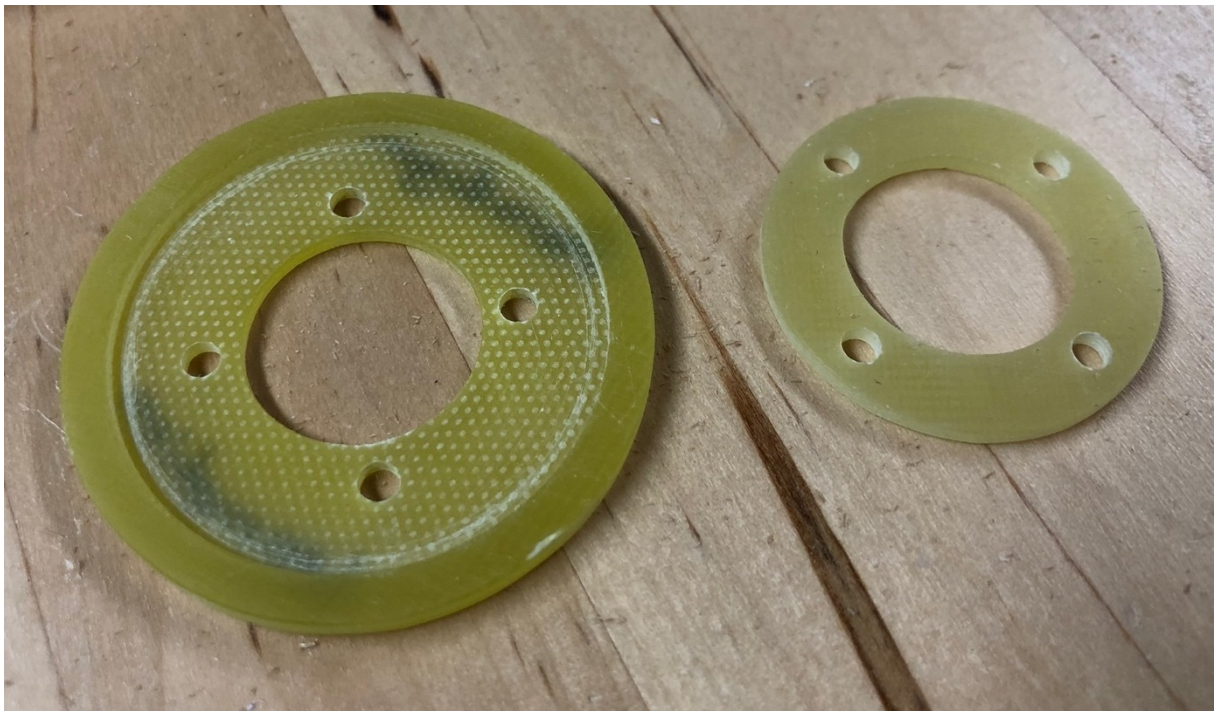
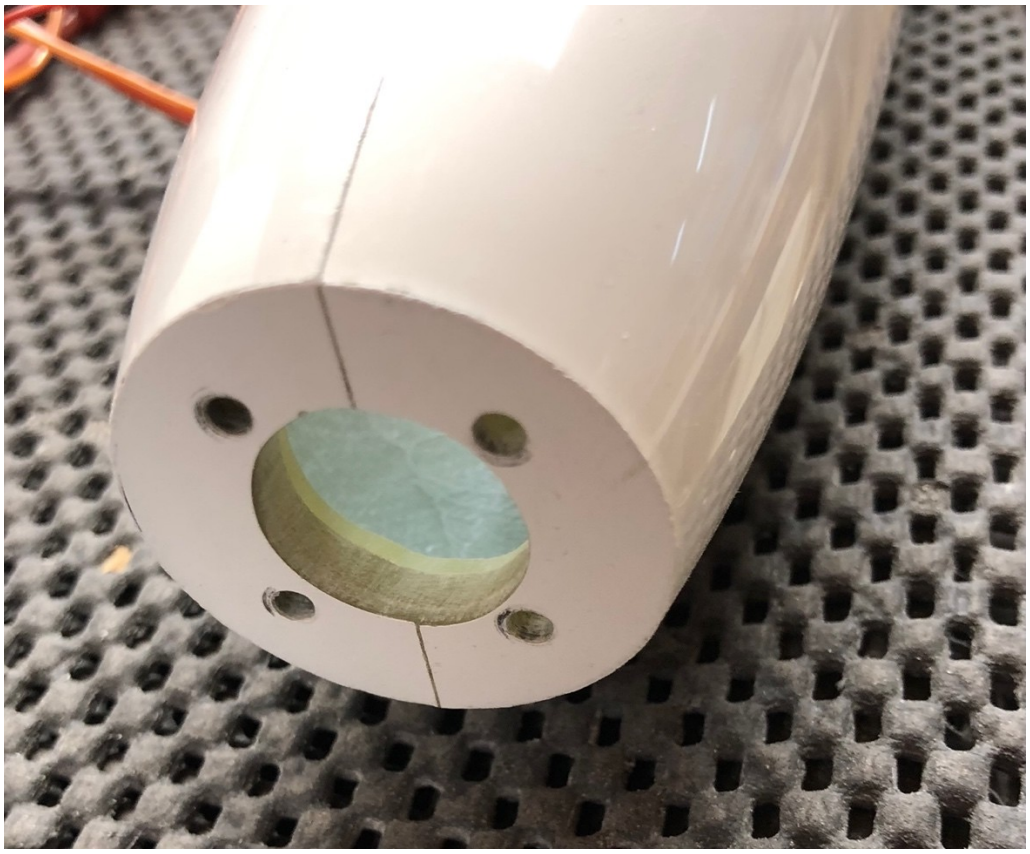
Paradigm fuselage arrangement

