

silent_runner #i7

Kit



silent_runner

#i7 | RC-AIRSHIP



Important Remarks

Please read the enclosed safety instructions carefully! The kit is not a toy and not suitable for children under 14 years.

The *silent_runner* #i7 - already the seventh version - is a proven kit. Nevertheless it is not a beginner model. You should already have model building experience.

Even if you want to fill the envelope immediately - please wait a little longer! The assembly of the other parts will - depending on your experience and skills - take some time and all your care. In addition, the hull is very stable, but it loses helium over time. So don't fill it until you need it!

In lighter-than-air technology it is important to use the existing lift (1 m³ helium can carry approx. 1 kg) in an efficient way. Therefore, the functional components should be as light as possible. This means that a payload, e.g. a small camera, may also be carried on board. However, this also means that some parts are fragile and only achieve the necessary stability when correctly assembled. If something is not quite clear to you during assembly, take another look at these instructions! You can also download it as a PDF file, e.g. to view the photos enlarged on screen. Then you may see the desired detail better.

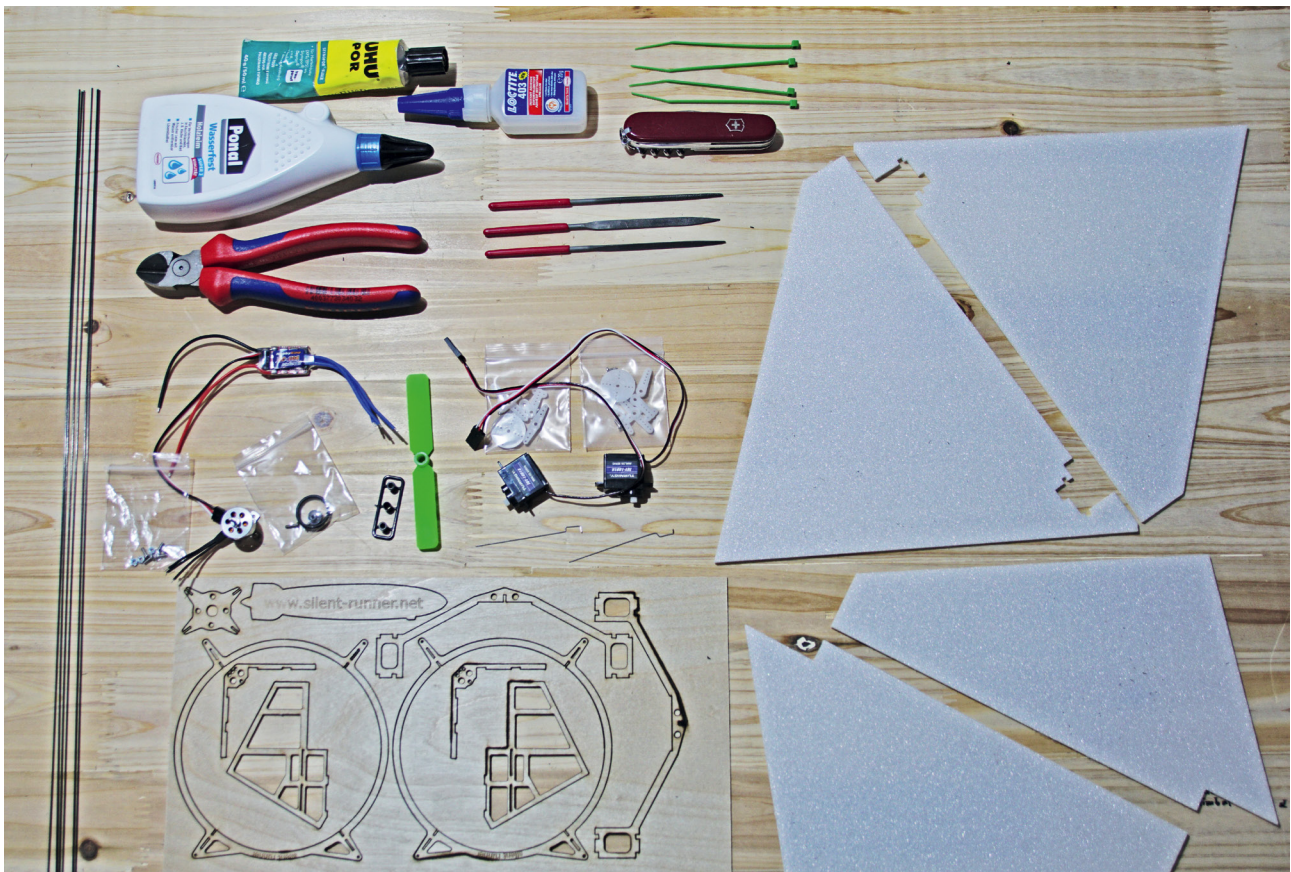
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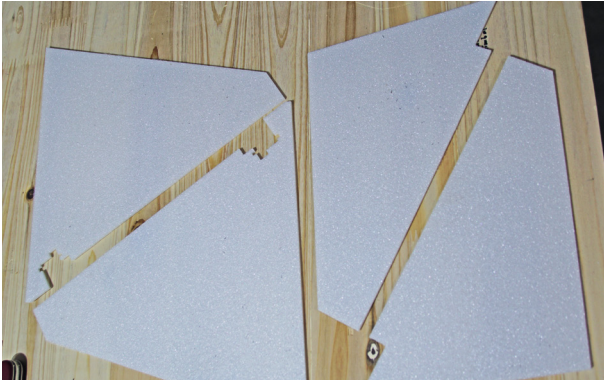
If you still have any questions or if something seems to be unclear, please contact us! We want to improve this small manual: silent_runner@lta-technologie.de

Preparation

Here is a brief overview of what we have used for construction, among other things. Depending on how much experience you have, you will certainly use or develop your own techniques.

You will also need small soldering equipment.

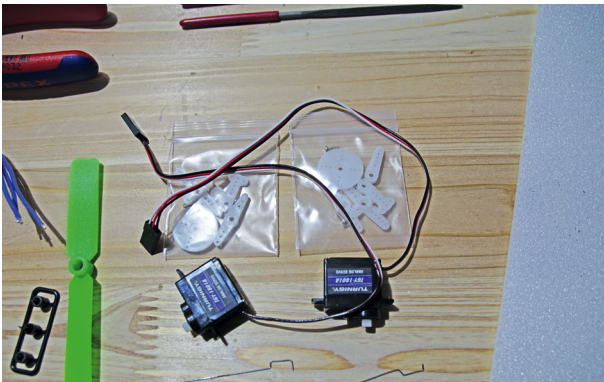




Parts List

Before we start, here is a brief overview of the Kit contents:

- » 4 Depron fin parts
- » 1 wooden plate with lasercut parts
(Remove the tape carefully!)
- » 7 carbon fibre rods
- » 2 servos with lever parts
- » Steel spring wire
- » 1 brushless motor with propeller mount and screws
- » 1 propeller
- » 1 LiPo battery 500 mAh
- » Engine control (ESC)
- » Airship hull
- » Shrink tubing
- » 4 pigtails for servos, 1 pigtail for battery
- » 4-wire ribbon cable
- » 1 clip for the hull
- » Cable ties

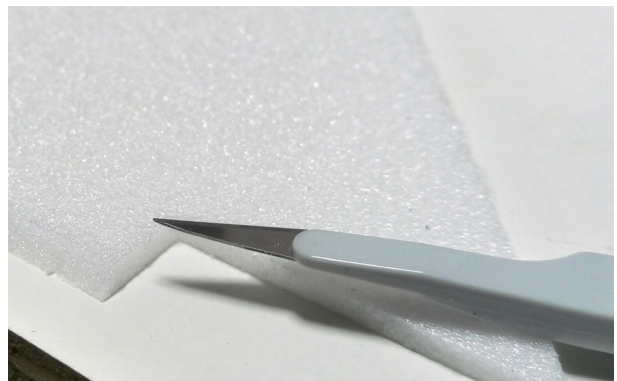
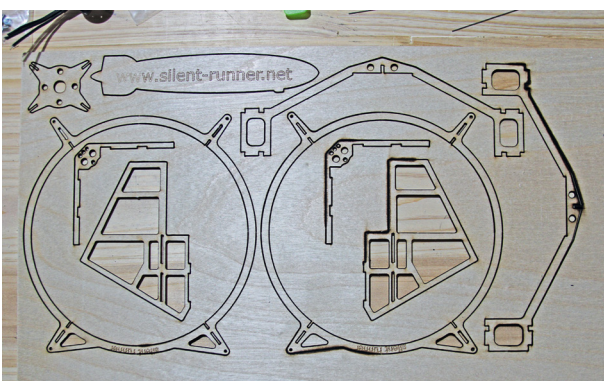
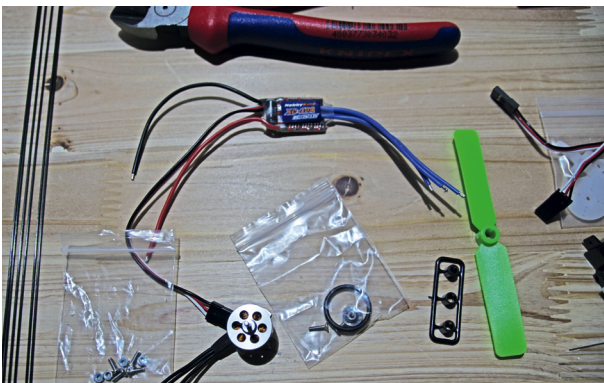


A packing list is enclosed for a detailed check of the contents.

