

Deviant Assembly Instructions

Parts and Materials List

Included Hardware:

1. 3D launch blade *1
2. Wing control horns *2
3. Rudder control horn *1
4. Stabiliser control horn *1
5. Wire for springs *2
6. Wire for pull-string *1
7. Crimps for pull-string *4
8. Pull-string guide tubes *2
9. Servo tray *1
10. Wing metal pushrods *2
11. Wing carbon pushrod sleeves *2
12. Wing bolts *2
13. Tail bolts *2

Equipment needed to complete the Deviant assembly:

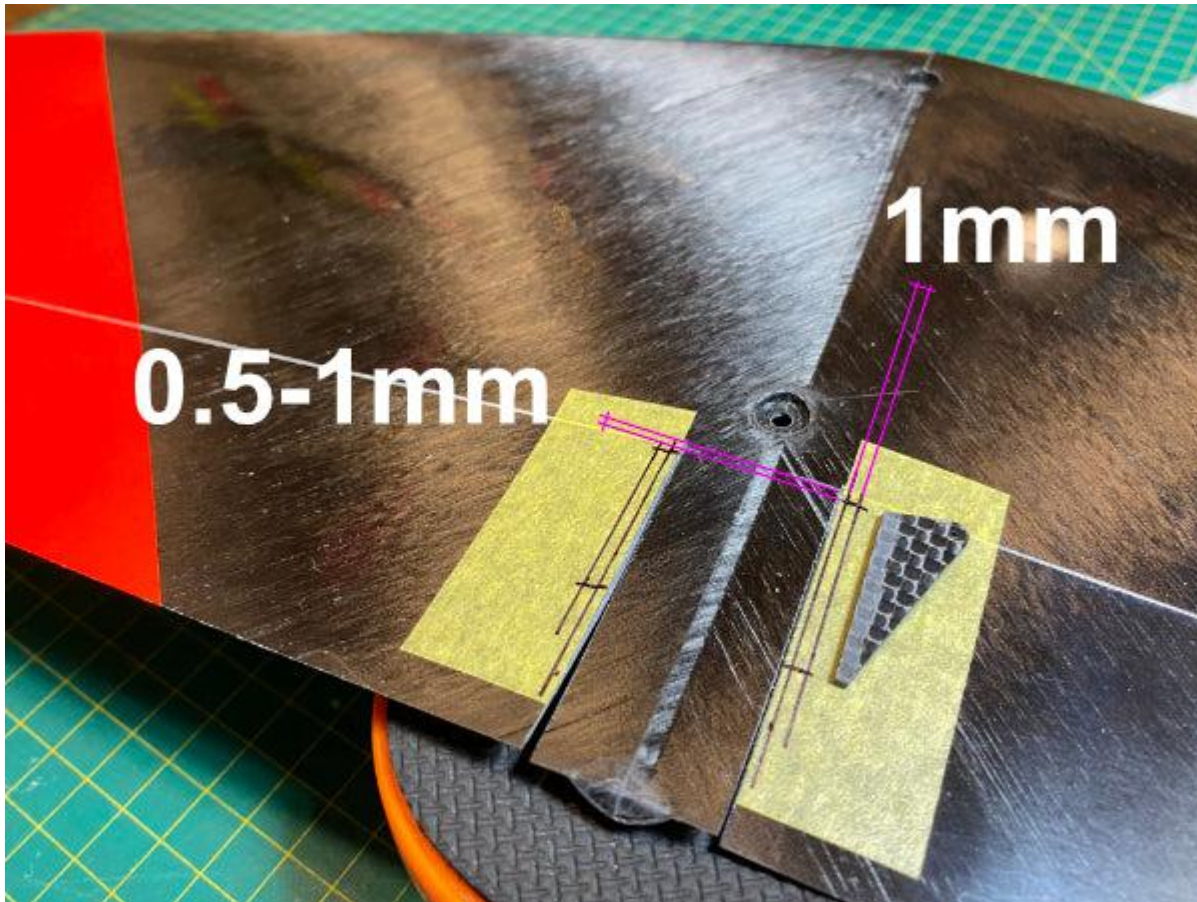
1. 1S LiPo battery, 300-400 mAh range. I am using a Giant Power 380 mAh pack: 38x8.7x19mm, 10.3 grams.
2. Small full range receiver with end pins, dual antennas recommended. The following have been tested to fit (may require de-casing and shrink-wrapping the receiver): FrSky X4R, D4R-ii, G-RX6; Spektrum AR410.
3. 4* KST X06 servos.

Supplies and equipment needed to assemble the Deviant:

1. Model knife (X-acto #11, etc),
2. Masking tape
3. Pen
4. Straightedge
5. Dremel
6. Pliers
7. Small file (flat and round)
8. Phillips screwdriver
9. Superthin CA
10. Medium CA