I found Philip Kolbs youtube video of his fuse arrangement with the GPS equipment very useful. That was the reason to show my arrangement and to provide the CNC drawings of the used GRP and wood parts.

I’ve ordered the Paradigm fuse without motor and therefore got it without the drilled holes for the motor connection. To drill them for my Leomotion 4023-2400 with P32 gear exactly, a template out of 3mm GRP was created per CNC. The template has a round pocket, 1.5mm deep, that fits the Paradigm nosecone perfectly. If you are using an other motor and are able to mill such a template yourself, the dxf-drawing is available at the end of this article. The holes with other motor dimensions can easily be changed. Important is the dimension of the pocket that fits perfect to the nosecone. With that round pocket, the template can’t move on the nosecone. After drilling the first hole the template should be fixed aditionally with a M3 screw to prevent a radial movement. The large middle hole for the gear of the Leomotion motor should be drilled with a smaller drill bit than necessary and then grinded with a Permagrid round file up to the boundary of the template.

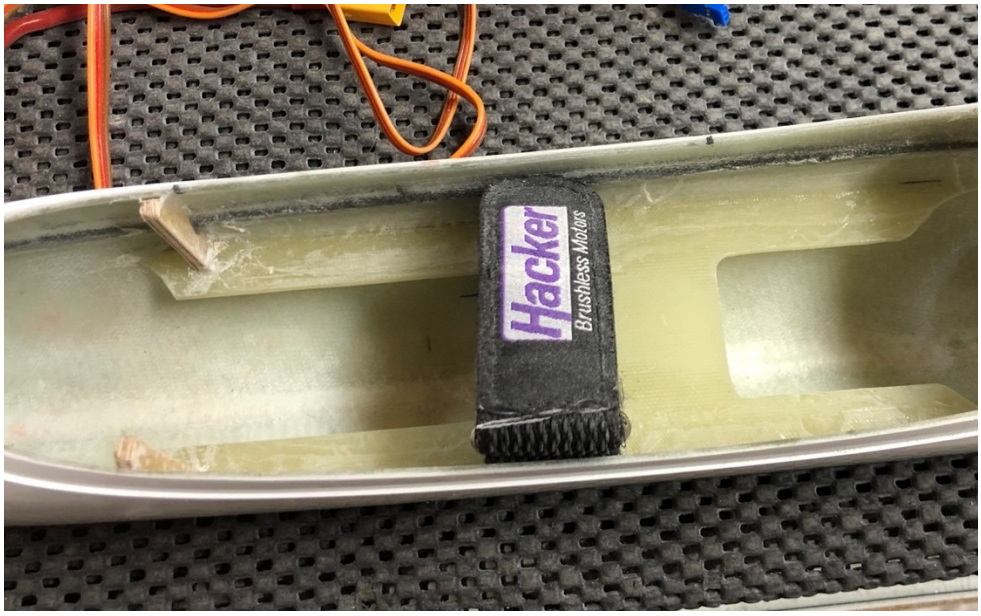


For the Leomotion motor it is necessary to put an 1.5mm GRP spacer inside the nosecone. Otherwise the gear of the Leomotion is too far outside the nosecone and the spinner will not fit close enough. I put epoxy on the spacer and fixed it with a 3mm steel pin in line with the motor holes.
The Paradigm motor bulkhead is already thicker than on other planes that I know but for the geared Leomotor not thick enough. The next picture showes the bulkhead and the additionally glued in spacer can be recognized by the lighter colour.