What else is needed

We recommend:

- » a sharp knife or scalpel
- » Side cutter
- » Clamps
- » Tweezers
- » Lighter, candle or hot air gun
- » Soldering irons
- » 4 mm socket spanner/wrench
- » Fine sandpaper or file
- » Transparent adhesive tape **of good quality (!)**
- » Adhesives: wood glue for the parts of the engine gondola, Styrofoam glue for the tail units, good superglue for the rods (in our picture example: Ponal wasserfest, UHU Por and LOCTITE 403)
- » Maybe a "third hand" (holding clamps)



1. The Engine Nacelle

Here we go, let's start with the motor gondola:

Required parts

Wooden parts (picture right):

- » Motor frame 1 and 2
- » Motor ring 1 and 2
- » Carrier plate

Carbon rods:

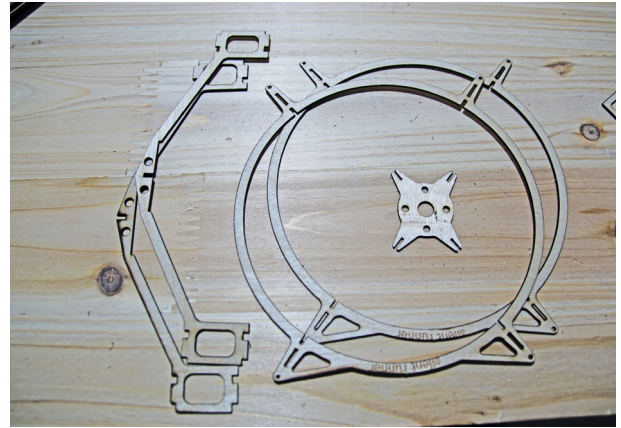
- » 2 rods each 50 cm
- » 2 rods each 48 cm

Electric:

- » Brushless motor
- » Engine control (ESC)
- » Two-wire kabel with socket (pigtail)

More:

- » Heat-shrink tubing
- » Wood glue and LOCTITE 403 or similar
- » 4 x M2 screws with washers and screw-nuts

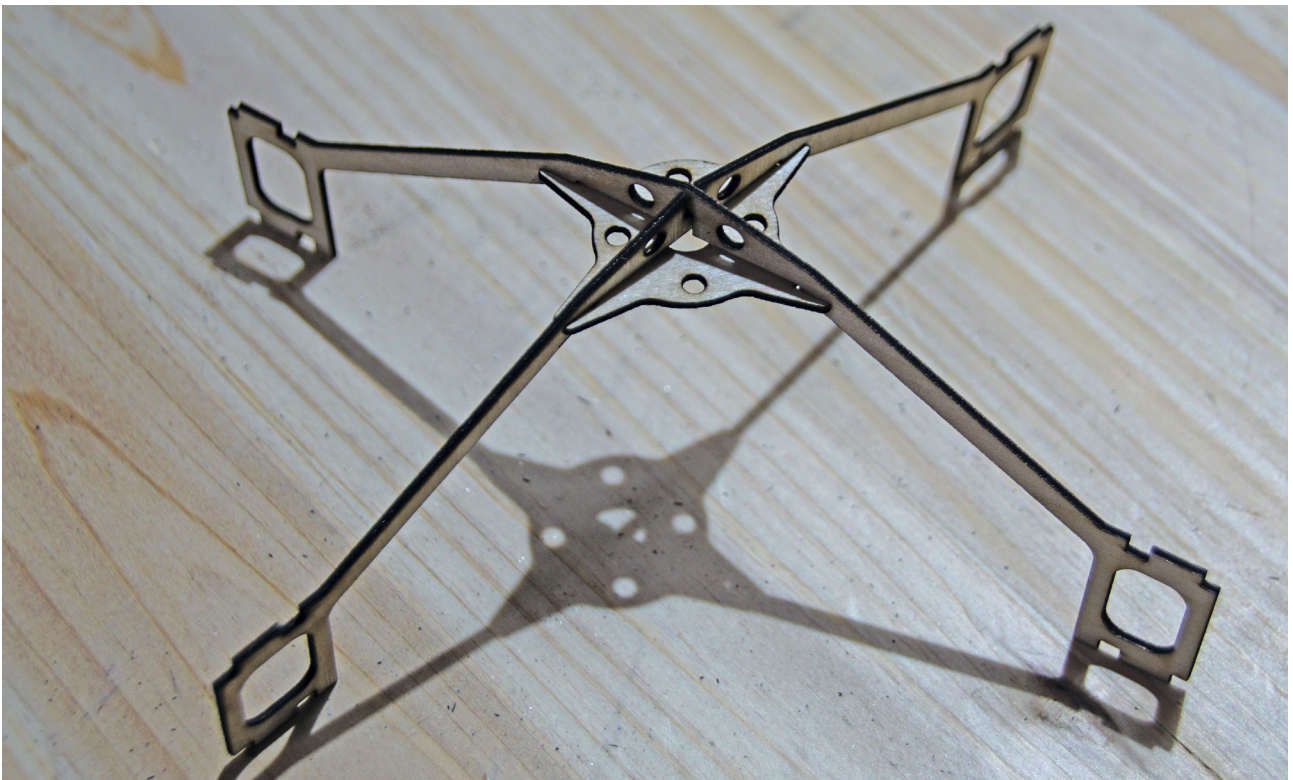


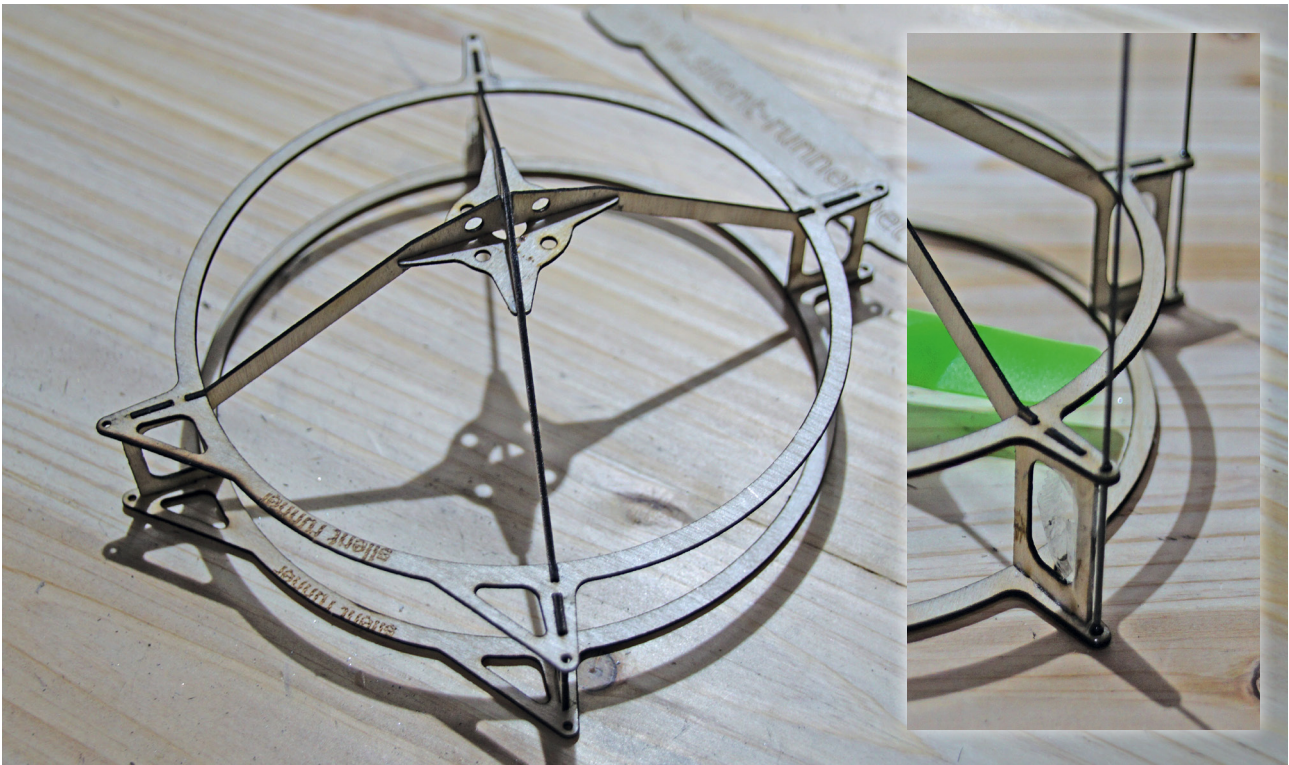
Note:

The wooden parts are not completely cut out, but have very small bridges to the surrounding wood!

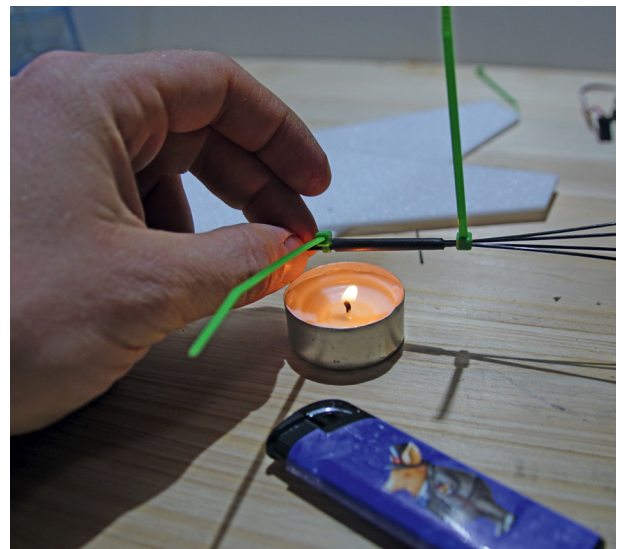
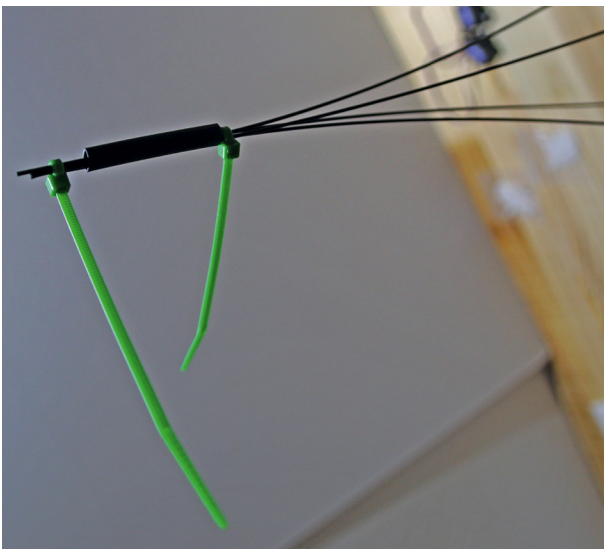
Steps

1. Clean the wooden parts with fine sandpaper or file. The parts should have a pleasantly smooth surface.
Caution - do not apply force to the fragile parts!
2. Test the assembly without glue! All parts must grip correctly into the guides.
3. Glue the parts together!

