

Mountain Models
quality r/c kits

MercurE™

Mini Old Timer Electric Model



MercurE™ Specifications

Wingspan: 31.6 in.

Length: 20.6 in.

Wing Area: 153 sq. in.

Weight (Ready to Fly): 4.9 to 5.4 oz.

Wing Loading: 4.6 – 5.1 oz. / sq. ft.

WARRANTY

Mountain Models guarantees this kit to be free from any defects in both material and workmanship at the time of purchase. This warranty does not cover ANY components or parts damaged by use or modification. In no case shall Mountain Model's liability exceed the original cost of the purchased kit. Mountain Models reserves the right to modify or change this warranty without notice.

LIABILITY RELEASE

In that Mountain Models has no control over the final assembly or material used for final assembly, no liability shall be assumed or accepted for any damage resulting from the use by the user of the final user-assembled product. By the act of using the user-assembled product, the user accepts all resulting liability.

If the buyer is not prepared to accept the liability associated with the use of this product, the buyer is advised to return the kit immediately in new and unused condition.

THIS PRODUCT IS NOT INTENDED FOR CHILDREN 12 YEARS OF AGE OR YOUNGER.

WARNING: This product may contain chemicals known to the State of California to cause cancer and or birth defects or other reproductive harm.

PRODUCT SUPPORT

This product has been designed to function properly and perform as advertised with the SUGGESTED power system, speed control, and servos, as described in advertisements and in this manual. We do NOT support, nor can Mountain Models assist in determining the suitability or use with any other electronics or hardware not recommended by Mountain Models.

For the proper electronics to complete this model, replacement parts, and product assembly questions, please contact Mountain Models online at www.MountainModels.com

Thank you for purchasing the Mountain Models MercurE™. The MercurE™ is a small model designed to bring back that nostalgic feeling of yesteryear, in a small field electric package. Taking inspiration from the original Mercury, we developed the 32 inch MercurE™, which resulted in a super lightweight, nostalgic, and relaxingly smooth flying plane.

The MercurE™ was designed using a state of the art 3D CAD package, to allow for exceptional interlocking parts design and fit. 3D design also allows us to provide clearer assembly images, without having to use photos.

The MercurE™ is built from self-jigging interlocking laser cut balsa and plywood parts. It's like a 3D jigsaw puzzle with instructions. If the instructions are read before hand and followed during the build, the MercurE™ can be built up and ready to fly in only a few evenings.

We think you'll like the MercurE™ and look forward to any feedback you might have.

Thank you,
Brian Eberwein

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Before You Begin

Check to make sure that all of your parts are there and in good shape.

Parts List

Number in Kit	Description of Part
Bundled Parts	
1	Laser Cut Parts (See wood inventory sheet)
1	These instructions of course!
Metal, Etc. (on the back of the wood bundle)	
2	072 Pushrod Housing x 12"
2	0.025" x 18" Wire
1	0.032" x 6" Wire
2	1/16" Pre-bent landing gear wire
Bagged Parts	
2	DuBro black wheel keepers and set screws
2	DuBro Micro Servo Connectors
2	DuBro EZ-Links
4	Magnets, 1/8" diameter, 1/16" thick
1	Aluminum tube, 3/32" diameter x 3/4"
4	#2 x1/4" Motor mount screws
4	#2 x 3/8" Screws
1	3/32" Basswood elevator joiner
2	1/8" x 1" Dowels
1	Velcro, sticky backed, 2"
2	DuBro control horn
2	Wheels

Building Materials and Tools You Will Need

- Smooth and FLAT work surface
- Wax paper or clear plastic wrap to protect the work surface
- Thin Cyanoacrylate (CA) glue
- 5 Minute Epoxy
- Hobby knife with #11 blades
- Needle nose pliers
- Wire bender or pliers for bending pushrod wires
- Wire cutters
- Screwdrivers
- Sanding block, 320 to 400 grit sandpaper
- Sewing Needle, Small
- Covering Iron

Finishing Materials You Will Need

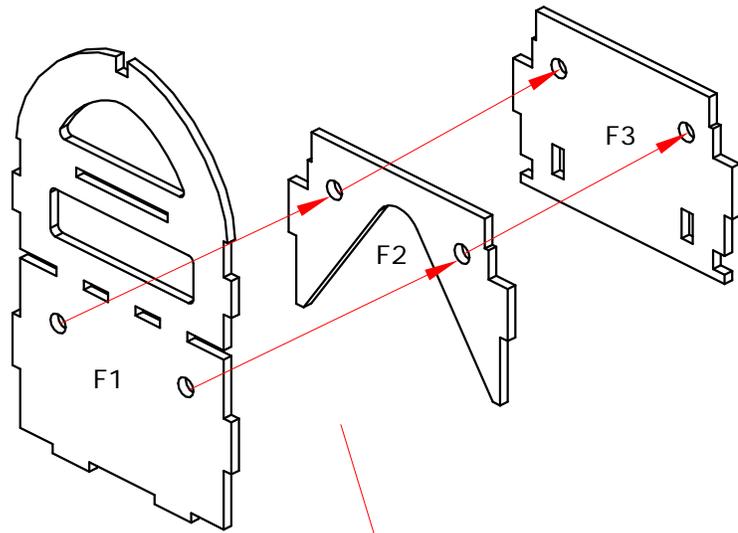
- Covering material (SoLite, 1 roll)

Electronics You Will Need

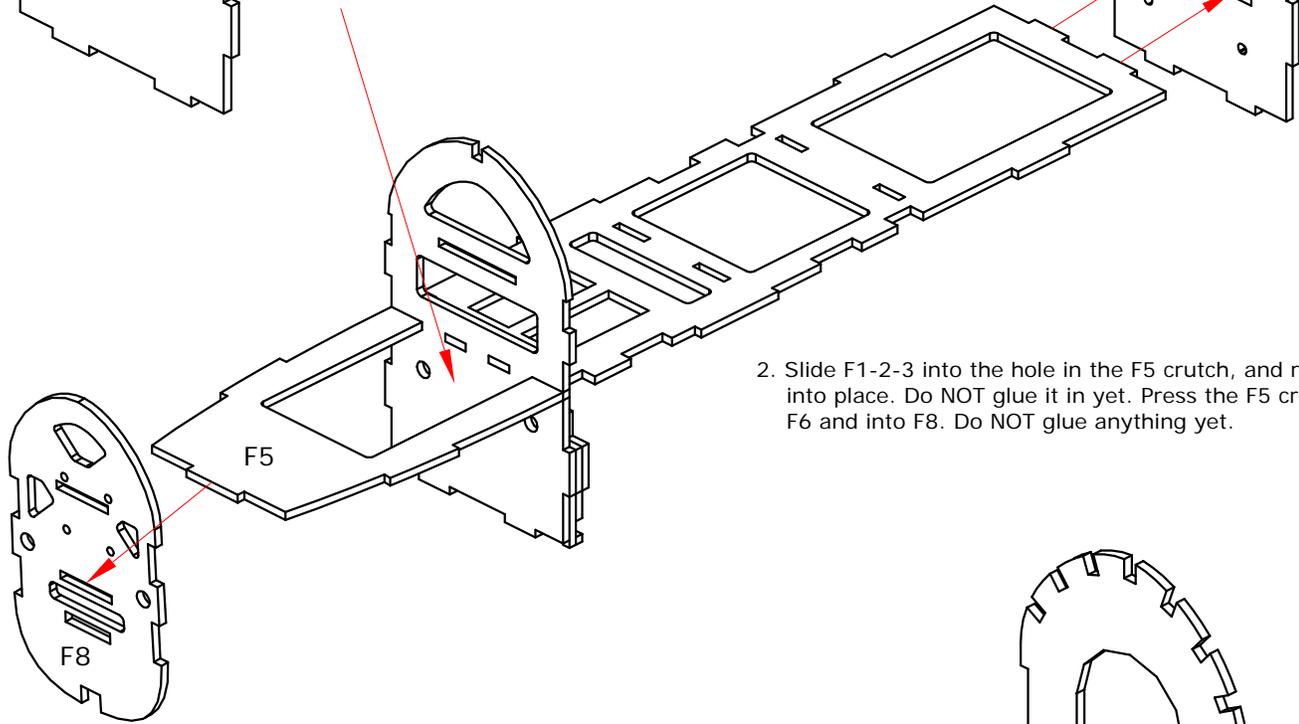
- 3 channel radio minimum
- 4 channel mini receiver (Berg 4L or Spektrum 6110e)
- 2 ea. 3.7 gram servos (Power HD 1370A or Mountain Models 3.7)
- D1811-2000 10 gram Outrunner
- GWS 6030 HD Prop
- Feigao or Mountain Models 6Amp, 6 gram ESC
- Rhino or PolyQuest 2S-360 LiPo

