WazzUp

Manual
Revision 1.0 - Sep 2024

DYNAMIC ALLROUND GLIDER

Span	: 2500 mm
Wing Area	: 46.3 dm²
AUW	: 2.3 kg
Wing loading	: 50 gr/dm²
Airfoil family	: JX-GT
Airfoil thickness	: 7.65 – 6.90%
CG	: 91,5 mm
Aspect Ratio	: 13,5

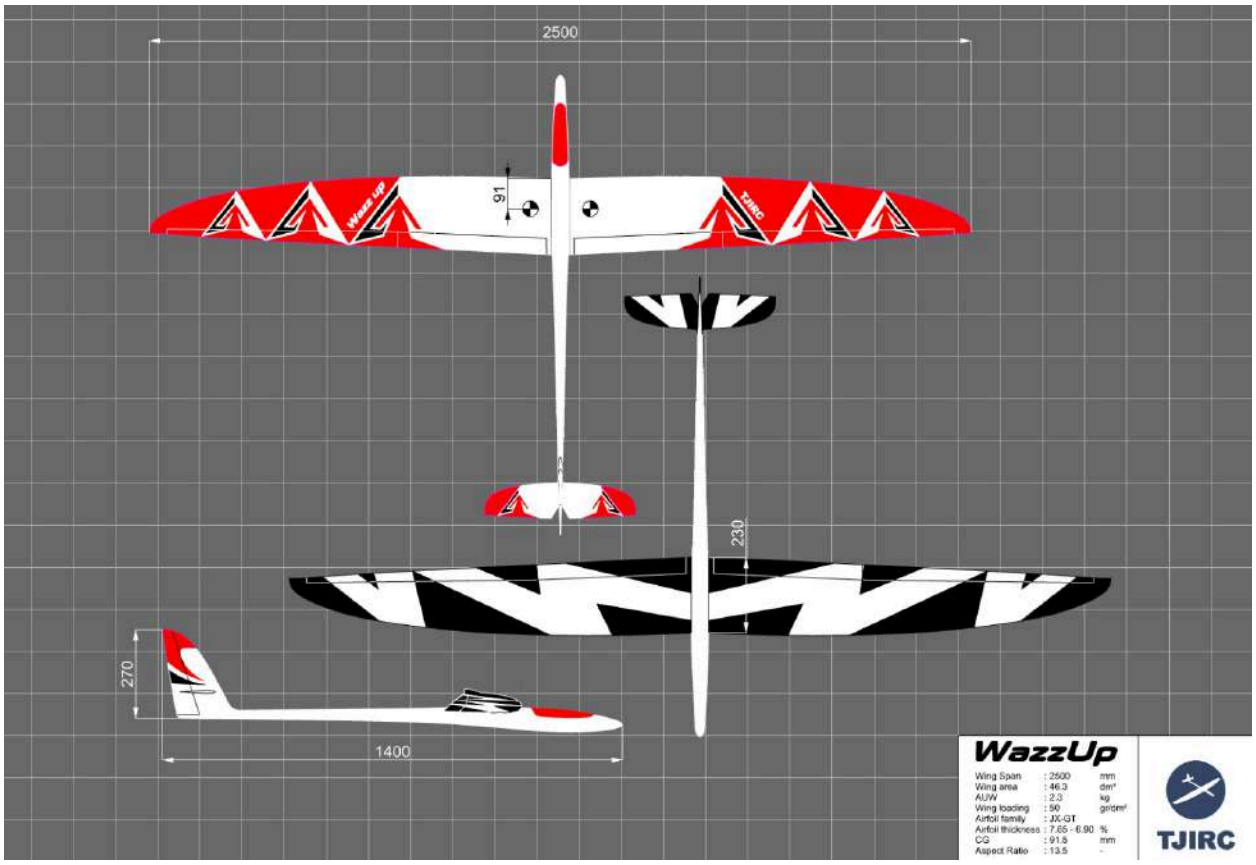
Contents

Version 1.0 (September 2023)

Introduction

Congratulations on the purchase of a WazzUp. The WazzUp was born out of the head of Eric, while he received a lot of help from 8 model glider friends. After a year of thorough testing and improvements by all of us we think that we have created a dynamic allround glider that can show its potential in the hands of an experienced pilot. That is the glider you have in your hand now.

The WazzUp can be built as a pure glider or can be equipped with a motor. This manual covers both models.



Characteristics

- Wingspan: 2.5 m
- Length: 1.3 m
- Weight: AUW 2000-2300 gr
- Wing area: 46.3 dm²
- Wing loading: 46.7 gr/dm²
- Airfoil: JX-GT Strak (by Jochen Günzel)
- Ballast: 700 grams of ballast in the wing pockets (optional)

