Wingspan [mm]:	950
Aspect ratio:	7,7
Wing area [dm2]:	11,7
Wing loading [g/dm²] :	16
Takeoff weight [g]:	190
Airfoil:	AG03 mod

BUIDLING INSTRUCTION
GLIDER MINI-RACE

CONTENTS

DATA

ASSEMBLING THE MODEL

OTHER

DATA

1. Kit – contents

Fuselage (canopy, middle part, boom)
Wing
V-tail

Radioboard
Carbon lever for controlling elevator, 2 pieces
Carbon levers for controlling ailerons, 2 pieces
Carbon push rods for controlling ailerons, 2 pieces
Kevlar wire for controlling elevator
Steel wire for torsion springs, 2 pieces
Screws for fixing wing, 2 pieces
Carbon roving

Building instruction (please download from website)

2. What else do you need:

Epoxy-glue (for example UHU 300 endfest or Pattex Stabilit)
Super glue, thin
Maybe cotton flocks (to thicken epoxy-glue)

Electrical equipment (On/Off-switch, cables, plug, ...)
Electronic equipment
Steel wire, shrinking tube...
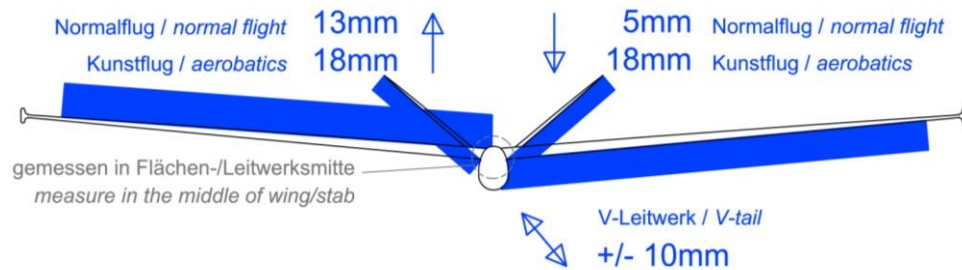
3. Electronic equipment

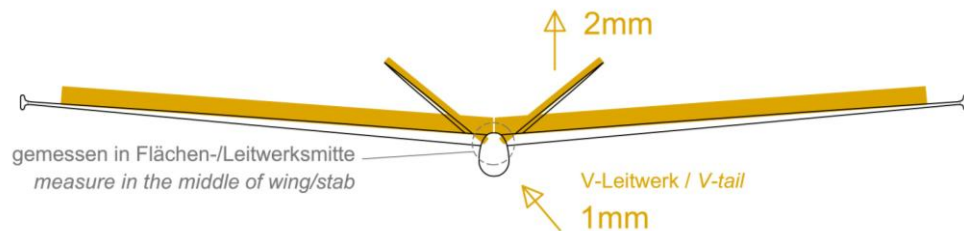|	
Servos	- Dymond D-47
elevator/rudder/aileron	Similar:
	- Futaba FS31
	- Modell Expert X31
Accumulators:	- GP NiMH accu 35AAAH, weight/cell 6g
	(1,2 Volt 0,35 Ah 1/2AAA)
Receiver:	- MZK Sexta Mini
	- Jeti Rex 540MPD

4. Settings for the first flight

Centre of gravity: 62mm
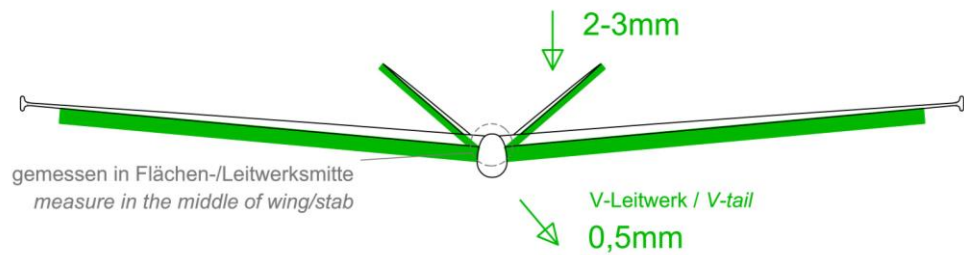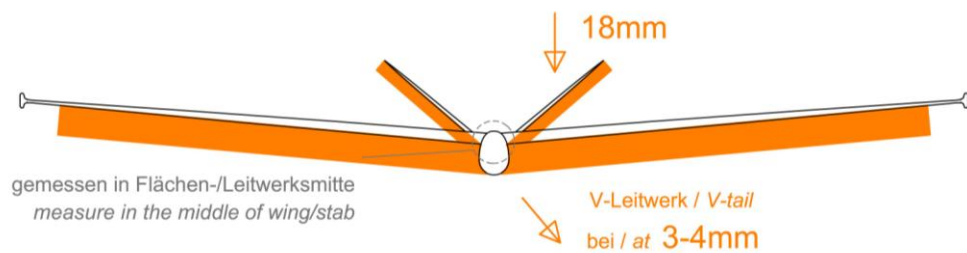(measure from the leading edge of the wing to the back)