General Building Tips

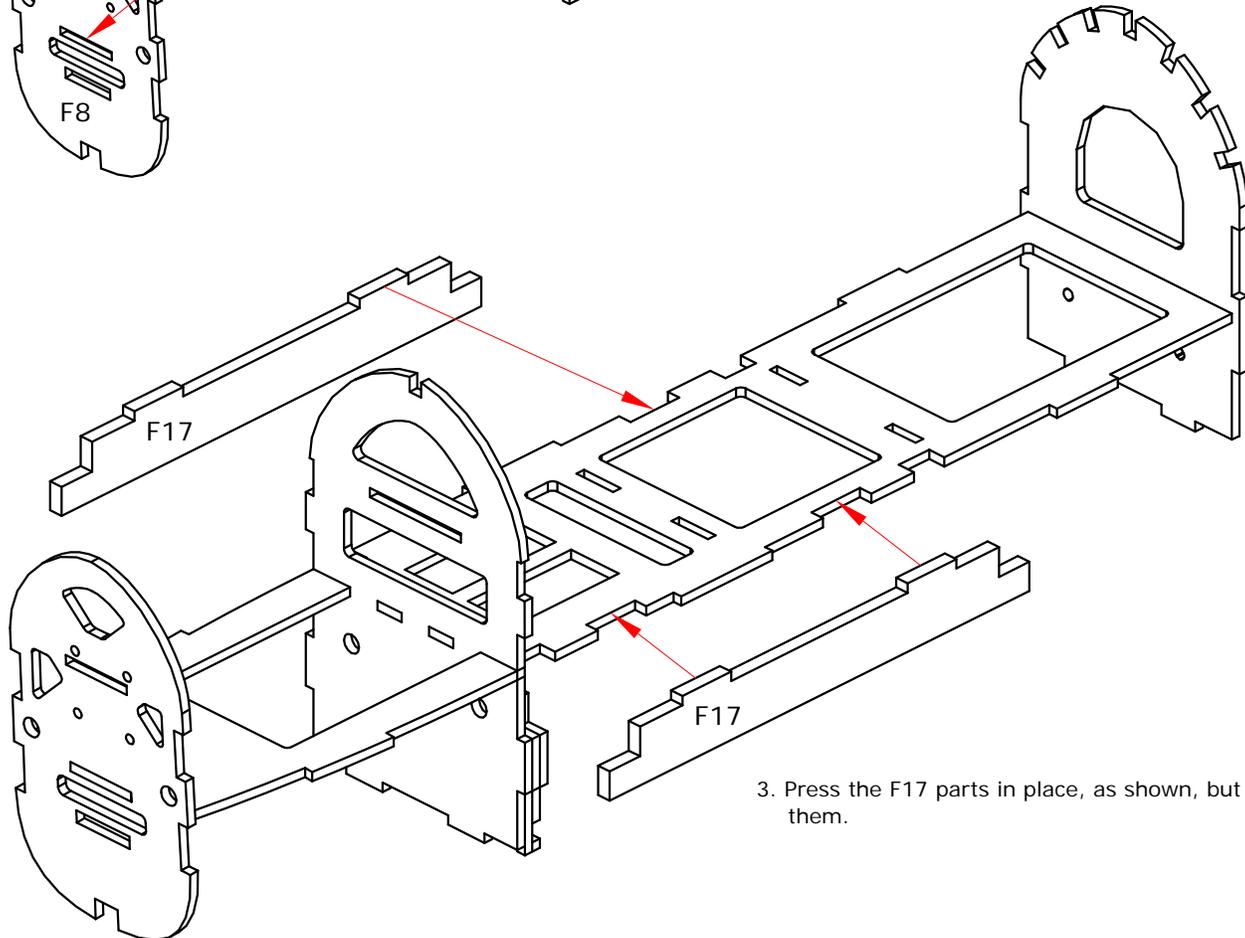
- **READ THE INSTRUCTIONS** all the way through and study the plans **BEFORE** starting any work on the model.
- **PRE-SANDING: BEFORE** removing any parts from the balsa sheets, use a sanding block with 320 grit sandpaper and lightly sand the back of the balsa sheets. Our balsa suppliers have been sending us wood that is over sized, so sanding the backs of the balsa sheets reduces the thickness just slightly and removes any charring from the laser cutting process.
- Tape the plans to your nice clean work surface and cover it with wax paper or plastic wrap. You want to keep your work surface clean and not glue the parts to the plans, right?
- Balsa is a lightweight and fragile wood, so you do need to be careful with it; however, you will also need to use a little bit of force to make everything fit properly, so don't be too timid.
- Do not remove any pieces from the balsa sheets until they're ready to be used. That way, parts won't get mixed up or disappear.
- Do NOT glue anything until told to do so.
- Join all of your pieces using thin CA (Cyanoacrylate) glue, unless we tell you otherwise. In general, only a small amount of CA is necessary to glue parts together.
- Don't over force your pieces together. If they aren't fitting together properly, make sure you have the right pieces and that they are oriented correctly. If needed, you can lightly sand the part to fit after making sure it is the correct part and oriented correctly. On balsa "tabs", you can "pinch" the wood with your fingers to get them to fit in slots. (The tabs might be tighter some times, due to tolerances in wood thickness)
- If you want to remove the charred edges caused by the laser cutting process, lightly dampen a cloth with bleach and gently rub the affected areas. Removing the char will not increase the strength but will make it look better. It also keeps that dark edge from showing under the lightweight coverings.



1. Glue together F1-F2-F3 using thick CA, and using the $\frac{1}{8}$ " dowels for alignment. Remove the doewls so they do not get glued in place.