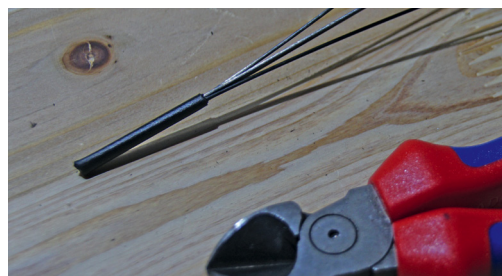




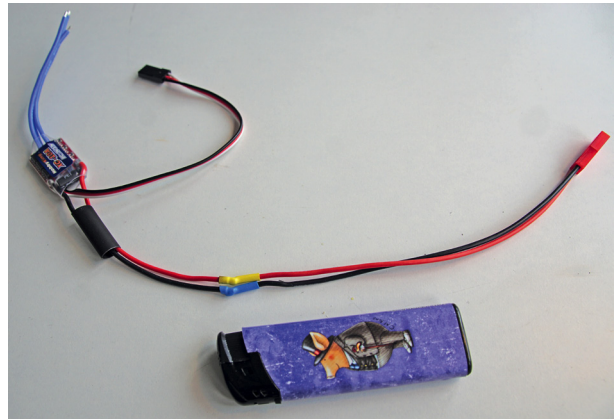
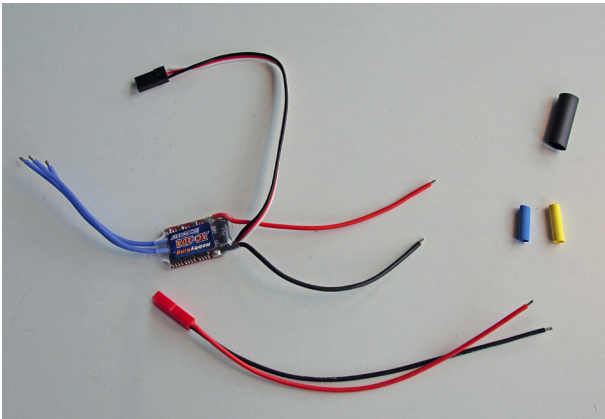
4. Insert the 48 cm rods into the upper holes (where the “triangles” are), the 50 cm rods into the lower holes of the gondola and glue them on with superglue. The sticks point in the direction of the carrier plate (in the picture upwards). You can make the rods stick out one or two millimetres behind the hole to make them stick better.
5. Bundle the ends of all 4 sticks, stabilize the end with small cable ties as shown in the picture below and put a piece of shrink tubing with filled glue (hot glue or superglue) over it.
6. Shrink the tubing tight (quickly in case of superglue)!



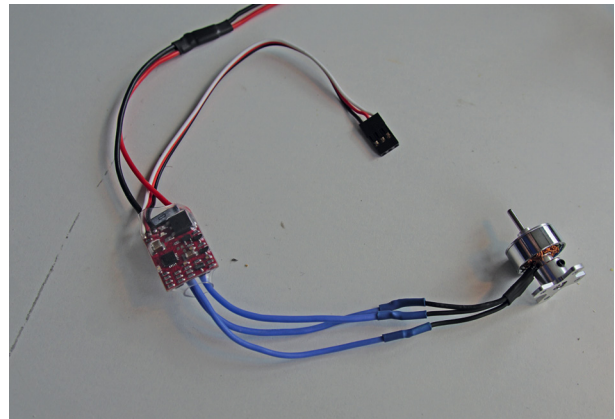
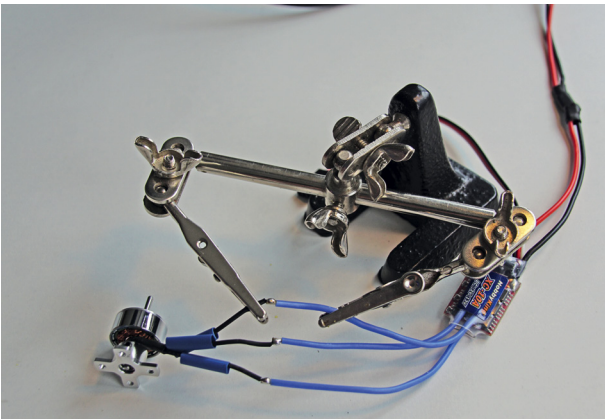
Note:
Before attaching the nacelle to the airship hull, remove the cable ties and cut off the carbon rods directly at the shrink sleeve so that a blunt end is formed (right picture).



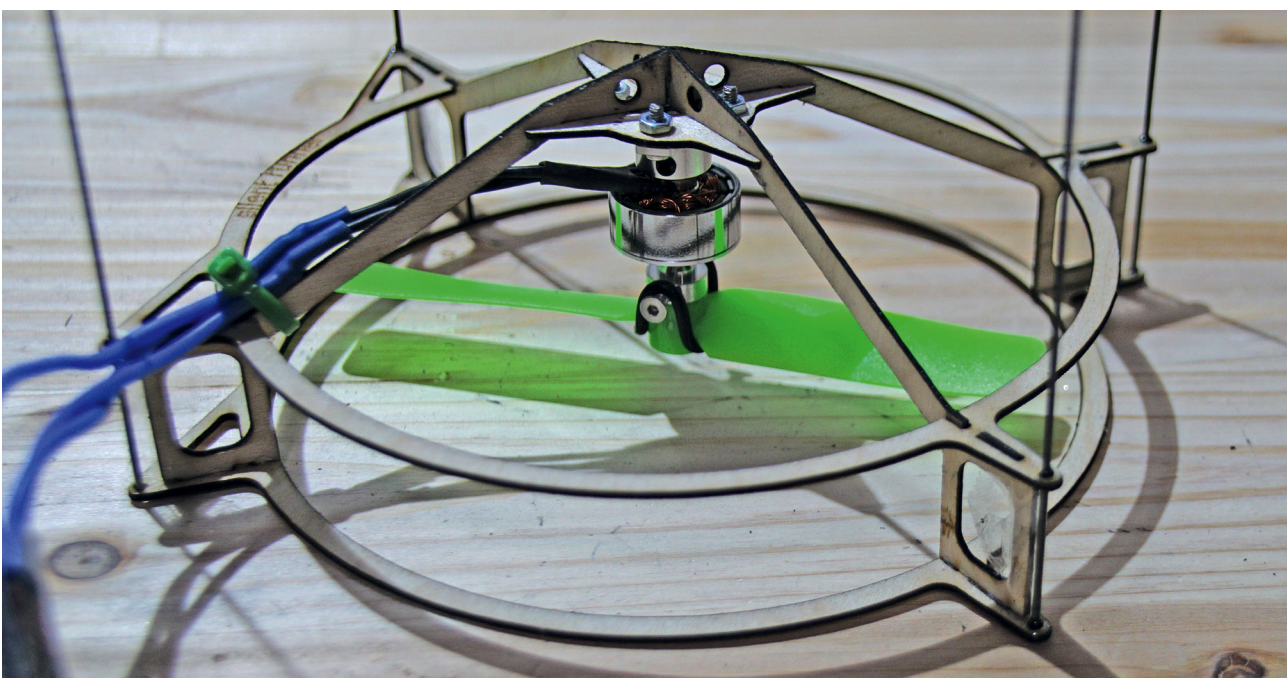
7. Lead the larger shrink tubing over both and the smaller over the individual wires of battery connection cable of the motor control unit and solder them together with the battery cable (pigtail, two-core with socket). Shrink the tubing over the solder joints, the larger one over both connections together!