Wing

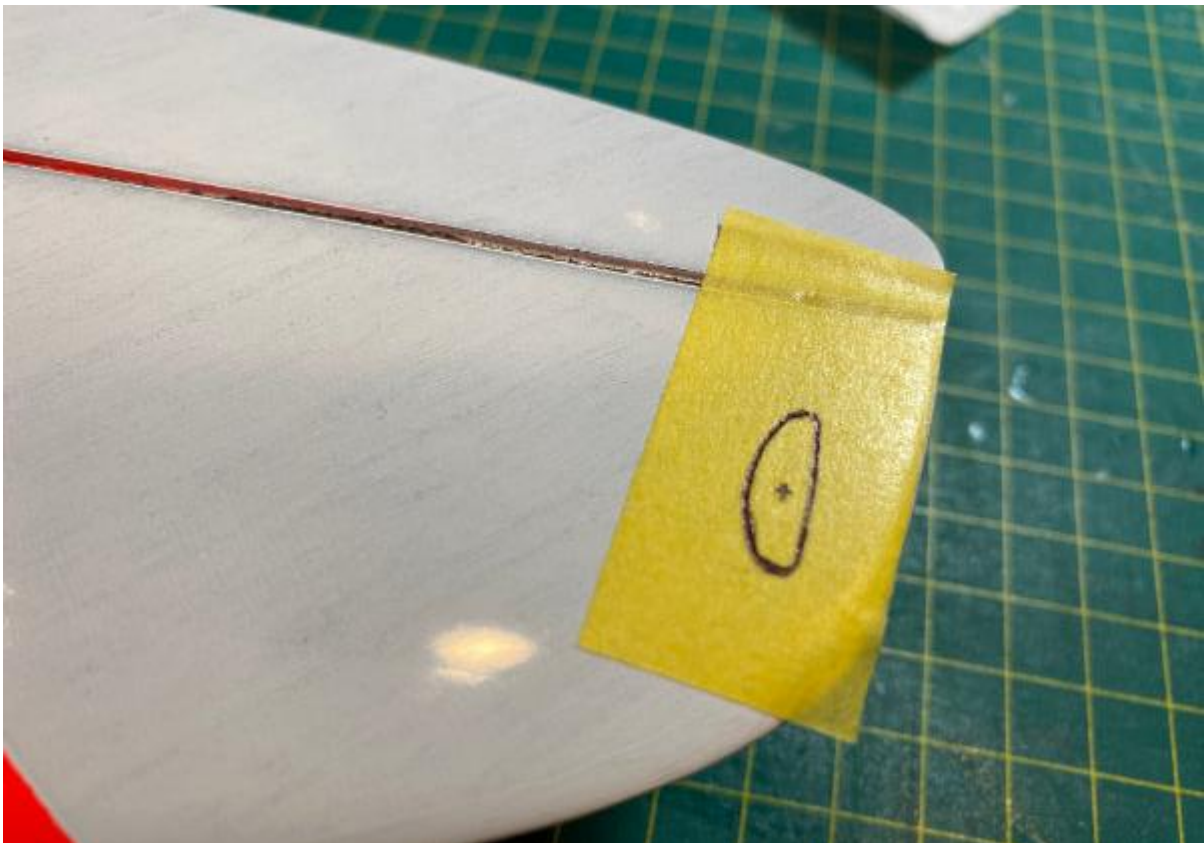
1. Using a piece of masking tape, mask the root of the bottom of the flaperon right up against the edge of the flaperon and hingeline as pictured. Mark the position of the control horn as follows: 1mm from the edge of the flaperon, 0.5~1mm from the hingeline.



2. Cut the slot for the control horn using a sharp knife, and use a file to widen the slot to make sure the control horns fit in tight and snug. Roughen the surface of the control horn by scoring with a knife, and clean the surface with rubbing alcohol to rid it of dust and grease. Slip the control horns into the slot, and make sure the control horns are parallel to each other going straight up and down (not normal to the wing surface). Glue with superthin CA, let cure, and make a small fillet with medium CA.



3. Use a piece of masking tape to mask the left wingtip (assuming you are right handed launcher). Mark the position of the throwing blade 10mm away from the wingtip and centred between the leading edge and hingeline.

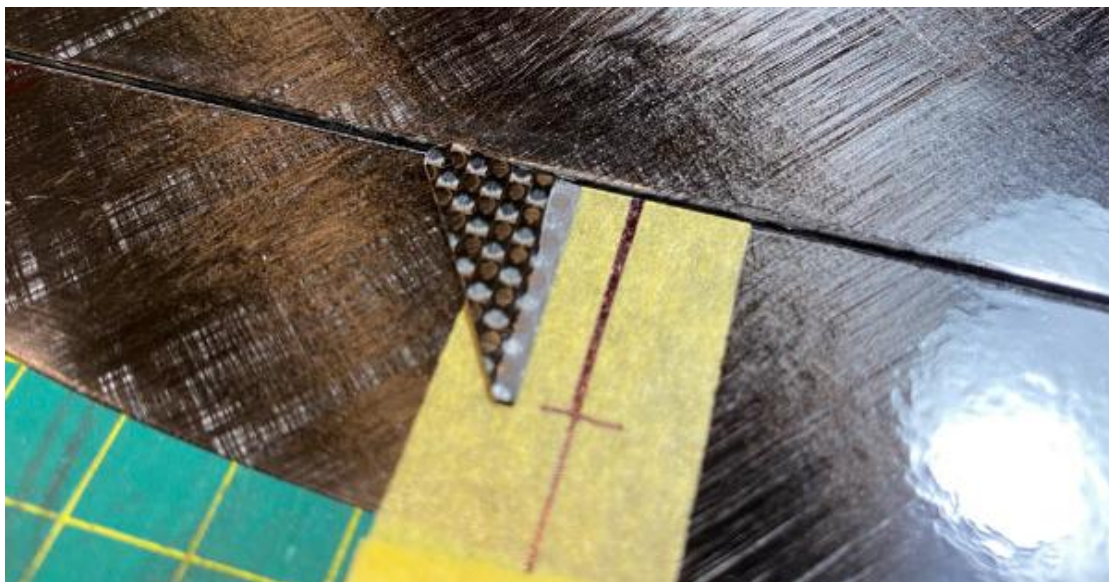


4. Drill through the wing and hardpoint, and make sure the hole is nice and snug with the blade. Rough up the centre of the blade and clean with alcohol. Install the blade into the wingtip, double check to make sure alignment is to your preference, and glue with superthin CA. Glue by wicking in superthin CA into the joint from the top, let cure, and repeat from the bottom. Allow each layer to cure before adding the next drops. Build up a small fillet using medium CA.