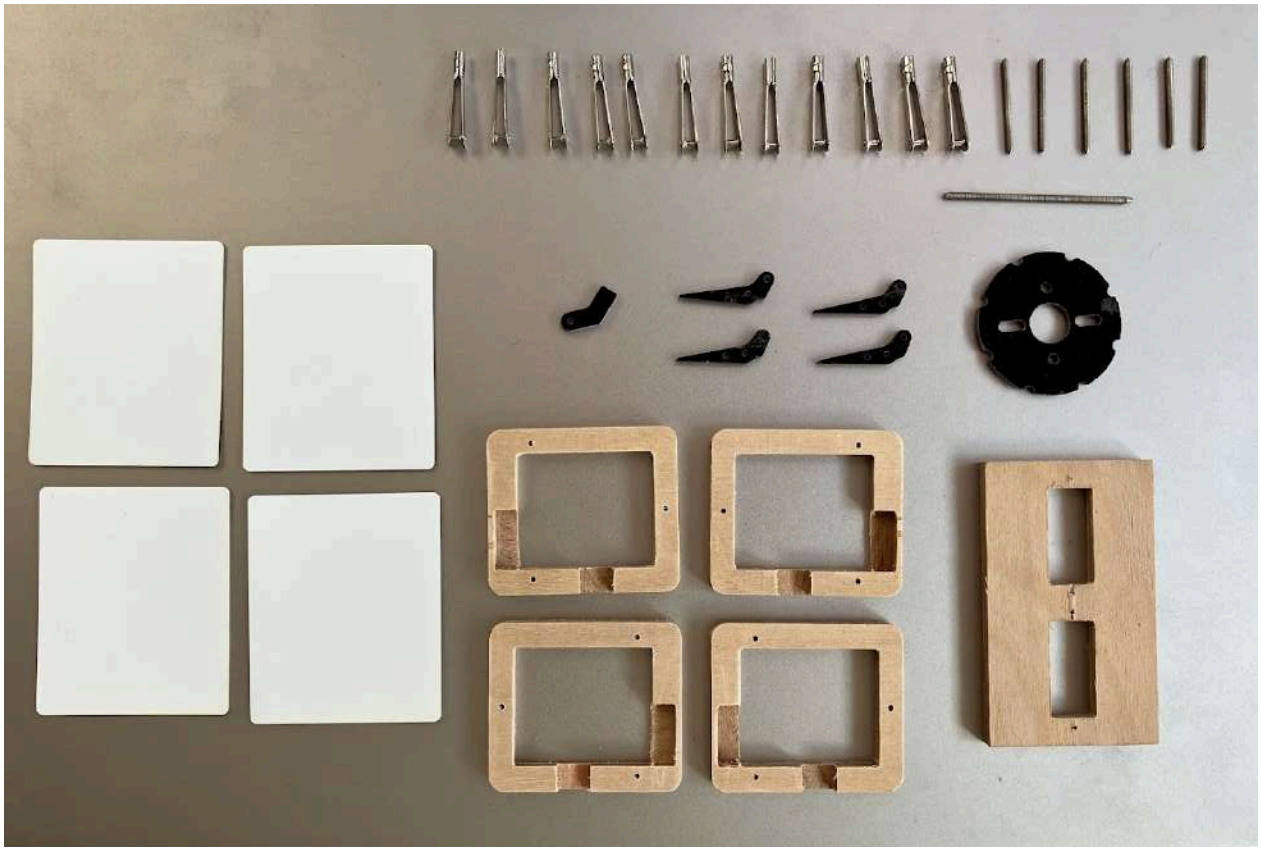
About this manual

We have built a few WazzUps for testing purposes. Glider versions and motorized versions, glass fiber and carbon. This manual shows how we have built them. This is not a step-by-step instruction on how to do it. It shows what equipment we have used, but if you make other choices that is fine. This is not your first plane, and you know how to install RC equipment, so pick the RC equipment you like. Our choice is not mandatory. Choose whatever suits you.

What you get

In the box you will find:

1. Fuselage
2. Left- and right wing halves
3. Joiner for main wing
4. Elevator, left and right halves
5. Joiner for the elevator
6. Small parts:
    a. Servo covers (4)
    b. Servo mounts (4)
    c. Servo tray (1)
    d. Clevises (12)
    e. Pushrods (flaps/ailerons) (6)
    f. Pushrod (spare) (1)
    g. Rudder horns (flaps/ailerons) (4)
    h. Rudder horn (rudder) (1)
    i. Motor mount (1)



What you need

You need to buy:

1. Servo's.
   - *Aileron:* The aileron servos should not be thicker than 9 mm, and have a minimum torque of 35 Ncm. For instance, KST X08H plus or Chaservo HV85H.
   - *Flap:* Max 10 mm thickness, > 35 Ncm torque. For instance KST X10 mini or Chaservo HV85H.
   - *Fuselage:* As long as they deliver a minimum torque of 35 Ncm, you're OK. Use for instance KST X10 or Chaservo HV85 / DS09
   - Receiver. Full range 6 or 7 (e-version) channel receiver.
2. Battery: e-version: 3S1P, 2200mA
   glider: 2S Li-ion (Panasonic 18650, 2900mah)
3. Wiring: Servo wire and two 4-pole connectors (Multiplex, for example).
4. Linkages: Three 2 mm linkages to be glued on the carbon pushrods. (elevator, rudder servo side, rudder horn side)

For the e-version, we have selected the following components for the prototypes and were happy with it. Consider our choice as an example:

5. Propellor: GM 11" x 6"
6. Spinner: 32 mm outer diameter
7. Motor: Dualsky XM3045-EG8 (1250kV, 725W)
8. Speed Controller: Sunrise Model ICE 60A (or ICE HV 60A for HV servos)

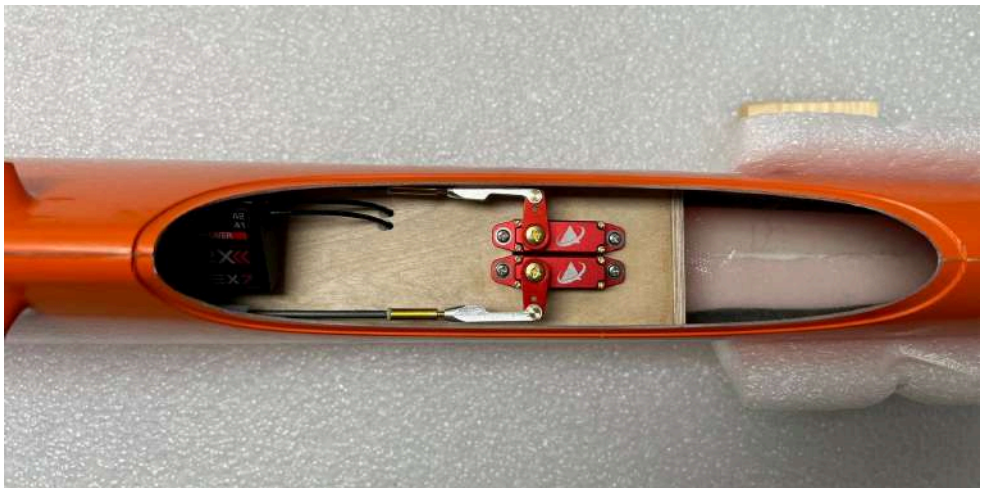
Assembly

Fuselage, Glider version

Servo’s, fuselage

First, adjust the servo tray so that the rudder- and elevator servos fit in. Then, adjust the size so that the mount is on the right height to give space for the servo’s that they don’t touch the bottom of the fuselage. Mount the servo tray behind the battery with epoxy. The fuselage is triangular so the tray can be fixed by pulling the tray upwards. In this way, a tight bond can be achieved. The receiver can be mounted on top of the tray with some velcro. There are carbon reinforcements in the fuselage, so it is recommended that the antenna’s are routed outside the fuselage.

