



Blades sanded to this aerofoil.

#### Constructing the blades and balancing

Please don't be put off about making blades, it is easier than you may think! Try and use the same sheet of balsa to make all the blades as this will assist in balancing and give an even weight to each. Using epoxy, glue the spruce LE to the balsa TE and leave to dry hard. Once dry mark the aerofoil on each end of the blade blanks and remove the excess wood using a rough sanding block/razor plane or simply carve away (I use a bench belt sander which makes quick work of them). The profiles are finished off with a fine sanding block, the important part is to keep the lower LE edge sharp. The lower root reinforcers can then be glued into position but leave the top ones off until we have found the position of the cord wise CG. This is found by sticking in pins to each end parallel to the LE, the pins are supported each end and their positions moved about until the blade balances. This position is then marked on to each blade. Another line 1mm back from this is marked, this will be the centre line to which the blade mounting bolt hole will be drilled. The top root reinforcers can now be glued with their centre positioned on the line just marked. Measuring from the tip of each blade accurately mark a line 430mm inwards as shown on the blade template. Where this line intersects with the cordwise CG (the one 1mm rearward of the CG) is the mounting point for the blade bolt. This is then accurately centre drilled then opened out to take the M3 mounting bolt. Make sure its a good interference fit and slop free.

The blades are marked up 1,2,3 and each one is weighed on some digital scales (jewellers scales are cheap and very accurate for this). Balance each blade on a piece of angle or dowel span wise (like a see saw) and mark this position on to each blade (see FIG 1).

Presuming the blades all weigh different amounts we can now add mass to the 2 lighter blades to match them with the heaviest. This is done with the application of Balsa Loc around the cordwise CG position just found. If the same sheet of balsa has been used to make all of the blades they will be pretty close anyway. When happy that they all way the same they can be covered in film or what ever is preferred.

To finish off take a pair of blades and bolt them together using an long M3 bolt, this is used as a pivot axle (I balance mine inbetween open vice jaws). Balance them like a see saw again, if one is lighter add small peices of tape until they are in equalibrium. Repeat this with with the other blades until any 2 blades are selected and balance perfectly together.

They are now ready to use!...far easier to do than explain!!