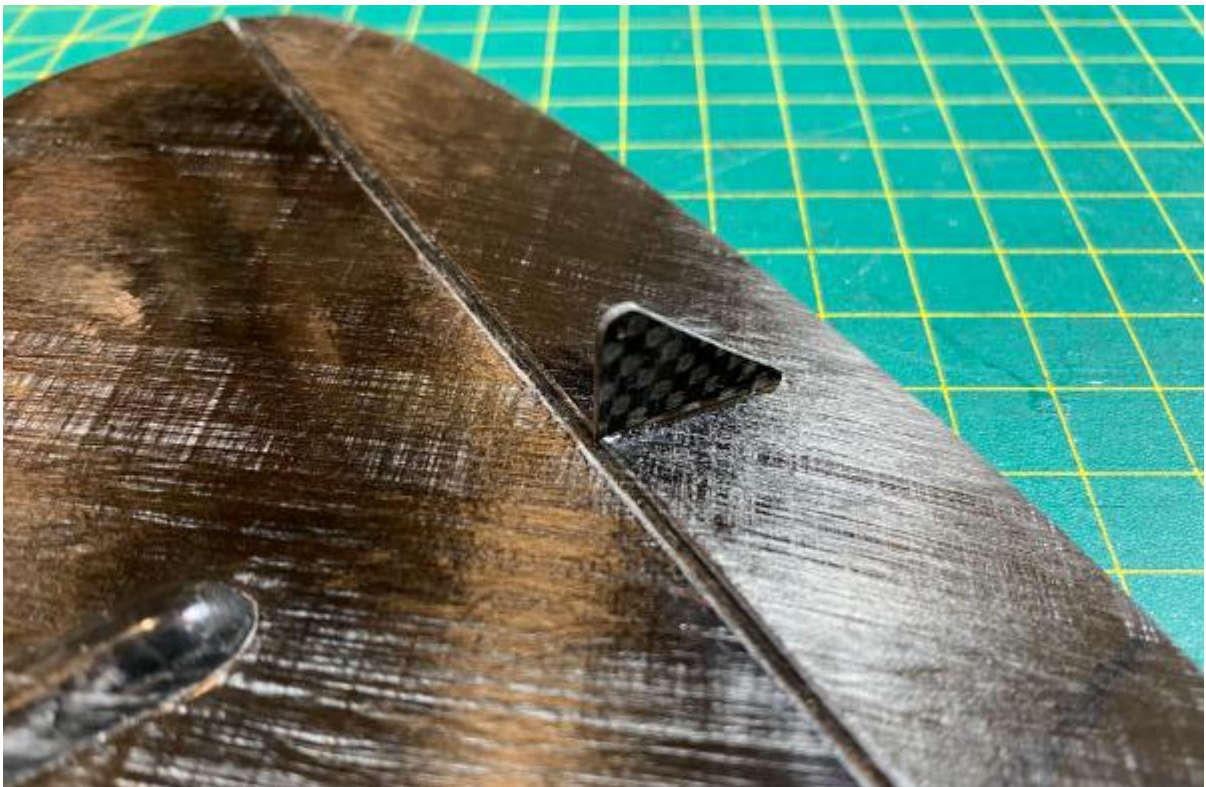
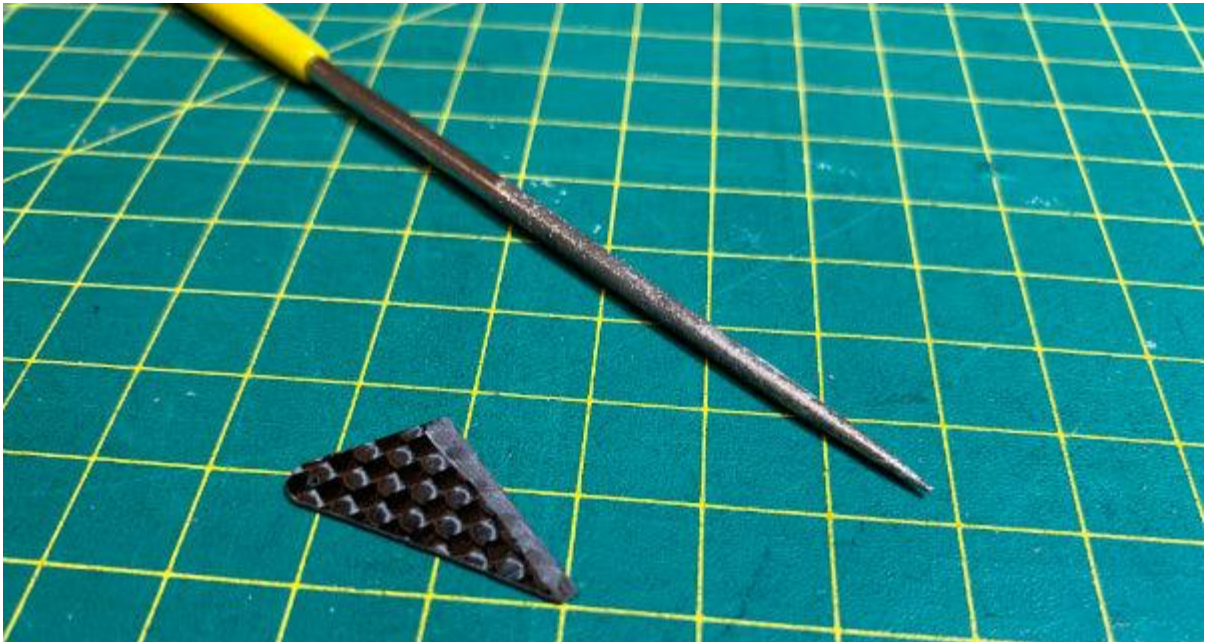


Tails

1. Apply a piece of masking tape to the rudder as shown, and mark out the center line, in line with the bolt holes. Mark out the location for the control horn slot. Repeat for the stabilizer.



