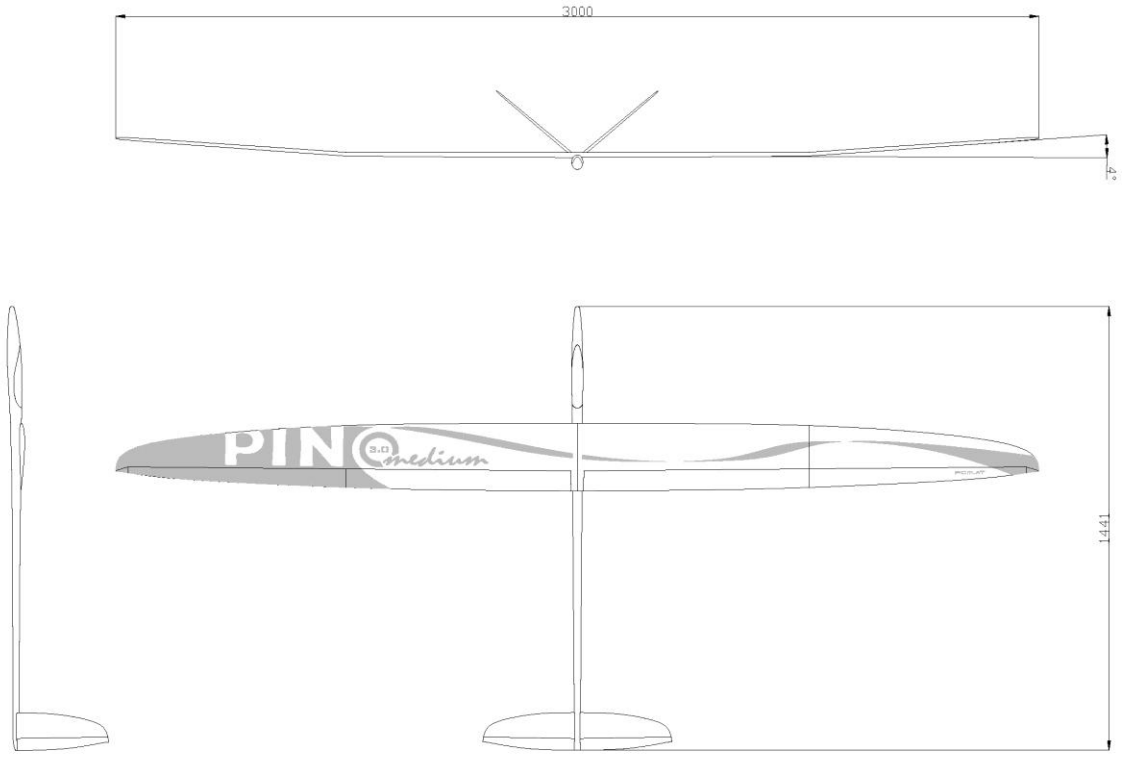
Wing span [mm]:	3000
Wing area [dm2]:	54,7
Aspect ratio:	16,6
Take-off weight [g]:	from about 1730-2610g
Wing loading:	31,6-47,5g/dm“
Airfoil:	MP1-1,66/7,6 to MP5-1/5 5 Modern F3b-F3f airfoils



BUILDING INSTRUCTION

Allround fun glider PINO 3.0

CONTENTS

DATA

ASSEMBLING THE MODEL

OTHER

DATA

1. Kit – contents

Fuselage + canopy
Wing
Elevator

Lever for controlling ailerons, 2 pc.
Lever for controlling flaps, 2 pc.
Bowden pushrods for elevator and rudder 2 pc.
M2.5 screw rod for controlling ailerons, 4 pc.
10x lever connectors M2,5
M4 metal screws for fixing wing, 4 pc.
M4 nylon screws for fixing wing, 4 pc.
Spring-loaded contacts 4 pairs.
Gap covers for aileron, flap, elevator, rudder
12mm carbon rod wing connectors, 2 pc.
12mm steel rod wing connectors, 2 pc.
6mm carbon rod elevator connector, 2 pc.
2mm carbon rod for elevator, 4 pc.
Twisted servo lead

