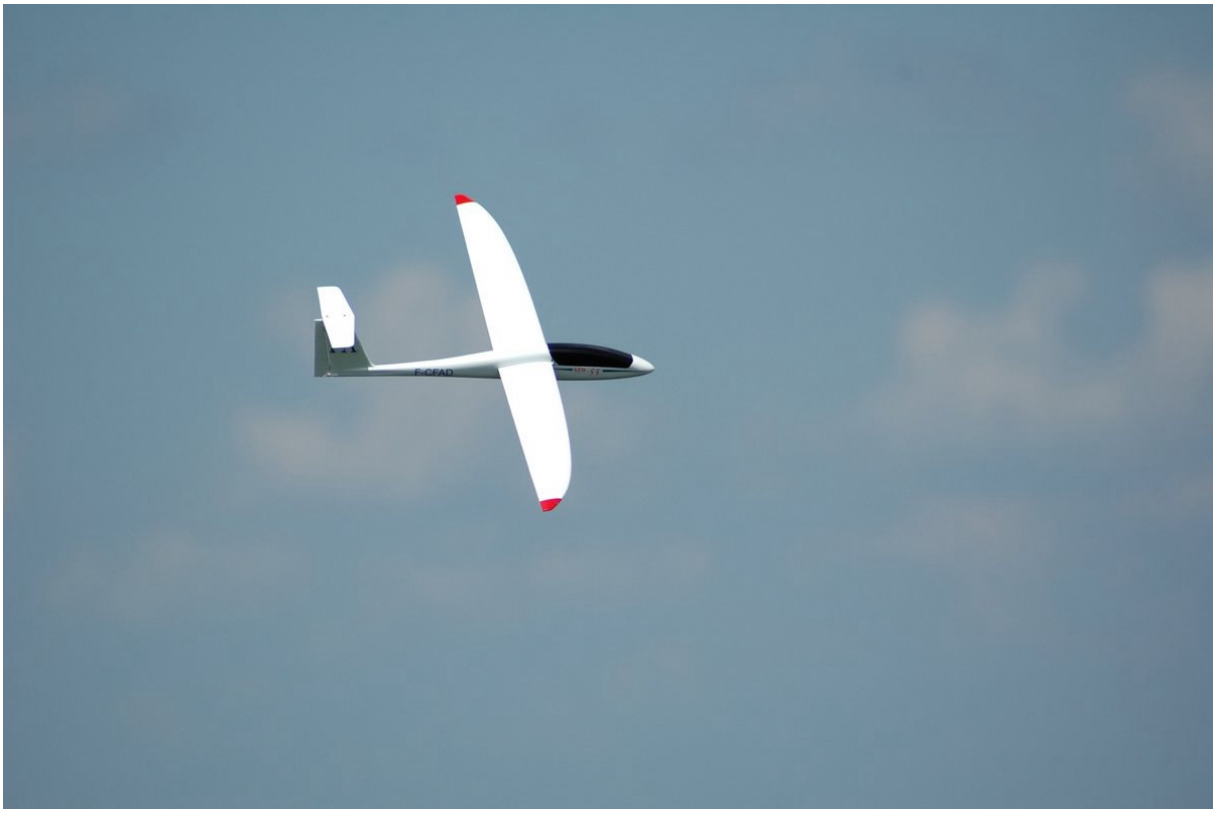
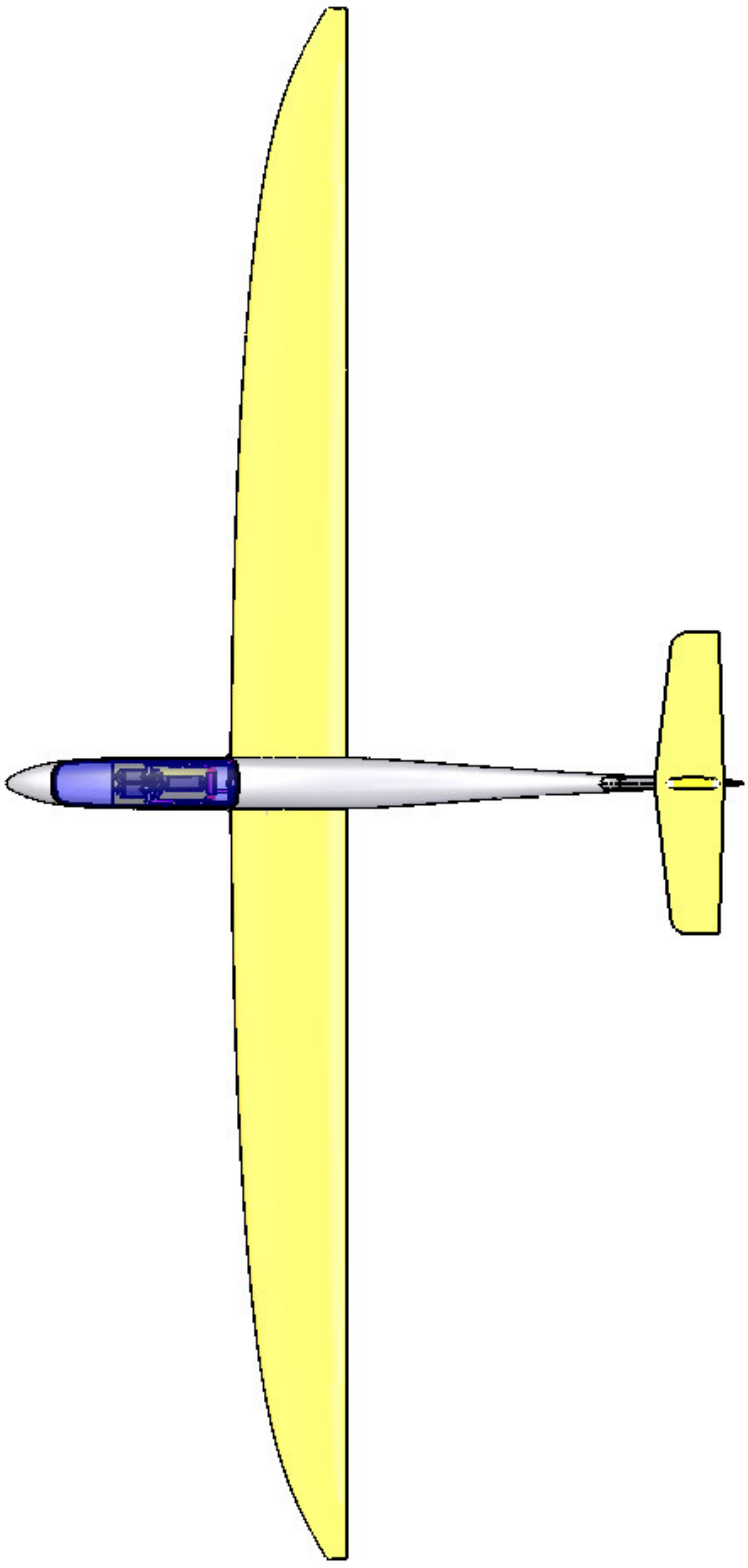
Release : 25.01.08