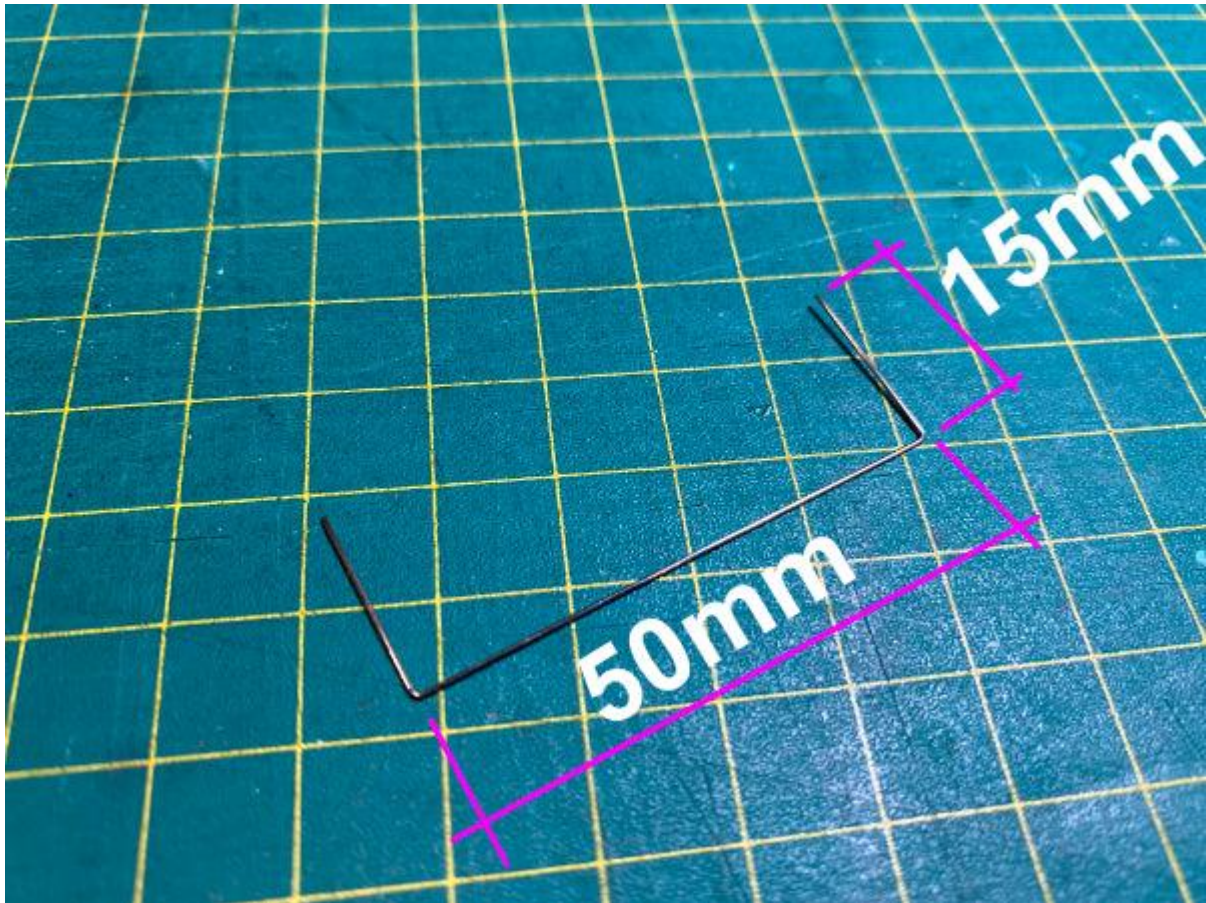
2. Cut the slot for the control horn on both tails, and remove the foam within the slot. Be careful to not cut through the opposite carbon skin.
3. Roughen the tail control horns, and clean thoroughly to remove dust and grease. Insert the slotted control horn into the elevator slot, and insert the other control horn into the rudder slot. Glue the rudder control horn with superthin CA, let cure, and create a small fillet with medium CA. Do not glue the elevator horn yet.



4. Install the stabilizer on to the fuselage. Make sure the control horn lines up perfectly with the elevator pylon, and glue with superthin CA. Allow to cure, and create a small fillet with medium CA.

5. Bend the two springs into a [] shape, with the long centre (torsion) section at 50mm in length. Legs should be 10-15mm in length (each).

Note: If you have an older kit with the shorter spring material, please replace the spring with a longer piece so that it has a long enough centre section and overall length. The spring is 0.5mm diameter wire.



6. Bend the stabilizer 180 degrees around the hinge. Poke two holes into the rudder pre-faced hinge to insert the spring. Glue the spring with white Gorilla Glue. Repeat for stabilizer.

Note, the hole for the control surface side should be as close to the control horn as possible, so the spring forces can be transferred to the control horn and wire directly, preventing twist from developing on the thin surfaces.