Servo tray

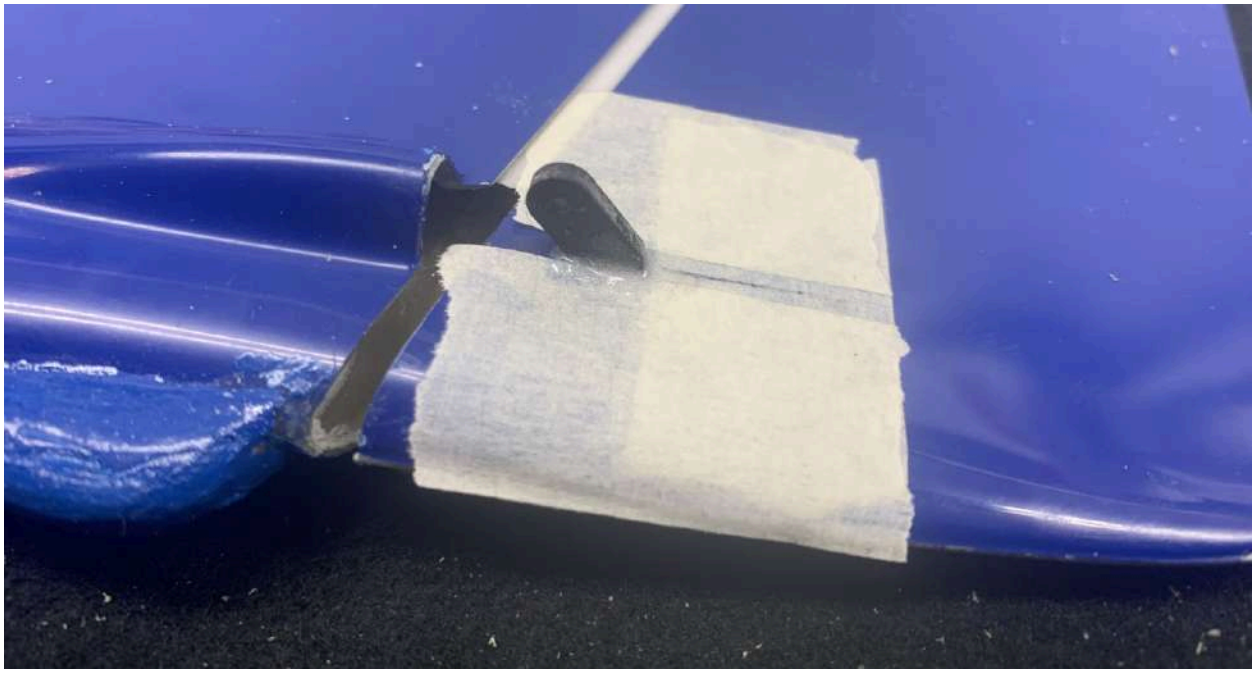


Servos mounted

Rudder

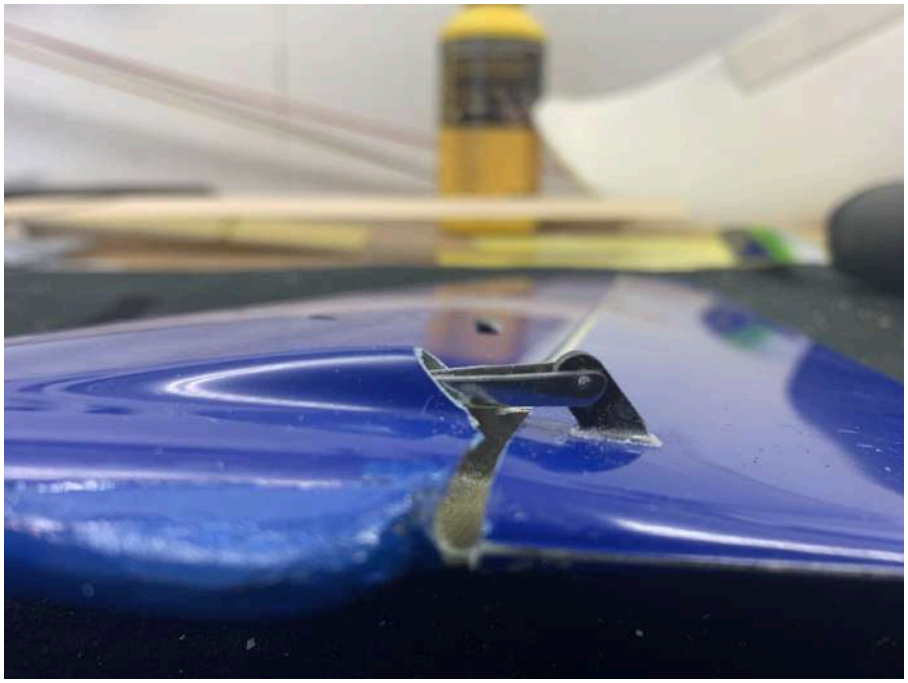
The following images describe the installation of the rudder linkage.

Defining the correct place.



Gluing the rudder horn.

Horn glued in place.



Remove a part of the tail to have enough rudder deflection

Another example

Linkages

The fuselage already contains two 2 mm carbon pushrods. Cut the pushrods to their right length and glue the linkages on the rods with epoxy bond or UHU Endfest before connecting them to the servo’s.

Wing servos

Aileron servo horn is 5.5 mm long, the distance between the rudder horn and the hinge is 10 mm.
Flap servo horn is 4 mm long, the distance between the rudder horn and the hinge is 9 mm.