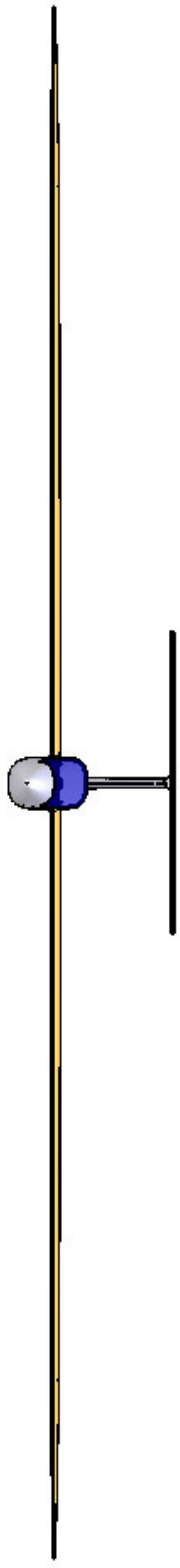
NEXUS 900



Technical datas :

Wingspan : 936 mm
Lenght : 444 mm
Surface : 5.07 dm²
Mass : 90g
Wing loading : 17.8 g/dm²





A quick summary of the design

The Nexus 900 is the result of a long research concerning the optimization of the aerodynamics' efficiency at very low Reynolds number, and optimization of control by pitcheron. The result is a very tinny scale glider, with nearly exact dimension of the real glider (SZD-55-1 Nexus) and high flying characteristics. Depending of the capability of the driver, it can fly either at low speed than with 40MPH wind, always with a perfect behaviour like a much bigger glider.

Caution : the Nexus 900 designated to advanced pilots. Despite of its very good flying characteristics and behaviour, it is not a toy, so please note that it is not adapted to beginner.

Assembly

Due to its very advanced manufacturing, only 2 hours are needed to make the Nexus ready to fly.

