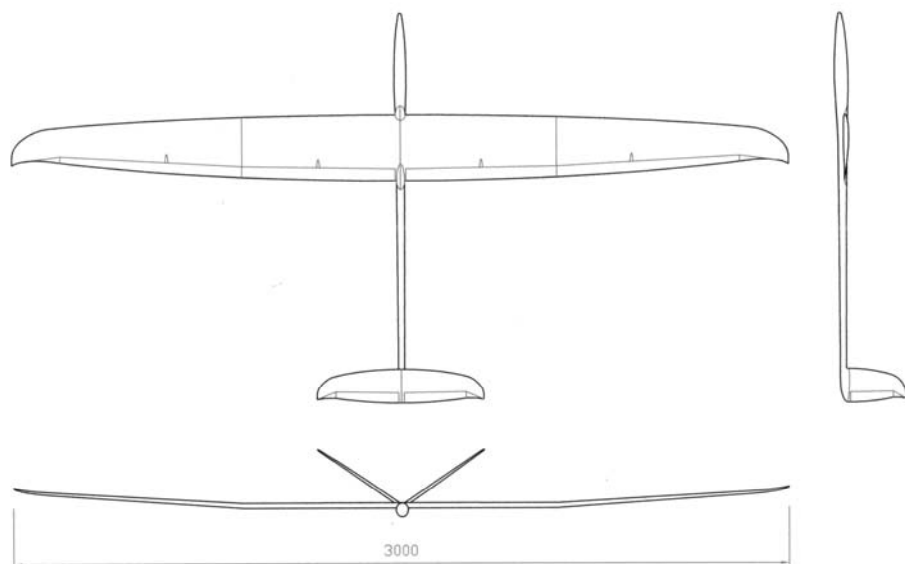


Wing span [mm]:	3000
Aspect ratio:	14,67
Wing area [dm ²]:	61,33
Wing loading:	42,4-66,8
Weight [g]:	2800-4300
Airfoil:	VS1



BUILDING INSTRUCTION

ERWIN XL

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BEFORE THE FIRST FLIGHT

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DATA

1. Kit – Contents

Fuselage, in two parts
Wing, in two parts
V-Tail

Steel-connector, 2 pieces
Carbon-connector, 2 pieces

Covers for servos on wing, 4 pieces
Cover for end of fuselage, 1 piece

Servo board
Assembly board for hook for winch start
Levers for rudders, 4 pieces
Ball connectors for the elevator, 2 pieces
Brass pipes for the elevator, 2 pieces
Pipes and glass fibre push rod, 2 pieces

Screws, 2 pieces, for fixing the v-tail

Building instruction (please download from our homepage)

2. What else do you need:

Controls of the wing:
Connectors for push rods, M2,5mm, 8 pieces
Welding rod, d=2mm

Hook for winch start

On-off switch / socket for loading
Cables (electricity)
Cable for antenna, possibly steel wire for extension of antenna
Plugs

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



Hook for winch start



Connector for push rods, M2,5mm

3. Electronical equipment

Servos for the wing	Futaba
	S3150
	Hitec
	HS125
	HS5125
	Volz
	Wing Maxx
	Wing Star

Servos for the v-tail

Hitec
 HS55
 HS56HB
 HS65HB
 Robbe
 S3108
 Graupner
 C2081
 C261 (these servos will fit into the gap of the servo board)

Receiver:

Graupner DS19
 Simprop Scan 7
 Schulze 835

Accumulators:

2500 mA/h NiMh
 3700 mA/h NiMh

4. Settings for the first flight

Centre of gravity: 88-94mm

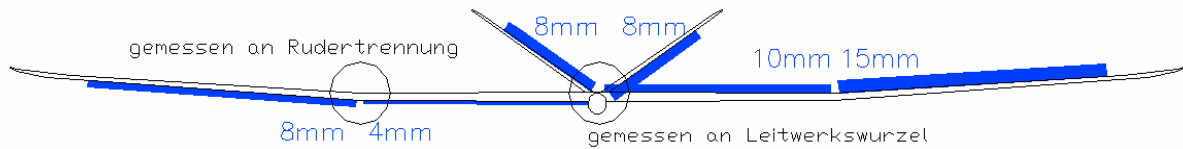
Difference in angle of attack: +1°

Hook for winch start: 100mm

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

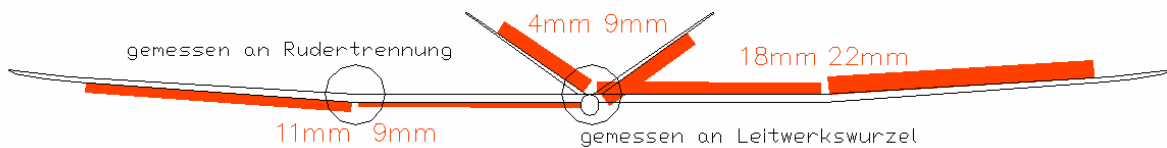
Ailerons und flaps (soft)

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



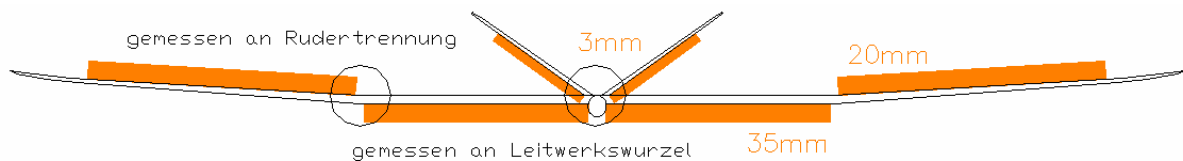
Ailerons und flaps (strong / dual rate)

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



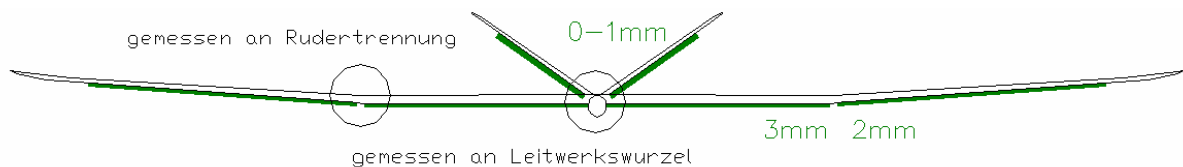
Butterfly (landing position)

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



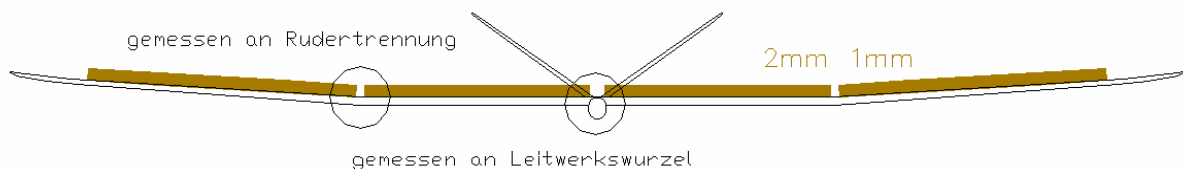
Flaps positive

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



Flaps negative

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



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 brass 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).

(Here shown using the example of 2-metre-Erwin.)



Ready mounted levers with ball connectors.
(Here to be seen on Erwin – 2 meter)



6. Fuselage

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 XL 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.

Then glue the parts together. Use epoxy-glue and some cotton flocks to thicken the glue.



7. Installation of electronical components inside the fuselage

Glue pipes into the fuselage every 25 cm with 5 minute epoxy mixed with cotton flocks.

Prepare the pipes outside the fuselage: Put the 5 minute epoxy onto the pipes. Then, thread them into the fuselage from the front and place them as shown. Beware that the last gluing point should be about 6cm from the end of the pipes.



The servos for the elevator are mounted on the servo board. The wholes are prepared for Graupner servos C261.

Glue the servo board into the fuselage as shown on the photo. Grind the gluing areas thoroughly and glue with "UHU endfest 300" (epoxy 2 component glue) thickened with cotton flocks.