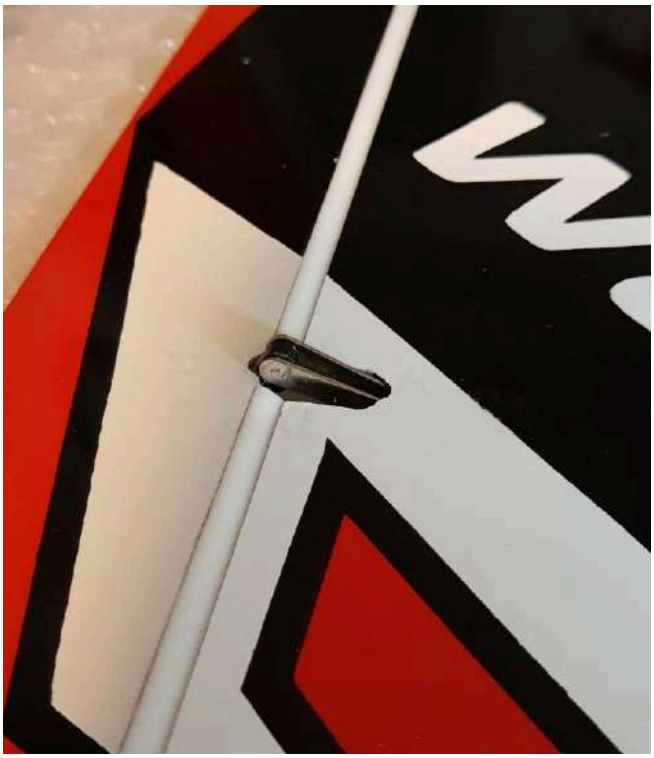
As an example we have used two ways of installing the wing servos:

1. The good old way with clevises and steering rods
2. With modern double servo-linkages

With clevises and rods:

Aileron servo

Flap servo



Aileron (neutral).

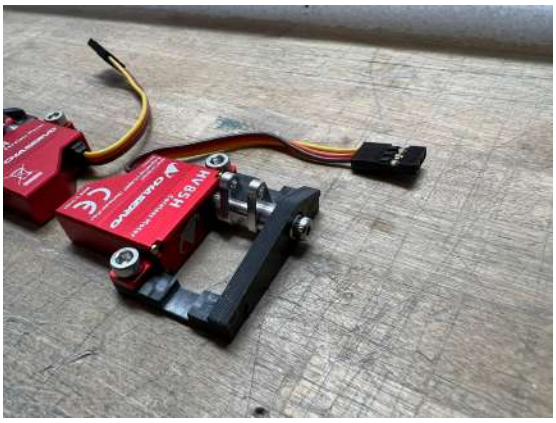
Aileron (deflected)

Flap (neutral)

Flap (deflected)

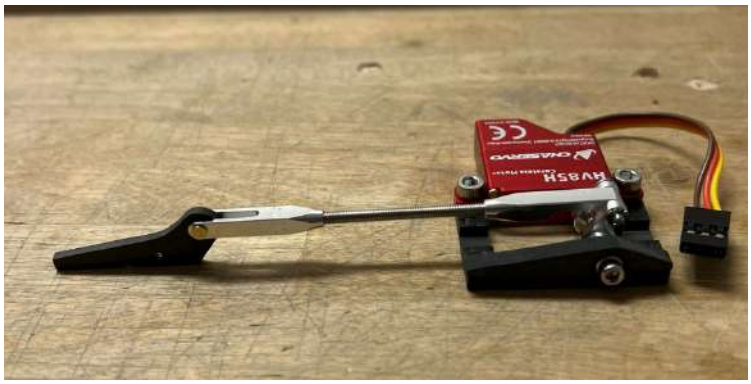
With double servo-linkage:

Order the following:
https://www.heizkoffer.de/produkt/m3-carbon-servorahmen-set-chaservo-hv85-doppelservoarm/



Servo with counter-bearing

The wing servos built in the pockets.



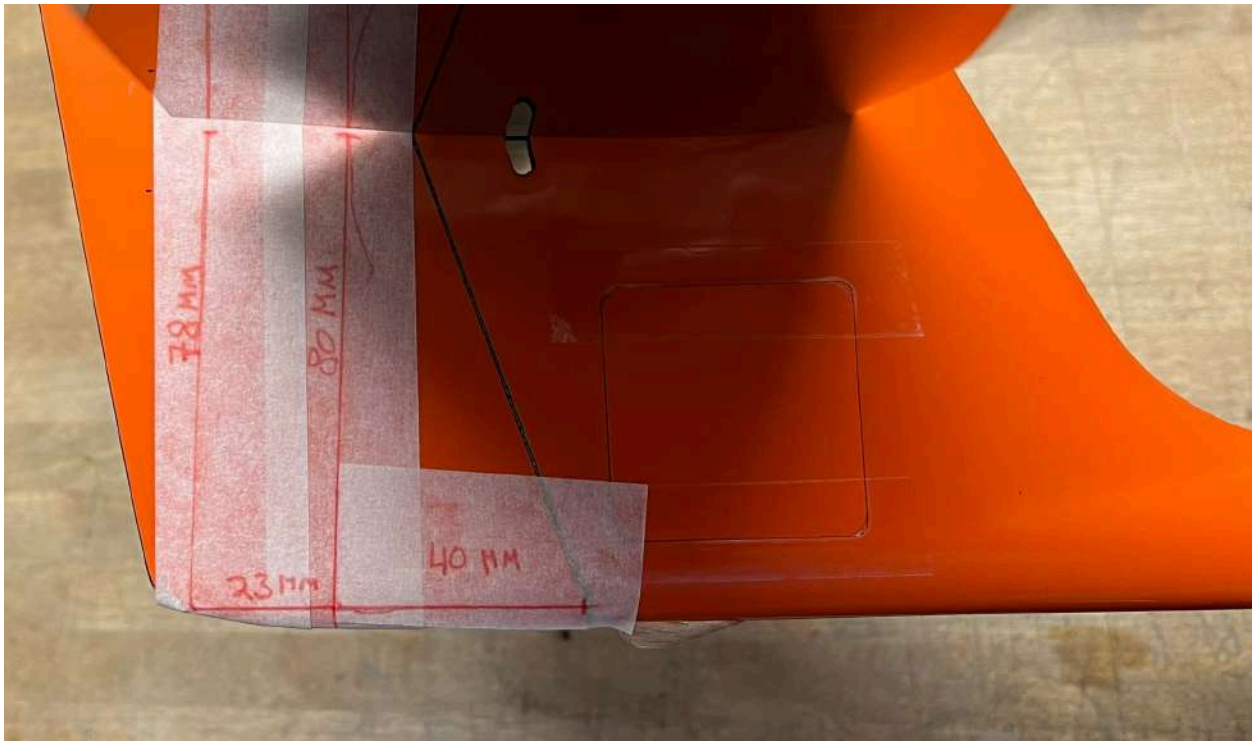
Example

Flap

Aileron

Elevator

If the linkages are in place, adjust the elevator according to the picture below. The decalage of 0.5 degrees is correct now.