Building instruction (for download from our website)

Connectors / ballast:

	Segler / Glider	**Elektro**
Slope	2x *carbon rod* 2x *steel rod* 2x long steel rods	2x *carbon rod* 2x *steel rod* 2x long steel rods
Medium	2x *carbon rod* 2x *steel rod*	2x *carbon rod* 2x *steel rod*
Ultralight	2x carbon tubes 2x steel tubes	2x carbon tubes 2x steel tubes

2. What else do you need:

Epoxy-glue (for example UHU 300 endfest or Pattex Stabilit)
Super glue (runny)
Electrical equipment (On/Off-switch, cables, plug...)
Electronic equipment
Shrinking tube...

3. Electronic equipment

Servo ailerons: - KST DS 135 MG
Servo flaps: - KST DS 125 MG
Servo rudder and elevator: - KST DS 215 MG V3

Accumulator: - Eneloop 2200mA/h

Receiver: - for 4 wing servos, rudder and elevator.

DATA

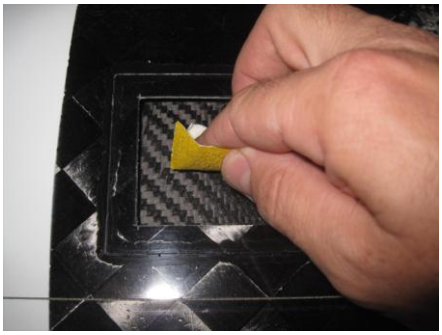
ASSEMBLING THE MODEL

4. WING

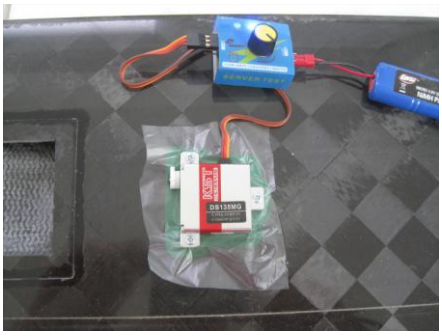
4.1 Controlling flaps and ailerons

Fixing the servos

First of all, prepare the **surfaces** which will be glued. **Grind** them with a rough paper (about 80-40 grain size).



Then, set the servo to the **zero position** and **screw it to the frame**. The screwing is important, because if you screw the servo after gluing it into the wing, tension will occur and the surface of the wing will get wavy.

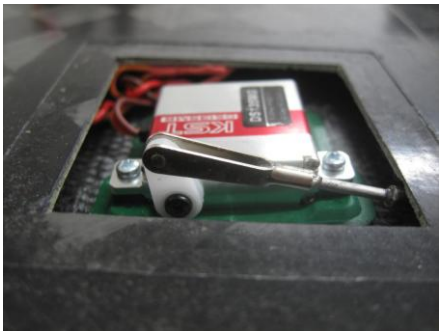


The **lever lengths:**
Aileron: 8mm (first hole of the smaller lever of the KST servos.)
Flaps: 10mm (first hole of the stronger lever of the KST servos.)

The length is measured from rotation center to hole center.

Flap servo:

Set the **servo** to its **zero position** and let the **lever** show a little bit **to the front**. So you get more break deflection.



Aileron servo:

Let the lever in **rectangular** position.

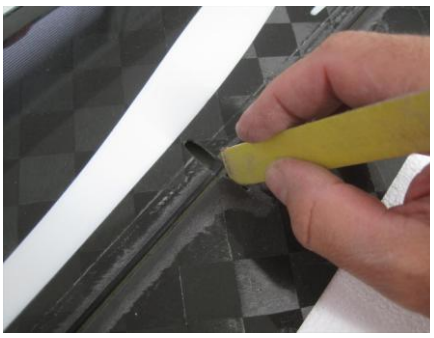
Verify the **free movement** of all the parts.

It will be necessary, that you **optimize** the **lever connector** as shown in the pictures besides.
It has to be done in different ways for the flaps and for the ailerons.