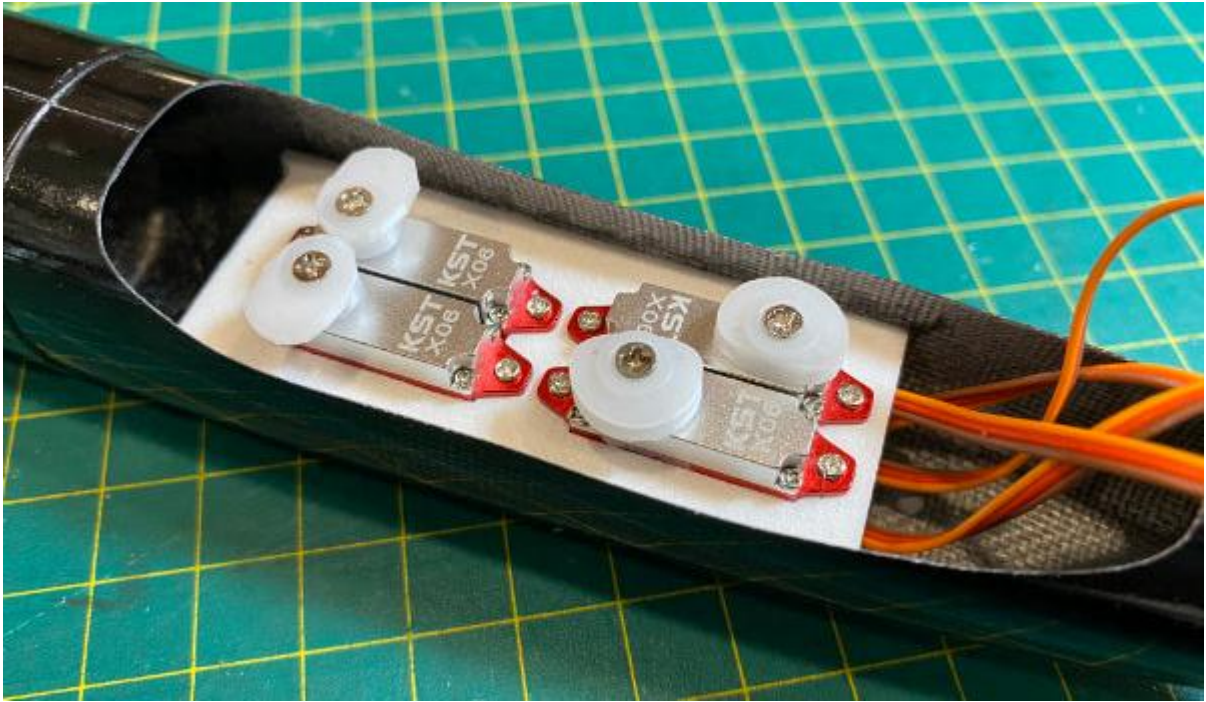
Fuselage

1. Screw your servos on to the servo tray as shown. The two servos in the back are for the wings, and both output shafts should be towards the rear. The two servos in the front are for the tails, and the output shafts should also be towards the rear.

If you are using optional pulleys for the front servos which move the tails, stagger the servos so one output shaft is to the rear and one output shaft is to the front.

2. Sand the sides of the inside of the nose, and clean with rubbing alcohol.

3. Put your receiver and battery into the nose, and put the servo tray with servos into the fuselage behind the receiver and battery. Plug in the servos to the receiver so the lengths are correct, fit the servo tray as far forward as possible and make sure the servo tray is as deep into the fuselage as possible (bottoms of servos should touch the fuselage). Put a drop of superthin CA on each side of the servo tray where it meets the fuselage to hold it firmly in place. Remove the electronics, and finish gluing the servo tray to the fuselage by wicking in superthin CA. Allow each layer of glue to cure before applying the next layer. Create a fillet between the servo tray and fuselage with medium CA.



4. Drill a thin slot on the back of the elevator pylon, this is for the elevator control horn and wire to go through. Make the slot thin and shorter, extend later as required to pass the horn though with the stabilizer mounted. This will allow you to have a cleaner opening, without removing too much material.



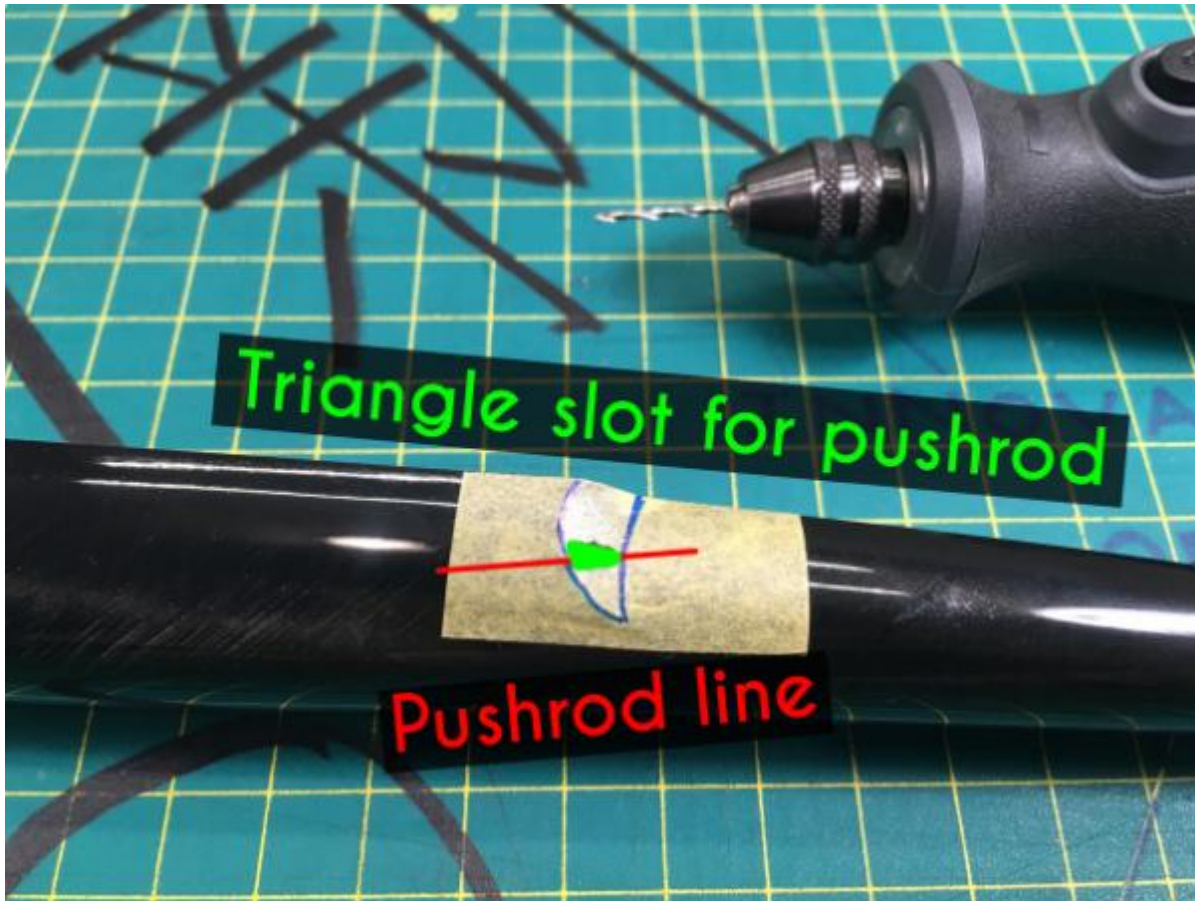
5. Tape the fairing on the fuselage for the QuikLink pushrods, and mark out the edges of the fairing. This will make it easier for you to plan out your cut slot location for the pushrods.