Deflection of controls

Normalflug / *normal flight* **13mm** ↑   ↓ **5mm** Normalflug / *normal flight*
Kunstflug / *aerobatics* **18mm**   **18mm** Kunstflug / *aerobatics*

gemessen in Flächen-/Leitwerksmitte
measure in the middle of wing/stab

V-Leitwerk / *V-tail*
+/- 10mm

Flaps negative (speed)

↑ **2mm**

gemessen in Flächen-/Leitwerksmitte
measure in the middle of wing/stab

V-Leitwerk / *V-tail*
1mm

Flaps positive (thermal)

↓ **2-3mm**

gemessen in Flächen-/Leitwerksmitte
measure in the middle of wing/stab

V-Leitwerk / *V-tail*
0,5mm

Landing position

↓ **18mm**

gemessen in Flächen-/Leitwerksmitte
measure in the middle of wing/stab

V-Leitwerk / *V-tail*
bei / *at* **3-4mm**

Snap Flap

12mm ↓   ↑ **12mm**

gemessen in Flächen-/Leitwerksmitte
measure in the middle of wing/stab

V-Leitwerk / *V-tail*
bei / *at* **10mm**

ASSEMBLING THE MODEL

5. General information on DLG-models

DLG-models - such as MINI-Fireworks - are constructed strong enough to withstand the demands of flying and landing and at the same time light enough to achieve the least possible flying weight. Each part is dimensioned to its possible minimum and produced using lightest and fewest material.

In order to continue this concept, please account the following when you assemble the model:
- Always **use glue sparingly**. **Grind** all gluing spots **thoroughly**, before you apply the glue.
- **Electronic components** should be **placed as far as possible to the front,** as you normally need additional lead in the nose of the fuselage to achieve the necessary centre of gravity.
- If you don't have any experience in working with resin or if you prefer an easier method, you can combine the **carbon rovings and glass fibre with super glue**: Put some drops of super glue on the rovings or the fibre, spread and press it with a (rustling) plastic bag. You will also save one or the other gram with this method..

6. Fuselage - structure

Cut holes as shown into the fuselage for the pushrods of the ailerons.
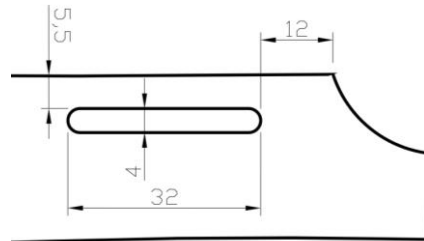
Push the boom into the middle part of the fuselage, until the **boom stands out 400mm**. If the boom can't be pushed out far enough, you can sand off some material inside the middle part of the fuselage.
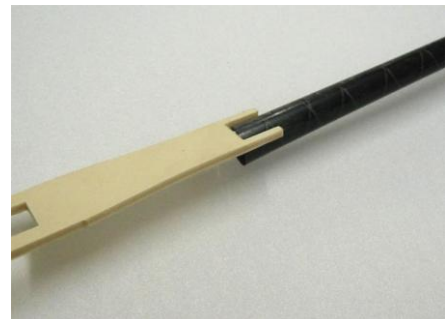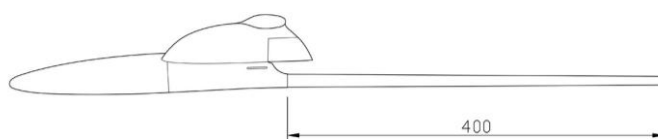
Before you glue the boom, check that the **servoboard** can be **fixed to the boom** inside the fuselage later according to the picture. The flat side of the boom should be on the upper side, the round one on the downside.
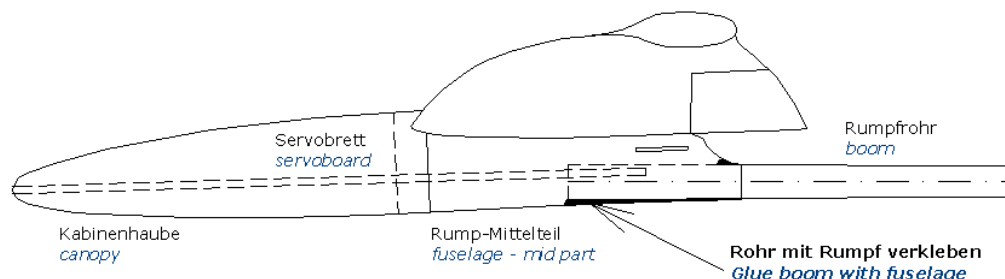
Further, you must check, that the **distance** between the **end of the boom** and **both wingtips** is the same.