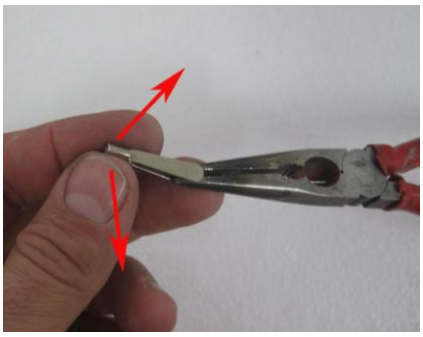
Aileron servo

Flap servo

Prepare the parts for gluing the control levers into the wing. **Grind all gluing surfaces**, the slot of the control surfaces and the levers themselves.



The **bolt** of the **lever connector** has sharp edges that are bigger than the bolt diameter. You should **remove these edges**, before you put the connector into the lever. It is easy to clean that bolt with nose pliers. Grab the bolt with the nose pliers and move the connector up and down about 3 times as shown in the picture. Repeat this that often until the connector is able to **move in the lever hole without a lot of friction**.



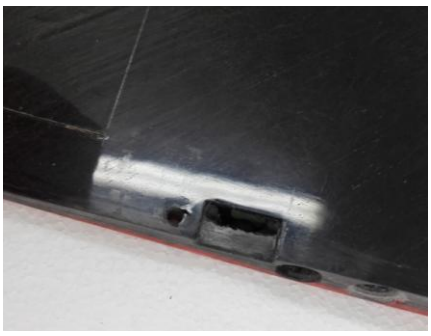
Before you glue the lever into the control surface, **fix the connector to the lever**.

The short lever is for the aileron and the long lever for the flaps.

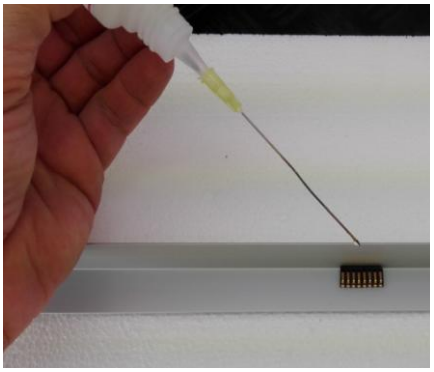
You can use **runny super glue** to fix the levers. This kind of bonding will be strong enough for the forces occurring.

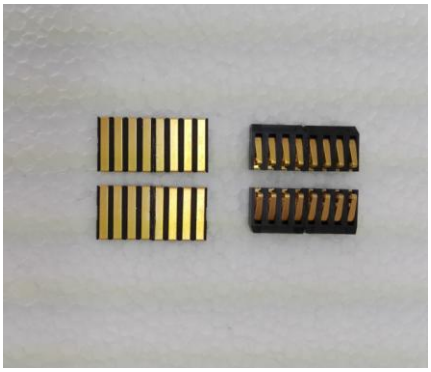
Cable mounting:

Mill a hole into the preformed space for the contacts. Make the hole big enough, so that the **contacts will not touch the carbon**.

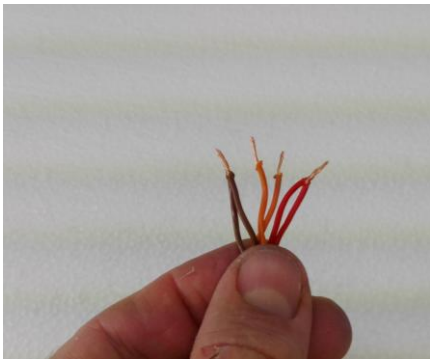


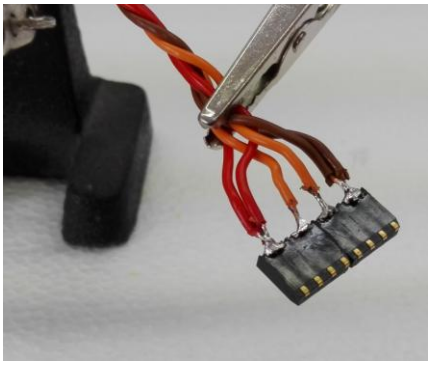
We now use **2 pairs of contacts** for a redundant connection.
Glue the contacts together.