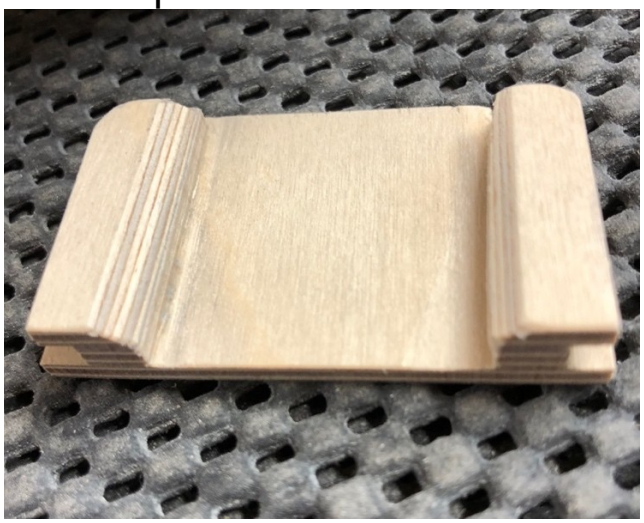


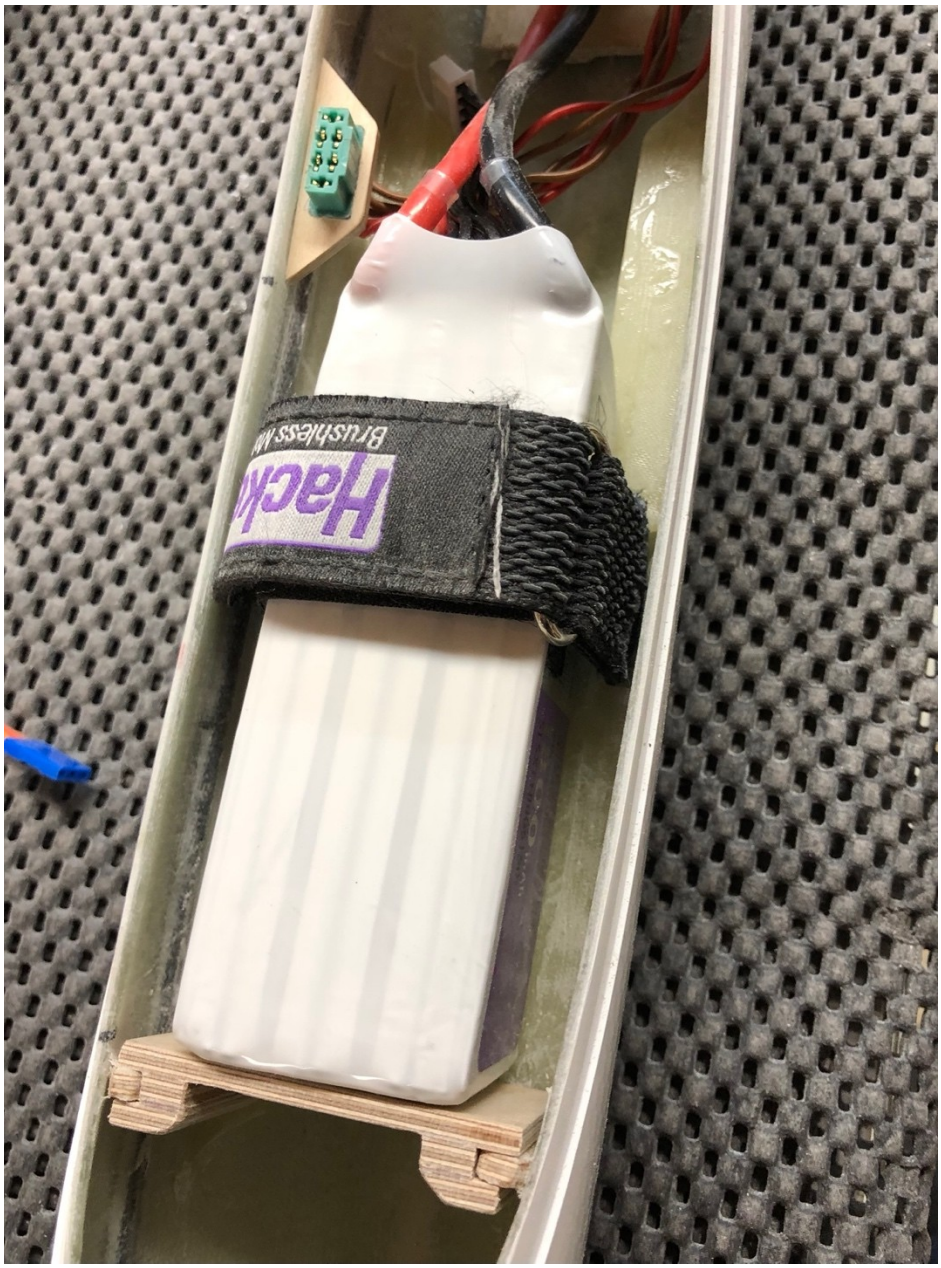
My Paradigm is equipped with a 95A controller from YGE, which was soldered directly to the Leomotion without plug contacts. I kept the cables as short as possible. The motor was then installed and screwed in such a way that the controller was placed on the bottom of the fuselage. Now the GRP board supplied from Samba with the Paradigm was adapted as a battery support and fixture. The width was reduced and an additionally U-shaped opening was cut out at the rear end of

the GRP board to make it easier to guide the battery cable of the YGE controller to the battery connector.
The drawing of the modified GRP board is also attached here on the dxf file.