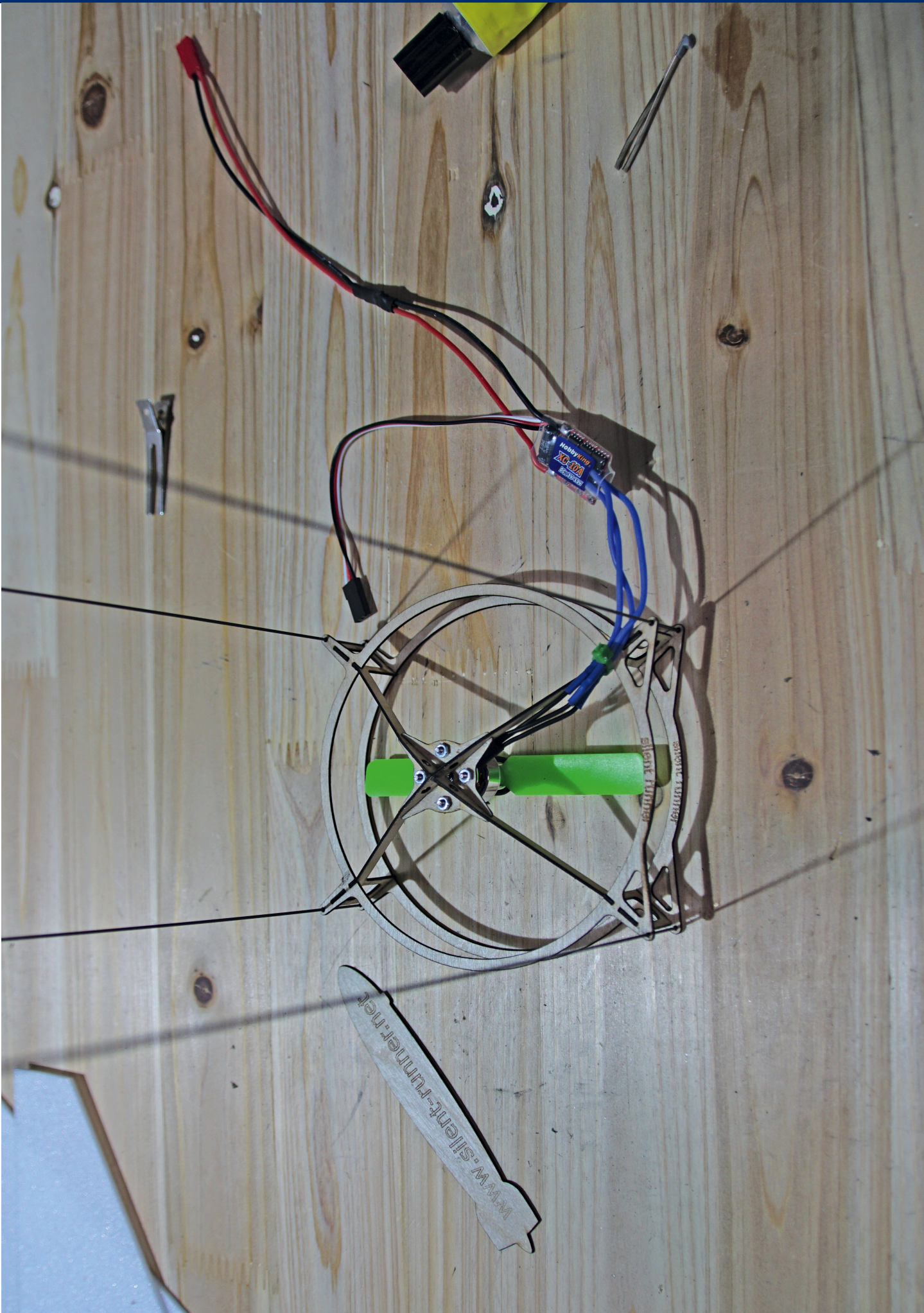


8. Lead small heat shrink tubing onto the 3 motor connection cables and solder the cables with those of the ESC. Test the running direction. If the motor is running in the wrong direction, swap two of the three motor cables. The propeller must blow away from the motor. Shrink the tubing over the solder joints.



9. Mount the propeller!
10. Fix the motor to the motor mount with the M2 screws, the washers on the wooden side. Secure the nuts with some glue or locking paint.
11. Fix the motor cable with a cable tie as shown in the pictures!





2. The V-tail

Required parts

Wooden parts (picture right)

- » Right frame
- » Light frame
- » V-part 1
- » V-part 2

Carbon rods

- » 3 rods, each 50 cm

Depron parts

- » 2 fins
- » 2 rudder

Electric

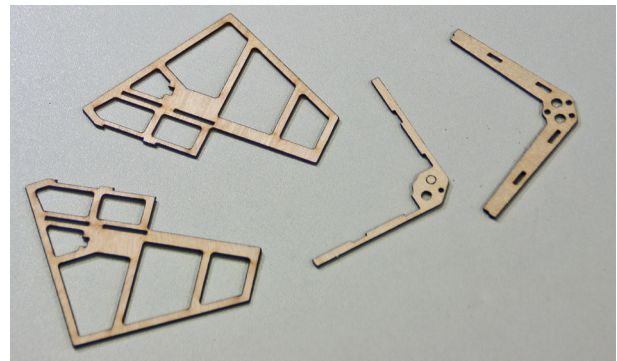
- » 2 servos
- » 4-wire ribbon cable
- » Possibly 4 pigtails (3-wire)

More

- » 8 small and 2 larger parts of shrink tubing
- » Steel spring wire

Assembly

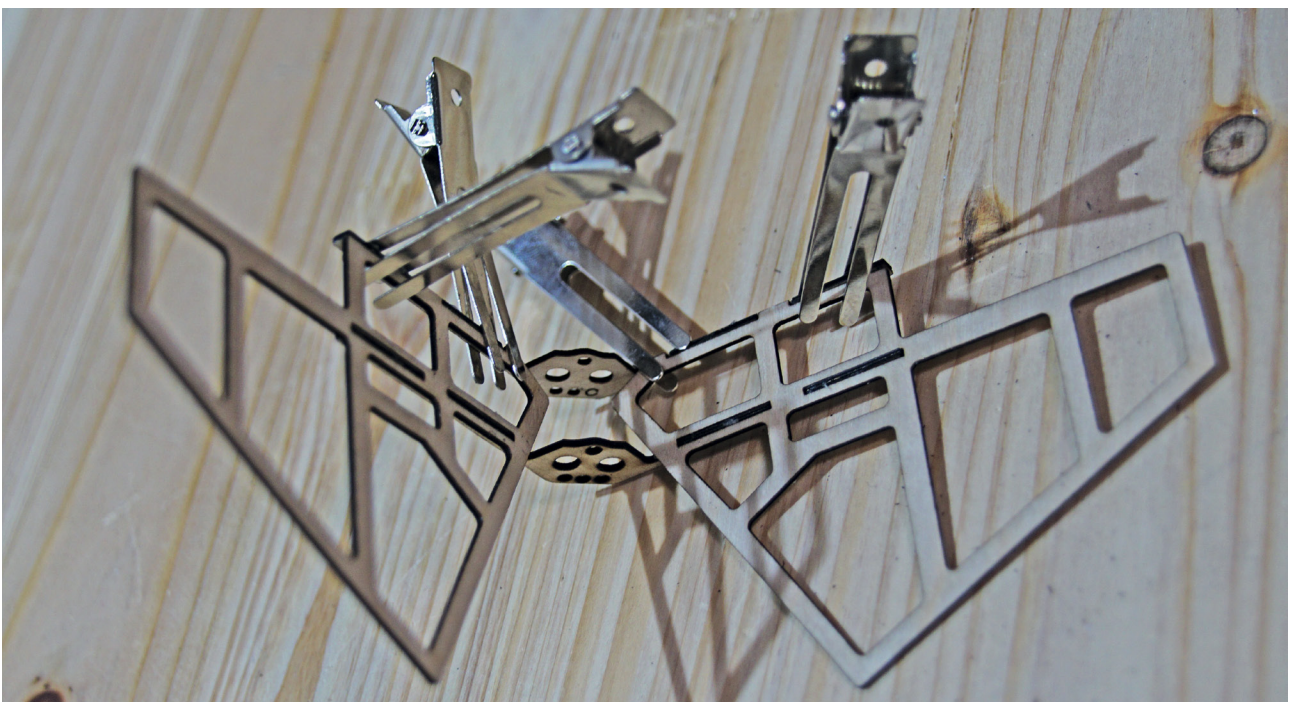
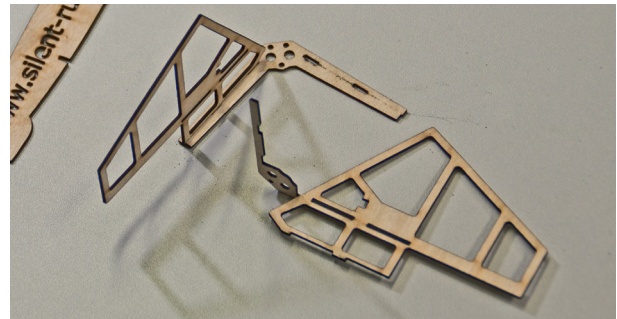
1. Clean the wooden parts with fine sandpaper or file. The parts should have a pleasantly smooth surface.
Caution - do not apply force to the fragile parts!
2. Test the assembly without glue!
3. Glue the parts together!