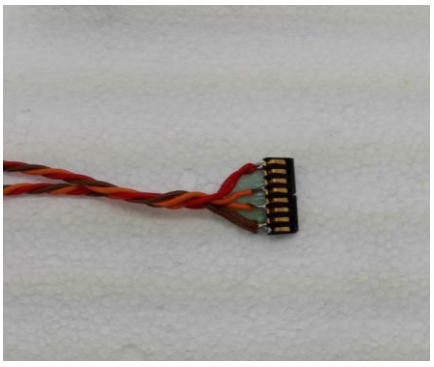


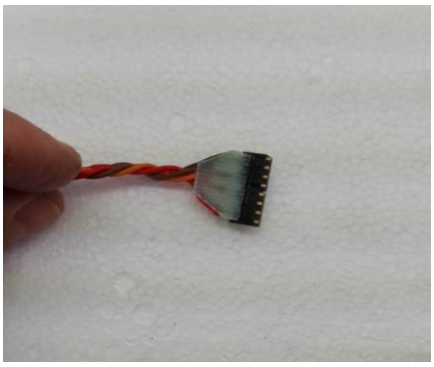
Connect the cable as shown and solder the ends to **BOTH** of the contacts. So you get a safe, redundant connection.



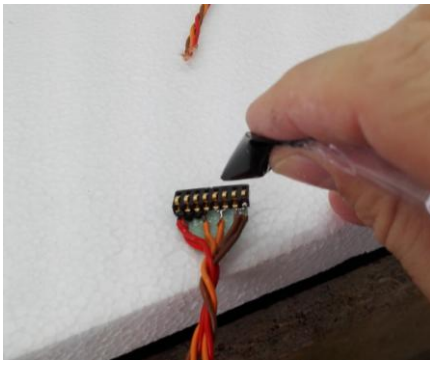


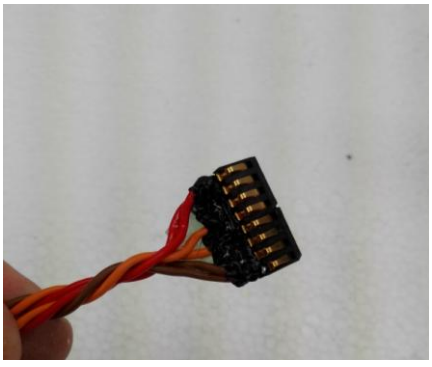
In order to secure the soldered wirings you should glue a **piece of plywood or GFR** to it.





It is very important to **insulate all the contacts** that could touch the carbon. We use “Plasti Dip” for such purposes.





Make sure that the contact **fits easily** into the free space, which is provided for the contact, without putting any force on the soldered areas.

Before you fix the contact with a drop of runny super glue, check if **all the servos work well**.

Now you can stick the **seals over the gaps**.

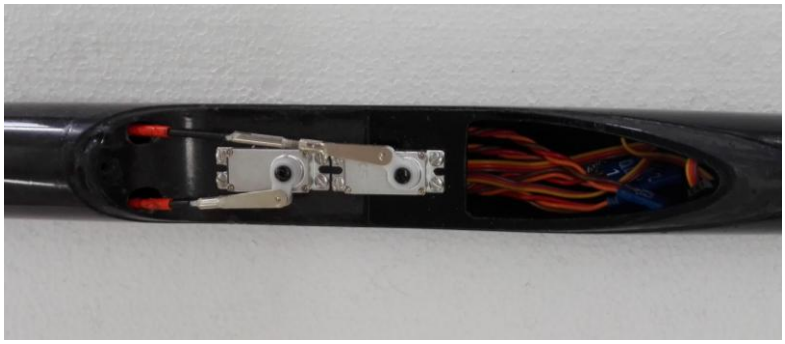
Use the broad ones for the wing and the narrow ones for the elevator.