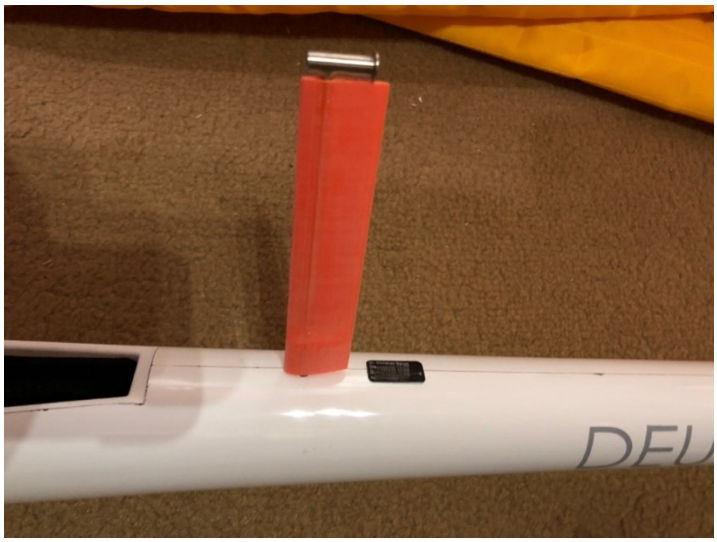


In the last picture you can see two small ribs at the front of the GRP board. I glued these ribs in place with epoxy resin and then bonded them to the fuse laminate on both sides with 49g/m2 glass fabric. These frames are sized so that the motor can still be removed. The function is a forward stop for the flight battery. To ensure this, a 3mm birchwood frame with guides was assembled which can simply be pushed on and off. This prevents the battery from moving forward. If it is necessary to move the centre of gravity a little backwards, a piece of EPP foam is placed between them as an additional distance.