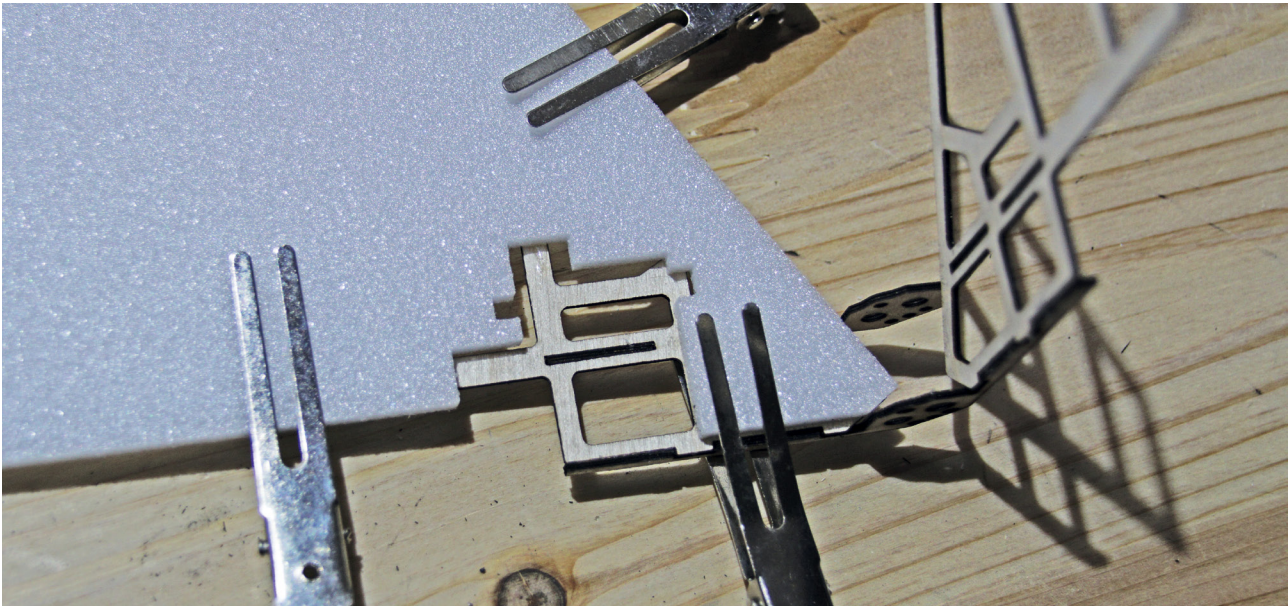
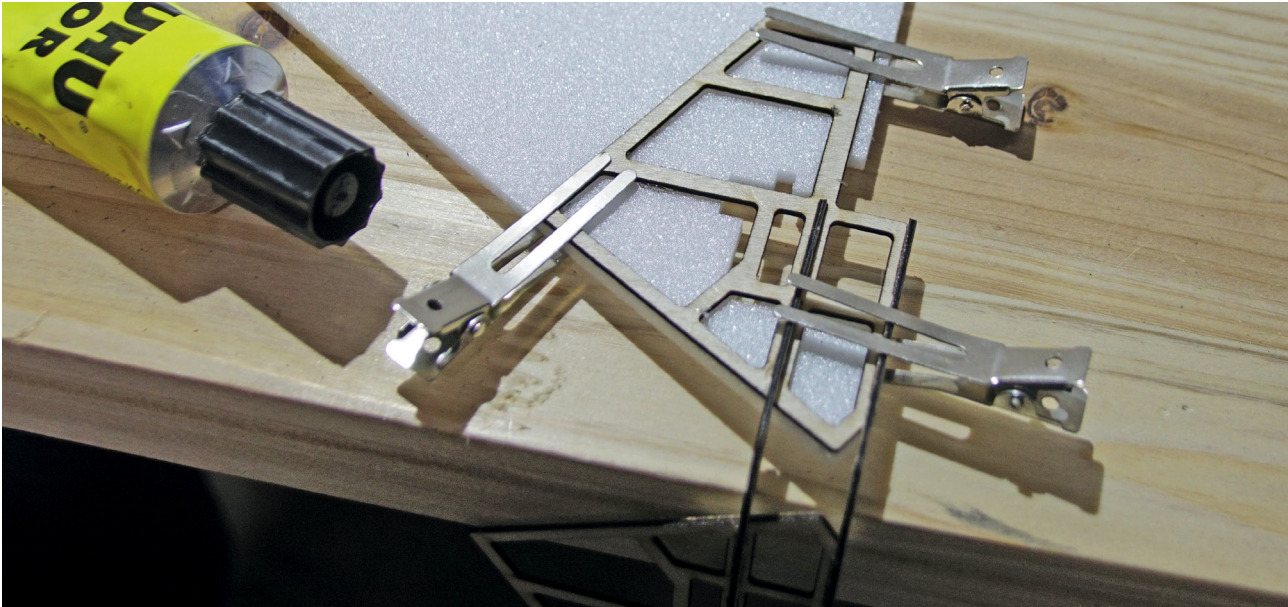
Note:

The wooden parts are not completely cut out, but have very small bridges to the surrounding wood!

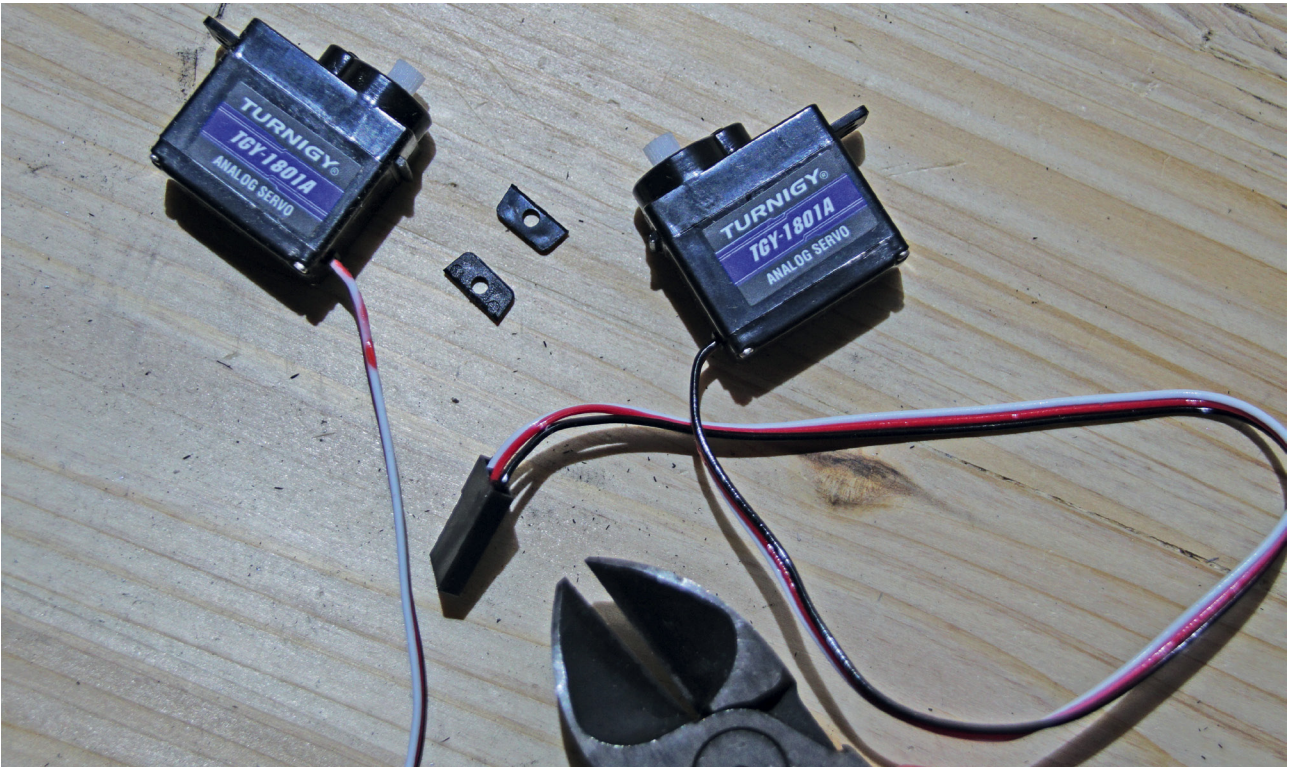
Be especially careful with the small angle!



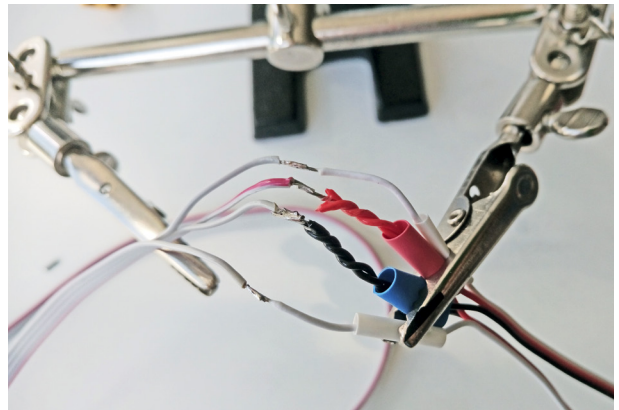
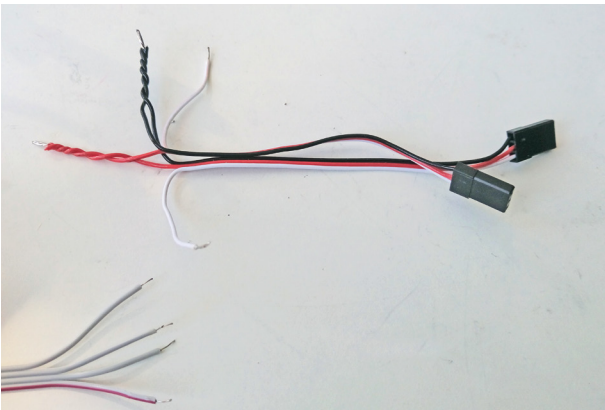
4. Glue the fins to the wooden parts!



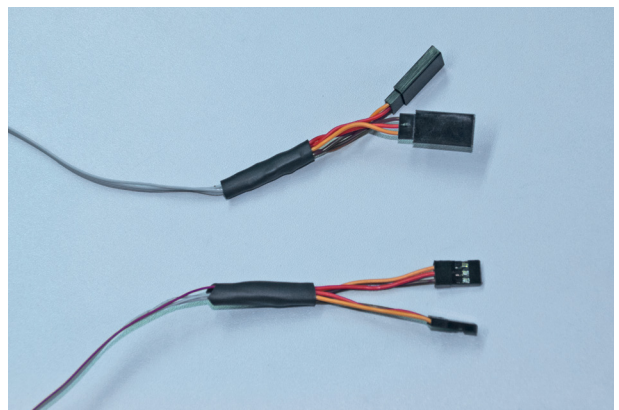
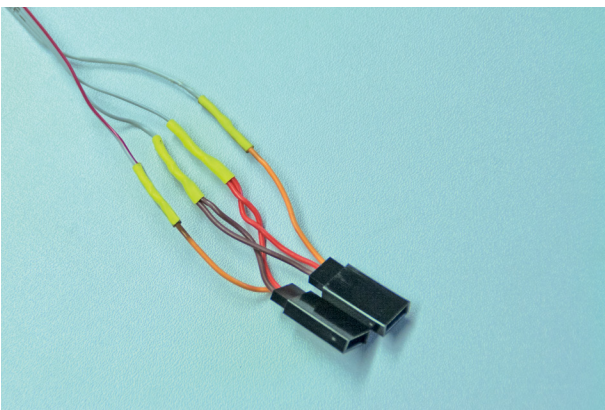
5. Carefully remove the mounting nose on the side of the servo axis from both servos!