If all alignments are correct, glue the boom **with epoxy-glue** to the middle part of the fuselage.

In addition, the **boom** must be **glued to the bottom of the fuselage** (see picture above).

Before you fix the servoboard inside the fuselage, **strengthen** the board **with a carbon roving**.

You can glue the roving with super glue or epoxy glue.

We recommend to **install all electronical components provisionally before** (see chapter 8) you glue the board and try to mount the canopy. So you will be sure, that everything fits inside.

In order to **gain full strength**, it is absolutely necessary to **fix the servoboard** in the fuselage!

Strengthen the edges of the servo board with **super glue**.

Glue the board **with epoxy-glue** to the boom (see picture above) and to the sides of the fuselage.

If you have a **hard landing**, always **check** if the servoboard is still fully glued before you make the next start!
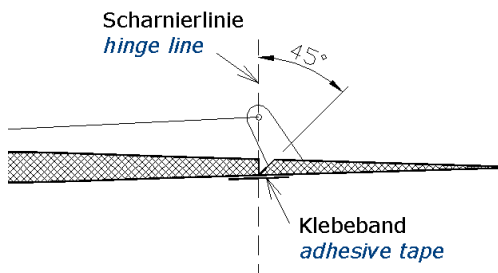
7. V-tail

(The description is partly based on the model "Taser" as the V-tails are almost identical.)

The V-tail is controlled by **only one servo**. The levers are connected with a V-shaped wire.

First of all, **glue the levers** on the lower ends of the control surfaces. The **holes of the levers** should be **above the hinge line**.

Scharnierlinie
hinge line
45°

Klebeband
adhesive tape

Now, place the V-tail on the boom. Before you glue it, Check the **alignment of the V-tail** regarding the axis of the fuselage and the **EWD**, so that it is fixed correctly.

To do this, mount V-tail and wing on the fuselage. **Fix the V-tail with adhesive tape**. Put another little piece of tape in the middle of the sticky side of the adhesive tape. By this, you will still be able to move the V-tail, as the adhesive tape will not stick to the boom.

First method:
Look at the model 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 symmetrically.

Second method:
Place the model upside down on a flat table. If **both wingtips** and **both tips of the elevator lie on the table**, the V-tail is aligned symmetrically.
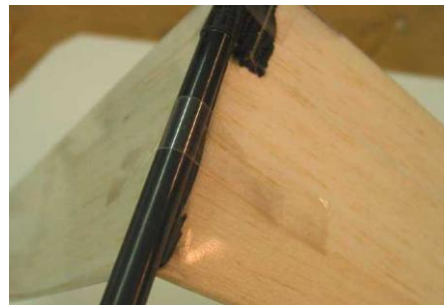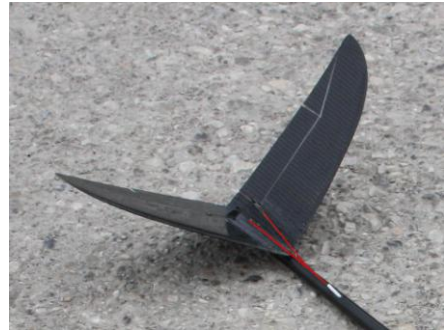
Make sure you have **grinded the gluing spots** on fuselage and V-tail thoroughly, before you glue.