Before it, you need to have the following furniture

- 1x : fast cure epoxy glue
- 1x : fast cure cyanoacrylate glue
- 1x : mini driller (Dremell or other)
- 1x : scalpel or cutter

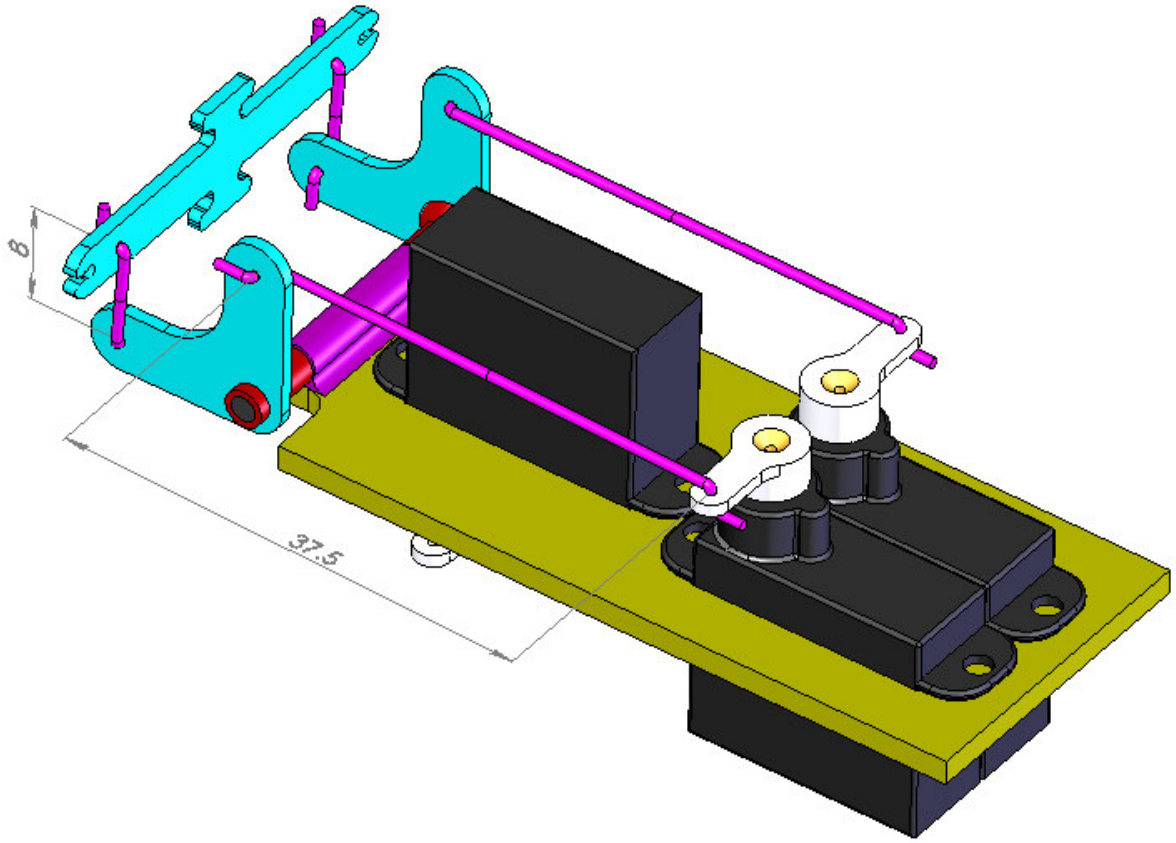
and equipments :

- 3x : pico-servos, size 4g
- 1x : 3 channels pico-receiver, size 4g
- 1x : lipo cell, 200 to 300 mAh, size 7g

Please note that all the equipment should be high quality ones, as the Nexus could fly fast and needs accurate response of the control system. Especially, neutral point and end of travel of the servos should be perfect and strictly identical.

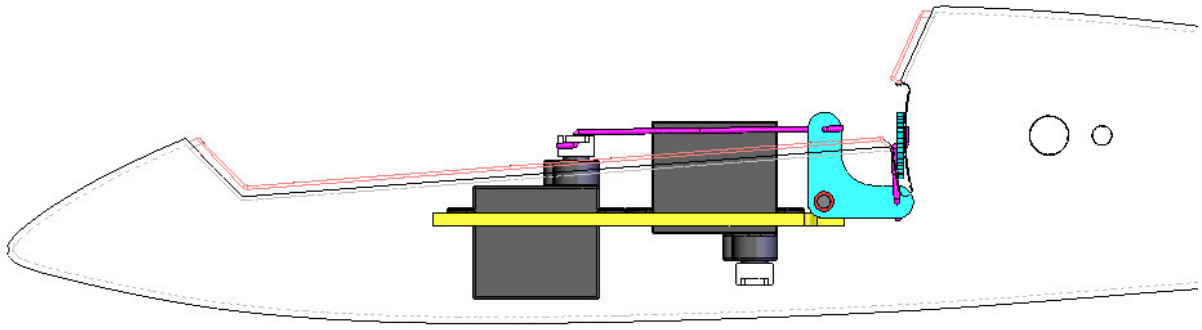
1. *Pitcheron control*

Adjust the servo's plate to fit the servos' dimensions.
Glue the carbon tube to the plate with cyanoacrylate.
Fold the control piano wire to the following dimensions (mm).