5. FUSELAGE

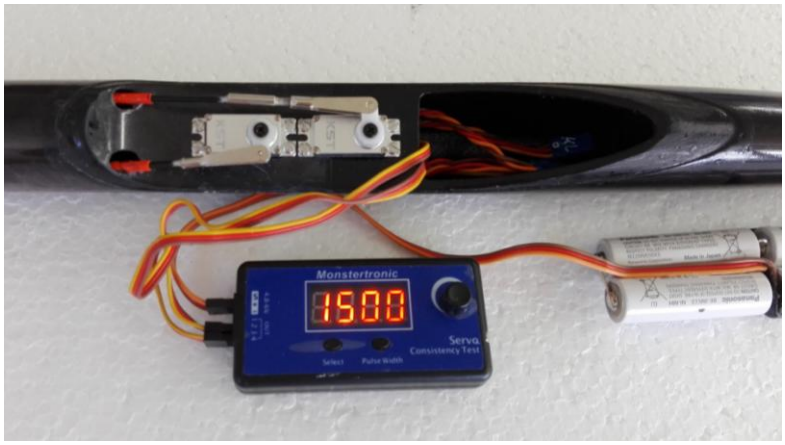
5.1 Servos

All necessary **holes** are already **pre-milled**.

The holes for the servos are especially dimensioned for the **KST DS 215MG V3.0** . You just have to screw in the servos and connect them to the pushrods.



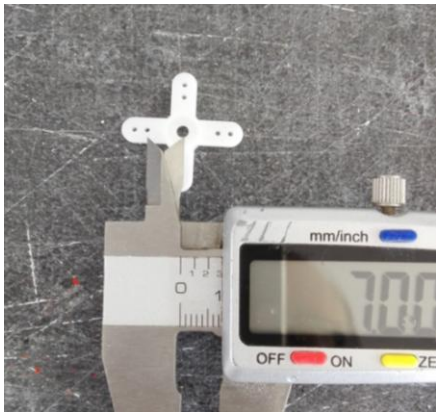
Set the servos and the controls (elevator and the rudder) to the **zero position** and **connect** them.
(here is a picture of Pino 2.5m shown)



The **lever lengths** are:

Elevator: 7mm

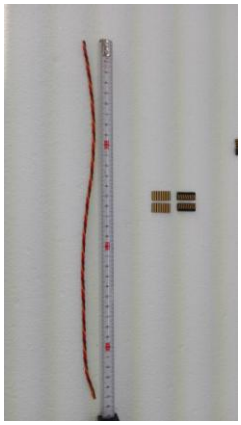
Rudder: 7mm

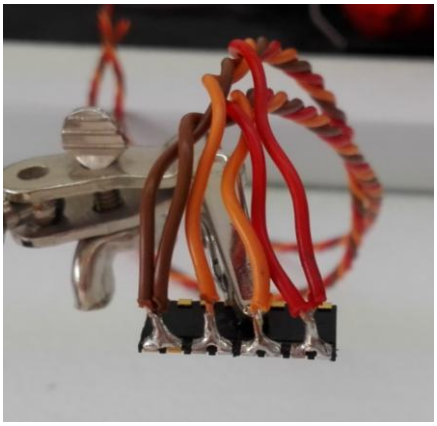


Next, let's finish the **aileron and flap contacts** for the fuselage.

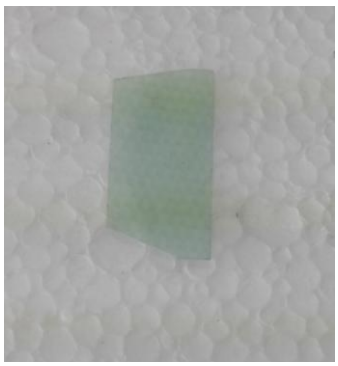
The **cable length** should be about **35cm**.
Pay attention that you solder the contacts **in the same way** as they are soldered in the wings.

