

# Twister the ultimate F3K competition glider by Alex Hoekstra

## *Fuselage*

Start by drilling a 2mm hole at the backside at the stab pylon and glue in the alu tube.

Before cutting the slot for the vertical fin put some tape on the top and the bottom of the boom and draw the lines for the slot. The tail section (HT23) is asymmetric and needs to be  $0.6^\circ$  out of line (for right handed flyers nose to the right).

Then cut with a saw the slot and make sure that the tail is all straight. Best thing is to screw on the wing and put the plane on a flat surface (table) and put both wingtips at the same height. Then check if the vertical fin is straight.



The hinge line needs to run slightly backwards at  $100^\circ$  with the boom.

Once you are sure the fin is all lined out you can glue it with 5 min epoxy to secure it.

**Don't use c.a. The inside of the fin is made from foam and c.a. will eat it.**

After bonding secure the fin with a thin layer of glass fabric wetted out with epoxy.

Cut the rudder horns to size and make a small cut in the rudder and glue in the horn with epoxy. Same to the one in the stab. Make sure it is lined up with the hole for the steering wire. Then fold the rudder  $90^\circ$  and place the spring with a small drop of epoxy or foam safe c.a.

Next step is to pull some dynema steering lines through the fuse. You can get them in angling stores. A vacuum cleaner sucking at the servo area can help with that. Tie the wire at the end at the horns or if you wish you can make a removable connection. Make sure the wires don't cross and that the rudder wire is at the right side of the boom (this will give automatically against rudder if the boom would bent) and the stab wire at the left. (for left handed this is reverse)

In the nose of the fuse there is place for a battery (4 x cells 350 to 400 mA) two in front and two behind) and a small receiver will fit just beside. Just behind there you can mount the servo's (2x D47) on a small ply tray. If you want to be able to change batteries keep them 15 to 20 mm. behind the battery pack. Make sure you fill the space with a piece of foam during flying.

The steering wires can be attached to the servo by taking them through the hole in the servo arm and then turn a couple of times around the little screw that hold the arm on place.



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Then tie the screw and your wires are connected. If you keep the wire a couple of centimeters long you can adjust settings if necessary. The ballast tube should be cut under an angle and a little piece of ply can be mounted at the top and bottom. Then drill a small hole through the whole thing and make a pin that can secure the ballast. After that the tube can be glued at the bottom of the fuse. Make sure that you can put an uneven number (3,5 or 7) of ballast pieces in the fuse and that the middle one is exactly on the center of gravity (CG). The CG should be around 80 mm. Make ballast pieces of the same size and some balsa pieces of the same size to be able to vary with the ballast.

## *Wing*

In the wing will fit different servo's up to 11mm. Make sure for 11mm servo's to cut the hole close to the root of the wing and  $\pm$  1cm in front of the main spar. 8mm servo's can be placed up to 20cm from the root. Cut the hole at the bottom side of the wing in front of the spar. Then cut a small hole through the spar webbing and a small long shaped hole through the top skin just in front of the back webbing. About 1 to 2 cm in front of the aileron.



Make sure those holes are all lined up so that the steering wire will pass through. Then cut a small slot for the aileron horn about 1mm left or right from the top skin hole to be able to make a 90° bend in the steering wire. This can be made of 1 mm steel. After setting the servo for neutral flying connect the cable to the servo and glue the servo in with epoxy. Then put the aileron horn over the steering wire. Then put some epoxy on the horn and slide it into the slot pulling at the same time the aileron up until it stand neutral. Then let the epoxy cure. A piece of tesa can be taped on the aileron to cover the gap.

## *Throwing Peg,*

Drill a little hole (1 mm) in the left wingtip (right wingtip for left handed). The hole should be placed 20 mm from the tip and 20 mm from the trailing edge. This is the location where the trailing edge from the launch peg should be. From this point cut with a fret saw the hole for the peg direction leading edge. Make sure you keep the hole on the small side and the make it to fit with a file. The hole can be cut at a small angle if required. Cut the throwing peg to the required length (two fingers plus wing thickness) and round of the tips. Once the throwing peg fits glue it in with epoxy and the put a small carbon roving in a V- shape around the throwing peg at the top and bottom side of the wing.



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## *Model informations*

Name: Twister

Wing surface: 21.5DM2  
Wing sections AA1 to AA5  
Stab surface: 2.2 mm  
Dihedral: 6°  
Weight: 250 to 290 gr  
CG 78 to 81 mm

## *Settings*

CG 80/82mm  
Aileron +15 to -15  
Flap  
Start/Speed 3mm up (bottom side level)  
Neutral -1,5mm up  
Thermal 2mm down  
Brake 30 mm down  
Elevator +12 to -12mm  
Rudder +18 to -18mm