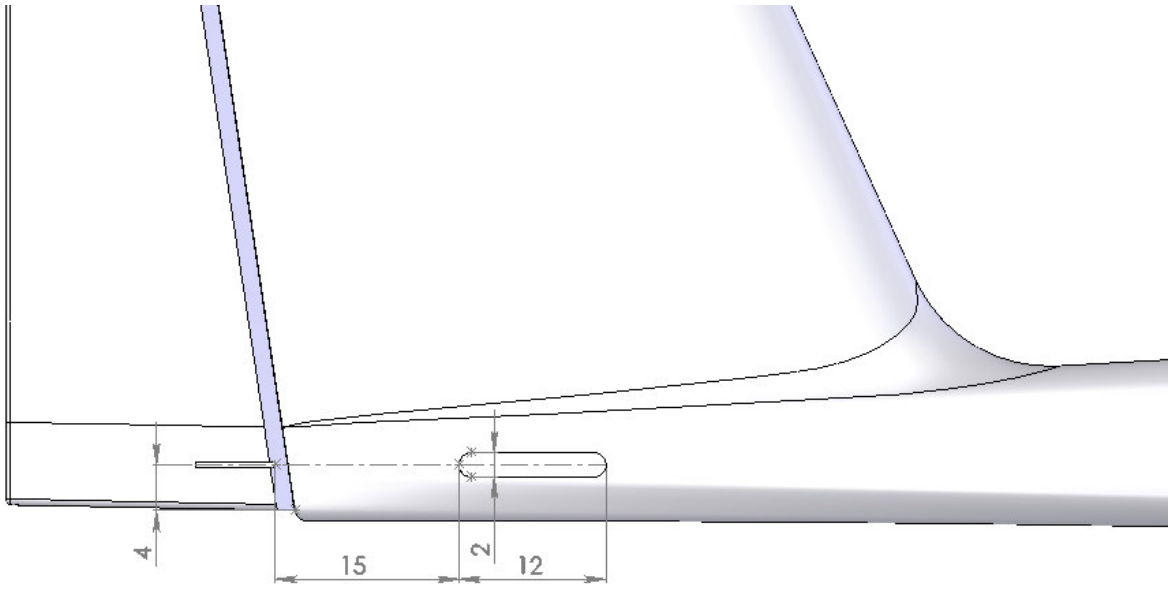


2. *Fuse*

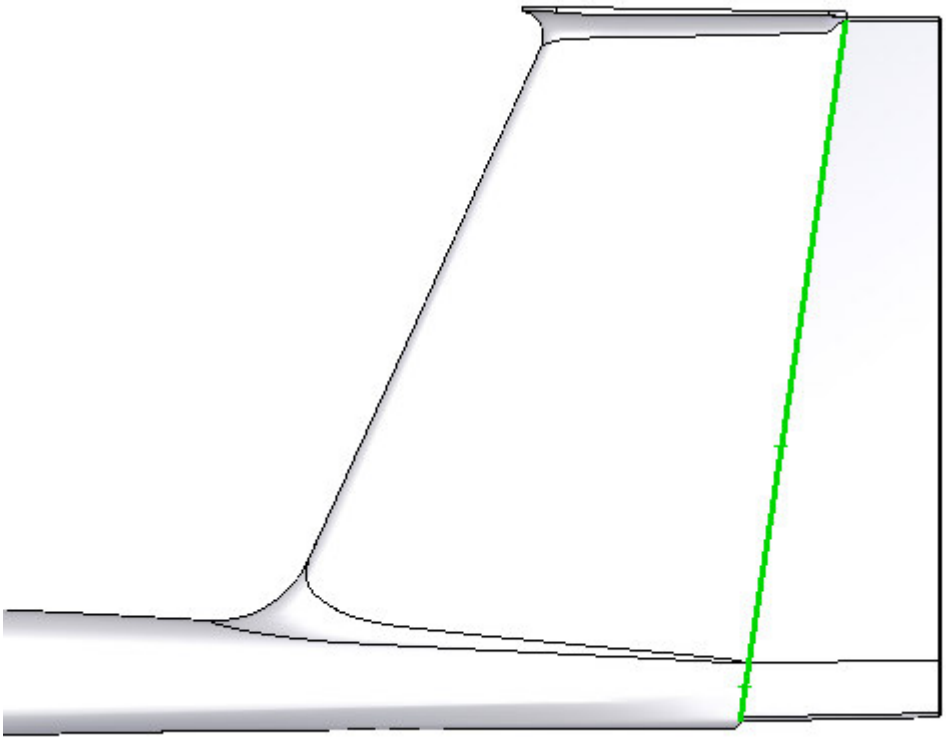
Insert the control system in the fuse, and glue it with epoxy glue at the following position. The control arm should be at the middle of its travel hole.



