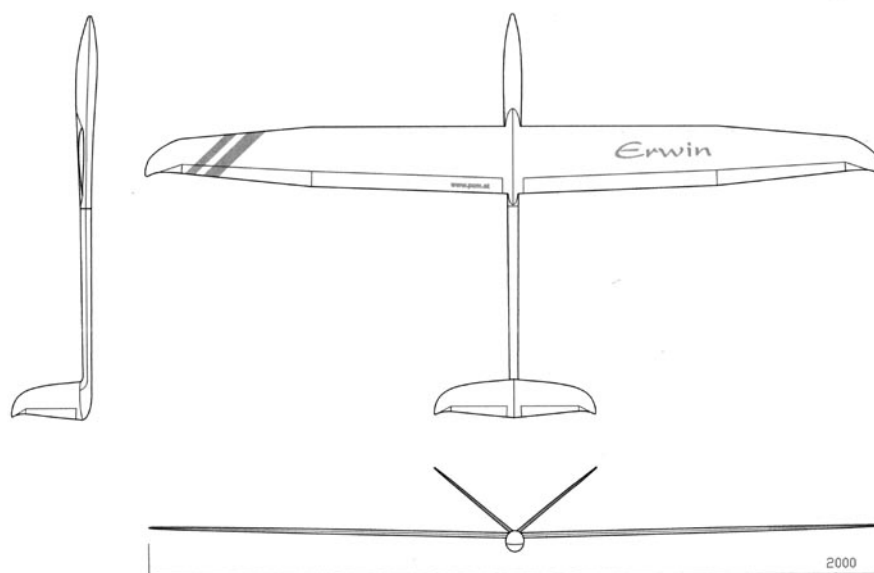


Technical data:	Wing span [mm]:	2000
	Weight [g]:	1100-1600
	Wing loading [g/dm ²]:	37,3-54,2
	Airfoill:	HQW/1,5/7mod-gestrakt
	Aspect ratio:	13,54
	Controls:	H/S/Q/W

Construction:	Fuselage	CFR/GFR strengthened with carbon rovings
	Wing / V-tail	CFR/GFR-shell-construction without support material spar made of CFR-rovings and GFR-hoses



BUILDING INSTRUCTION

ERWIN

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BEFORE THE FIRST FLIGHT

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DATA

1. Kit – contents

Kit with kitparts:

Fuselage, in two parts

Wing, in two parts

V-Tail

Steel-connector, 2 piece

Carbon-connector, 1 piece

Covers for servos on wing, 4 pieces

Push rods, aluminium, for the elevator

Supporting frame, balsa, for push rods

Ball connectors for the elevator

Levers for rudders, 4 pieces

Servoboard

Fixing board for servoboard

Screws for fixing the V-tail, 2 pieces

Adhesive decoration film (just with unpainted models)

Building instruction

2. What else do you need:

Tape, f.e. Tesa

Epoxy-glue (for example UHU 300 endfest or Stabilit, no fast hardening epoxy resin)

Controls of the wing:

Connectors for push rods, M2,5mm, 8 pieces

Welding rod, d=2mm

On/Off-switch / socket for loading

cables

Cable for antenna, possibly steel wire for extension of antenna

Plugs

3. Electronical equipment

Servos for the wing:

Hitec

HS 81

HS 85 (just for flap)

HS 125 (you have to cut the mounting eye, fixing of the servo by gluing)

HS 5125 (you have to cut the mounting eye, fixing of the servo by gluing)

Volz

Wing Maxx

Wing Star

Graupner

2481 (no metal gear)

Servos for the V-tail:

Hitec

HS55

Receiver:

Simprop Scan 7

Accumulators:

1100 mA/h NiMh

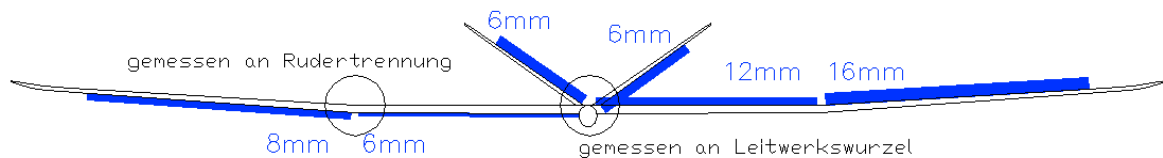
4. Settings for the first flight

Centre of gravity: 61-64mm

(measure from the leading edge of the wing to the back)

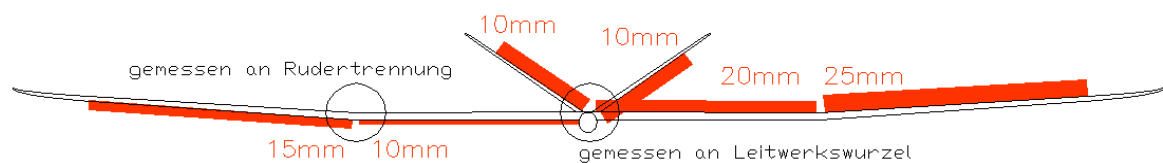
Ailerons and flaps (soft)

(measure between aileron and flap and on deepest point of the elevator)



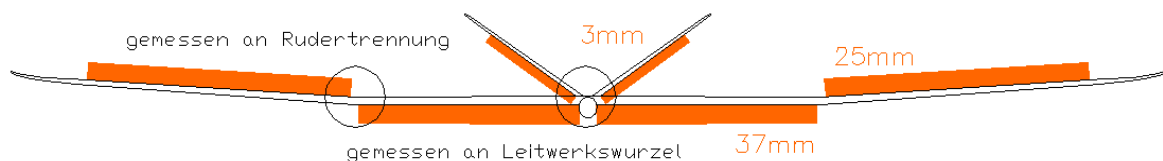
Ailerons and flaps (strong / dual rate)

(measure between aileron and flap and on deepest point of the elevator)



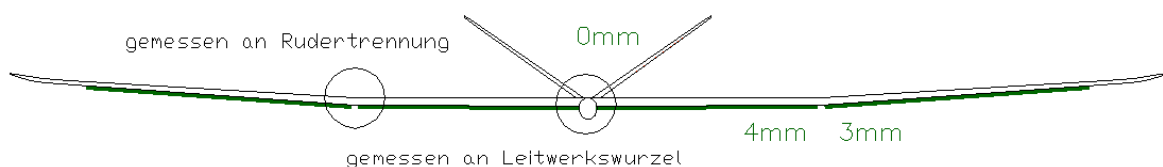
Butterfly (landing position)

(measure between aileron and flap and on deepest point of the elevator)



Flaps positive

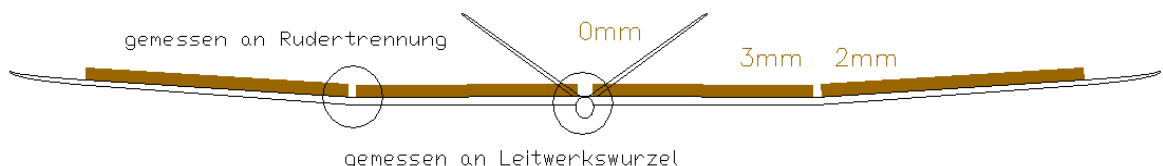
(measure between aileron and flap and on deepest point of the elevator)



(You can possibly trim the elevator during flight.)

Flaps negative

(measure between aileron and flap and on deepest point of the elevator)



(You can possibly trim the elevator during flight.)

If you use 50% Expo (switchable) you can fly in soft conditions („aileron and flaps – soft“)

With 60% dual rate Erwin flies calm and elegant.

You should be able to switch the flaps to the ailerons: When thermaling you should use only ailerons, when doing aerobatics Erwin flies best with flaps and ailerons together.