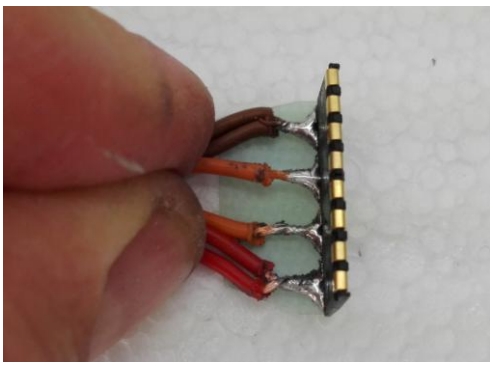
Double the contacts again for redundant connection.



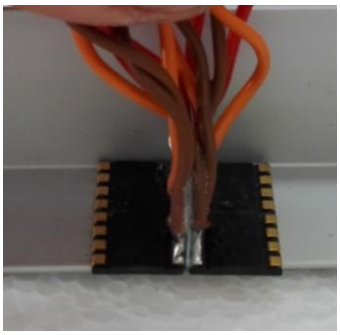


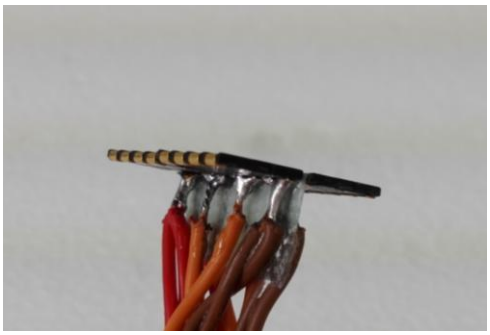
Then glue again a thin piece of GFR to the wirings and the soldered parts.
So you **insulate** and **strengthen** the soldered parts.



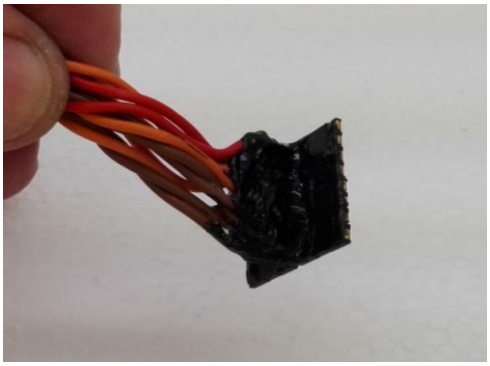


Now glue the **left** and the **right cable part together**.





The rest of the contacts have to be **insulated**.



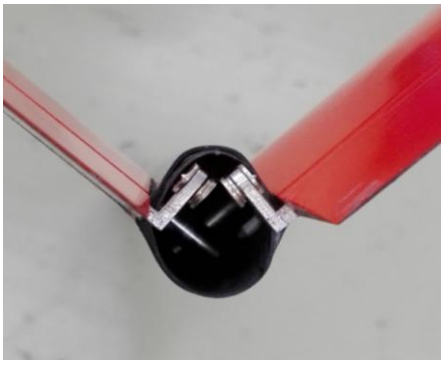
Before you fix the contacts to the fuselage with a runny super glue, make a **test, if everything is contacted well**.

5.3 Accumulators

Pack the Eneloop cells the way it is shown in the picture.

5.4 Connection of V-Tail control surfaces and carbon joiners for fuselage connection

Just set the servos and the control surfaces to **zero** and glue the **lever connectors to the pushrods**.

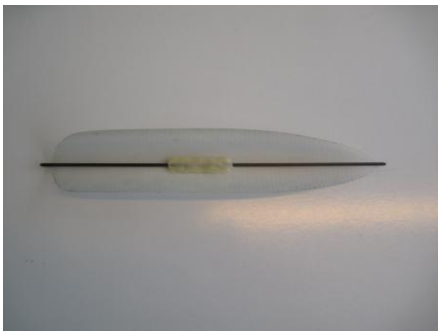


The black teflon should be removed before gluing.

The 6mm carbon rods should be glued into the fuselage. If you want more more transport comfort you could also leave them unglued. But check the fittings before every flight. The Fittings should be tight. If they loosen you have to make them tight again with a drop of superglue.

