

Chuck Glider Building Instructions

Below is a basic set of instructions covering the building of most Chuck Gliders

WOOD SELECTION

WING

If you are making your first Hand Launched Glider, then don't place too much emphasis on the type of Balsa wood that you use. Just select a Medium / Straight grain sheet of balsa wood.

If you are not sure what Medium / Straight grain wood should look like when you are in your local model shop, ask the shop assistant (they ought to know). If the assistant is unsure then ask to examine their whole stock of 1/4" (6mm) sheet. Compare the sheets and reject the very softwood (prone to breakage's) and also reject the very hard wood (makes cutting and shaping difficult). Also reject any sheets that have obvious flaws in them. Look for nice 'clean' wood. Look along the edge of the sheet (lengthways) to see if it is straight - not bent or twisted.

If you have decided to venture into the world of HLG competition flying or just fancy having a sparkling performance from your glider then you should use Quarter Grain (quarter cut) balsa wood for the wings, fin and tail.

The major benefit of using Quarter Grain wood is its stiffness.

Quarter Grain has a mottled appearance and is easy to spot once you have seen it.

TAIL & FIN

Use medium weight quarter grain if you can get it, otherwise use medium straight grain.

FUSELAGE

Use a Hard grade of wood for the fuselage. If the fuselage is laminated (Mr. Shifter) or covered in fiberglass cloth (Hybrid) medium grade will do. Fuselages very rarely break - wing / fuselage joints do.

Hardwoods

One or two of the plans mention Spruce, if you cannot obtain Spruce locally use any lightweight hardwood.

CONSTRUCTION BEGINS

Before you start building any model photocopy the plan and use the photocopy to build from.

Please note: plans Downloaded from this website will have shrunk 5% (while photocopying re-size if you wish.)

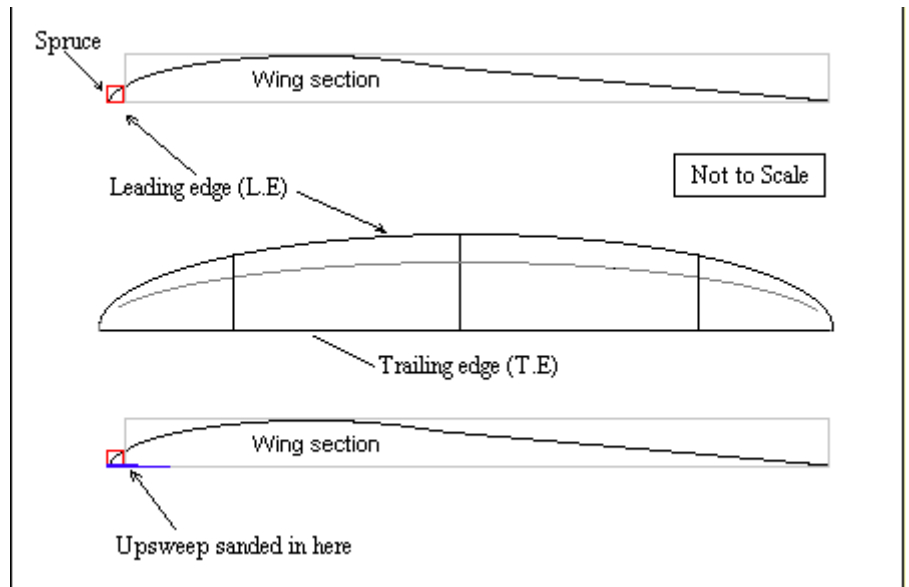
Cut out the main shapes from the plan and use these paper shapes as templates to mark out the parts on the wood. Take the template for the wing, position it for the first wing half then flip it over and mark (with pen) the other wing half. Before cutting out the wing (as one piece), mark the wing centre line and dihedral positions on both the top and bottom of the wing blank.

WING

Cut out the wing; use a sanding block to smooth off the leading edge making sure that there are no dips or bumps. If a Spruce leading edge is indicated on the plan, now is the time to fit it.

Measure and cut two strips (one for each half). Lightly sand one side of the square Spruce strips (we'll glue this side). Use a razor plane to taper the opposite side of the strips towards one end. Using a smooth round metal object, rub the sanded side, this will encourage the strip to curve (important). Keep rubbing (it takes practice) until the curve of the Spruce almost matches the shape of the wing leading edge.

Use Cyano' to glue the strip to the leading edge - remember to allow for any up-sweep indicated on the plan.