For nice rolls switch off differential (controls should make the same way in both directions, up and down).

ASSEMBLING THE MODEL

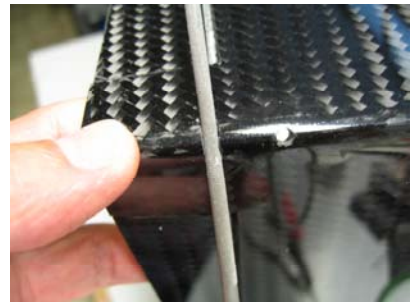
5. V-tail

The V-tail is ready prepared with holes for screws to be fixed on the fuselage.



Controlling of the elevator:

Bend two levers as shown below and glue the ball connectors to one end each. Then glue the levers to the control surfaces of the elevator. The gluing spot should be as near as possible to the turning axis of the controls (silicone hinge).



Scale 1:1

Before glueing you must make a hole in the fuselage and the elevator to give place for the levers. For this you can use a file or a rotary grinder. (Newer models will have this prefabricated.)

Ready mounted levers with ball connectors.



6. Fuselage

Before you glue the two parts of the fuselage to each other, you have to fix the balsa-frame, which supports the aluminium rods for the elevator, into the rear part of the fuselage. The easiest way to do so, is to push the balsa part with a rod backward as shown besides.



Check the alignment of the V-tail regarding the axis of the fuselage, so that it is fixed symmetrically.

To do this, mount V-tail and wing on the fuselage. Look at Erwin from the front and slowly lower the tail, until the ends of the elevator disappear behind the wing.



If both ends of the elevator disappear at the same time, the V-tail is aligned correctly.

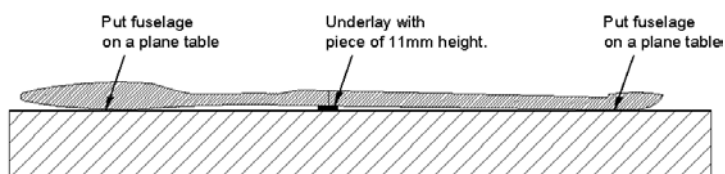
If the V-tail isn't aligned correctly, chamfer the edges of the fitting. Put the two parts of the fuselage together again and turn one part until the V-tail is mounted symmetrically.



Additionally, check the difference between the aerodynamic angles of wing and elevator ($0,5^\circ$):



Underlay the fuselage with 11mm at the point where you put the rear and the front part together. If you can't adjust the parts in this way, you'll have to grind at the connecting spot of the fuselage until it fits correctly.

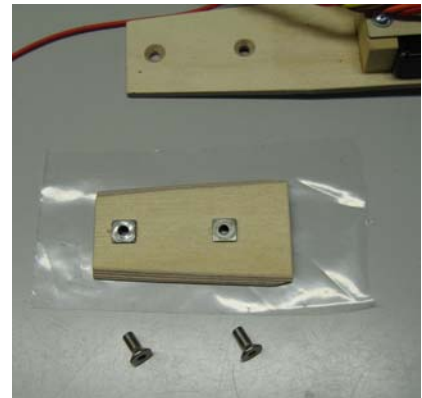


If everything fits, glue the parts together in this position. Use epoxy-glue and some cotton flocks to thicken the glue.

