



WingBat™ Assembly Instructions

This is a compact, easy to build EPP foam flying wing. Follow these instructions and you will be rewarded with a stable, easy to fly, aerobatic aircraft that is virtually **indestructible**. When you crash, simply pick it up throw it again and go flyyyy!! This makes it an ideal aileron **trainer**.

This aircraft is capable of Loops, Rolls and inverted flight and is ideal for combat or even slope gliding/soaring. Its size and light weight means it can be flown just about *anywhere!* We have recorded flight times of over 30 minutes with an in-house manufactured 1250mAh Lion Battery.

Kit Contents: Instructions are downloadable from www.wingbat.co.uk

One Pair of **WingBat** Foam wing Cores.
One LitePly Centre Rib
Two Micro Control Horns
Two Piano Wire Pushrods
Two Correx Elevons
Two Correx Wing Tips

To complete your WingBat™ you will also require:

Computer Tx with 'Elevon', or 'Delta' mixing (or a plug-in elevon mixer)
Micro 3-4 Channel Rx
Two 6gram Micro Servo's
ESC of your choice, 5amp for Parkfly, or 10amp for up to vertical or ballistic performance
Motor of your choice, GWS 50 (Parkfly), or 280/Brushless (Ballistic)
Battery pack to suit your motor/prop and ESC, Ideal weight range **50-80 gram**
Standard modelling tools
5 Minute Epoxy glue
Fibreglass strapping tape & SolarfilmCovering

(Please note: This wing was developed with a brushless motor package. The motor was a hand wound CD_ROM motor kit from www.gobrushless.com powered by a Castle Creations Phoenix 10 ESC. The battery used is a 1250mAh 7.4volt Lion, which are available from WingBat at £11 inc UK shipping.)

Building:

Please Note: *The lighter you build the better this will fly, use epoxy and tape sparingly!!! Comprehensive, step-by-step build photo's can be viewed on the www.wingbat.co.uk website!*

1. Gently sand the wing cores to remove any wire-cutting residue so they are smooth and sand the leading edge to a smooth rounded shape. Cut or sand the trailing edge straight and flat until its about 3-4mm thick see photo 001. (Any minor imperfections in the wing will not affect performance, you may blend these out with aerolite model filler if you prefer!)



Photo 001



2. The liteply rib needs to be cut and sanded to the correct shape, sharp modelling scissors are ideal. Using a *thin* layer of epoxy glue, bond the liteply rib to one of the wing cores. Photo 002 shows a similar rib, but made from carbon fibre. Using epoxy, bond both cores together, ensuring the cores are flat and level Photo 003. **Please note:** The bottom of the wing is the 'flatter' side!



Photo 002

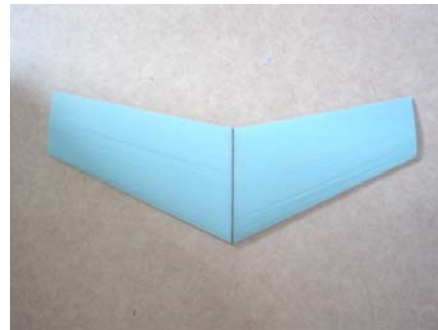
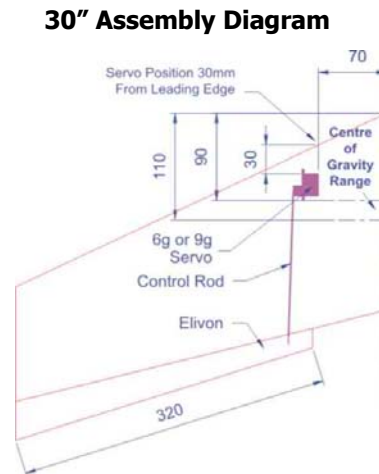
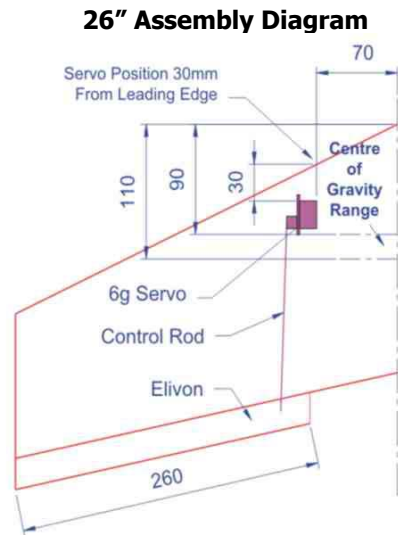


Photo 003

3. All the electronics are fitted in, or on top of the wing. Mark the position of the servos as per the following Diagram:



4. Cut enough foam away to ensure the servo's fit flush with the top surface of the wing, see Photo 004. Make sure the servo's are a snug fit, because there is nothing else locating them. The Rx should be mid positioned between the servo's, remove foam in the same manner, see Photo 005. The Rx aerial can be carefully sunk just into the top of the wing, to exit at either wing tip.