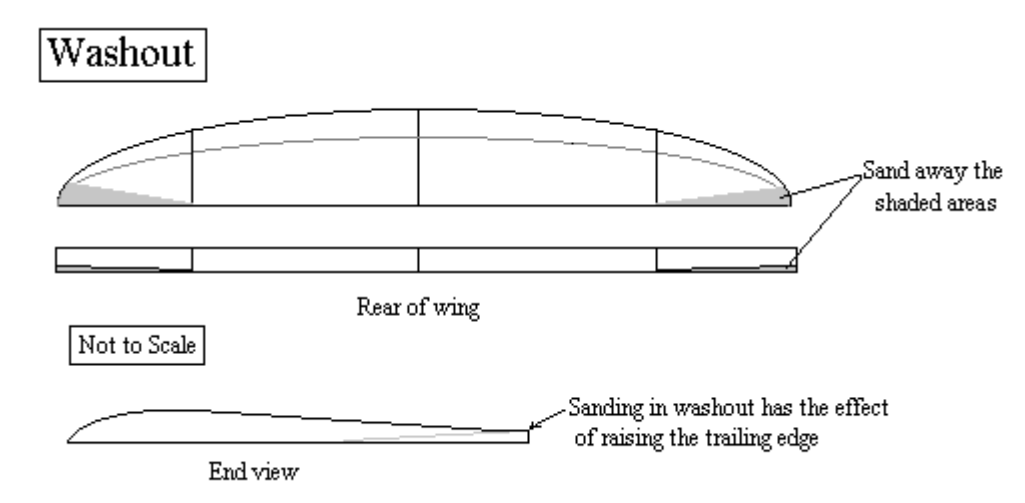
A Spruce leading edge will strengthen the wing and help prevent LE damage.

Washout

After cutting out the wing shape from the balsa sheet,

Sand in any washout that is indicated on the plan

Washout gives stability to a model and helps prevent spiraling.



Shaping the Wing

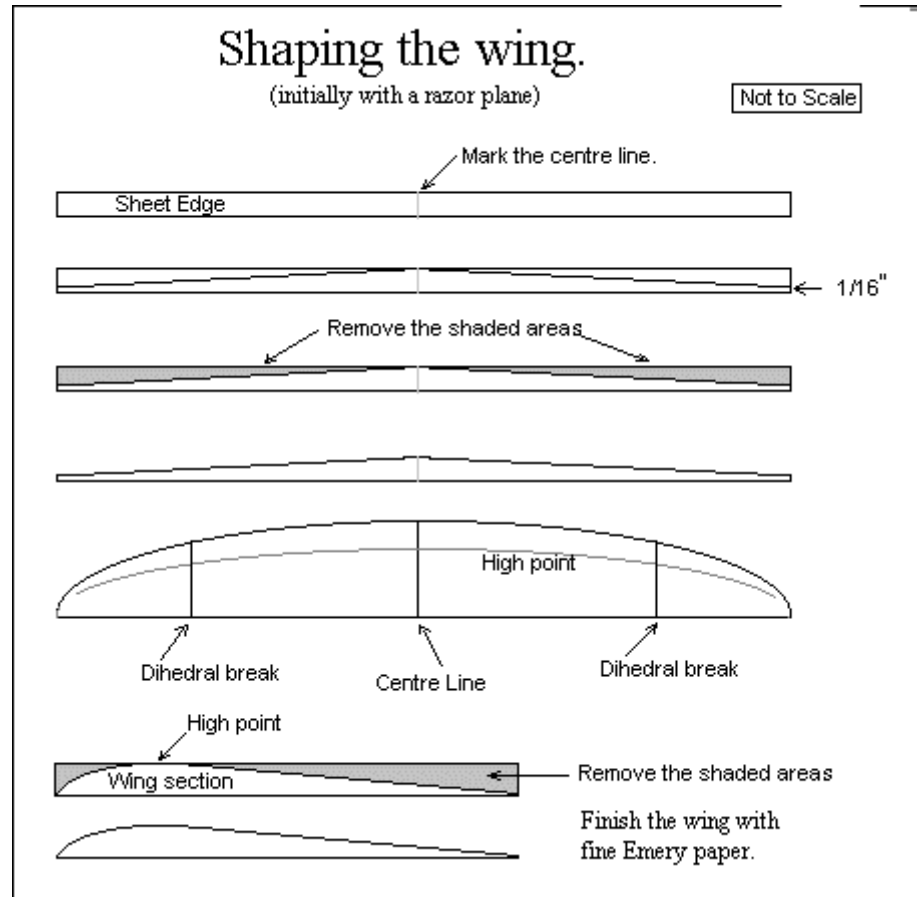
Use a razor plane to shape the wing to a rough section.

First thin the wing from the centre to the tips. Mark the high point onto the thinned wing and then shape in the wing section.