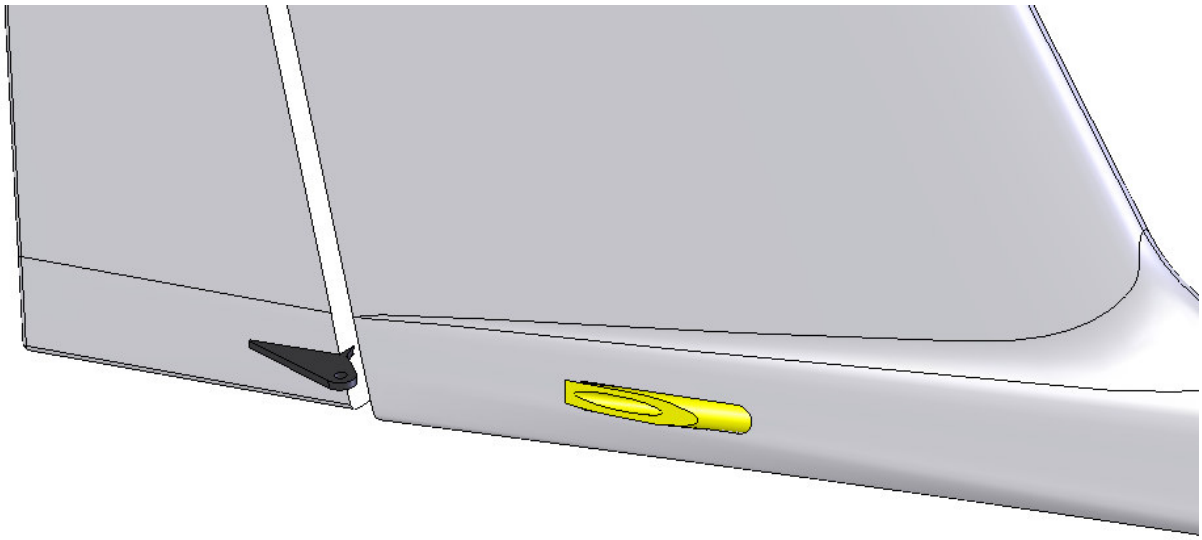
Prepare the hole for the ∅2mm plastic tube with the mini driller.
Prepare the slot for the horn with the cutter.



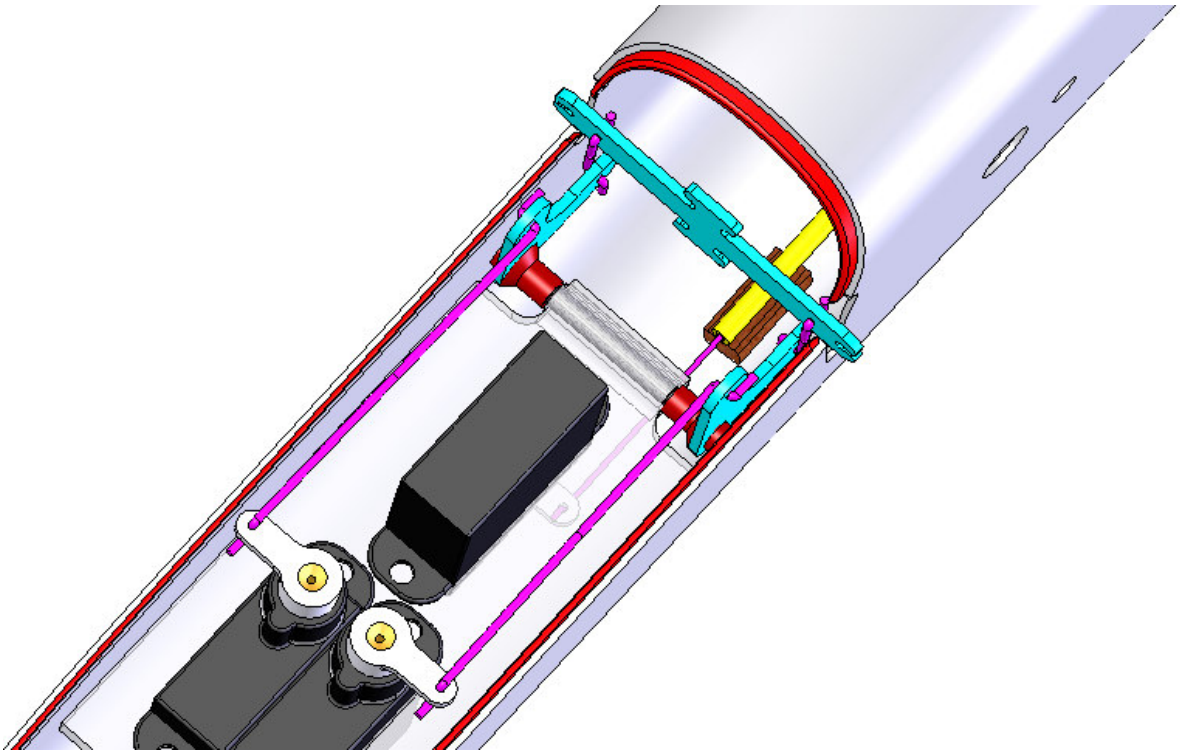
Carefully scratch the paint to let the rudder move with the cutter, without cutting the fiber.