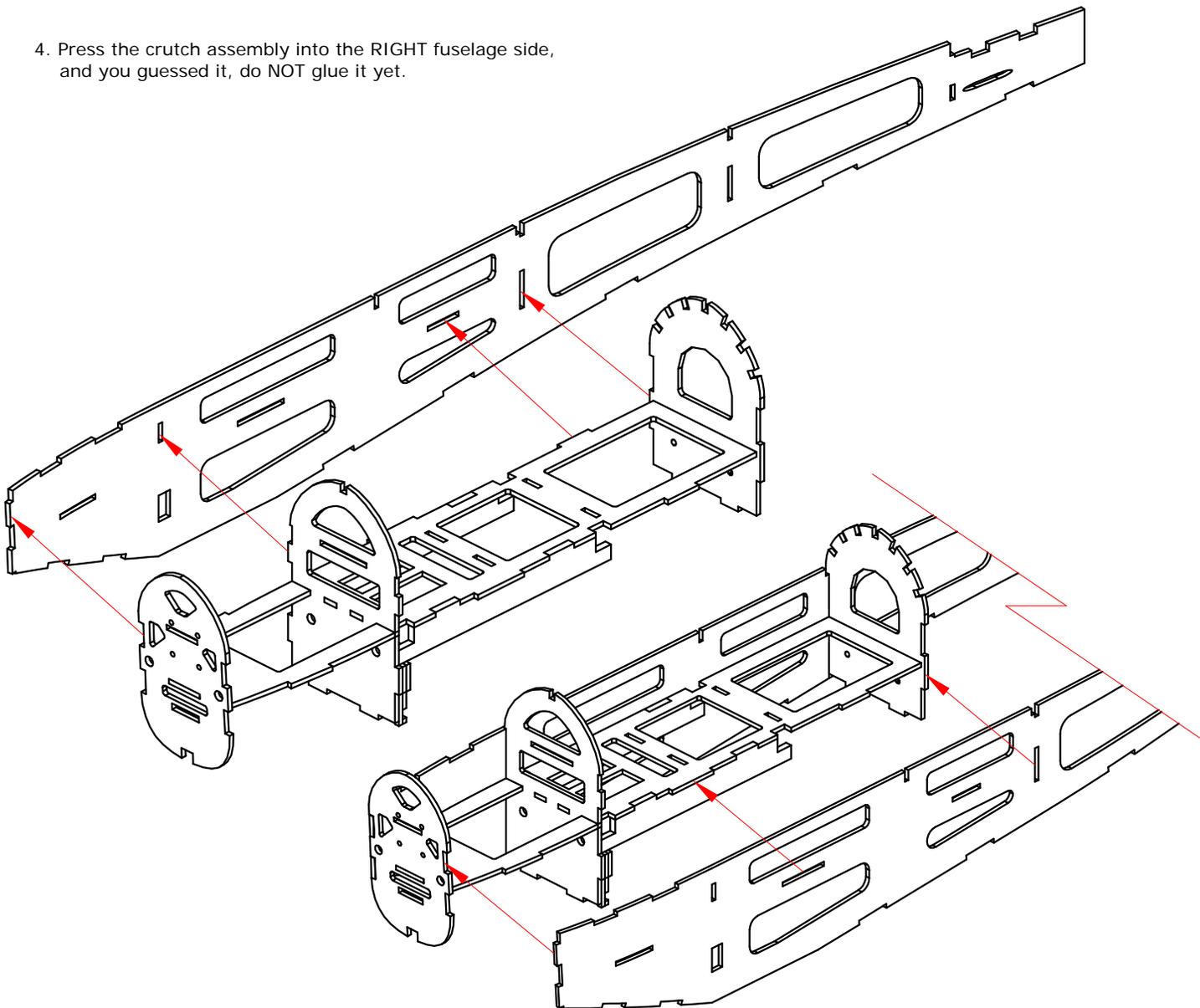


2. Slide F1-2-3 into the hole in the F5 crutch, and rotate it into place. Do NOT glue it in yet. Press the F5 crutch into F6 and into F8. Do NOT glue anything yet.