7. Installation of electronical components

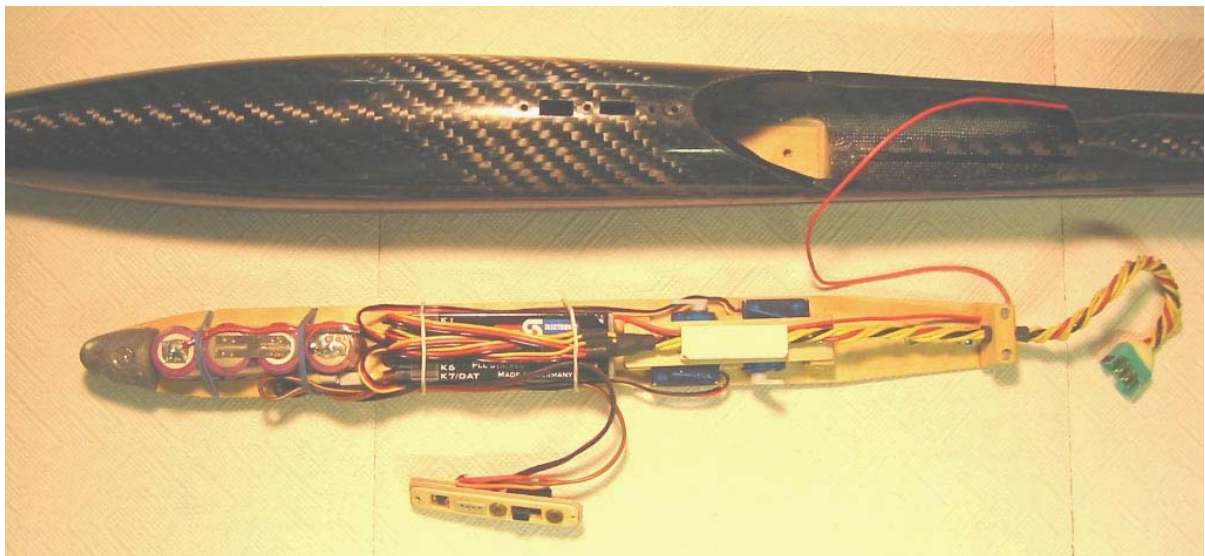
First you have to glue the fixing board inside the fuselage, as the servoboard is fixed to this board.

Drill one or two congruent holes in both boards and knock a nut into the hole of the fixing board. Mount the servoboard to the fixingboard with screws and enclose a foil between the boards.

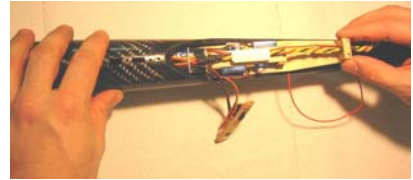


For gluing grind the joins and put epoxy-glue on them. Then push both boards into the fuselage (servoboard in front) as far as they will go.

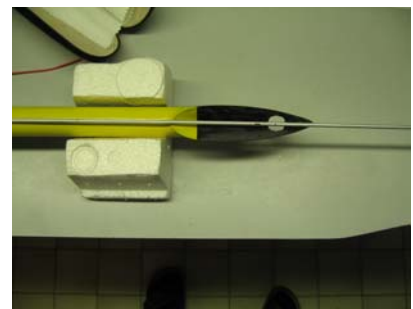
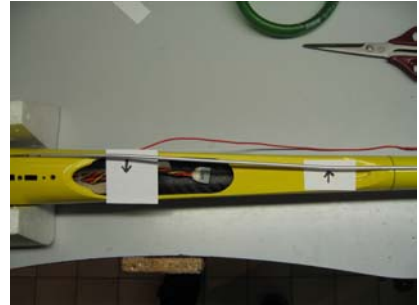
Suggestion for the installation on the servo board:



Mount everything on the board and then thread it inside the fuselage.



To make the aluminium pushrods move easier, you can bend the rods slightly according to the outline of the fuselage. By this way you will also gain some space on the servoboard.



As the wing possibly loosens in case of a crash, there will be tension on the cable. To avoid this, we recommend to clamp the cables to the radio board with a block of wood. In this way the plug can be loosened without putting tension and possibly causing damage to the electronic parts.



The receiver should be situated close to the opening in the fuselage. In this way, you can change the frequency easily.

For changing the quartz loosen the screw and pull the servo board about 5cm to the back.



If you want an easy handling of the ready arranged glider, we recommend to mount the switch and the sockets for loading and scanning on a small board as shown.