If the V-tail is **aligned correctly**, let **super glue** run into the gluing spot from both sides.
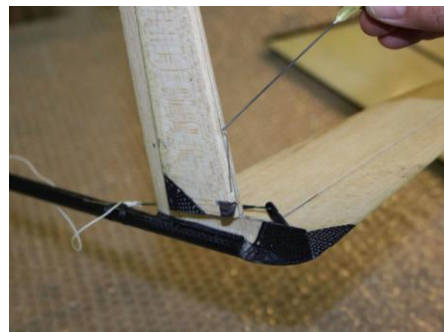
Torsion springs

Bend the wires according to the drawing on the right. **Tip back** the **control surface** of the rudder completely. (180°)

Stick the spring **into the wood.**

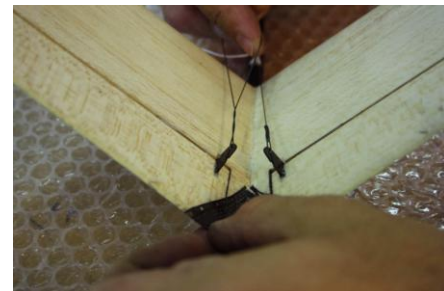Then **harden** these spots **with super** glue.

Connection of the wire

First, the kevlar wires should be attached **to the servos**. The servos should be brought into the **zero position** by using a servo tester.

Then, you can **hook in the kevlar wire** into the lever.

Make a **loop, twist the end** and put the end of the wire into a **shrinking tube**. Shrink it and fix it with a **drop of super glue**.

Drill a small hole in the boom to lead the wire inside the fuselage to the servo.

To keep the carbon from chafing at the wire, use a **plastic tube** to lead the wire through the hole.

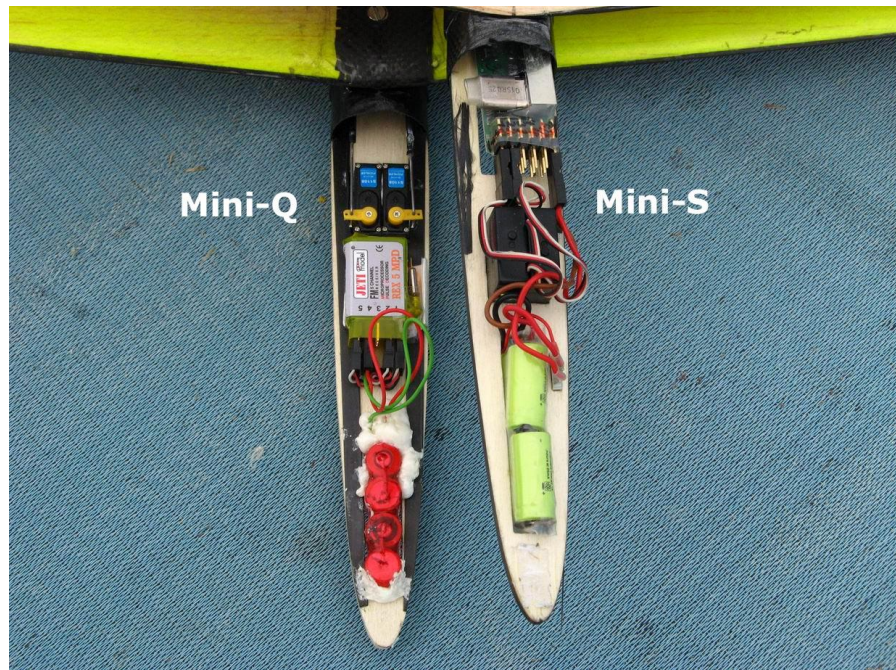Note, that the wire keeps **free movable** without problems.
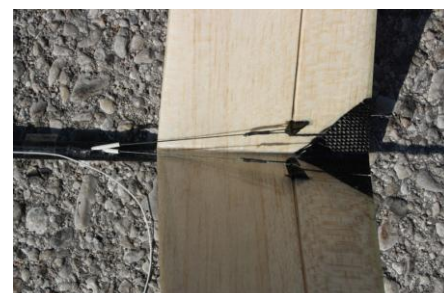
8. Fuselage – installation of electronic components

Suggestion for arrangement:

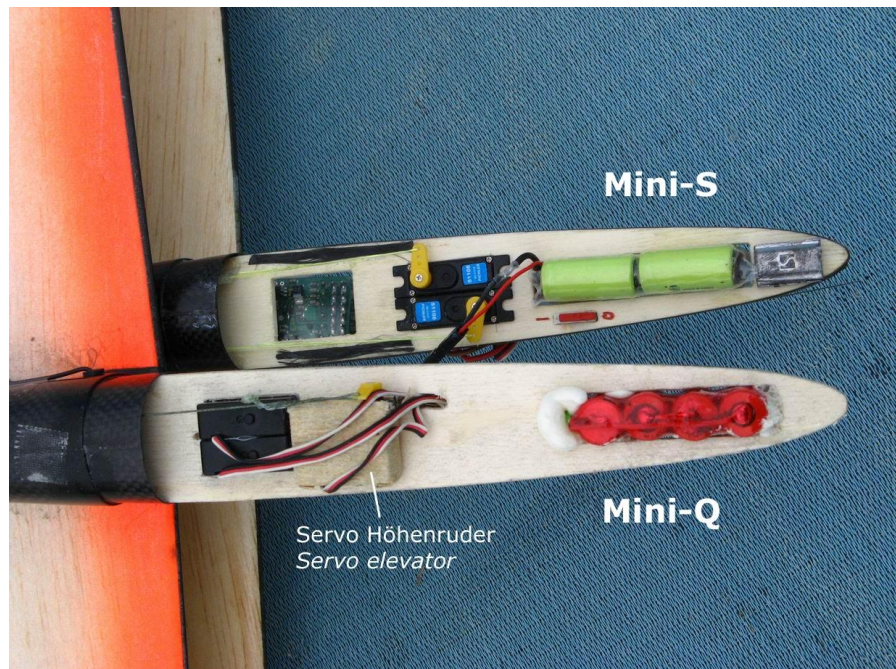**View from above:**

Mini-S
(elevator/rudder):
green accus,
right side

Mini-Q
(elevator/aileron):
red accus,
left side

View from the bottom

Mini-S
(elevator/rudder):
green accus,
top

Mini-Q
(elevator/aileron):
red accus, **bottom**
(servo for elevator is
on downside of
radio board)

Servo Höhenruder
Servo elevator

9. Controlling of the ailerons

To **avoid unintentional demounting** glue little steel **hooks** to the ends of the carbon pushrods

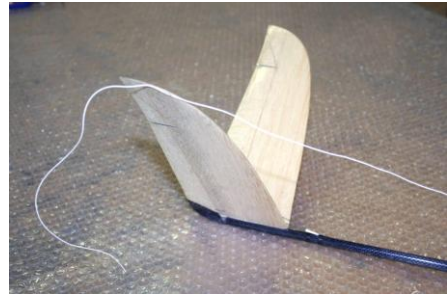**Connection to the servos** in the fuselage

**Connection to the levers** on the wing

10. Installation of antenna

In order to have an undisturbed reception a **part of the antenna** must be situated **outside the model**.

An easy 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.

Another possibility is to lay the antenna **inside the gap of the aileron**. For improving reception you can solder the antenna to a steel wire, d=0,3mm, which you fix at the end of the wing and let stand out to the back about 10-15cm.
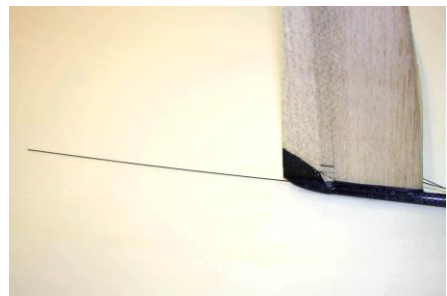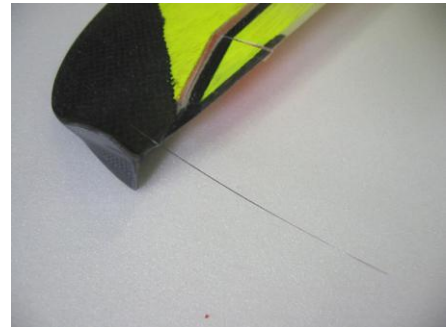
Always **TEST THE RECEPTION** on ground before you fly!

OTHER

11. 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**:
   Leave the antenna inside the radio control and go
   away from the glider up to a distance of about
   60m. The control surfaces should not tremble.