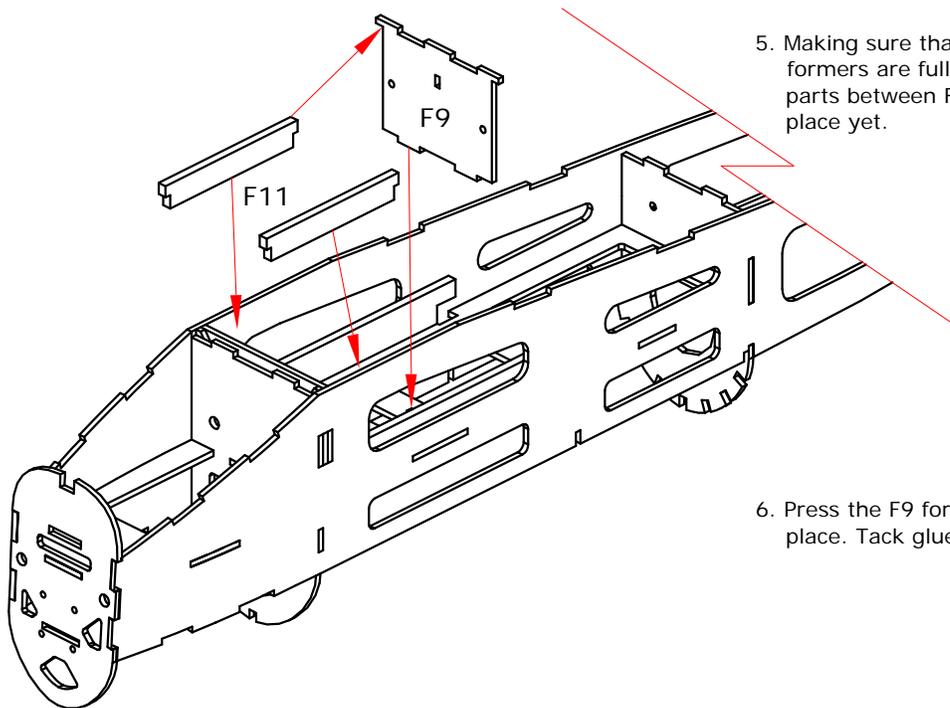


3. Press the F17 parts in place, as shown, but do NOT glue them.

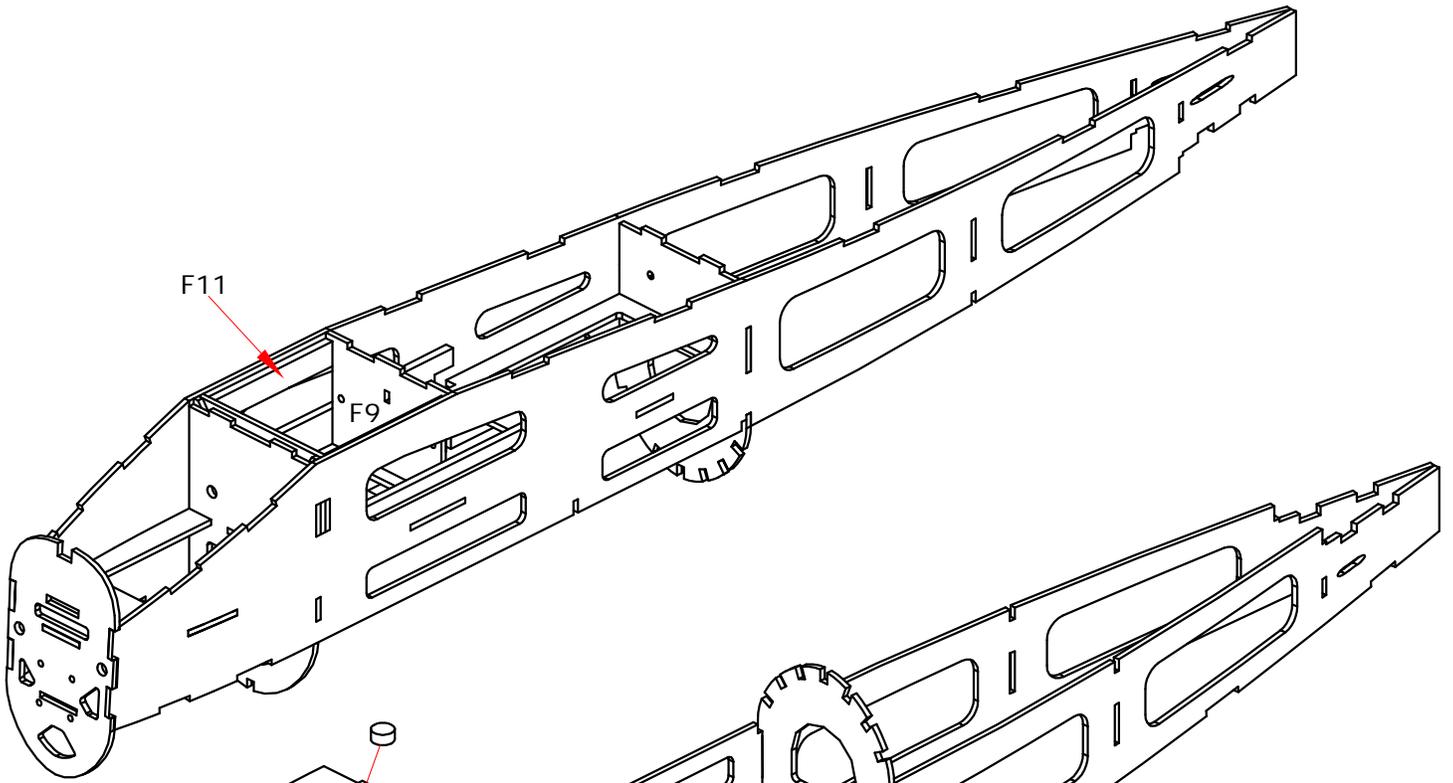
4. Press the crutch assembly into the RIGHT fuselage side, and you guessed it, do NOT glue it yet.



5. Making sure that the fuselage sides, crutch parts, and formers are fully inserted into each other, tack glue the parts between F1 and F6. DO NOT glue the firewall in place yet.