Elevator, correct settings.

Elevator mount

The elevator halves will stay in place through friction with the wing joiner. Some force should be applied to mount the stabilo halves. If you have to apply too much force, sand the joiner a tiny bit. If it goes too easy, apply some glue to the joiner and sand it until the friction is sufficient.

Servo wiring

We need a connector to couple the wing servos to the receiver. Solder a 4-pole (or more) connector to proper servo wire and put a servo connector (female) to the servo wire harness set.

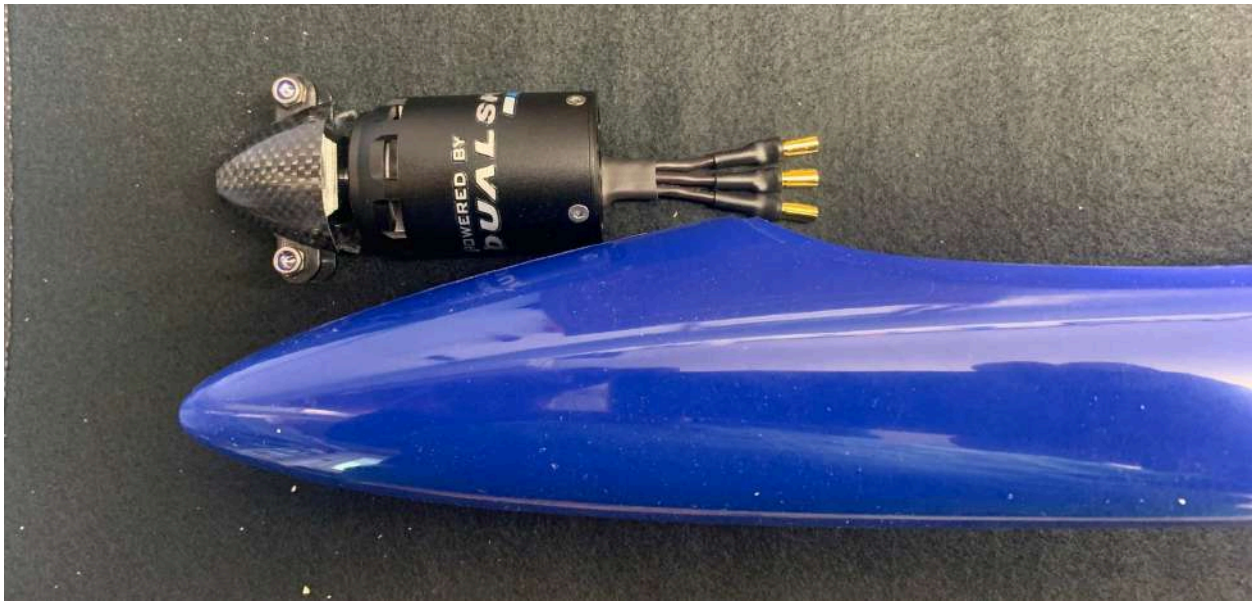
Multiplex connector in the fuselage

Connector in the wing

E-version

The WazzUp can be built as an E-version by cutting off the nose and replacing it with a spinner/propeller combination. Carefully define the correct position to cut off the nose, keeping in mind an approximate 2 degrees down thrust setting. The fuselage has a triangular cross-section, but at the Ø32mm location, the fuselage section is round, to create a perfect transition from spinner to fuselage.

Installing the motor



Motor and fuselage, uncut.