The final shaping and finishing of the wing should be done using medium and fine Emery paper. Sand the trailing edge and tips down to at least 1/64"

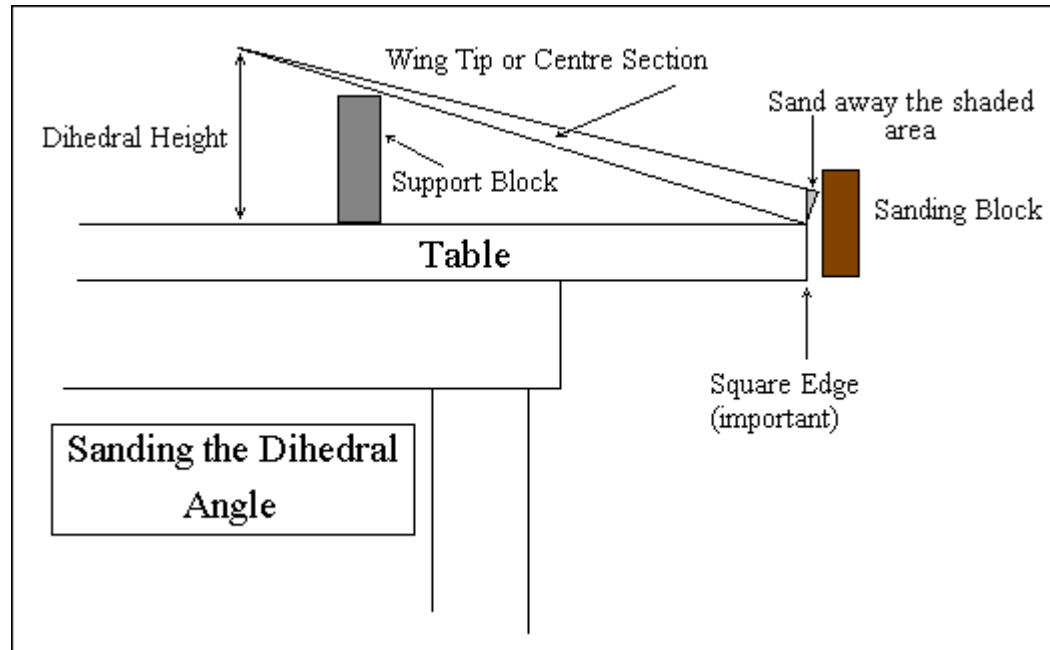
Use a metal 90o square to re-mark the wing dihedral breaks onto the top surface.

Fit a new blade to your modeling knife and using your metal 90o square - carefully cut through the wing breaks.



Dihedral Breaks

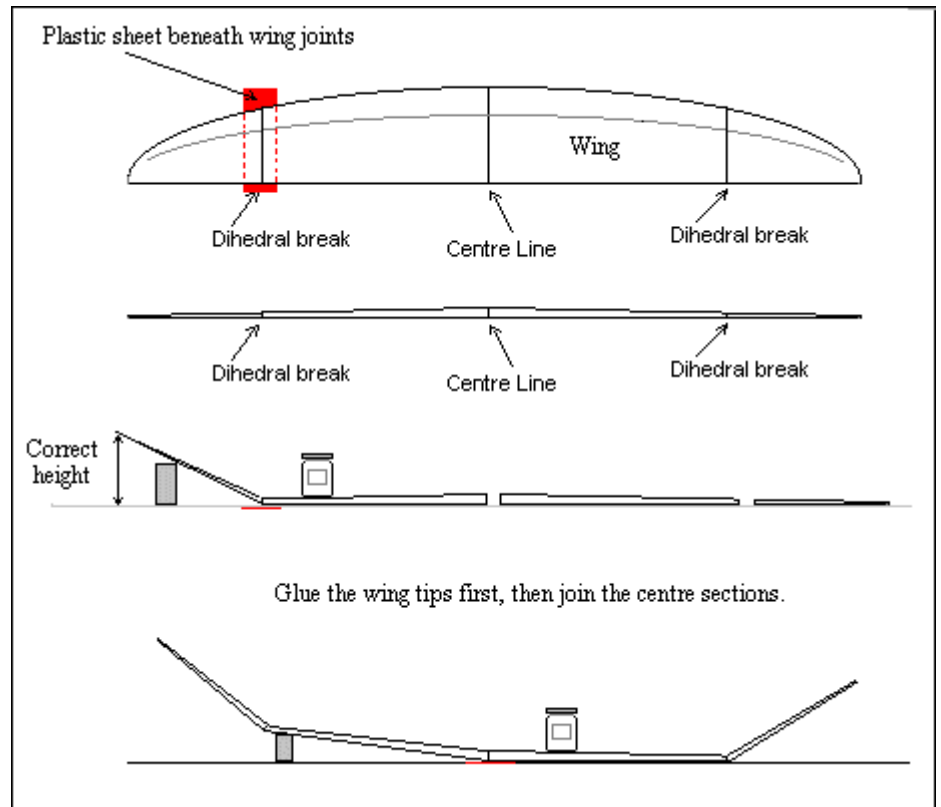
Sand the dihedral breaks as shown in the plans. Hold the wing tip/centre section rock steady and with backwards and forwards strokes carefully sand the angle as shown. The table edge will ensure that the sanding block is kept 'square' to the balsa, thus achieving a straight edge. The sanding block should be at least 5" long, make the sanding block from 1/2" sheet - Cyano a piece of emery paper to one side. Support blocks should be at least as wide as the wing it is supporting.