6. Put the wing on the fuselage, and note of the angle of the to-be installed pushrod between your wing control horns and the servo horns in the fuselage. Mark this angle and location on the tape.



7. Note the relation and shape between the pushrod line you drew and the triangular opening to be cut. The triangle allows free and precise movement for the pushrod in its full range of motion. It's good practice to make the hole smaller in the beginning, and further refine with a small file after fitting on the wing/pushrods to make sure the hole is only as large as it really needs to be.



8. Choose the cross-shaped servo horn that comes with the KST X06 servos for the wing pushrods. Center the servos, and from the two wider arms, select the one that is closer to 90 degrees with the servo. Using a small section of the pushrod material, insert it into your Dremel/Rotary tool, and use that to drill the innermost hole to the correct diameter. You will notice that the hole is not 4.5mm from the center of the servo gear output, and it might not be 90 degrees from the servo. To modify the hole to the correct position, turn on your Dremel (with the pushrod material attached), and insert it into the hole. Apply light lateral pressure to the hole in the direction of where the hole should be. This essentially melts the servo arm material in the direction of your lateral pressure, and deposits the melted material towards the (now empty) gap, filling it solid. This technique allows you to modify hole locations over short distances.

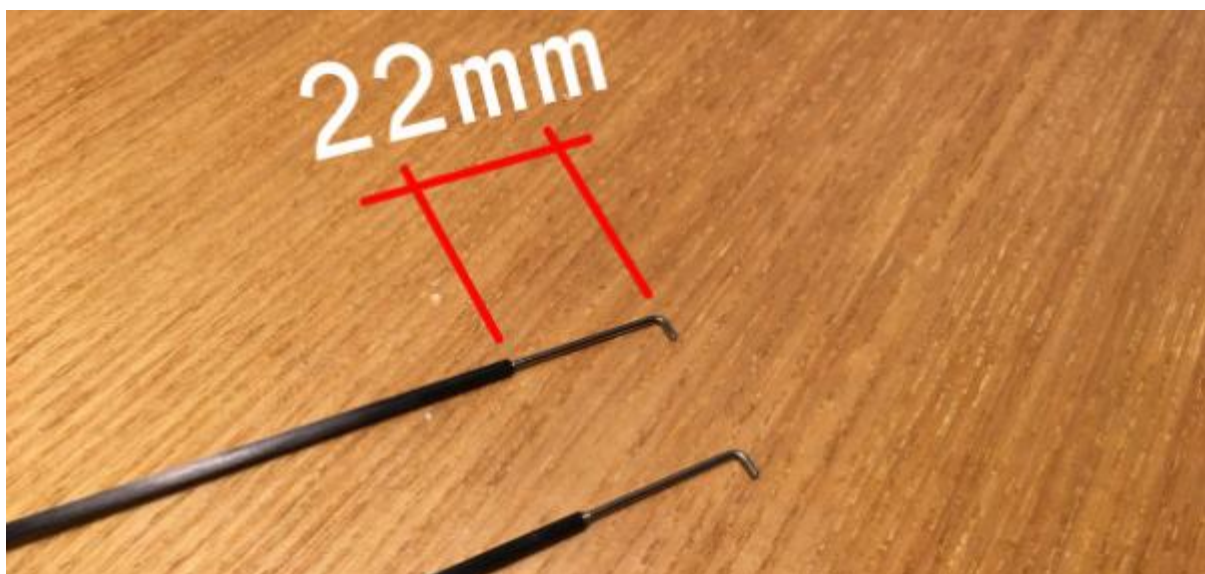
**Note, use the lightest lateral pressure you can while still having enough pressure to melt the servo arm material, this will ensure the melted material is deposited in the gap and not flying everywhere.*

**Note 2, after the hole is relocated, it is generally strong/durable enough for normal use. In a later step, we use superthin CA to create a bearing and keeper for the pushrods, and the CA will*

also help spread the load. I have used this technique to relocate servo arm holes for several years and have not had a problem with slop/durability. Your mileage may vary, so if you are not comfortable with this technique, please modify the servo arms in your own preferred way.