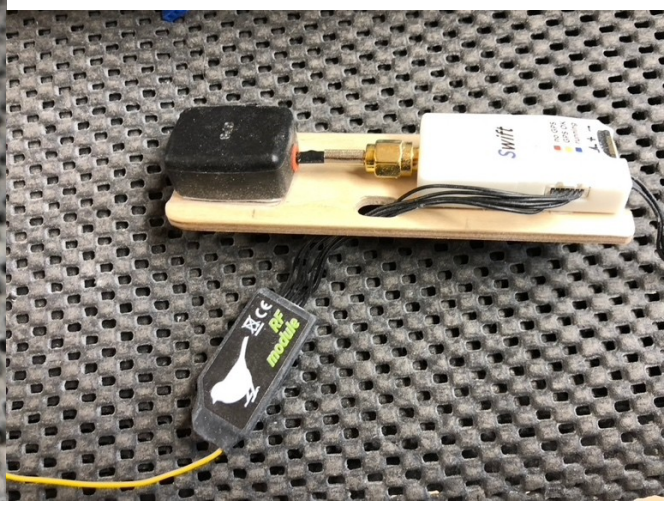




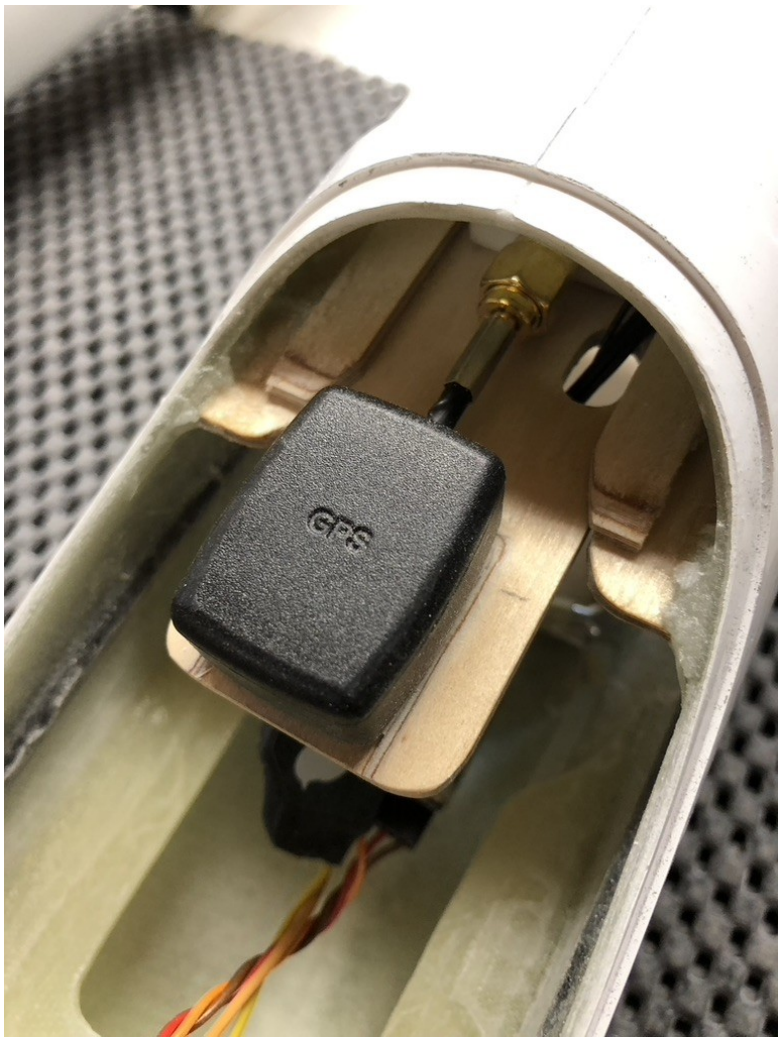
The Paradigm was also equipped for GPS flying. With the position of the battery directly behind the motor and thus above the controller, the area between the battery and the wing nose is available. This area is completely laminated from GRP without CFRP. The area is large enough to place the receiver forward and also to lay the receiver antennas inside the fuselage.
The space behind the rudder and elevator servos is thus free. Behind the wing only the connection of the TEK-nozzle with the holder was then glued in with epoxy resin.