Wing Joints

You should now have perfectly straight wing joints, which you can glue with Cyano'. If you are not confident that you will be able to position and hold the wing in the few seconds that you have using Cyano' - then use Epoxy glue. Position a piece of thin plastic underneath the joint while gluing to stop the wing sticking to your work surface. To prevent the wing from moving, place a weight on top of the wing section that is flat on the work surface.

Remove the plastic strips once the glue has set hard.



FUSELAGE

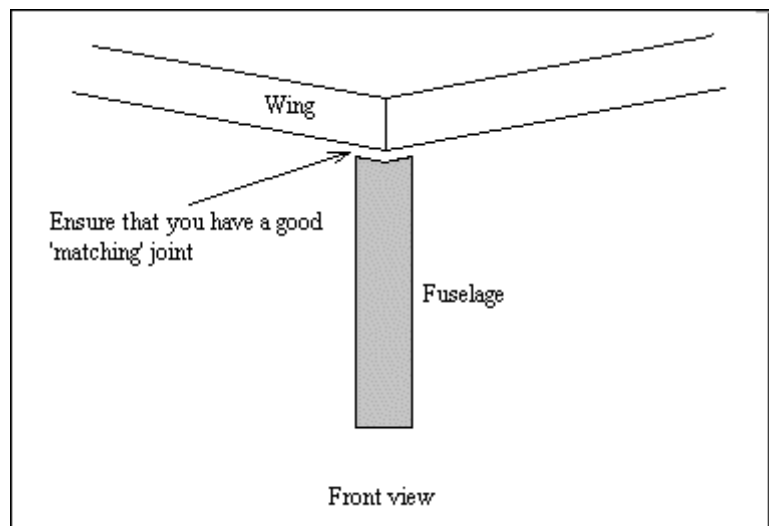
Use hardwood and follow the plan outline accurately to ensure that the wing / boom incidence is correct.

If building a model with a balsa fuselage always thin the rear end to reduce weight. A heavy tail means more weight on the nose to counter balance it and that means a heavier model - not good!

Use Cyano' glue to build and laminate fuselage parts (Mr. Shifter) and to attach the boom pivot side plates.

Wing / Fuselage Joint

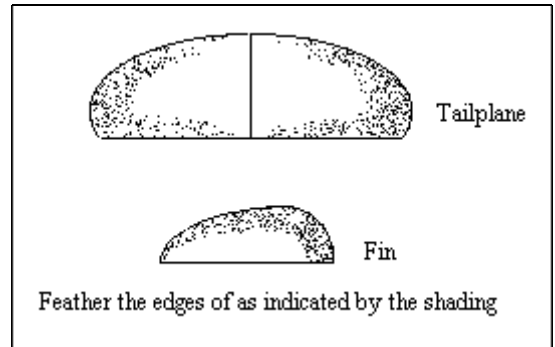
When gluing the wing to fuselage, use Epoxy; ensure that you have a neat joint before gluing. Apply any fiberglass re-enforcing after glue has set.



TAIL & FIN

Neatly cut out the parts and then feather (sand) the edges down to about 1/64" as shown (keep the edges smooth).

Glue the Fin and Tail to fiberglass booms with Epoxy; use Cyano' for wood to wood joints.



FINISHING

Give the wing / fin / tail surfaces one final sanding with very fine Emery paper.

Round off the nose section of the fuselage.

Fit the d/t tube if there is one. Use a rat-tailed file to start the hole and slowly enlarge it.

Now apply three coats of thinned (50/50) non-shrinking dope, allow to dry thoroughly between coats, sand smooth with very fine sand paper between coats.

Apply a further coat(s) of non-shrinking dope if required (if the wood still looks 'dry').

To fully waterproof the model, apply a thinned (50/50) coat of two-part fuel proof dope.

Lightly spray the wing tips and 'tail feathers' with Fluorescent orange paint (essential for recovery)

It isn't necessary to paint the whole model, as this only adds weight.

Write your name and phone number on the wing.

Assemble the model (if using a glass' boom) and go flying!!