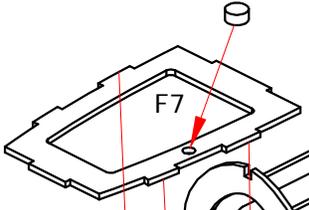


6. Press the F9 former and F11 hatch support parts in place. Tack glue with a few drops of thin CA.



F11

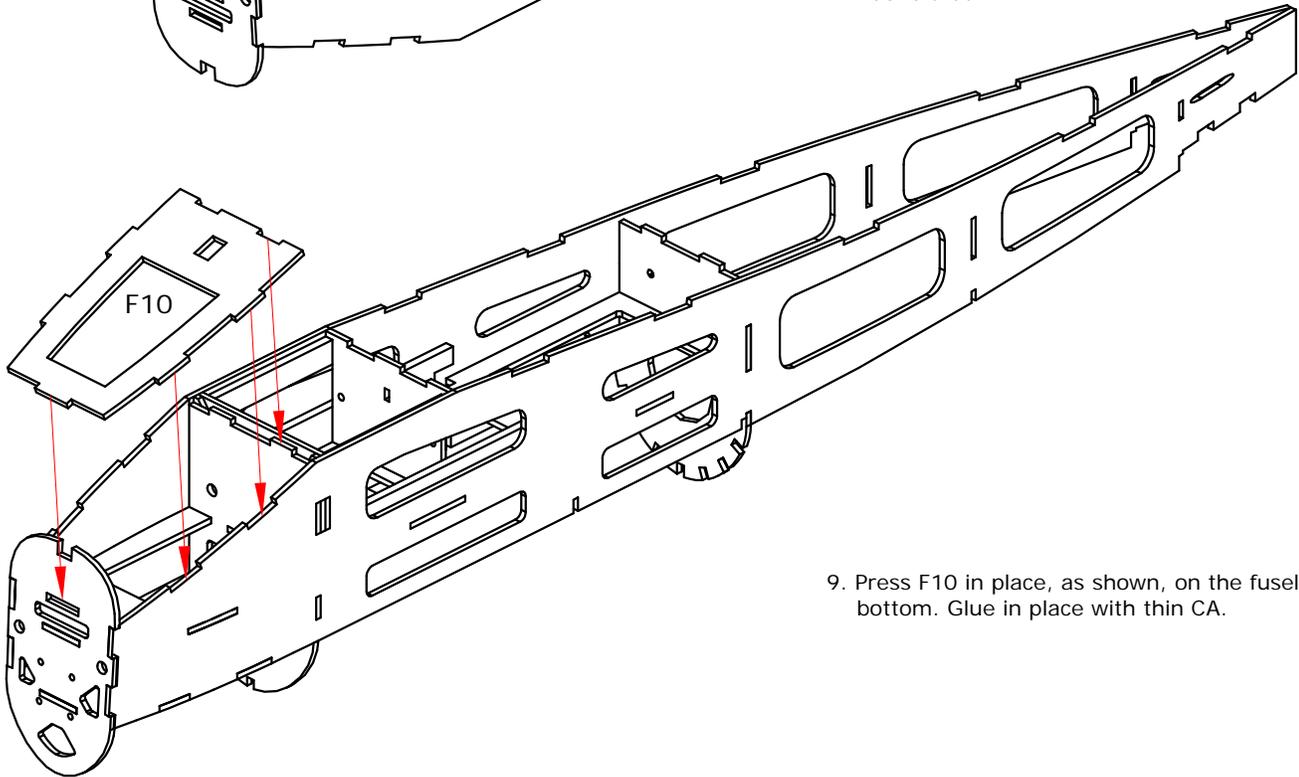
F9



F7

7. Glue ONE magnet into F7 with thick CA.

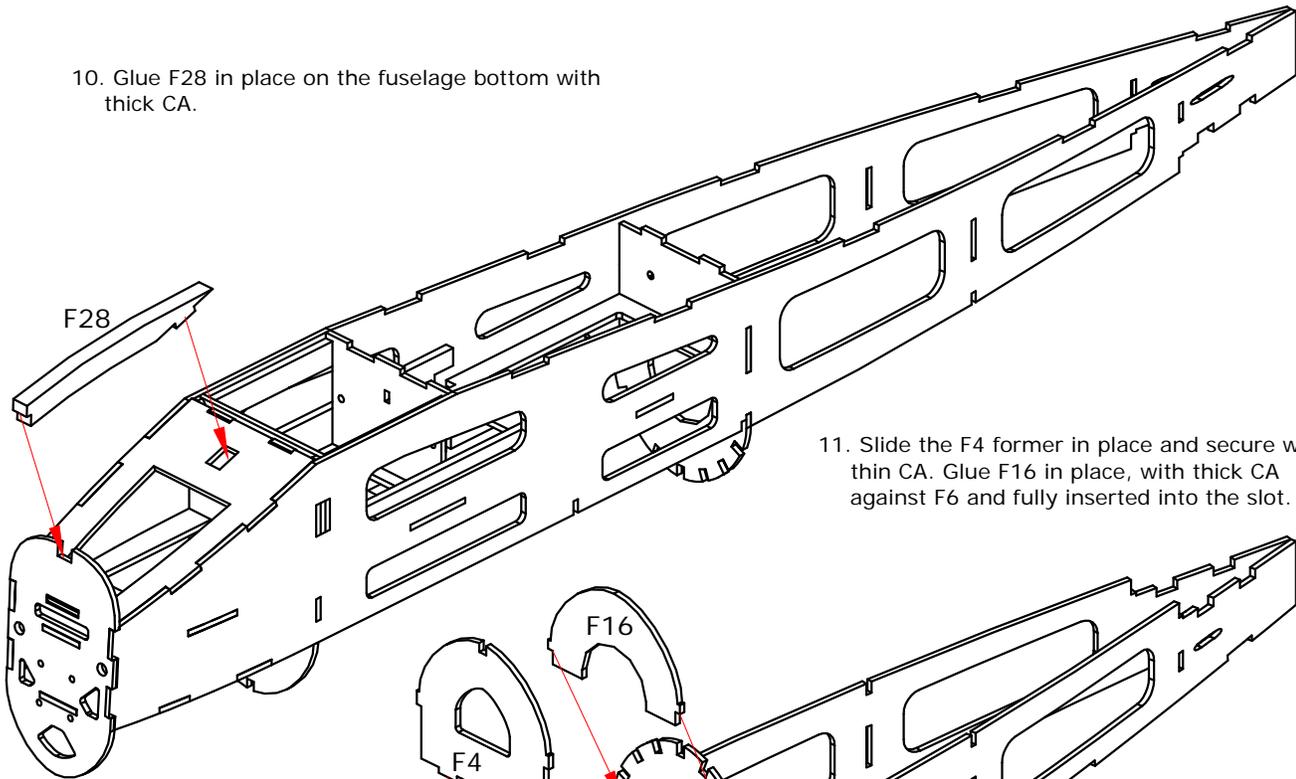
8. Press F7 in place, as shown. Secure it and the firewall in place with CA. BE CAREFUL not to glue your fingers to the fuselage here! Yes, we have done that...