9. Cut and trim the extra material from the servo arm, and repeat for the other wing servo.
10. Bend the wing pushrod ends to form an L-bend. Slip the pushrod into the carbon sleeve to the indicated length, and glue with superthin CA. This end hooks to the wing control horns.



11. Slip the pushrods into the fuselage and out the QuikLink slots. After both pushrods are in, hook it to the wing control horns, then bolt the wing to the fuselage. QuikLink allows a super easy assembly/disassembly process for the linkages to the wing, and once the wing is bolted on to the fuselage, it is impossible for the linkages to slip out of the control horns.

12. Make a small piece of balsa for offsetting the flaperons to their maximum UP deflection. If you want a maximum of 10mm max UP deflection, make your block 20*10mm. If you want 12mm max UP deflection, make your block 20*12mm. The Deviant requires very little aileron travel, and I would recommend no more than 12mm. This allows the rest of the travel to be used for braking, using 100% of the servo's potential.

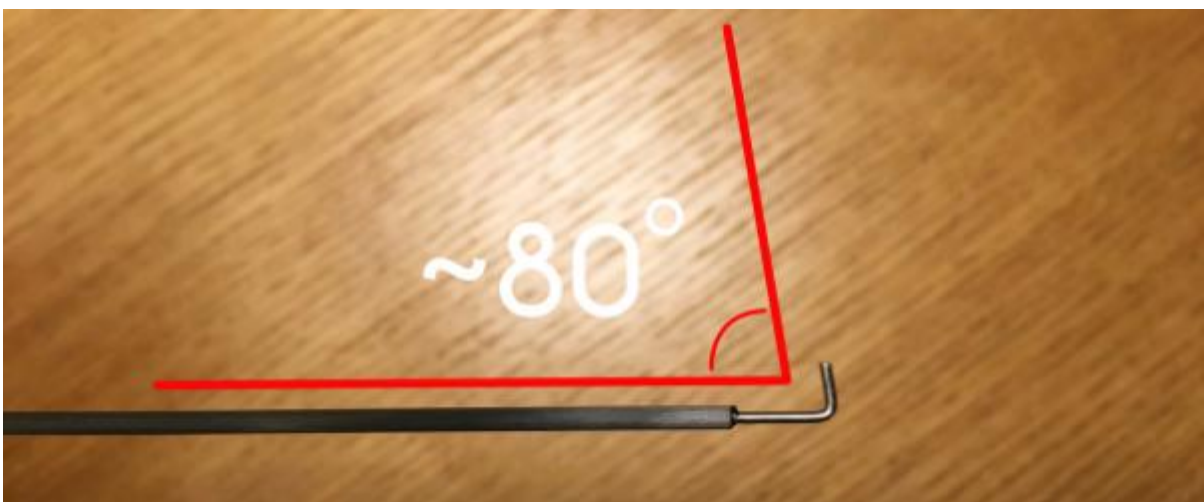


13. Set the left wing-servo to max up travel, mark hole location on the pushrod. Repeat for the right wing-servo/pushrod.



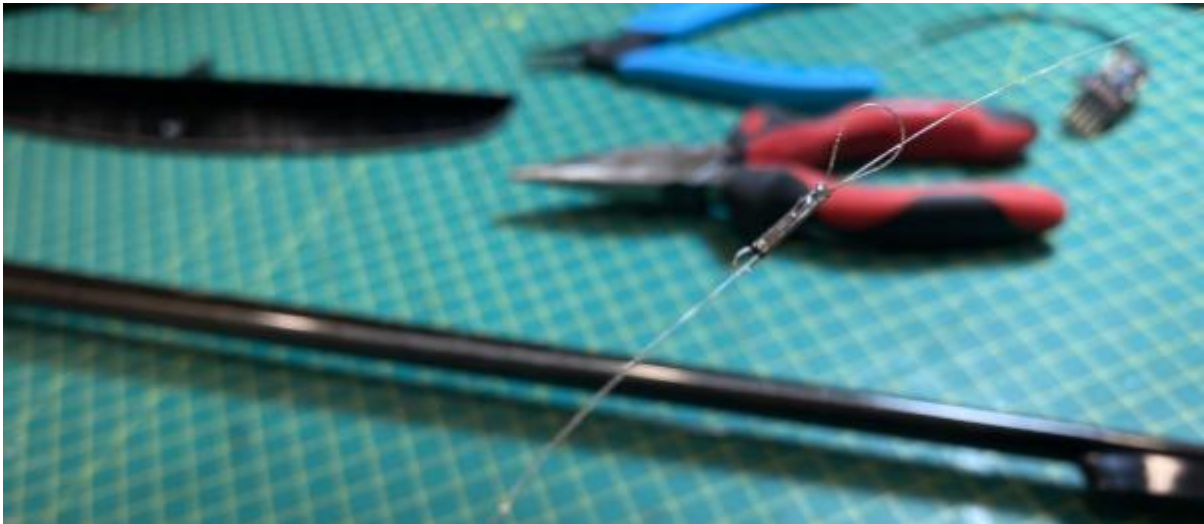
14. Remove the wing from the fuselage, and disconnect the pushrods. Remove one of the pushrods from the fuselage, and bend as shown. Insert it back into the fuselage and hook it up to the servo. Repeat for the other pushrod.

Tip, to ensure both flaperons are symmetrical, place the marked line on the pushrod right to the edge of your pliers. Repeat for second pushrod.



15. Add a drop of superthin CA as shown. Once cured, add a drop of medium CA, and allow to cure. This creates a bearing and keeper for the pushrod, eliminating any potential slop, and keeping the pushrod from popping off.