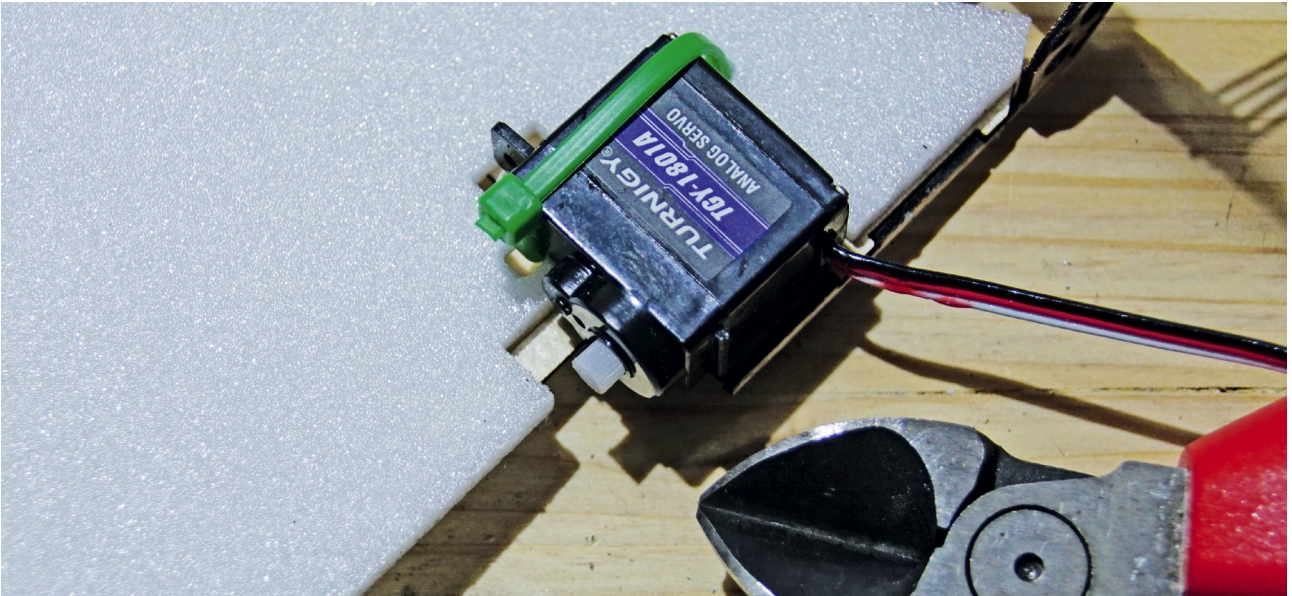
6. **Option A:** Cut the servo connections and solder the ribbon cable in between!



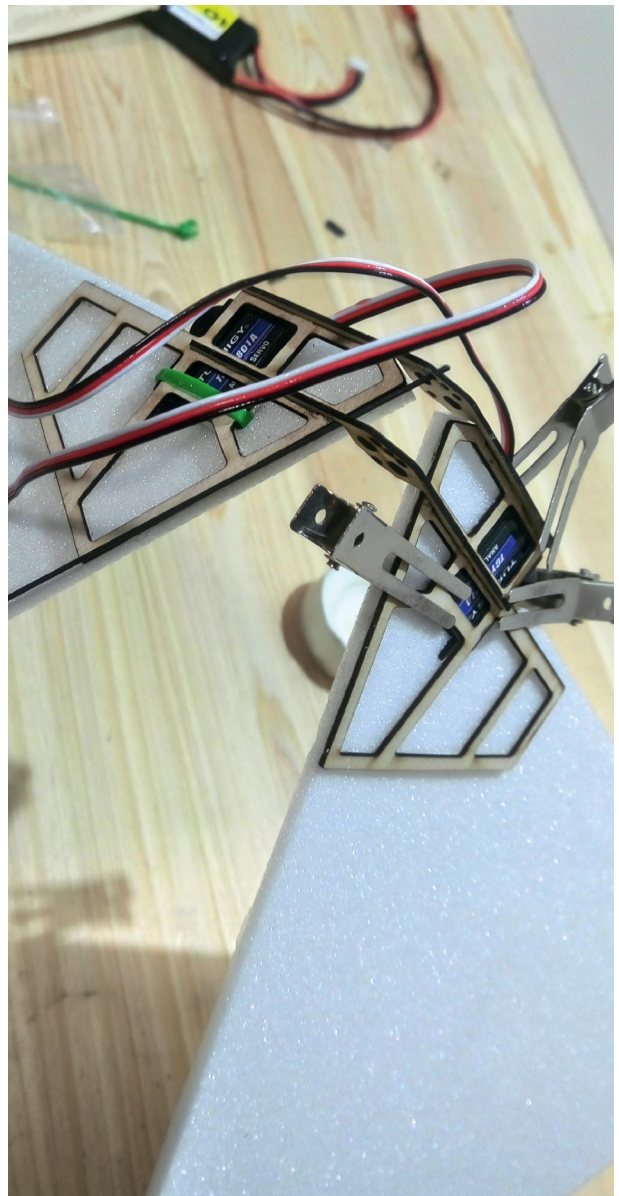
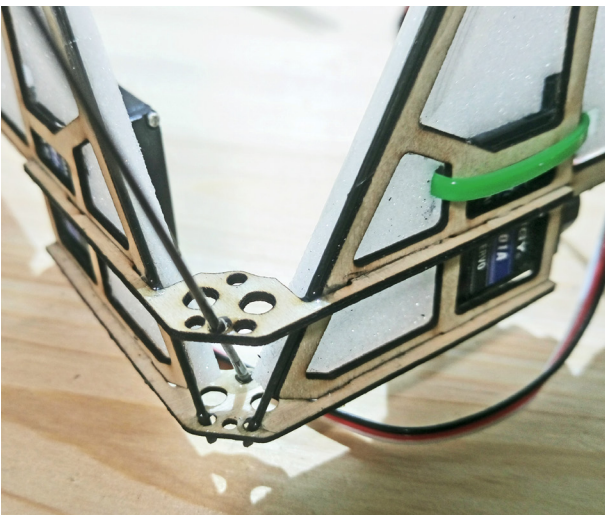
6. **Option B:** Use the 3-wire pigtails to build an extension for the servo connections! Please pay attention to the correct polarity! Please note that the Futaba colours are used for some of the enclosed cables and the FR colours for others. The equivalents are: red = red (+), black = brown (-), white = orange (control signal). The pin layout is identical.



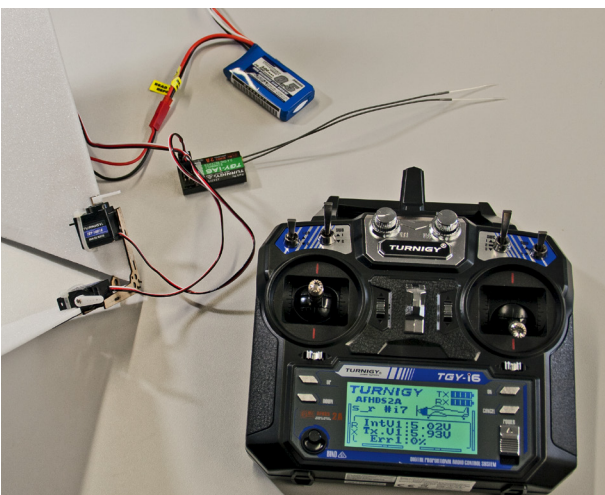
7. Glue the servos in place! You should remove the cable ties if the glued joint holds well.