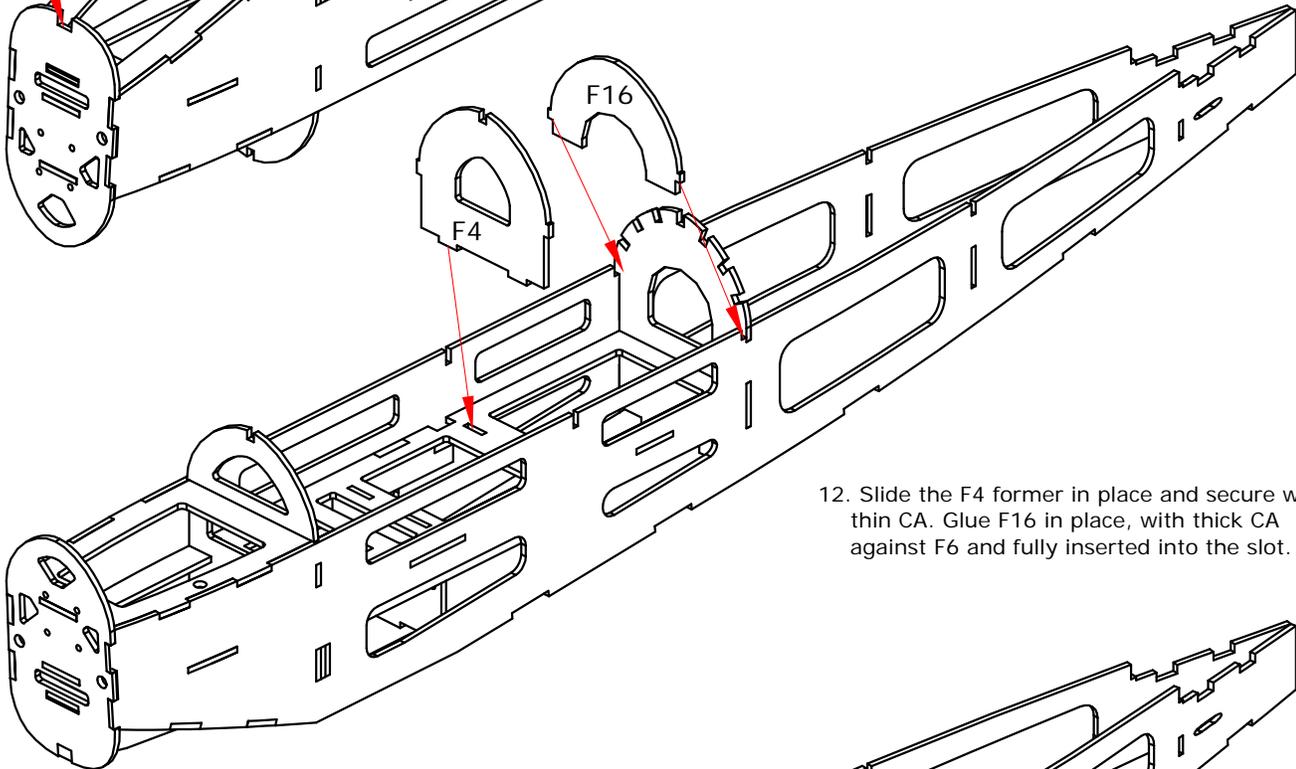
F10

9. Press F10 in place, as shown, on the fuselage bottom. Glue in place with thin CA.

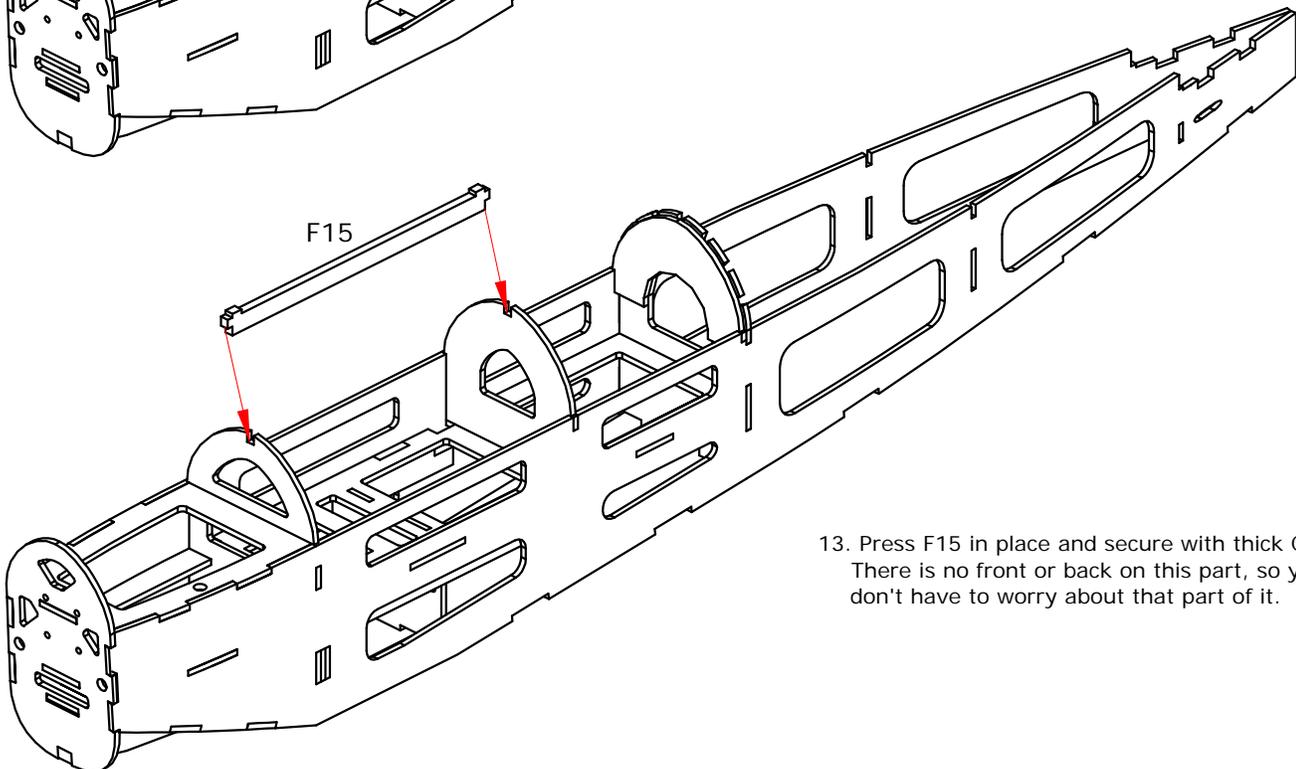
10. Glue F28 in place on the fuselage bottom with thick CA.



11. Slide the F4 former in place and secure with thin CA. Glue F16 in place, with thick CA against F6 and fully inserted into the slot.



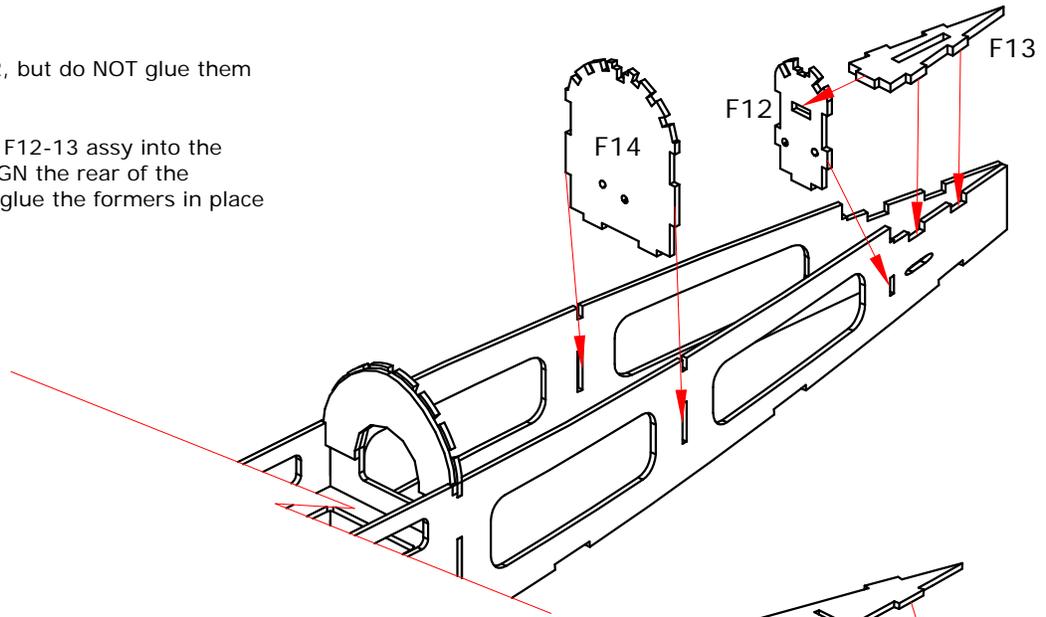
12. Slide the F4 former in place and secure with thin CA. Glue F16 in place, with thick CA against F6 and fully inserted into the slot.



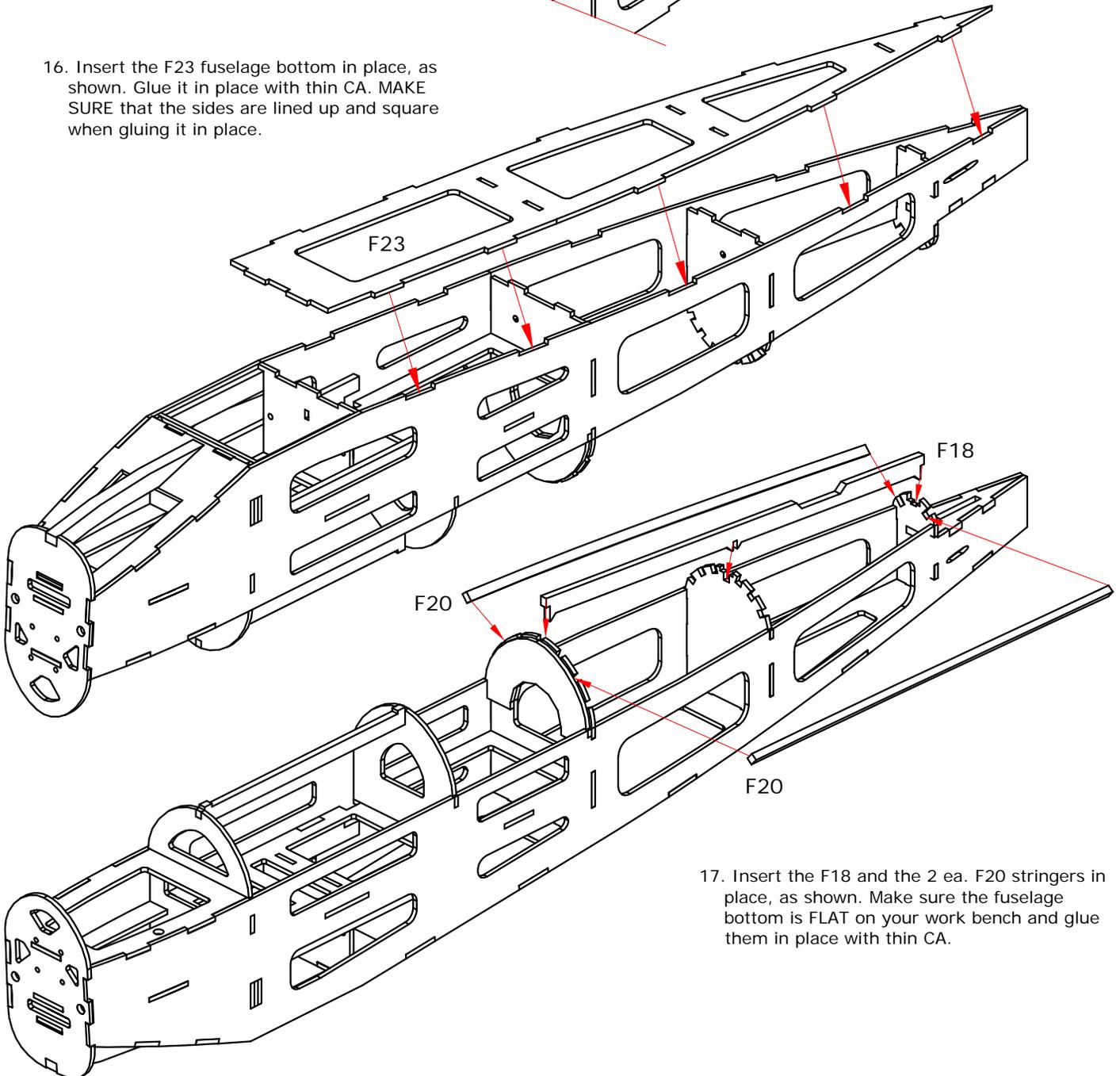
13. Press F15 in place and secure with thick CA. There is no front or back on this part, so you don't have to worry about that part of it.