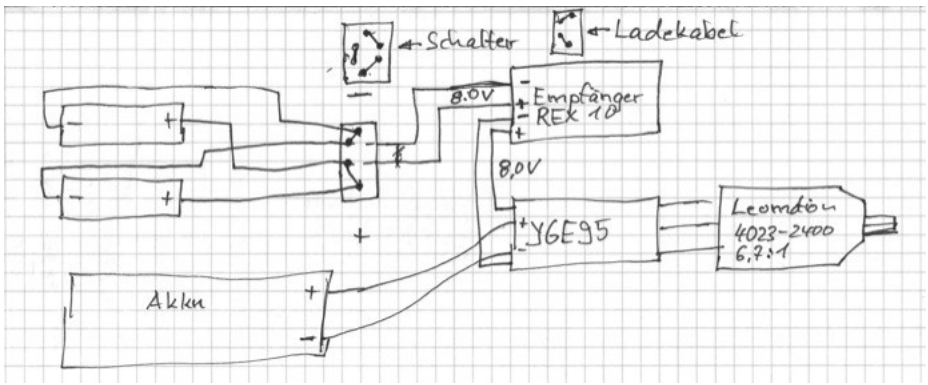
I use the Swift with the GPS module, the RF module and the TEK connector for GPS flying. Since this unit is also used in other models, I glued all this onto a 3mm birch plywood board measuring 100x30mm with double-sided tape. This board is held and fixed in the models in a kind of drawer guide, also made of birch plywood.

