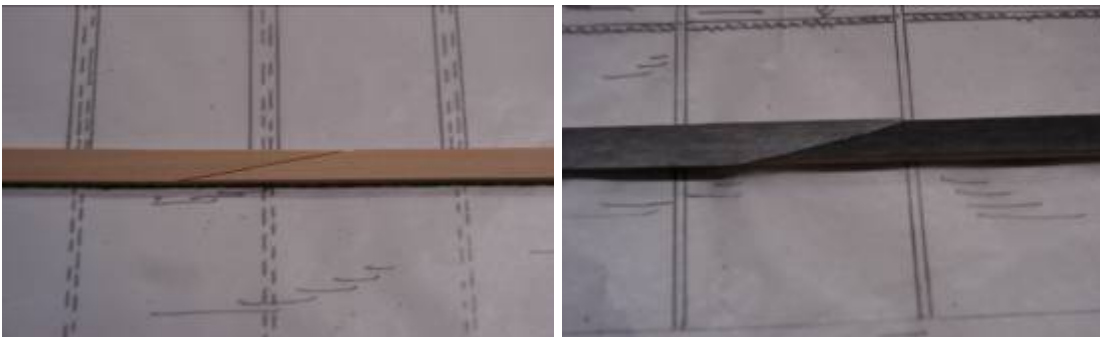


Smooth Genie Pro Build Log for Wing

1. Take 48" x 1/8" x 3/8" basswood spar and cut them into 36" and 24" lengths. Stack the four pieces together, using a belt sander, sand a diagonal the width of the rib bay, 2". Every thing used to build the wing is included in the full kit, EXCEPT THE WIRING HARNESS.



2. Glue the splice together and trim to make 2 – 52" spars.

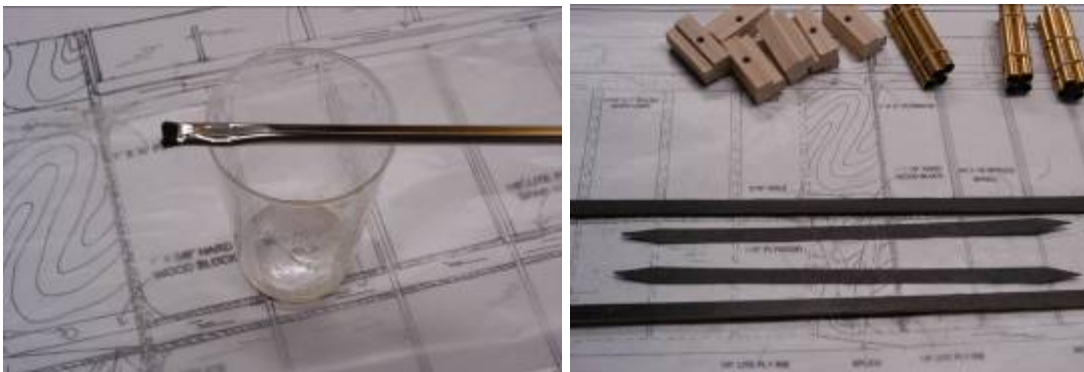


3. Cut 3 – 52" strips by 3/8" of 0.007 carbon fiber sheet and 2 – 52" strips by 3/8" of 0.014 carbon fiber sheet. Splice if necessary. NOTE: If you do not get exactly 3/8" that is OK, the CF can be sanded down to spar width after the epoxy has set. I do that whether I "need" to or not, then the spars fit the spar notches in ribs better. (3/8" and 1/4" CF is included)
4. Cut an additional 24" x 3/8" x 0.007 and 2 – 12 "x 3/8" x 0.007.
5. The top of the top spar will have three CF laminations!
 - a. 1 – 52" with a
 - b. 24" in the middle on top of the 52".
 - c. The third 12" CF strip goes on top of the 24" in the middle.

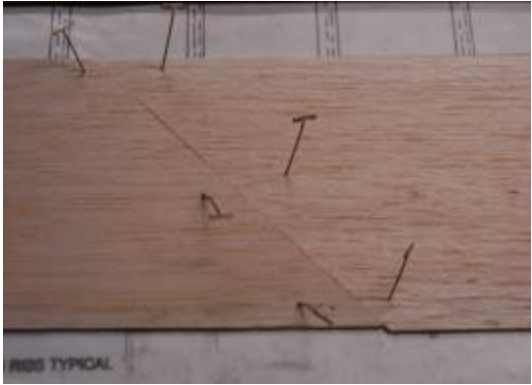
6. **The splices are all on opposite sides of wing:** That is, the bottom basswood spar splice is on the left of the wing, the 0.007 CF for the top of the bottom spar is on the other side of wing – the right side. The 0.014 CF for the bottom of the bottom spar will be on the right at a slightly different place than the 0.007 CF. Of course if you by 72" tapered CF, this is not a problem.
7. **At this point you can begin to decide if you want to launch with the big boys or launch the way you would launch a well built woody.** If you want a very strong spar, **DO NOT** glue the lower spar to the 1/16 sheeting. Jump to step #46

The following is for woody builders.