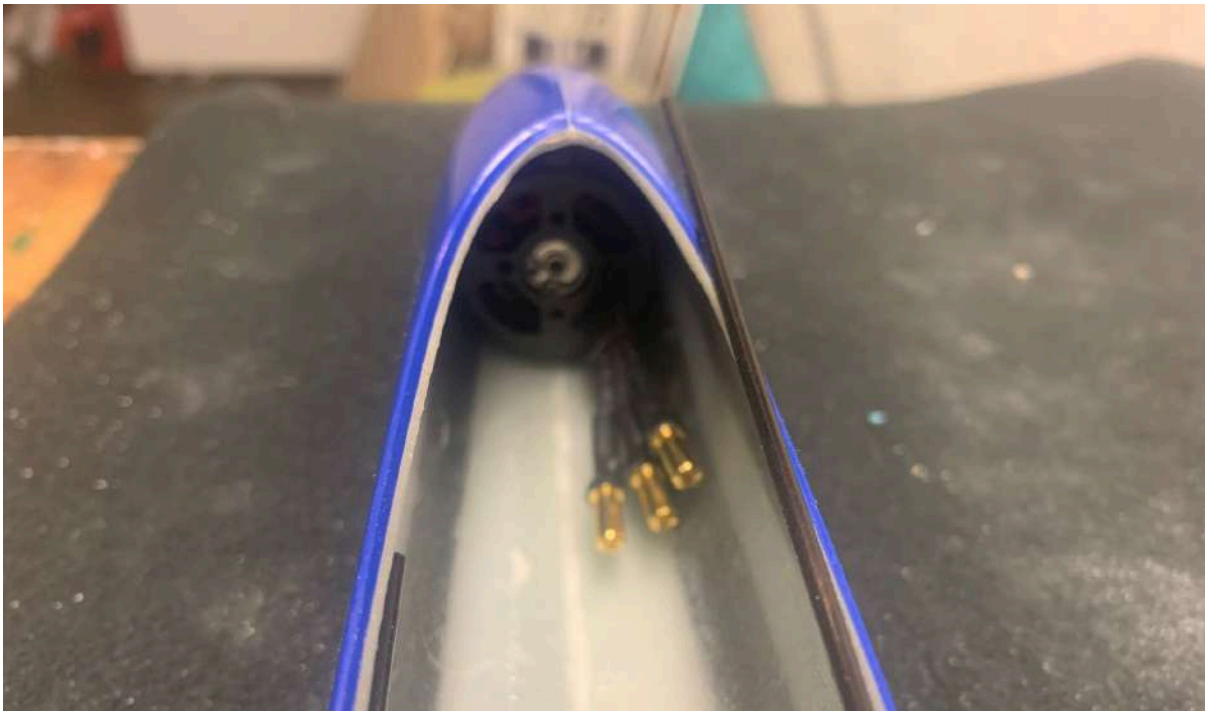
It is done 🙂

A snug fit

Fits perfectly

Just enough space for motor

Motor mount glued in

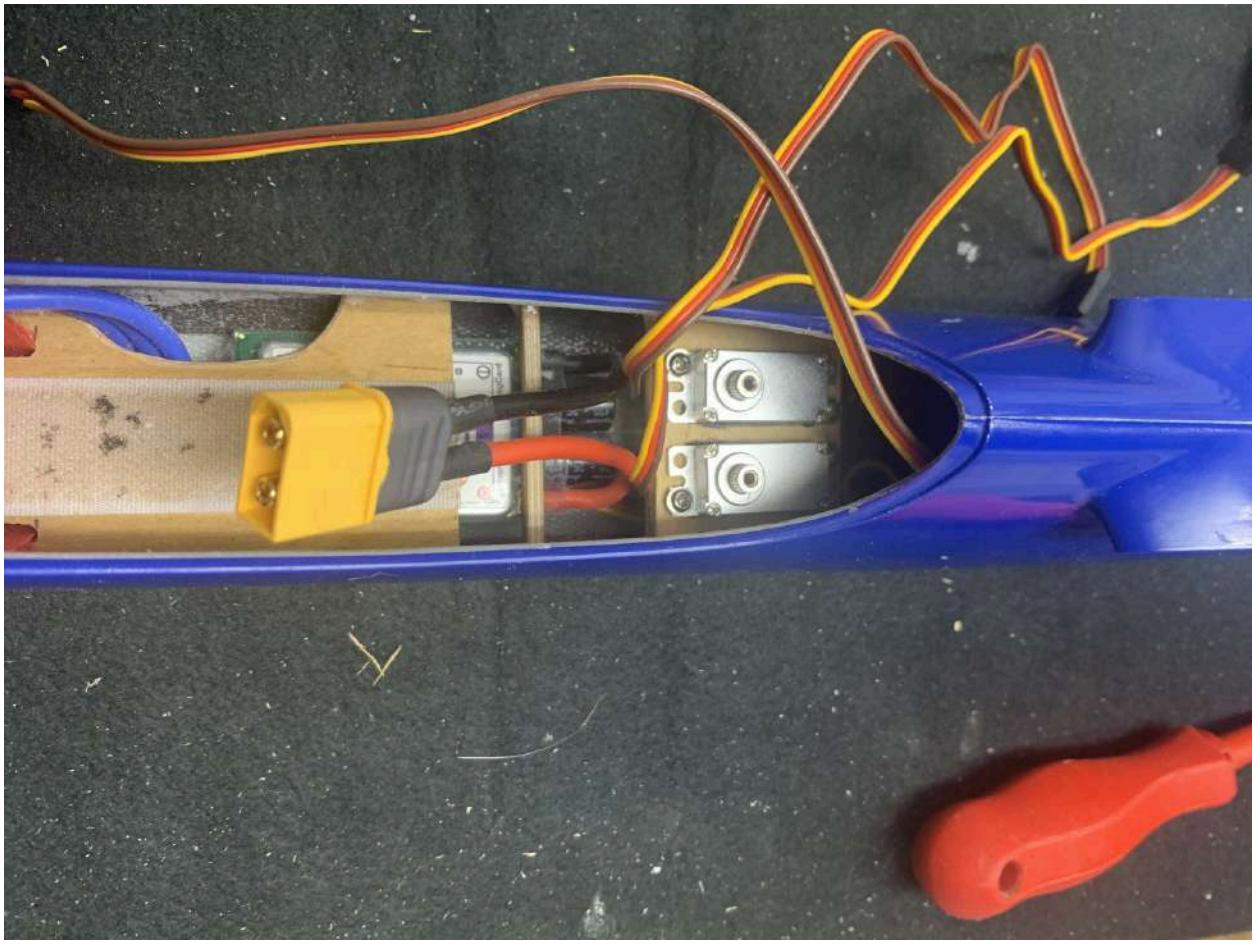


Motor mounted in fuselage

Installing battery, controller and servos (battery on top of ESC)

Fitting the components (motor is left)

