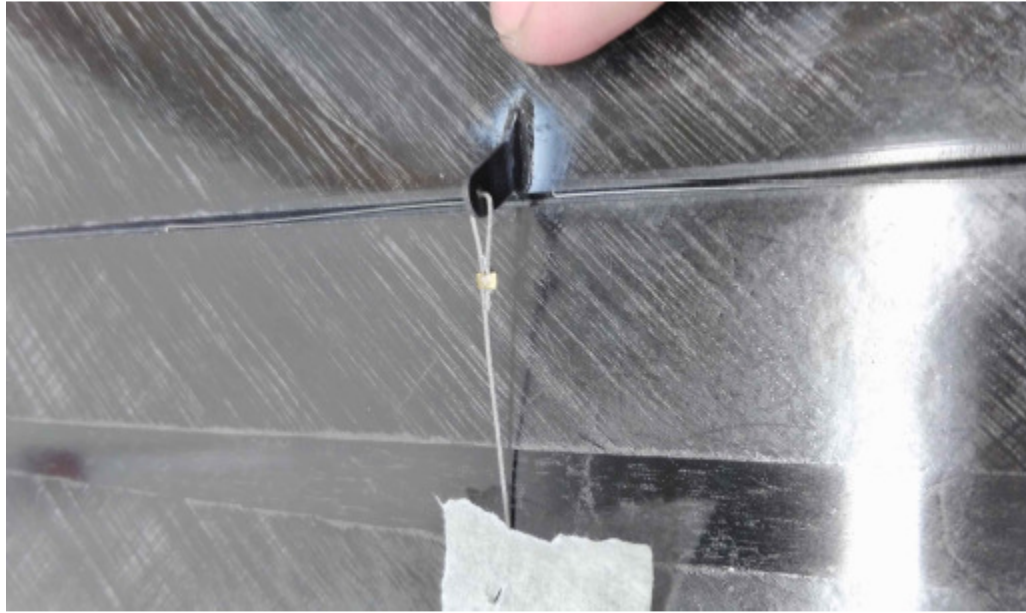
from flowing too far. Wait until the CA sets completely before removing the magnets.



Glue the end of the control cable to the wire and use the wire to pull the cable through the guide tubes and the tail boom.



Use a magnet to guide the wire through the exit hole near the end of the tail boom.



Pull the rudder cable through the tail boom. Attach the rear end to the control horn with a crimp.



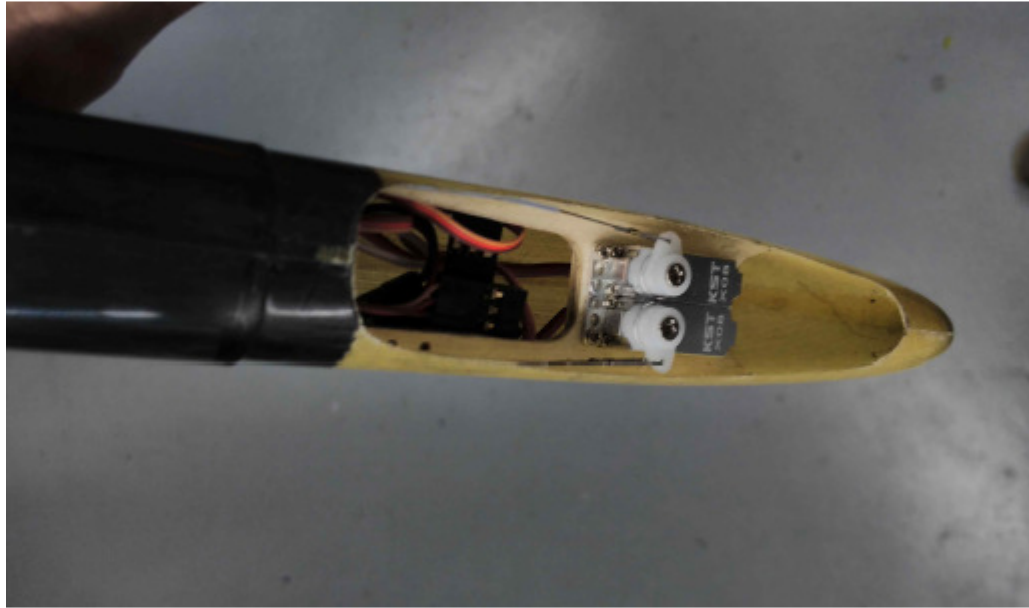
Repeat the procedure with the elevator cable. Guide the wire through the exit hole under the stab mount using a magnet.



Use magnets to hold the wire with a tube on the fuselage wall, then glue the guide tube with CA.



Pull the elevator cable out. Make a loop and attach an auxiliary safety end to the cable, needed for pulling the control cable out of the tail boom.



Attach the elevator cable to the servo arm with a loop and a crimp.



When removing and installing the stabilizer onto the tail mount, first move the elevator servo to extend the cable as much as possible. Then unhook the loop from the elevator control horn.