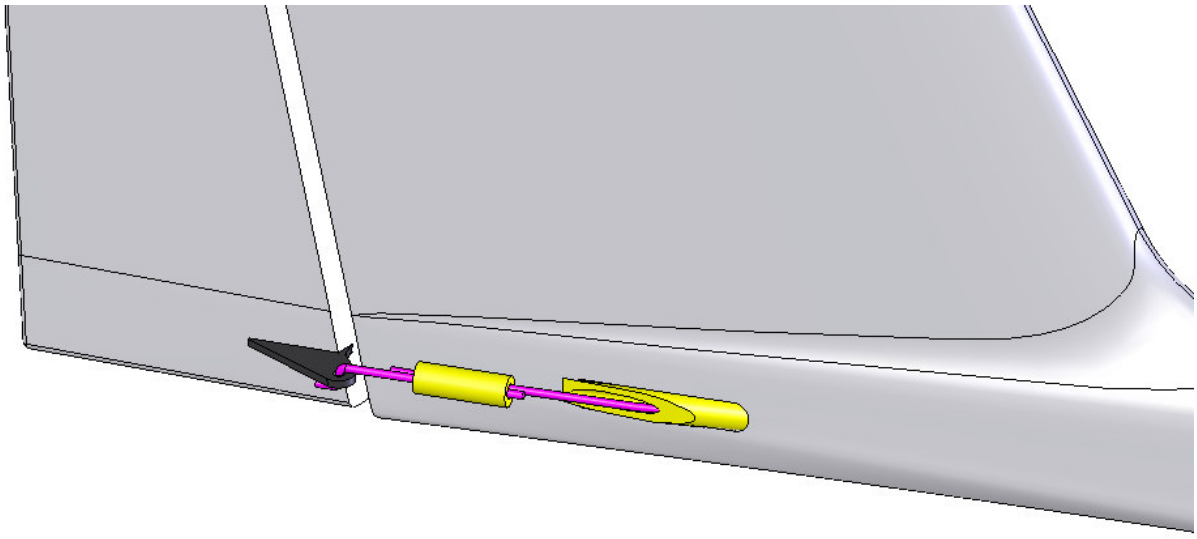
Glue the horn with epoxy and the ∅2mm plastic tube with cyanoacrylate or epoxy.