8. Take the 2 – 36" x 1/8" x 1/8" spars and the 1– 24" x 3/8" x 1/8" spars, place together and CA the splice. Repeat. Sand off any residual CA
9. Mix about a small teaspoon, total amount, of 15 minute epoxy in a cup add 6 or 7 seven small drops of isopropyl alcohol or epoxy thinner to the cup. Mix thoroughly. It should be the consistency of maple syrup. (To save on wasted epoxy, trim flux brush to 1/4" bristles.)



10. Spread the thinned epoxy on one side of the spar, add carbon fiber strips. Repeat with the other spar. Weight it down with bags of lead over wax paper. I use a 2" by 48" steel ruler to help spread the weight more evenly. Cut arrow heads on each end of 12" x 3/8" x 0.007 CF to laminate the top of the top spar and the bottom of the bottom spar. The pointed end of the additional CF laminate should not come to an abrupt end. The bending forces are distributed less abruptly with a gradual blend.



11. Place wax paper over the plan. Cut and splice the 1/16" x 4" sheeting. (Some kits will have 24" and 36" lengths and other kits will have 48" and 12") Use a 3/8" strip of 0.007 CF to hold splice together. Place and epoxy the spar to the sheeting. Add weight to hold the spar to the sheeting. Locate the basswood hold-down block and epoxy in the middle of the bottom spar.

12. Trim the 3/8" x 2" sheet of webbing. Trim the sheet to exactly 1" and 7/8" wide. Measure the height of web space (top of bottom spar and bottom of top spar notch) – between Root Rib and 2nd rib. Cut 24 of these. Sand to fit exactly flush with the spar and spar notch. Use these webs as a rib spacer. **This may be more accurate than the plans, which can be distorted when printed.**

13. Place a web and then a rib, then a web, then a rib..... Thanks Ray!



14. It is so nice when CNC and Laser cut parts fit as they were designed!



15. There is a lot to discuss in the picture.
 - a. The 1/16" x 2" x 10" birch ply bottom sheeting.
 - b. The 1/8 x 3/8" by 52" CF laminated basswood spar.
 - c. The wing hold down block
 - d. 1/16" x 4" x 25" balsa sheeting
 - e. 1/16" 1" x 25" aileron spar sheeting
 - f. 1/4" x 1/4" x 25" basswood sub wing spar
 - g. 1/4" x 1/4" x 25" basswood aileron spar
 - h. 1/16" x 1 1/2" x 25" aileron spar sheeting
 - i. 1 7/8" x 3/8" nominally 5/16" webbing
 - j. Holes in ribs are for the servo wires.

16. The 1/16 ply bottom sheeting is use to protect the wing from fuse saddle.

17. I have changed the hard balsa sub spars to basswood spars. Less than 8 grams difference in weight. Much stronger.

18. Place the aileron sections are about a 1/4 inch behind/away from the wing sub spar!!!! If you don't separate them, the glue "will get legs and migrate" and glue them to each other. BEEN THERE – DONE THAT!
 - a. Maybe plans should be drawn that way????

19. Add the 1/16" x 1/4" bottom caps strips.

20. Add ribs and webs going from Rib #1 through #11 on each side.

21. Cut 3/4" inch off of the tail of each ribs. Glue the "tails" in place on the 1/16" aileron bottom sheeting, and against the aileron spar. This will be sanded and shaped later.
22. Trim each rib to precisely fit between the spar and the sub spar. Avoid cutting the rib too short!!!