Photo 004

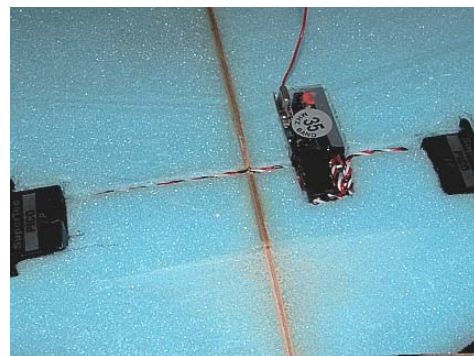


Photo 005



5. Mount the motor direct to the rear of the wing in a pusher configuration, (but as far forward as possible to assist with CofG setting). I epoxied a doubler (1/32 ply or CF) onto the 'V' area so that I could cable tie different motors directly to the wing, but this is not essential (see Photo 006/007). Make sure to build in a couple of degrees of downthrust. The ESC may also be buried in the wing at a suitable position, but it is recommended to mount onto the surface of the wing for cooling purposes. Velcro was ideal for this.



Photo 006

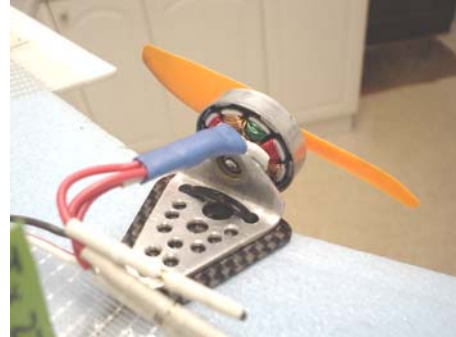


Photo 007

6. Slide the battery up & down the nose to maintain the correct CofG, this is 110mm back from the nose. Once again I used velcro strips to attach the battery, so it is easy to change the Battery & CofG if necessary. If you prefer a more permanent or streamlined look, the battery may be partially sunk into the wing surface, similar to the Rx & servo's.

7. At this point connect all the radio gear and make sure both servo's work in the correct direction for aileron and elevator mixing. 'Centre' the servo horns at the same time. I used equal length servo and elevon horns (approx 13mm).

8. Once all the radio gear is fitted use self-adhesive fibre reinforced tape to hold it all in place. The wing should be covered with solarfilm, or coloured packing tape as you prefer, reinforced tape may be applied across the nose and leading edge to make it more crashworthy, see Photo's 008/009. **Handy Tip:** Rotate the servo horns down into the wing for covering, then slit the covering to release the horns back to vertical.



Photo 008



Photo 009

9. Wing tips and elevons are supplied in Correx, but can be made from anything suitable, balsa, liteply, or depron. Depron is particularly suitable because it is very lightweight. **Handy Tip:** Depron is usually found for **free** when buying supermarket pizza's. (It's the white foam disc under the pizza!)

10. It helps to sand, or cut a chamfer on the leading edge of the elevon so that it fully hinges down. Wrap the elevons with covering film or clear tape and attach to the wing on both upper and lower sides using clear tape as a hinge, this will stiffen the elevons and makes the wing more responsive. Tape along the full hinge line. Mount the control horns using a little epoxy. The control horns should be fitted directly in-line behind the servo horn, but close to the elevon leading edge. If your wing is to be powered then you will need to trim the supplied elevons to clear the propeller you wish to use.



11. Bend a 'Z' at one end of both pushrods and fit to each elevon horn. Ensure the servo horns are still central and while keeping the elevon in a flat-neutral position mark where the servo horn 'Z' bend should be. Trim off any excess wire and connect both horns.

12. The wing tips can be attached with double-sided (servo) tape, clear tape or epoxy, but I prefer to use Velcro, so that they are easily removable for transportation.

13. Finally, add some high contrast graphics to help identify which is the right side up!



Flying:

Exponential on all settings of 15-20% will soften any twitchiness. Approximate initial control throws are (in mm of movement from the trailing edge neutral position):

Function	General & Test	Sport & Aerobatic
<i>Aileron</i>	<i>5mm</i>	<i>8mm</i>
<i>Elevator</i>	<i>3mm</i>	<i>5mm</i>

These are not definitive settings, but they will get you started, depending on what motor you have fitted, but please **feel free** to experiment. We are grateful for your feedback and if you wish to send a photo of your completed wing we will add it to the WngBat website.

If you have any questions or need further advice then just drop a line to tech@wingbat.co.uk

Please check www.wingbat.co.uk for regular updates, revisions, or new developments.