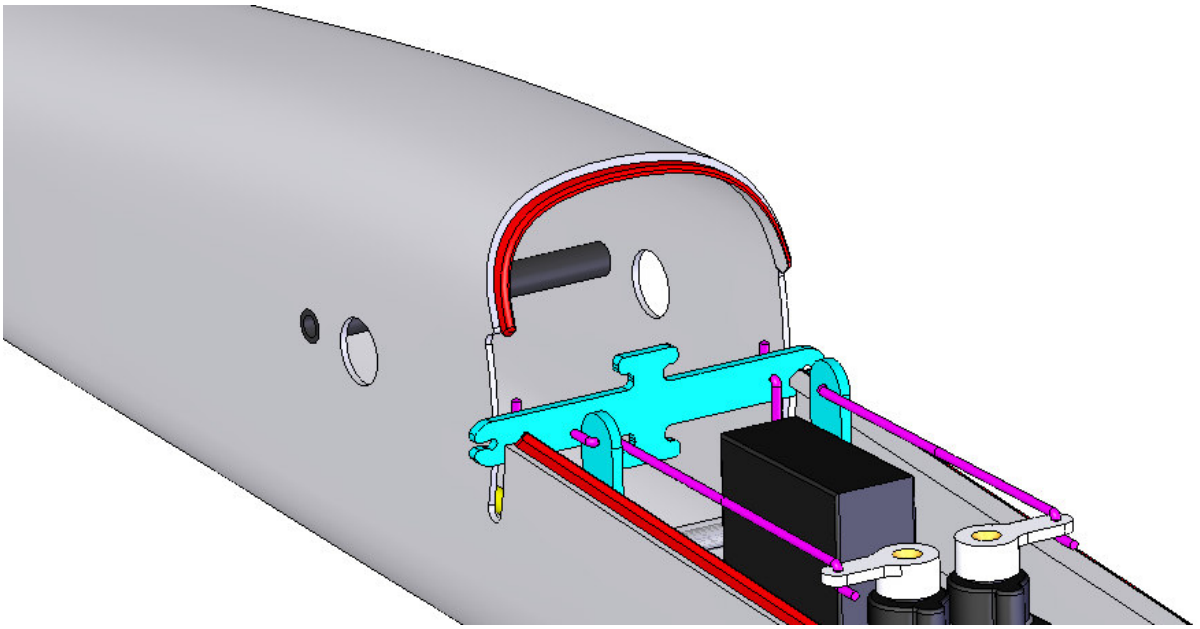
Put in place the rudder's servo with the ∅0.5mm piano wire, then glue the ∅2mm plastic tube with a small piece of 2mm balsa (to adjust the height of the tube).



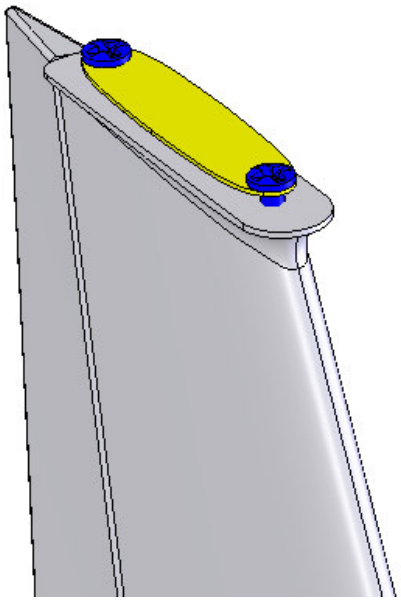
Finish the control of the rudder with a small piece of plastic tube to join the two ∅0.5mm piano wire. Adjust the system, verify that the servo can move easily the rudder, then fix it with a little cyanoacrylate.