5.5 Canopy

We use a very simple solution to mount the canopy.
Just **glue the carbon stick** into the canopy. Note that the gluing spot is only **in the middle** of stick and canopy, so you can thread the stick into the fuselage while the canopy remains on the outer side. (here the method is shown on a glass canopy)



5.6 Hook for winchstart

We flew with a hook position of about **86mm**.
To be safe please start with a further position and then go back carefully.

A sheet of plywood is already integrated in the fuselage at this position.

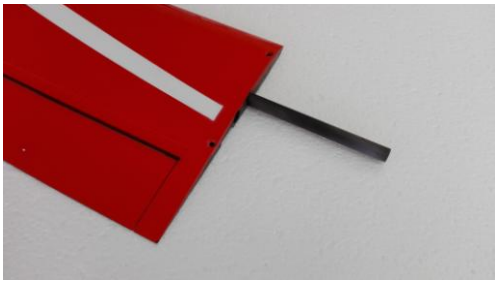
6. BALLAST

Included in the kit:
- 2x carbon rod
- 2x steel rod

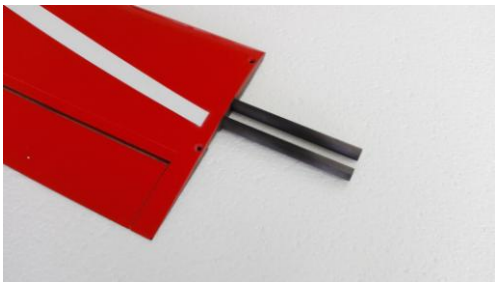
The 2x long steel rods are just delivered if you ask for.

You can use these rods as follows:

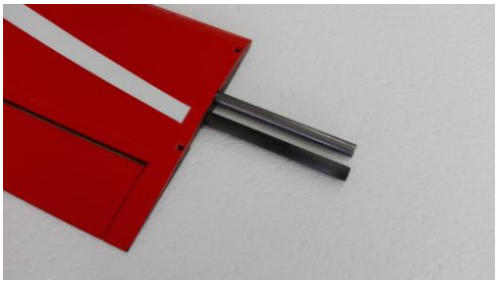
- **1x carbon rod** for **very weak conditions** in the front hole.
  Adjust the CG of the plane with this rod inside. **Don`t set full charge on the wing at this configuration.**



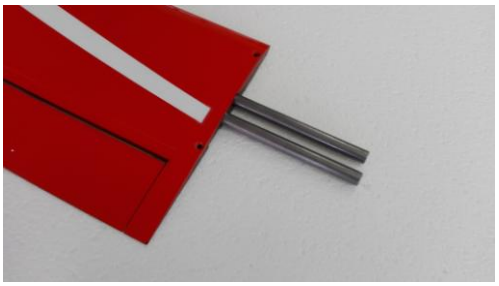
- **2x carbon rods** for **weak conditions**



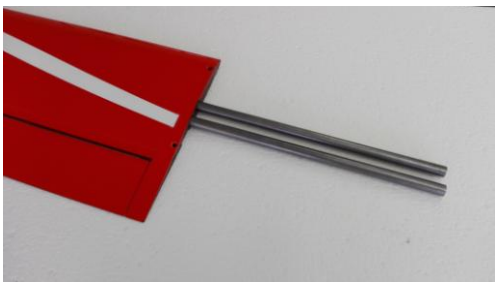
- **1x carbon + 1x steel rod** for **stronger conditions**



- **2x short steel** for **even stronger conditions**



- **For extra strong conditions** you could insert two 50cm **long steel rods**. That ballast weights **880g** (+836g to the lightest weight).
  When you fly with this setting, you have to take care that you **don`t overload the wing structure**. So, use the elevator cautiously, when you fly with that much ballast. Remember also that the landings have to be very soft with such an additional weight.