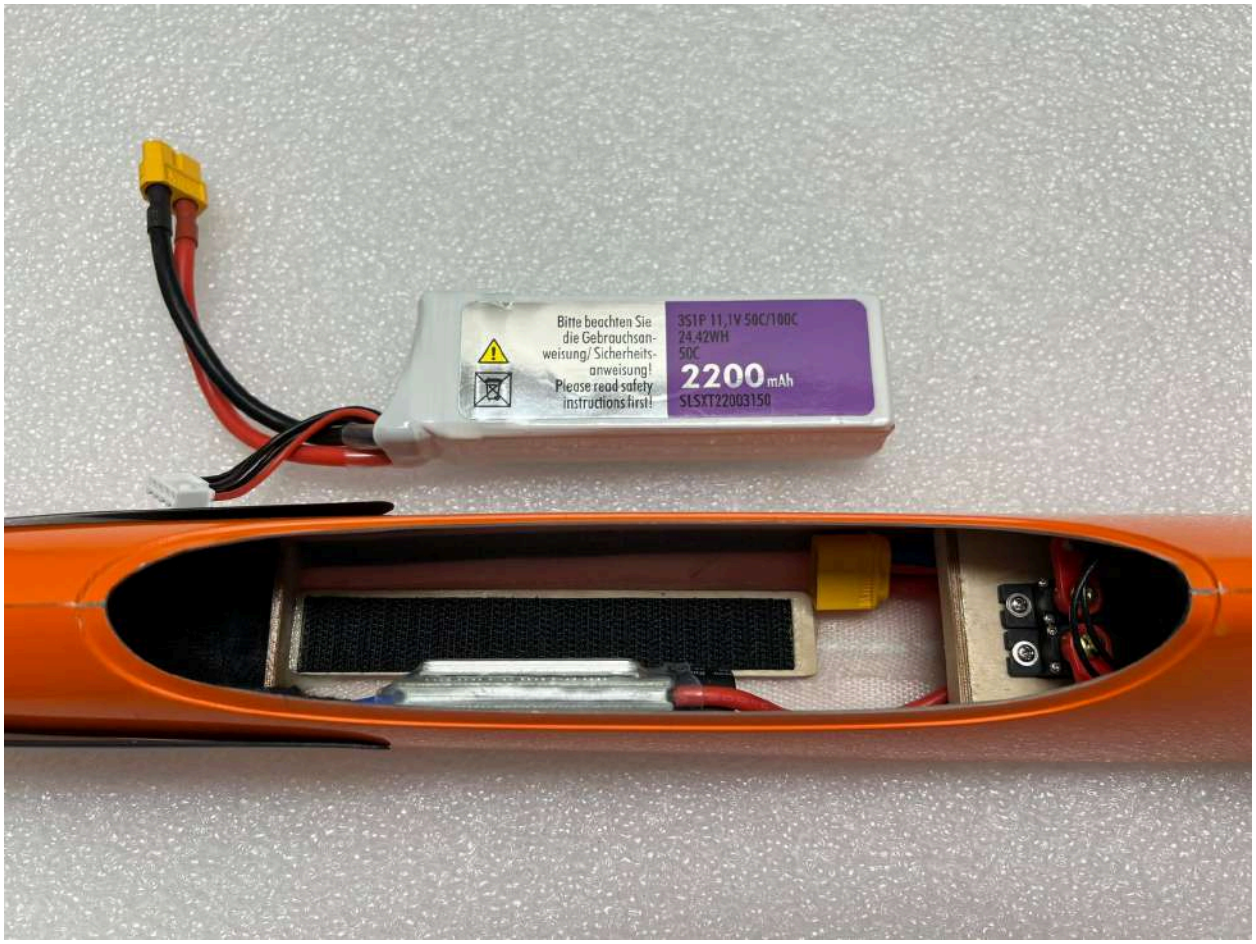
Battery tray

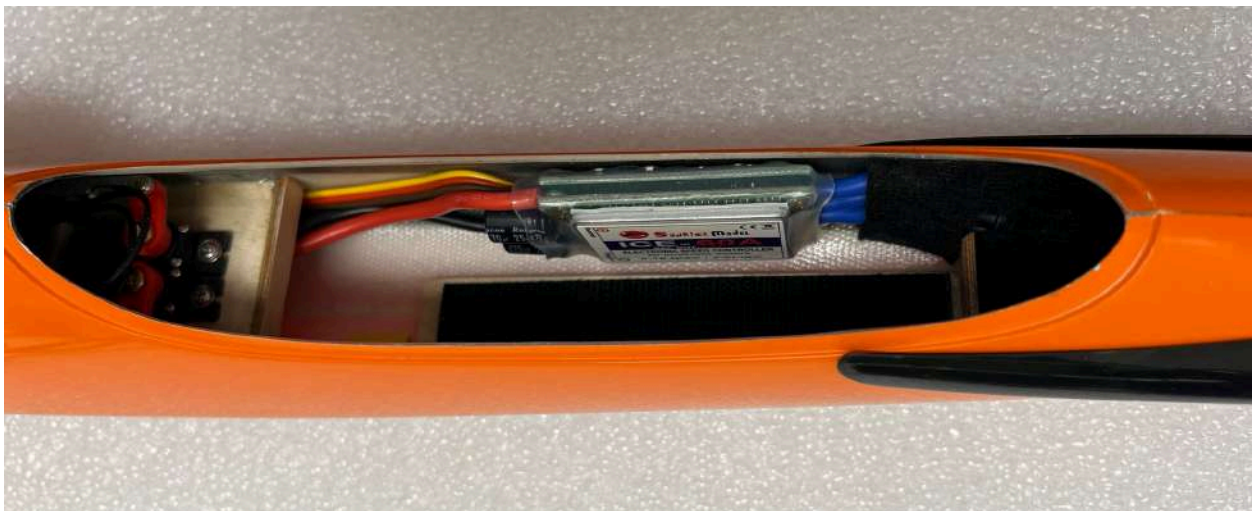


Rudder and elevator servos behind the battery

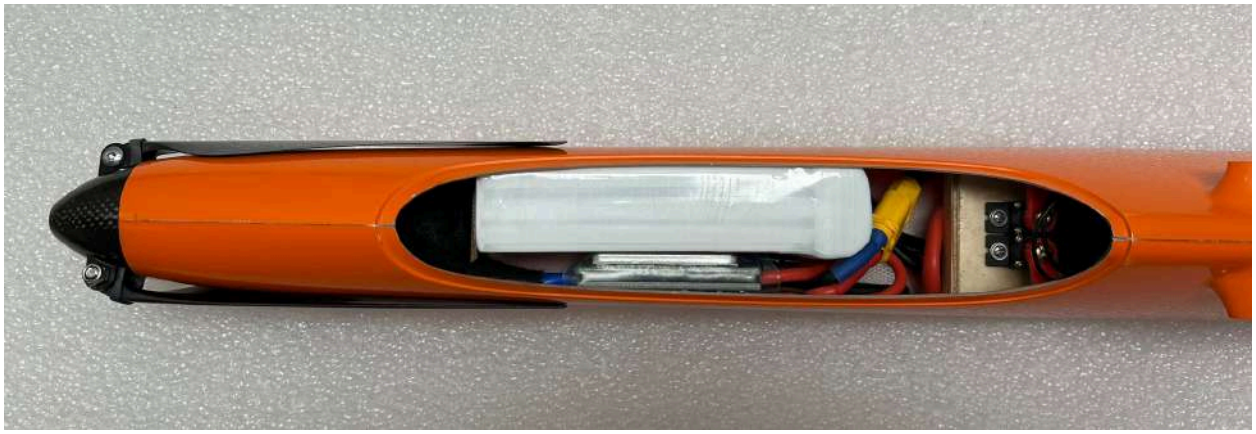
Battery next to ESC

A second possibility is to fit the battery next to the esc (cooling body on the outside).
First, prepare a strip of wood with velcro to mount the battery on. Also prepare a buffer between the battery and the motor with some spare wood.