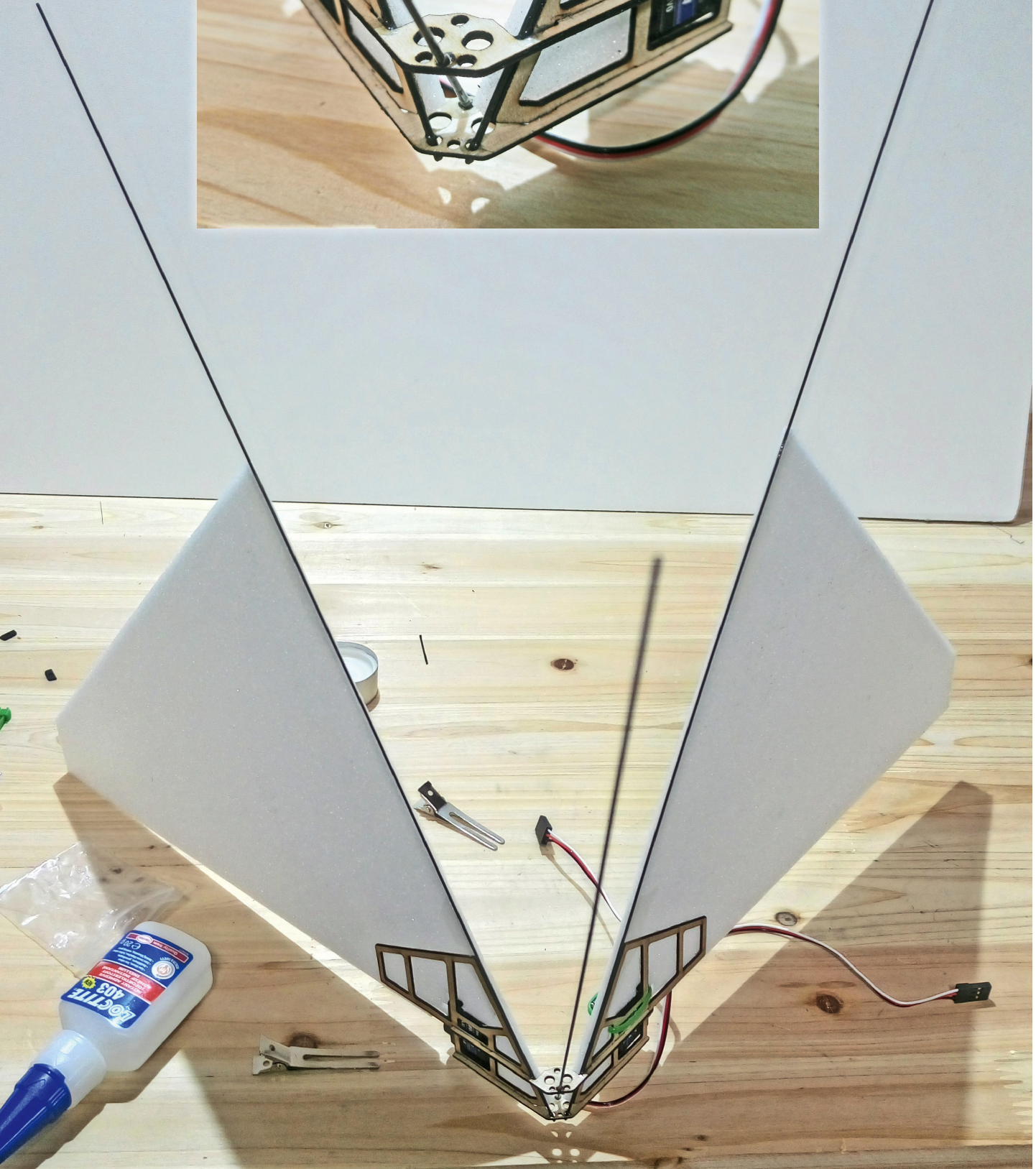
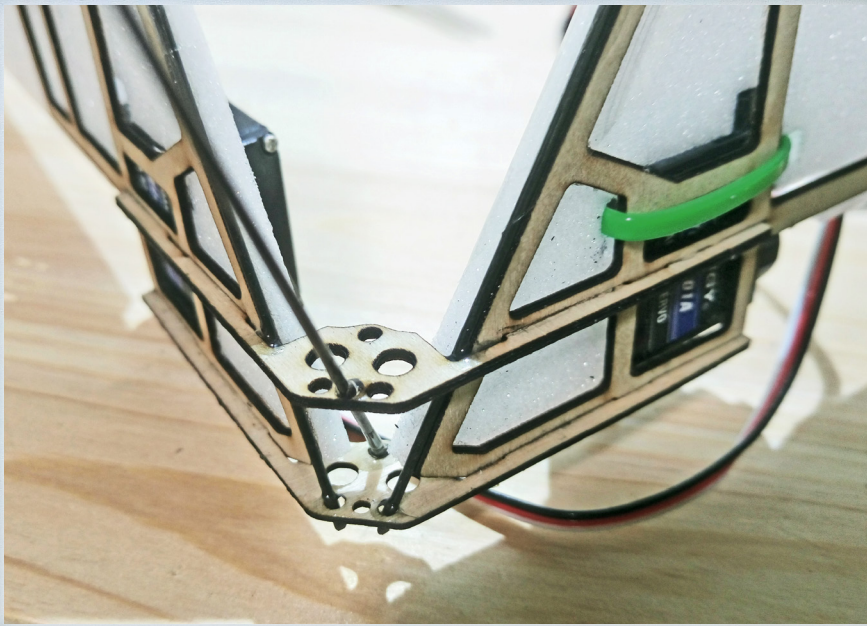


8. Glue in the carbon rods, if necessary use additional adhesive tape (see also picture on page 12)!

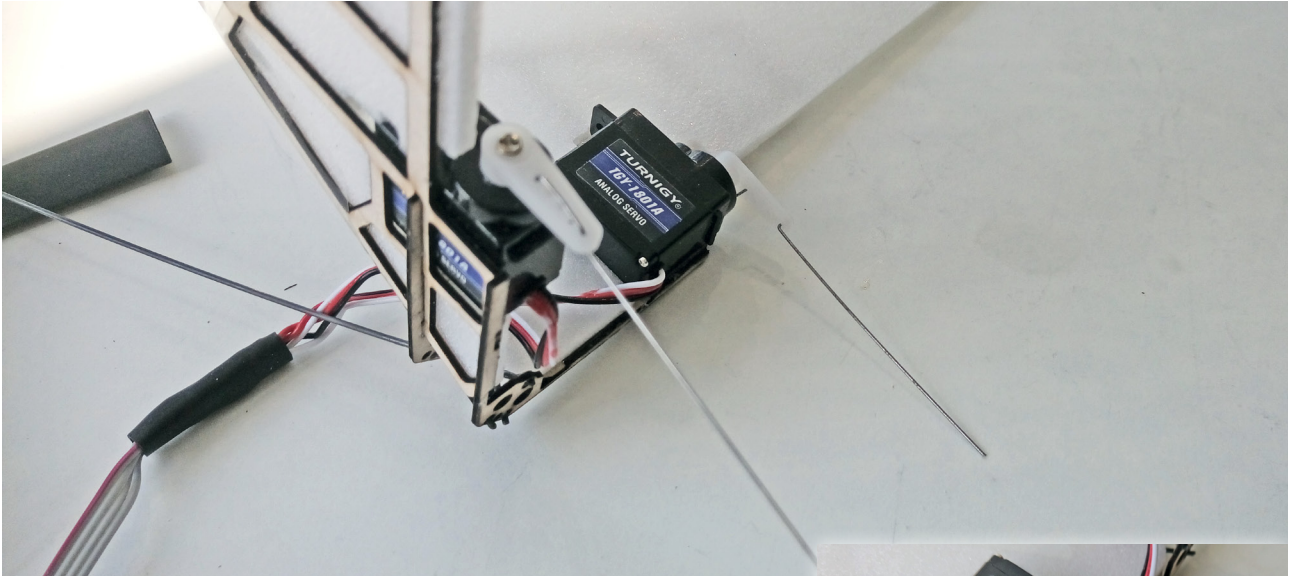


9. Set the servos to centre position with your remote control before mounting the servo arm!

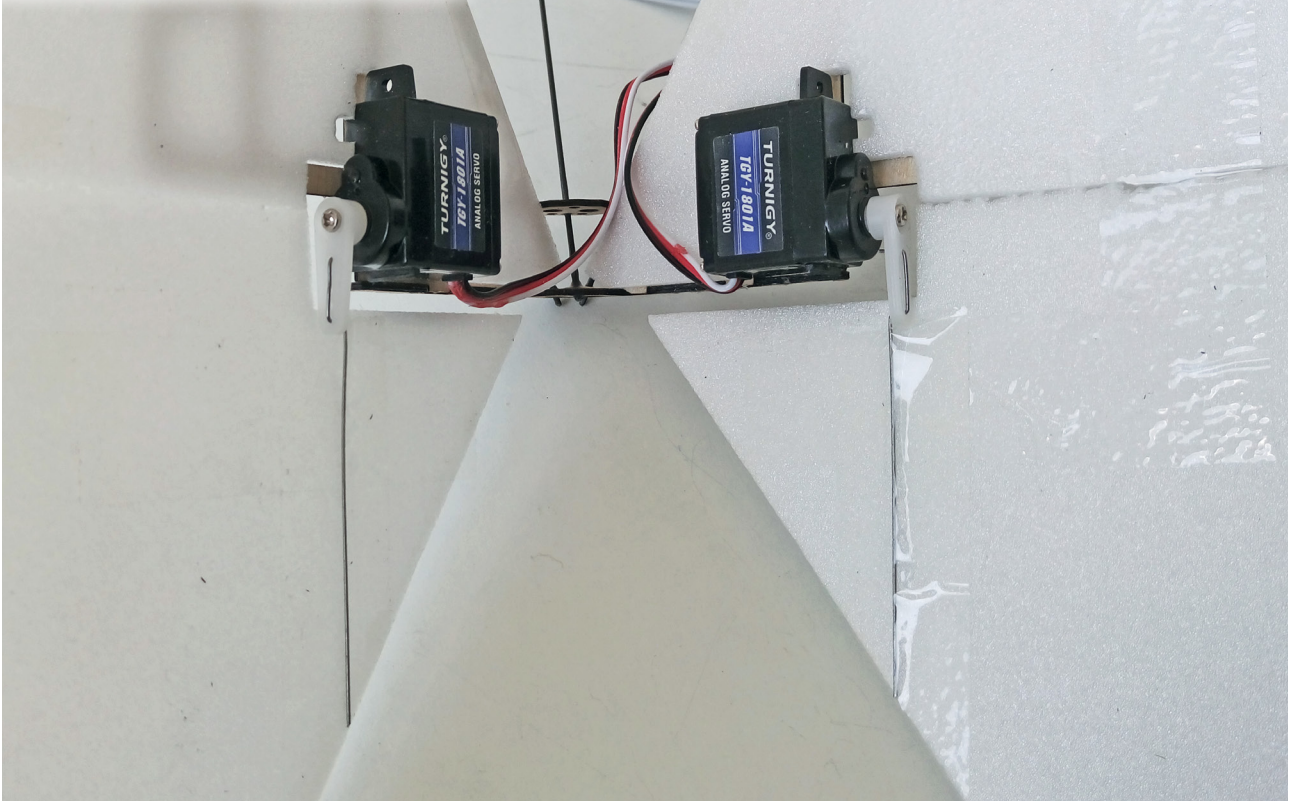
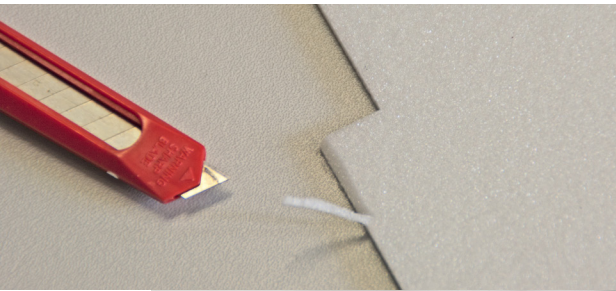