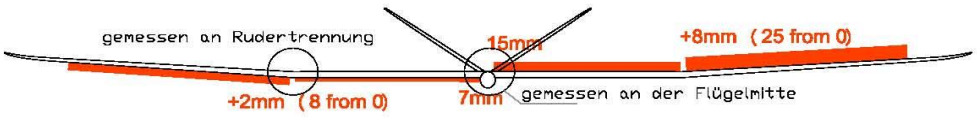


7. SETTINGS FOR FIRST FLIGHT

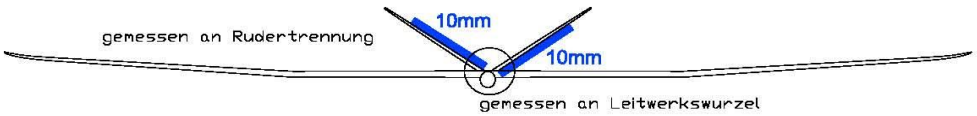
Recommended CG 86-88mm

CG 85mm for very light conditions (thermaling)

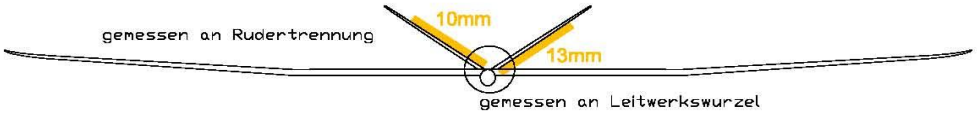
CG 97mm for very strong conditions on a slope



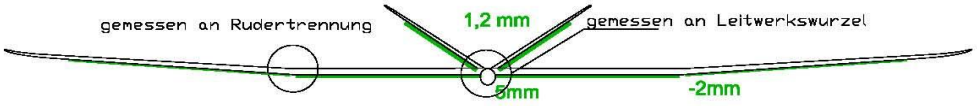
Ail., Flap max



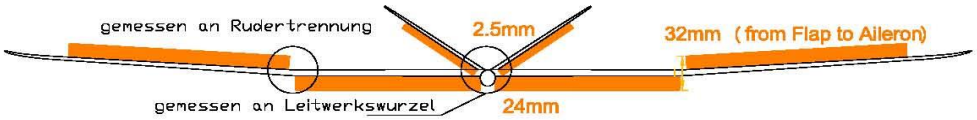
Elevator max



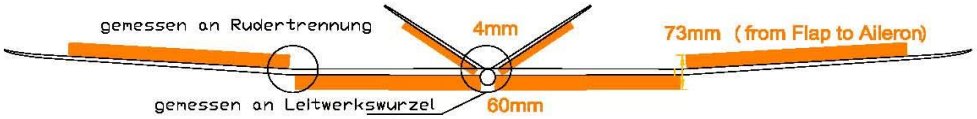
Rudder max



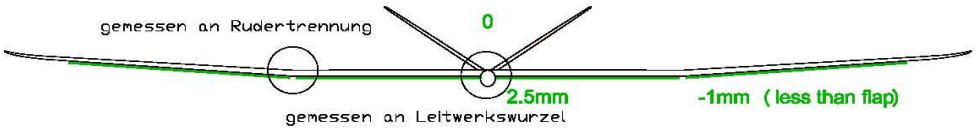
Winch



Butterfly half



Butterfly full



Flaps for thermaling

Flaps for speed

OTHER

8. Check list before starting:

1. Check **centre of gravity**
2. Check **control surfaces**:
   Do control surfaces move in the correct direction?
   Check the greatest swings
3. Check **reception**
4. Check **control surfaces before each flight.**
   Do all control surfaces still move correctly?
   Is there enough power in the accumulator?
   Are the brakes retracted?
   You can save the retraction of the brakes in your start setting. By this, you can never start with extended brakes.
5. **Gentle launch** in the flat. If there are some wrong settings, you will realize it during a gentle throw in the flat.

9. Notes for the use

To avoid heating of the carbon surface, models with carbon wings should **not** lie **in the sun**.

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

After every **ungentle landing**, you must **check your model for possible damage**, such as:

- Is the radio board still glued thoroughly?
- Did the leading edge of the wing burst open?
- Did rudder or elevator get damaged?