

Zackspeed

This construction manual shall be used as a guide for the assembling of the Zackspeed. In addition to the wings and winglets you need the following things:

- 3mm balsawood (elevons)
- 2 control horns and 2mm wire
- 3M 90 spray adhesive
- 3M 50mm strapping tape
- 5min Epoxy or hot glue
- coloured Monta tape

Only for Dynamic Soaring:

- GFRP/CFRP Pipe (diameter 6mm; length 2m)
- Glas or Carbonfibre fabrics and epoxy resin
- Aluminium pipe as ballast chamber (15mm diameter; length 150-200mm)

The spray adhesive and the strapping tape are both available on our website (www.epp-modelle.de) if go to accessories.

1. Remove the foam cores from their beds. Use the sandpaper or a scrap piece of foam to clean off any melted foam debris.

Only for dynamic soaring:

Use a hot 10mm pipe to melt, according to the attached sketch, holes in the wing. Connect the batteries inline and put them in the created holes. In order to compensate the additional weight of the composite elevons, the FRP Pipe and the fully with 3M Strapping tape reinforced wing, usually you need 50g plumb in the wing nose.

Now apply epoxy or hot glue and bond the foam cores together. Use the bottom foam beds to align the cores.

Trace your radio gear, battery and receiver on the top site of the foam core using a pen or marker. The positions for the RC components are as shown in the drawing. Pay attention to the position of the centre of gravity (190mm +/-5mm from the nose backwards). Use a sharp knife to do the cut-outs (The cut outs should be a bit smaller then the RC components as they wont be glued but pinched into the core). Make a cut about 6mm deep from the receiver to the end of the wing and push the antenna into the cut. Proceed the same way to run servo and battery wires to the receiver.

2. Remove the RC components in order to spray a light cote of 3M 90 spray adhesive on the wing. Now you should wait about 5min to allow the adhesive to evaporate, before you start taping the wing. In the meantime you can start putting the RC components in place. Tape the wing with 50mm strapping tape as shown in the figure standing down. It is important that you tape the wing equally on the top and bottom side in order to avoid twisting of the wing. The taping is necessary to make the wing bending proof and torsion proof.

3. Take 3mm balsa wood and cut it as shown in the figure. The elevon should be 520mm long, 55mm deep at the winglet side and 35 mm deep at the inner side. If you manufacture the elevons like this you have enough space at the trailing edge to grasp and throw the wing. Before you attach them you will first need to bevel a 45-degree angle on the hinge edge of each elevon. Now you simply tape (strapping tape) the elevon to the trailing edge by leaving enough room so it doesn't bind. You should apply one stripe at the top and one at the bottom side of the elevon.

Only for dynamic soaring:

Reinforce the balsa elevon with one layer of CFRP or GFRP (at least 80g/m²). This is necessary in order to avoid twisting and consequently oscillating of the elevons at high speed. Replace the standard winglets with CFRP or GFRP winglets of at least 0.4mm thickness. Make cut-outs for the 6mm CFRP or GFRP pipe as shown in the sketches and insert the pipe. Put the ballast chamber (Aluminium pipe) in the centre of gravity. Now the wing has to be completely covered with strapping tape.

4. The wing is now ready to be covered with Monta tape. After this you can install the control horns on the elevons. Now connect the control horns with the servo horns by using control rods (2mm wire). The attachment can be done by using Z bends. Adjust the elevon movement to an approximate deflection of 10mm for the elevator and 15mm for the aileron. At neutral position the elevons have to be directed slightly to the top in order to make the wing fly straight.

5. Check the position of the centre of gravity again (190mm +/-5mm from the nose). Use plump to adjust the CG.