14. Press F13 into F12, but do NOT glue them together.

15. Press F14 and the F12-13 Assy into the fuselage sides. ALIGN the rear of the fuselage sides and glue the formers in place with thin CA.

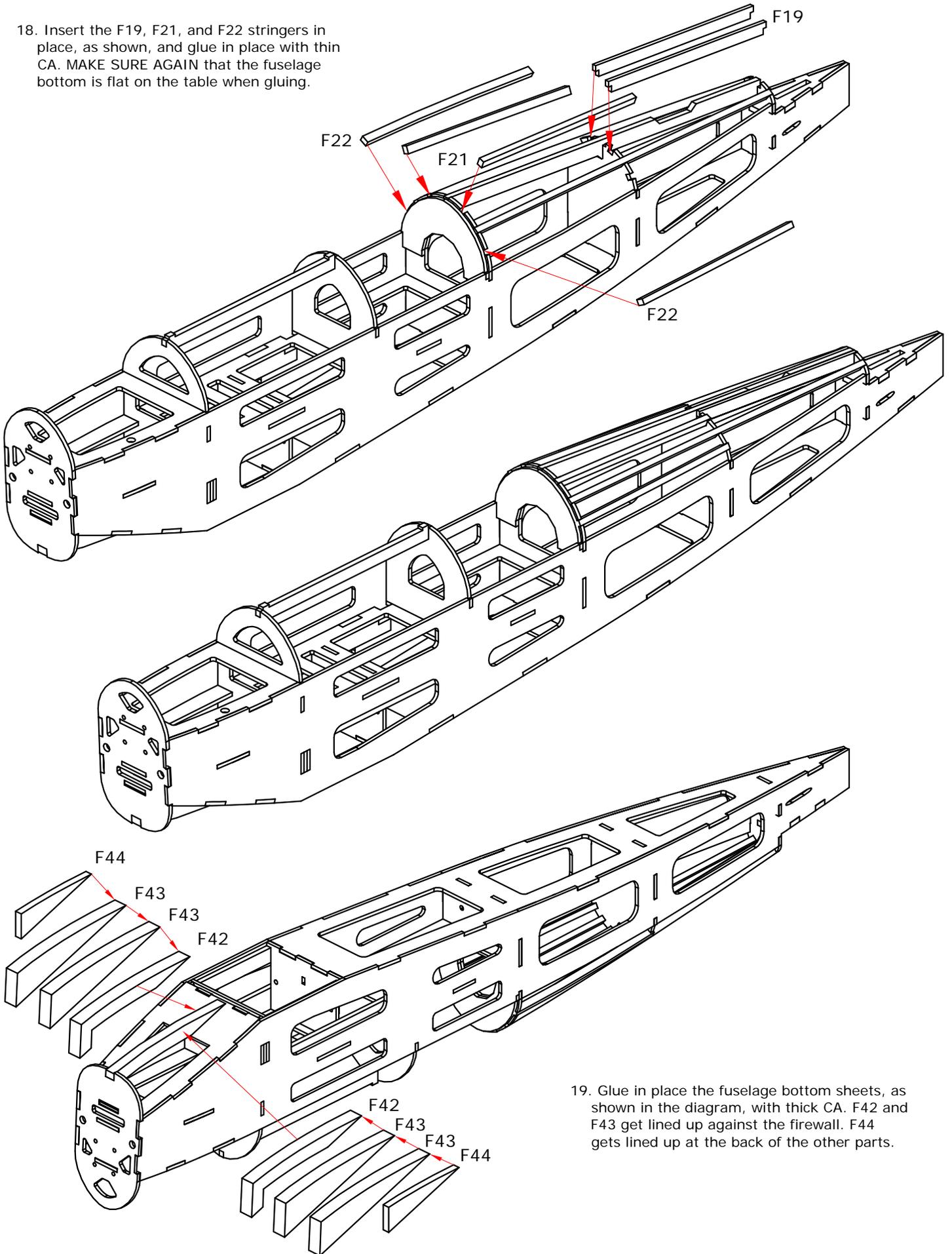


16. Insert the F23 fuselage bottom in place, as shown. Glue it in place with thin CA. MAKE SURE that the sides are lined up and square when gluing it in place.