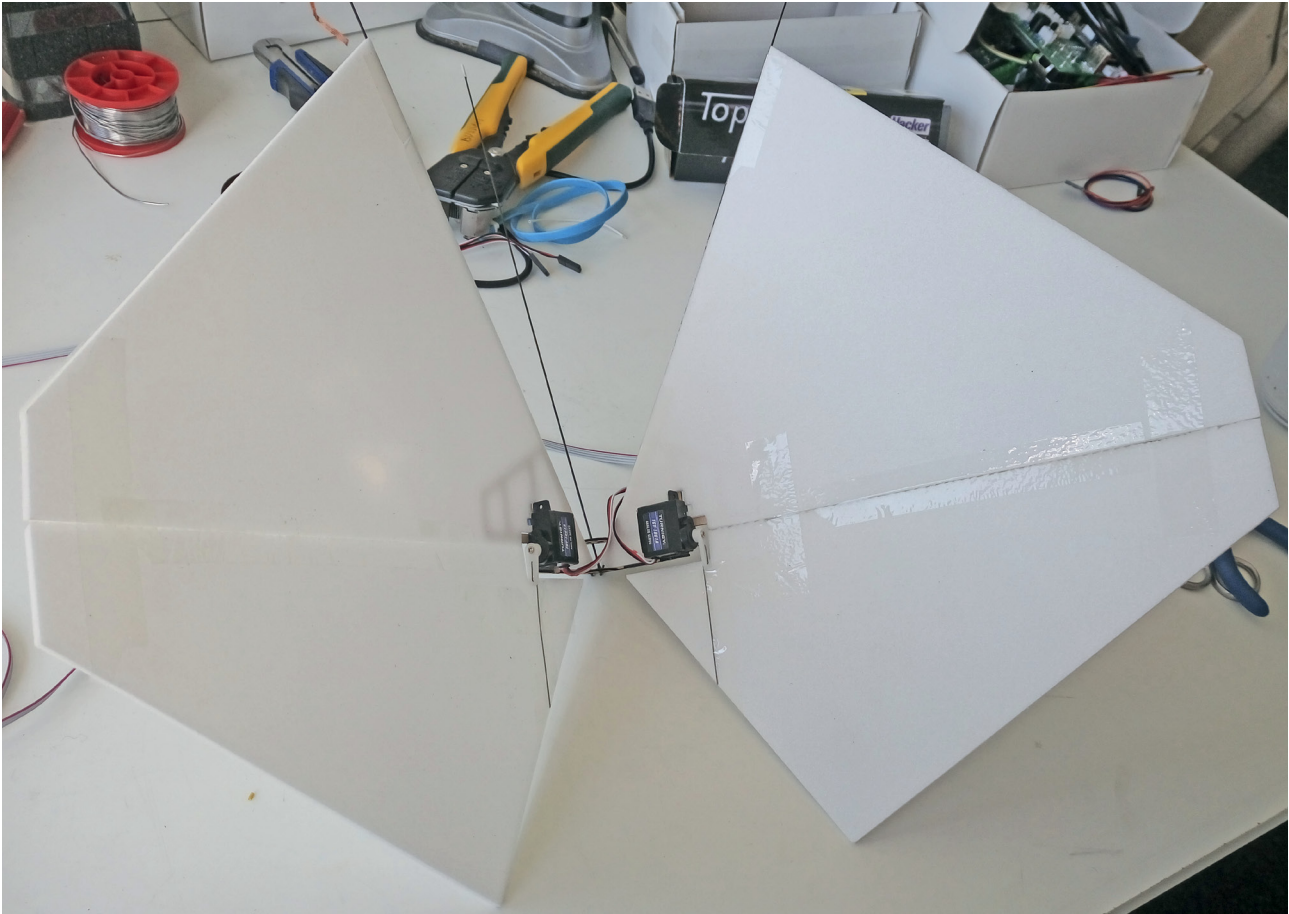


10. Fold the steel springs into the servo arms and screw on the servo arms!



- 11. Chamfer the rudders at a 45° angle so that they can move well against the fins!
- 12. Use good transparent tape to connect the rudder and fin to each other. Also use adhesive tape to fix the steel springs to the surface of each rudder.





3. Final Assembly

Before the finished attachments can be placed on the hull, it must be filled. The filling is done with helium (balloon gas). For one filling you need approx. 360 l helium, which means approx. 1.8 l from a 200 bar bottle.

Secure the airship hull with a line, which you fasten securely somewhere (e.g. to the helium bottle), so that it does not fly away during filling. It is very difficult to get it back from the hall ceiling if the engine does not work yet ;-). You can attach this line to the hull with 1-2 strips of adhesive tape.

Fill the hull until it has a stable shape. Some folds will remain (see pictures). Fold the filler neck and close it with the bag clamp! Secure it with some adhesive tape!



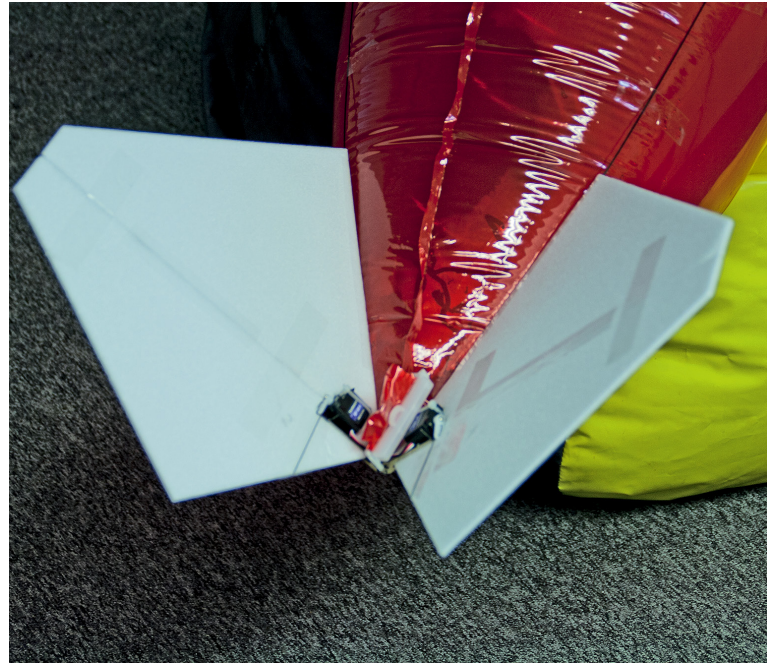
The cover on the room ceiling is easy to reach. Don't forget to secure the cover in a hall or outdoors!



Fix the engine nacelle by attaching the two upper carbon fibre rods to the bottom of the hull, facing forwards, using transparent adhesive tape. The engine is positioned exactly above the weld and in the first 1/3 of the hull. The battery will be in front of the gondola.



The V-tail is attached in a similar way to the stern of the airship. Two rods are at the top, the third at the bottom of the airship. You have to take care that the clip and the rudder do not get in the way. It is up to you whether you place it at the top or at the bottom and secure it with some adhesive tape if necessary.



Connect the RC receiver to the motor and servos, then connect the battery and test the function! Secure the cable, battery etc. in suitable places with adhesive tape or cable ties. This should be combined with the next step, the balancing of the airship! On the one hand it should lie horizontally in the air. You can also change the position of the battery - or of the possibly mounted camera. On the other hand the airship should be trimmed "slightly heavy". This means that it should sink slowly without propulsion. The calibration is done by small weights, e.g. coins, which you attach to the hull with some adhesive tape.

All done? Great! The holding line can be released ... and start!

Important tips:

- *There are pre-configured mixers for the V-tail in several remote controls. Possibly you still have to adjust channels and directions.*
- *In the beginning fly slowly and make half rudder deflections, before you dare to take fast turns!*
- *Don't worry, collisions with walls are usually completely harmless for the silent_runner.*
- *In the open air the silent_runner should only be flown when there is no wind. The engine is not designed for a fight against the wind.*
- *Make sure to trim the airship "slightly heavy" so that it comes to the ground in case of a failure!*
- *Adjust the RC receiver so that the engine switches off when the radio connection is interrupted!*

Have fun with the silent_runner!



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Links

Online shop: https://lta-technologie.de/silent_runner/

The designers: <http://windreiter.de/>

Forum: <https://www.lta-forum.de/phpBB3/viewforum.php?f=62>

Facebook group: <https://www.facebook.com/groups/184553295643/>

Yahoo group (old): https://groups.yahoo.com/neo/groups/rc_airship_regatta/

LTA Technologie AG
Onlineshop
Strehlener Str. 14
01069 Dresden
GERMANY



E-Mail silent_runner@lta-technologie.de
Web <https://lta-technologie.de>