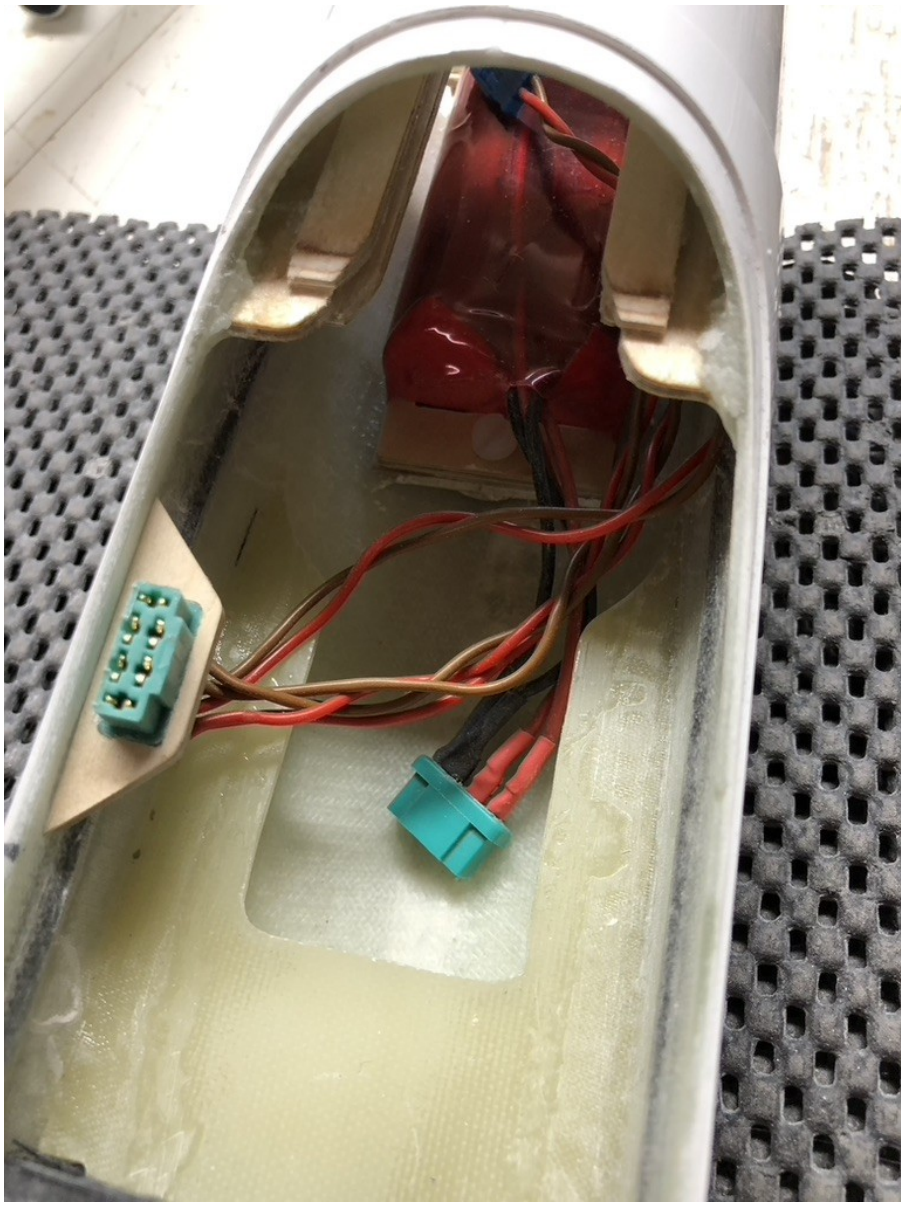


On the left pictures you can see the GPS drawer guide glued at the very end of the nosecone above and the fixture of the additionally buffer battery at the bottom. The used GPS-equipment is placed on the plywood board.