Ready installed switch and socket on the outside of the fuselage.



8. Wing

The connection to the levers on the rudder goes crosswise through the wing.



For easy putting in and out of the servos you can make a mounting with two pieces of plywood.



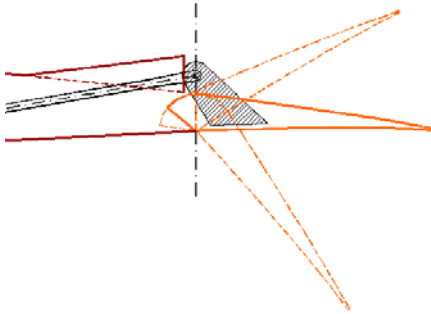
Before you glue the lever to the rudder, mill a slit of about 10-15mm in the control surface as shown on the picture to the right.

Glue the smaller levers in the ailerons, the bigger ones in the flaps.



For glueing the lever use epoxy-glue with cotton flocks.

When fitting the lever in the correct position, notice that the hole in the lever should be situated vertically above the hinge line.



To connect the servos to the levers use two connectors M2,5mm. In between, use a slightly bended welding rod (diameter 2mm), which you solder to the both connectors.

To find the right length of the welding rod put all servos in 0-position. If the length isn't exact after soldering, you can heat the soldered point with the soldering iron until the the wire can be moved to the correct position.

To connect the cables between fuselage and wing you lead one cable out of each part of the wing, length about 20mm, and connect them with two plugs to the fuselage.

If the wing loosens in case of a crash, there might be tension on the cable. To avoid this, we recommend to connect wing and plug with a string, that is a little shorter than the cable.

If you use two separate plugs for left and right wing, you should mark them with colors to differentiate more easily.



Cut the covers of the servos to the correct size and glue them with a double-sided adhesive.



In order to move the triangular ends of the ailerons, you can bend a piece of steel wire (1mm) and glue it into the end of the aileron as shown. Let the wire jut out about 6mm.



9. Installation of antenna

As Erwin is completely made of carbon, a part of the antenna must be situated outside the model.

One possibility is to „extend“ the fuselage at the rear end with a steel wire of about 450mm. Fix the end of the antenna to this steel wire.

Another solution is to fix the antenna to the end of the elevator. Lead the antenna inside the fuse behind the wing and then leave the fuselage. You should add the length between receiver and the breakthrough of the fuselage to the end of the antenna, so that the original length of the antenna is completely outside the fuselage.

Always test the reception on ground before you fly!



BEFORE THE FIRST FLIGHT

10. Ballast system

You can easily change the weight by varying between the different connectors.

In smooth conditions you can fly Erwin with one carbon connector.

Additionally to the two steel connectors you can add ballast inside the hose between the aluminium pipes. You have to remove the foam first. The ballast should be divided in two halves.

You can add ballast up to 1600g weight.



11. Fixing of the wing

Use 3 layers of tape to fix the wing to the fuselage. Don't use low price products. (The tape should not rustle.) We take tapes made by "Tesa".

In case of a crash, the tape will break, the connecting plug between fuse and wing will loosen, and further damage will be avoided. Normally, you can continue flying without problems.

For extreme use, for example Dynamic Soaring, add further 3 layers of tape.

Note the correct installation of the plug between fuselage and wing. (see point 8.)



12. Check list before starting:

1. Check centre of gravity (the angle of attack is pre-set)
2. Check rudders:
 - Do rudders move in the correct direction?
 - Check the greatest swings of the rudders
3. Check reception:
 - Leave the antenna inside the radio control and go away from the glider up to a distance of about 60m.
 - The rudders should not tremble

13. Notes for the use

To avoid heating of the carbon surface, Erwin (without paint on the upper side) should **not lie in the sun**.

During flight heating by the sun is no problem, as Erwin is cooled by the wind. On ground Erwin should be kept **inside protective bags or in the shade**.