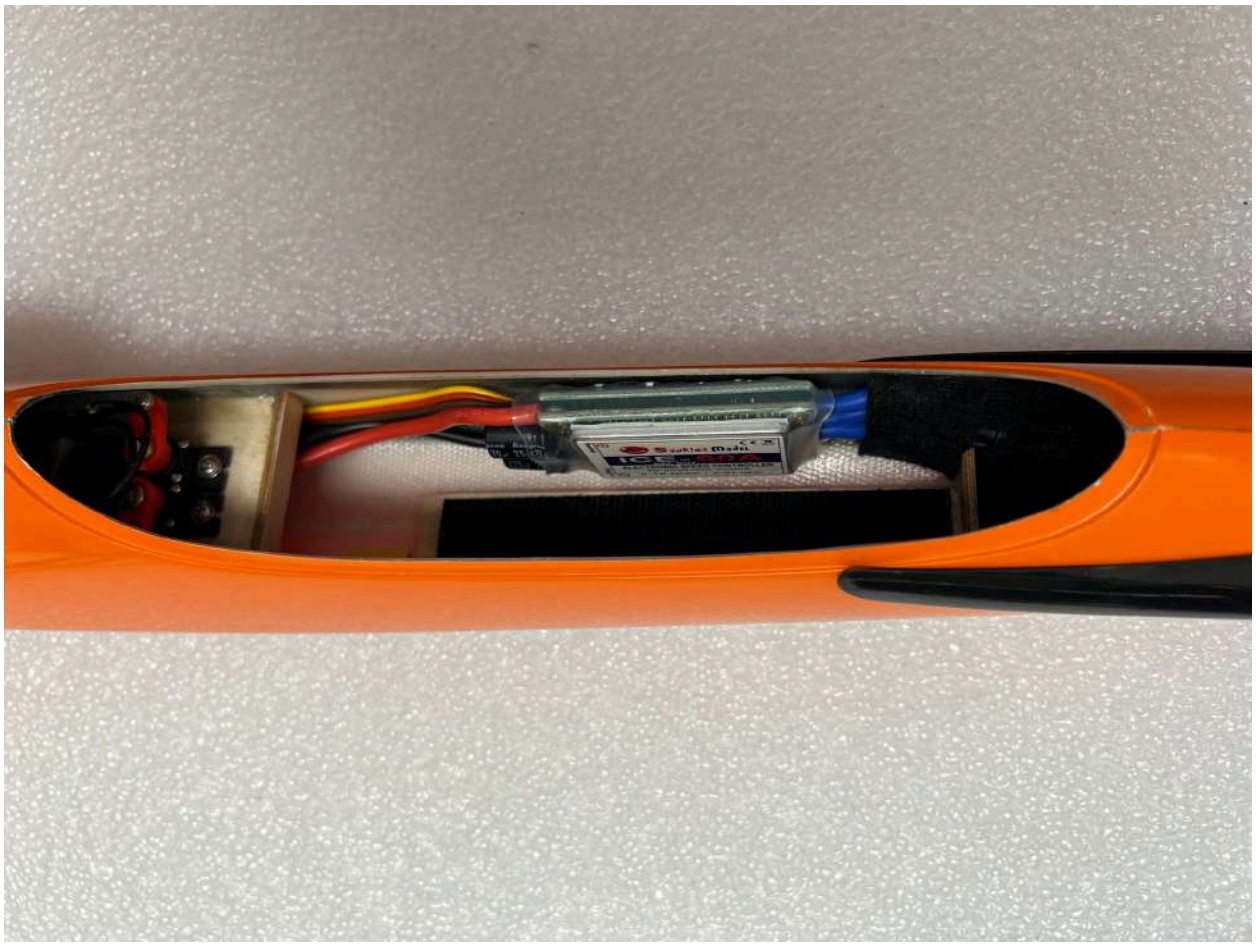


Fitting the components



Battery fits perfectly

The battery can easily be removed now. In front of the battery there is enough space for lead.



Ballast

The WazzUp can take about 700 grams of ballast. You have to make it yourself, it is not supplied in the kit. The space is 10 x 20 x 196 mm for each wing. In the picture are 2 blanks and 3 blocks of ballast, made of brass. Each wing half can take 3 blocks.

If ballast is inserted the CG will move a few millimeters backwards, so it is necessary to put a small counterweight in the nose. In our test model 50 grams were needed.

Ballast, made to measure

Ballast inserted in the wing

50 gram as counterweight in the fuselage

Recommended Settings

CG	90-91 mm (from LE at wing root)	
Elevator deflections	12 mm up / 10 mm down	
Rudder deflections	25 mm L/R (measured at maximum chord)	
Aileron deflections	20 mm up / 12 mm down	
Aileron to flap mix	Flaps	5 mm up / 0 mm down
Butterfly	Flaps	Full down (> 70°)
	Elevator	8 mm down
Flight Phases		
Cruise	Aileron	0 mm
	Flap	0 mm
Speed	Aileron	3 mm up (bottom side flat)
	Flap	3 mm up
Thermal	Aileron	2 mm down
	Flap	4 mm down

Flying

As always, do a pre-flight check confirming that all the deflections are in the right direction and your radio has sufficient range. Then, perform a test flight with a firm toss out of your hand. If the WazzUp flies a considerable distance across your flying field you are ready for the next step.

You know what that step is 😉

Have fun!