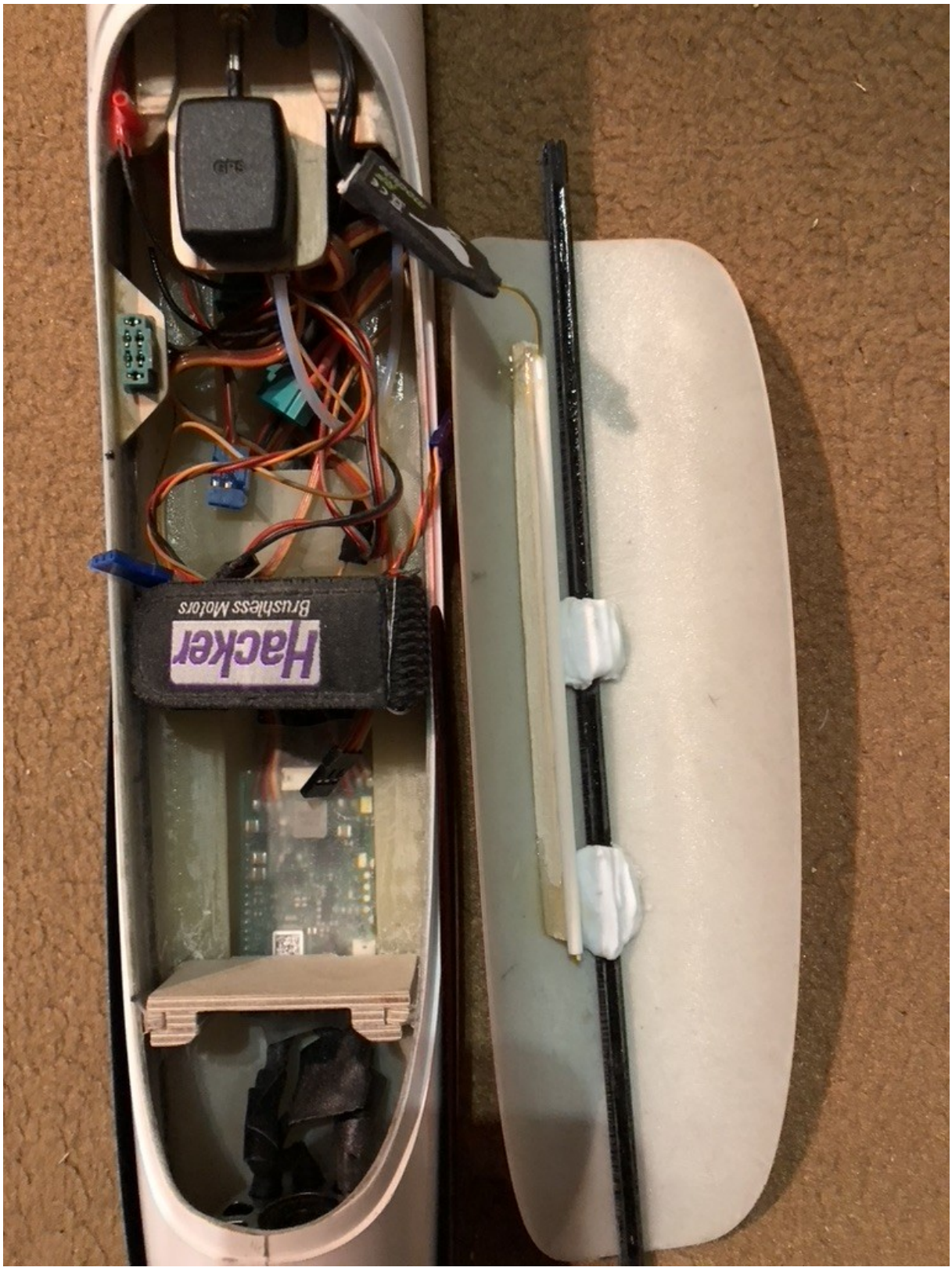


Since I only use an 1800mAh 6s battery for reasons of centre of gravity, I have installed a buffer battery for the first time. The circuit for switching on and possibly recharging the 2s 3000mAh LiIo battery, I use MPX plug and socket. The two cells are connected in parallel up to the plug and are therefore also charged in parallel without a balancing cable. With the MPX socket, the cells are connected to the receiver and then in series, i.e. with a reduced voltage of 8.2V.





The buffer battery has found its place under the GPS equipment. The receiver is fixed to the buffer battery with Velcro tape and thus lies in the space between them. The receiver antennas are guided and fixed at an angle of 90° in bowden cable tubes on the plywood installations. The MPX connector for switching the buffer battery is placed in a plywood socket on the right inside of the fuselage.
For the time being, I have placed the antenna of the RF module in a bowden cable tub in the canopy. If there are problems with the telemetry reception, this antenna can also be placed on the fuselage bottom. Since there are a lot of cables on the fuselage floor, I decided to use the version in the canopy.



Maybe this articel could be of help for the installation.

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