Thread a glass fibre wire into the pipes, which act as pushrods for controlling the elevator. Fix one part of the ball connector to the pushrod.
(Here to be seen on Erwin – 2 meter)

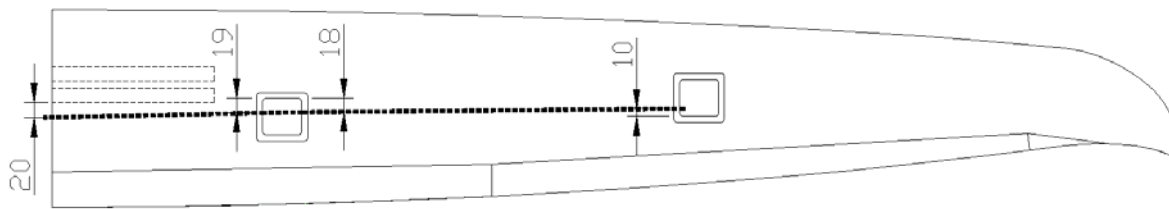


8. Wing

The openings for the servos are big enough for all appropriate standard servos including mounting frame, such as Futaba S3150.



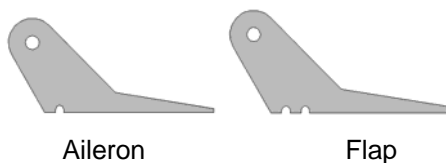
Lead the cable through the wing as shown below.



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

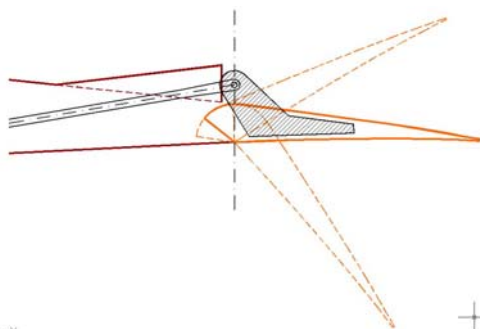


Before you glue the levers into flaps and ailerons, grind the gluing spots on the control surfaces and on the levers.



For gluing 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 welding rod (diameter 2mm), which you solder inside 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.

The root ribs have recesses for the plugs between fuselage and wings for easy electrical connection.



Fix the covers of the servos 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.

You can also fix a piece of steel wire to the trailing end of both control surfaces with adhesive tape. Let the wire be movable inside the tape on one control surface.

If you want an easier solution, connect the two control surfaces with an adhesive tape.



9. Installation of antenna

As ErwinXL 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!

If you want to install 2,4 Ghz, let the antennas stand out of the carbon fuselage as shown on the photo of Elvira. The antennas can also stand out on top and on the side. The angle between the antennas should be 90°.



BEFORE THE FIRST FLIGHT

10. Ballast system

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

You should always use two connectors when flying Erwin XL.

If the glider accelerates too slowly, don't hesitate to add further weight. Erwin XL can do well with more weight, in the air as well as when landing.

2x carbon short, 150g



1x carbon short, 1x steel short, 450g



1x steel short, 1x steel long, 1125g



2x steel long, 1500g
(Order an additional steel bar if you need it)



11. Fixing of the wing

When attaching the wings, make sure that the connector will not be postponed again.

First, push the connector into the first wing half as far as possible. Note, that the shorter part of the connector should disappear inside the wing. Then, push the fuselage onto the connector and finally the 2nd wing half.

Close the gap between wings and fuselage with adhesive tape. By this way, the wing halves are fixed to the fuselage.



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
 - All control surfaces are continuously connected to the wing along the hinge line.
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.
 - 2,4 Ghz: depending on radio controller (f.e. reduce transmission power)

13. Attention, ErwinXL is sensitive to heat!

Pay attention, that Erwin XL does not heat up! That means,

- don't let the model lie in the car, when the sun is heating up the car.
- don't let the model lie in the sun too long. Protect wing and elevator with bags, if you don't fly.
- Avoid all other possibilities to heat up Erwin XL.

The model is heated up to 50° during production, but in the sun the model can easily reach higher temperatures. During flight the model is sufficiently cooled by the airstream.

This sensitiveness is high shortly after production / purchase and will get less gradually.