23. This is what a well manicured wood wing looks like. Beautiful!
24. Add the spliced 52" x 3/8" x 3/8" LE. The kit will contain a 2 - 48" and 2 - 12" or 2 - 36" and 2 - 24" pieces
25. Razor plane/sand the LE to the contour of the ribs.
26. Razor plane/sand the wing sub spar to the contour to the aft end of the ribs.
27. Add the shaped 2" x 1 1/2" x 1/4" lite ply center TE. A 1/4" hole will be added later. (Shown on in the right pic, below)

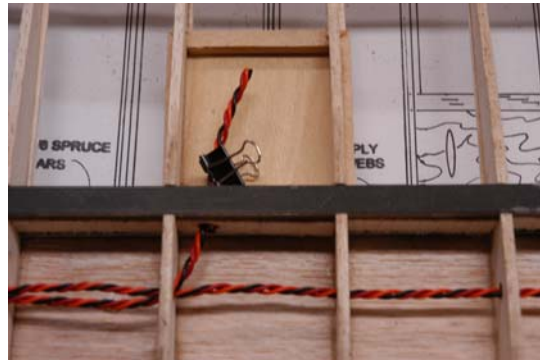


28. Sand the 3" x 13/32" brass tube to rough up the outside so the epoxy will adhere to brass.

29. Cut out the hole in ribs #13 and #14 vertically, to accommodate the joiner tube. If you kept the epoxy and CF strip as tight as possible, the space between the bottom and top spars will be just 13/32"

30. Tack with CA. Will epoxy in place later.

31. Epoxy the CF/basswood laminated 3/8" x 1/8" x 52" spar in place. Clamp or add lots of lead weight. Use 15 minute epoxy to give you plenty of working time.

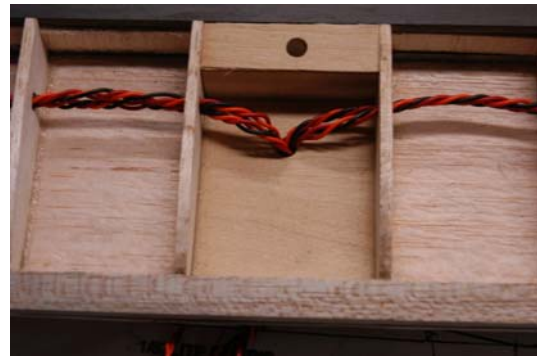


32. The pic above shows cut and sanded TE wedges

33. The kit contains a routed 1/4" x 1/4" 36" basswood strip. The strip is routed 1/16" x 3/32" to allow the recessed fit of the servo hatch cover.

34. Drill two holes for the servo wiring harness.

35. Wiring harness with four servo leads. One set with two leads on each side of the center section. The aileron leads are approximately 30" and the flap leads are 15". The servo ends have female Hitec style connectors. The receiver ends have four pin male red and black Deans connectors. A female four pin red and black connector is connected to four 6" twisted servo leads. The four 6" twisted servo has 4 female Hitec servo style connectors. The red and black connectors keep the left and right servo leads separated at the field.



36. The servo support rails are $\frac{1}{4}$ " x $\frac{1}{4}$ " x 2 $\frac{1}{8}$ " cut from the 36" length. Cut the 2 $\frac{1}{8}$ " lengths, with a miter cutter, on a 45° angle for a nice square tray support on the ribs. Attach the servo (HS125 Hitec) to the tray. Of course, if you wish to make the servo bays smaller, just cut to your size.



37. Glue and clamp the $1/8'' \times 1\ 7/8'' \times 3/4''$ web caps in place. If necessary sand carefully to be flush with top of spar. Web caps between each rib is optional. The first four rib bays are necessary and the last two bays on both sides are necessary. For this version, I have web caps on all ribs bays and on both side of the spar between the first four bays. You can reduce the weight by sticking with necessary structure only.

38. Next you are ready to epoxy the web cap to the brass joiner bay. Mix up enough to completely fill both side of the joiner tube bay will some left over to seal the $1/8'' \times 1\ 7/8'' \times 3/4''$ web caps to the ribs. The center panel rib bays are $1\ 7/8''$ and $7/8''$ wide, but the outer panel bays are $2\ 7/8''$ wide.

39. Glue the additional $1/4'' \times 7/8''$ by $1\ 7/8''$ aft spar web cap.



40. Glue the $1/16'' \times 6'' \times 2''$ ply sheeting in place, secure with clamps. The plywood sheeting is optional. I wanted to build a **very** strong center wing panel and see what the weight would be, just a little over 31.5 oz.. Necessary structure will weigh in around 28.5 oz to 30 oz.



41. Add glue to the top of the spar, place 1/16" x 4" x 26" add sheeting. Clamp in place with a steel ruler to distribute the pressure evenly.

42. Wet the sheet with water until it curls. Place the wing on its LE and let CA run down the rib and on the sheet where the rib will touch.



43. Because the sheeting is curled, clothes pins or masking tape is all you need to hold the sheeting place.

44. Cut and glue the 1/16" sheeting in place.

45. Sand entire center panel, fill any dings with ICING, AND admire a beautiful wing panel – can you wait to see it fly with transparent covering?????

46. For a very, very strong center, the following steps can be taken.