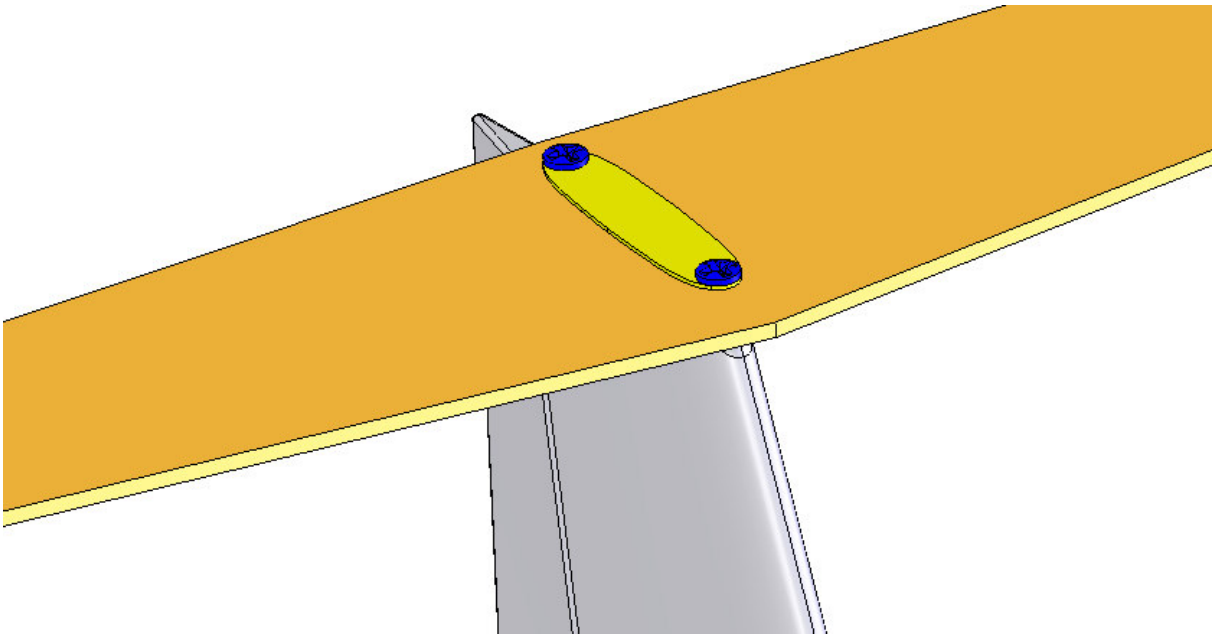


Put in place the ∅2 x ∅3 tube, the ∅2 piano wire and the wing, and verify the placement of the wing on the fuse (view form the front and view from the top). Is necessary, modify the hole with the mini-driller.
When all is ok, glue the ∅2 x ∅3 tube with epoxy.



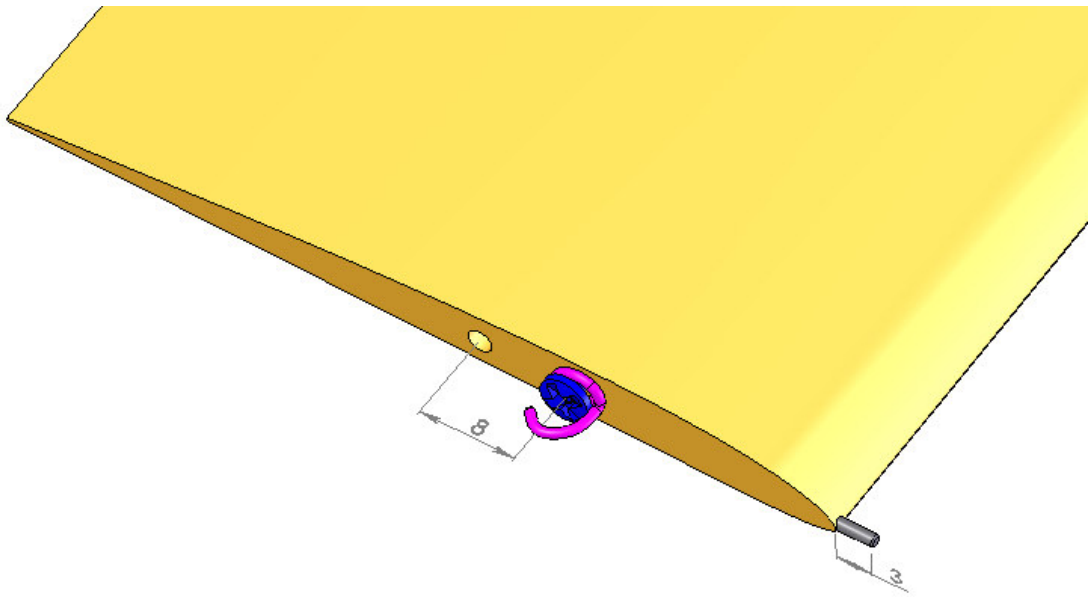
Drill two ∅1.5mm hole with the fiber plate as template, then fix the stabilizer with the 2mm. Please verify that the stabiliser is well aligned with the wings (view form the front and view from the top).





3. *Wings*

Drill a ∅1 hole at the leading edge, depth around 10mm, as near as possible of root (let around 0.5mm material). Then glue the ∅1 piano wire with epoxy.
Drill a ∅1.5mm hole at 8mm of the center of rotation, then put in place the hook with the ∅2mm screw.



4. *Adjustments :*

Elevator : +/- 5 mm measured at trailing edge, no exponential
Aileron : +/- 3 mm measured at trailing edge, no exponential
Rudder : +/- 9 mm measured at root
Center of gravity : 27 mm from leading edge at root.

Important notes

To avoid any misunderstanding about the pitcheron system, please note :

- to climb : the leading edge go up
- to down : the leading edge go down
- to turn right : the right leading edge go down, the left leading edge go up
- to turn left : the right leading edge go up, the left leading edge go down

Concerning the R/C system, it is preferable to use a programmable transmitter, with Delta Mixer (aileron/elevator mixing). The difference of travel rate between elevator and aileron should not be obtain with Travel Rate or Travel Limiter, but with Dual-Rate (ex : 100% for elevator, 80% for aileron).

Concerning the center of gravity, please note that it should be very carefully adjusted, due to the small scale of the Nexus. So please use a tool to do it, not your finders!

Appendix

Some photos of the assembly of the prototype, to show the assembly achieved :