16. Take the pull-string wire material, and cut it into two equal lengths. One will be for the elevator and one will be for the rudder. Take one piece, and thread one crimping tube as shown. The left over length is for you to fish out the wire in case the loop goes into the fuselage when the stabilizer is not installed. Crimp the tube hard using a pair of pliers, and reinforce it with a drop of superthin CA.



17. Thread the line into the fuselage from the elevator pylon. Hook the elevator control horn into the wire loop, and bolt stab to fuselage.



18. Thread the wire through a crimp then through the servo arm as shown, pull the wire and thread it through the crimp once more. Ensure servos are powered and the elevator servo at max travel of elevator UP deflection (note the stab is bottom mounted). Crimp the tube hard using a pair of pliers, and reinforce it with a drop of superthin CA. You can adjust the wire length to make sure the elevator is deflected perfectly, with it just touching the boom. Once the servos are centred, the elevator should be in a slightly down position. Similar to the wing installation, this allows you to use 100% of the servo travel, and gives you lots of push-down travel at the top of launch. Trim wire length, and glue with a drop of medium CA as shown.



19. Sand the boom, and clean off all dust and grease.



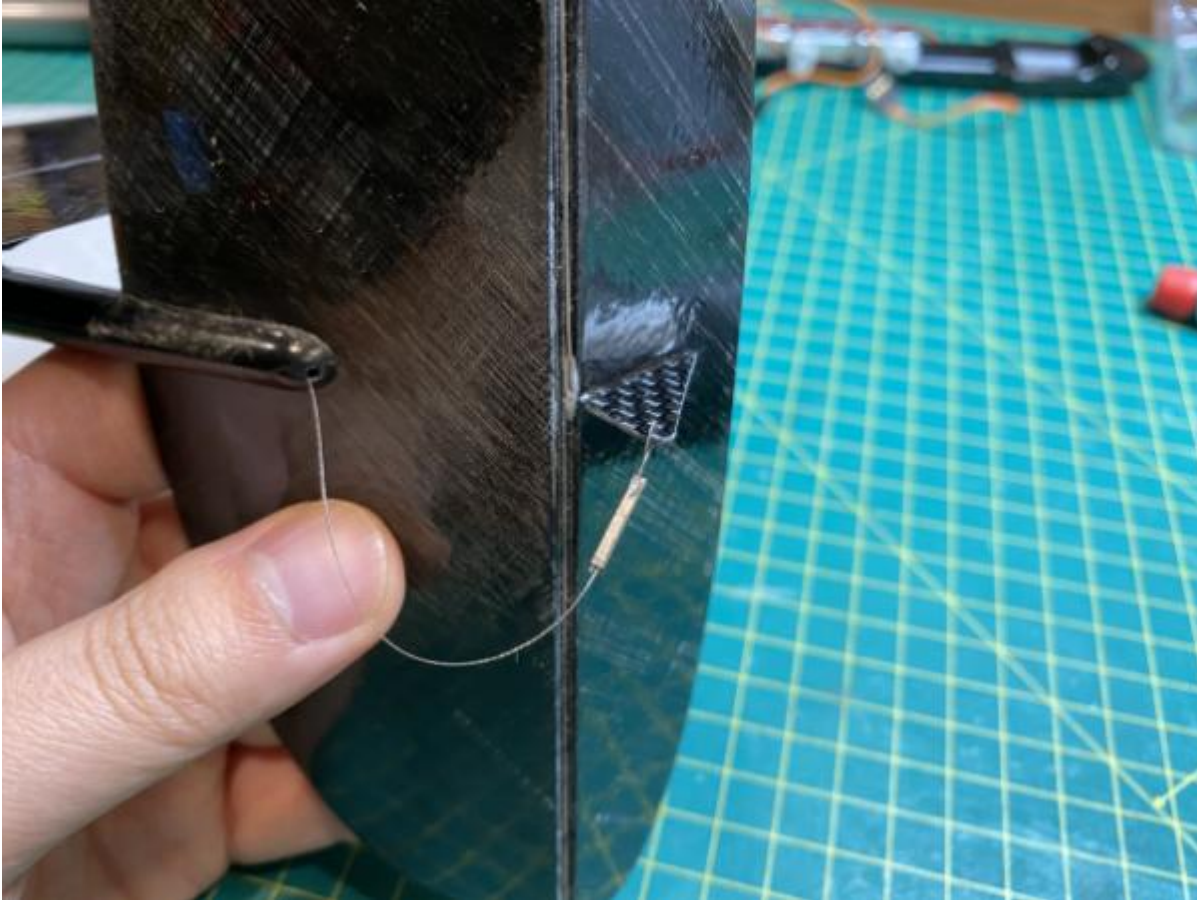
20. Insert vertical into boom, making sure the rudder control horn is on the side facing away from the throwing blade. Once you ensure it is at the correct angle, glue with superthin CA. Allow it to wick into the joint and cure.



21. Drill a small hole as shown. This is for the wire to pass through.



22. Thread the wire into the fuselage. Then, put on a crimping tube, pass it through the rudder control horn hole, and back through the crimping tube. Crimp and glue like the elevator wire loop.



23. Install the wire to the servo arm just like for the elevator, with the exception that the servo should be centred, and the rudder should be installed centred.

Initial Setup

These are our latest settings, and will be updated as we find better settings. Please treat it as a starting guide.

CG:

- Regular conditions: 65mm

Camber:

- Preset: 0mm down
- Zoom: 2mm up
- Speed: 0mm (flush)
- Cruise: 2mm down
- Float: 5mm down

Aileron deflection:

- 8mm up / down with no differential

Rudder deflection:

- 10mm each way

Elevator deflection:

- 5mm each way