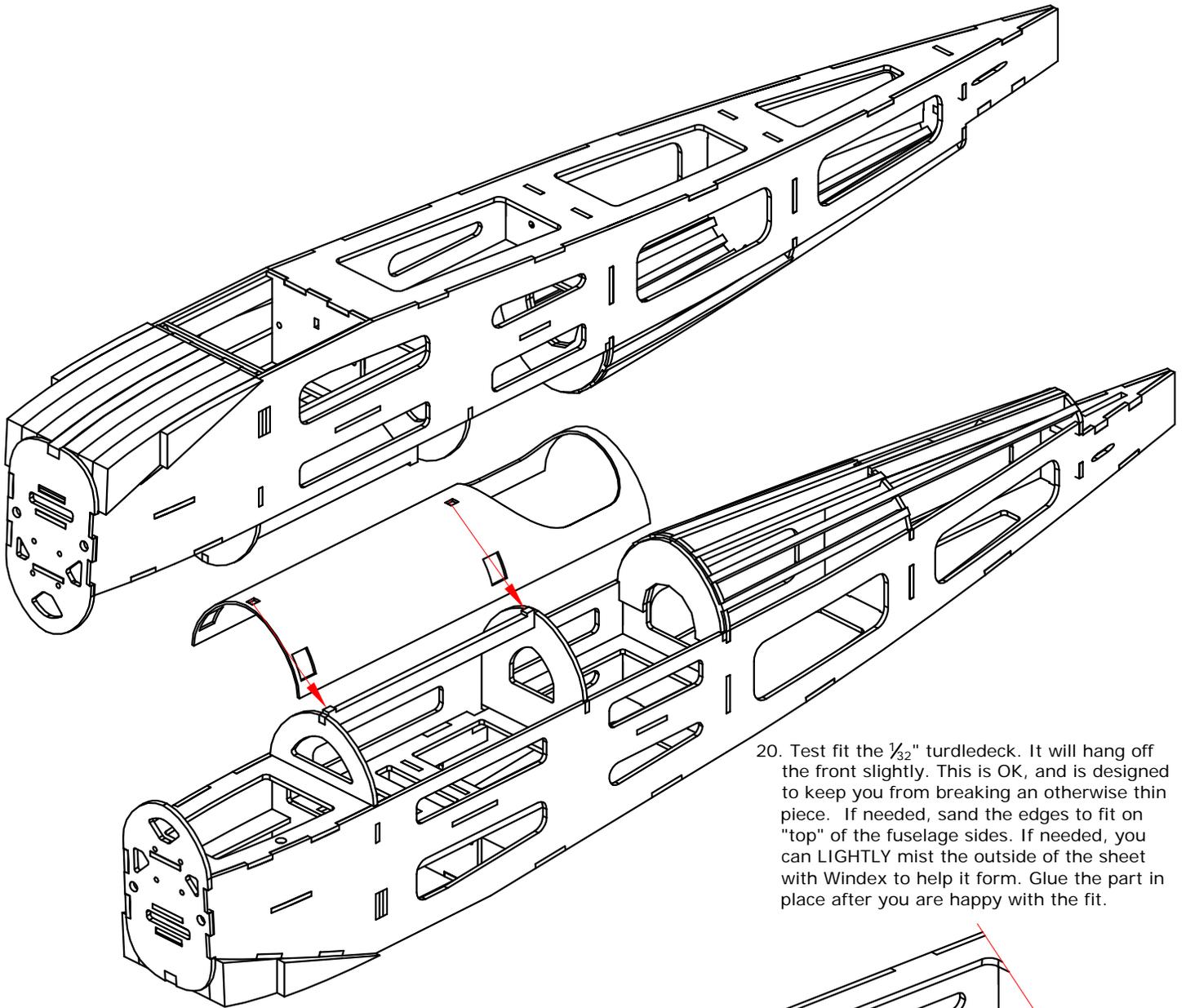


17. Insert the F18 and the 2 ea. F20 stringers in place, as shown. Make sure the fuselage bottom is FLAT on your work bench and glue them in place with thin CA.

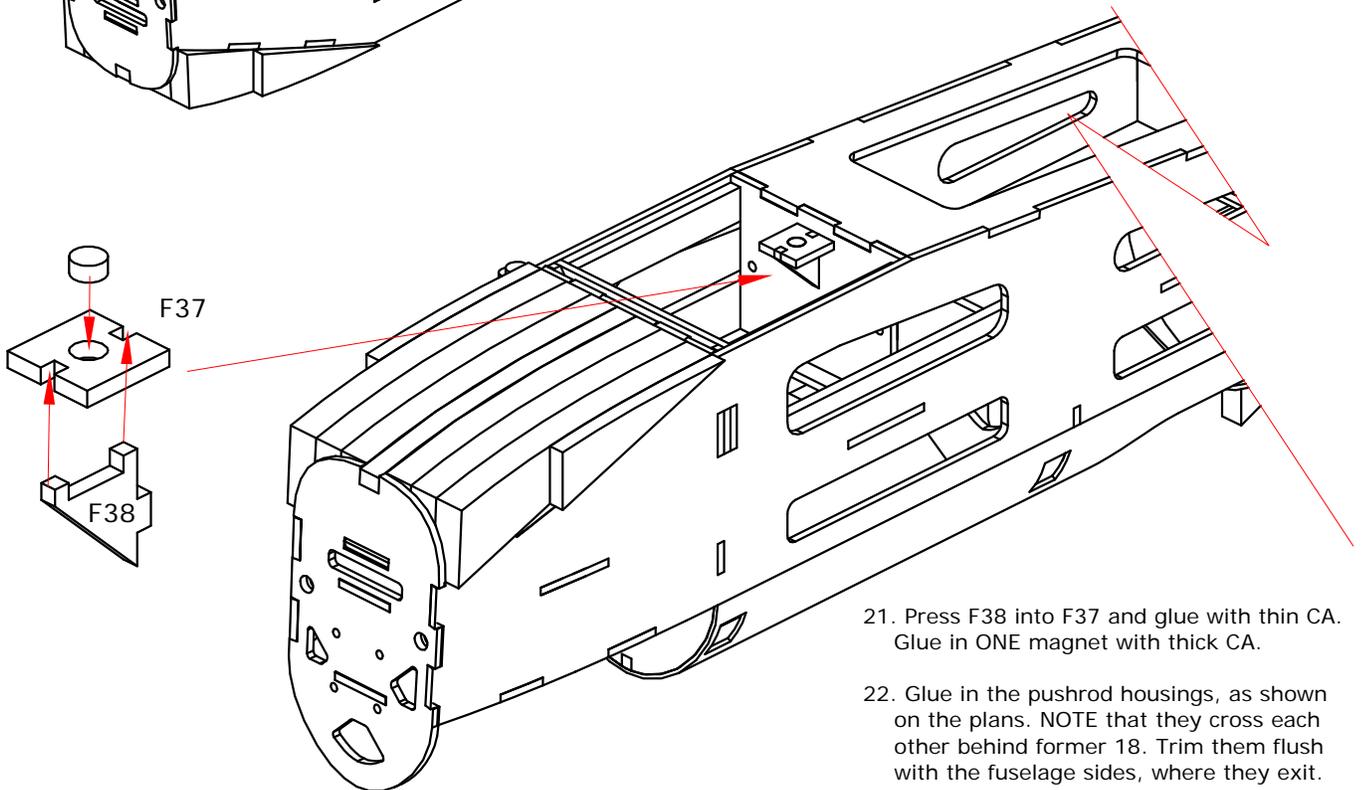
18. Insert the F19, F21, and F22 stringers in place, as shown, and glue in place with thin CA. MAKE SURE AGAIN that the fuselage bottom is flat on the table when gluing.



19. Glue in place the fuselage bottom sheets, as shown in the diagram, with thick CA. F42 and F43 get lined up against the firewall. F44 gets lined up at the back of the other parts.

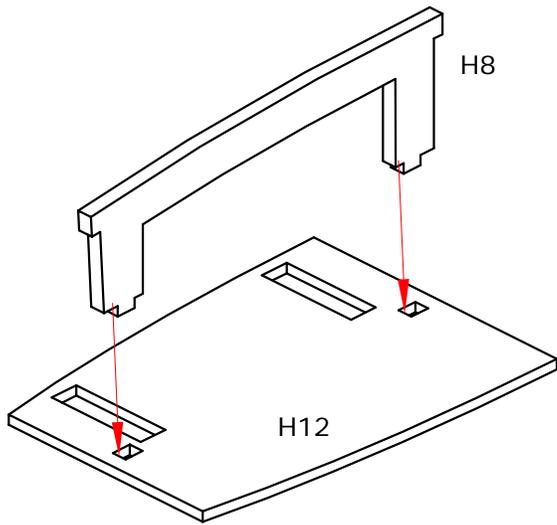


20. Test fit the $\frac{1}{32}$ " turdledeck. It will hang off the front slightly. This is OK, and is designed to keep you from breaking an otherwise thin piece. If needed, sand the edges to fit on "top" of the fuselage sides. If needed, you can LIGHTLY mist the outside of the sheet with Windex to help it form. Glue the part in place after you are happy with the fit.



21. Press F38 into F37 and glue with thin CA. Glue in ONE magnet with thick CA.

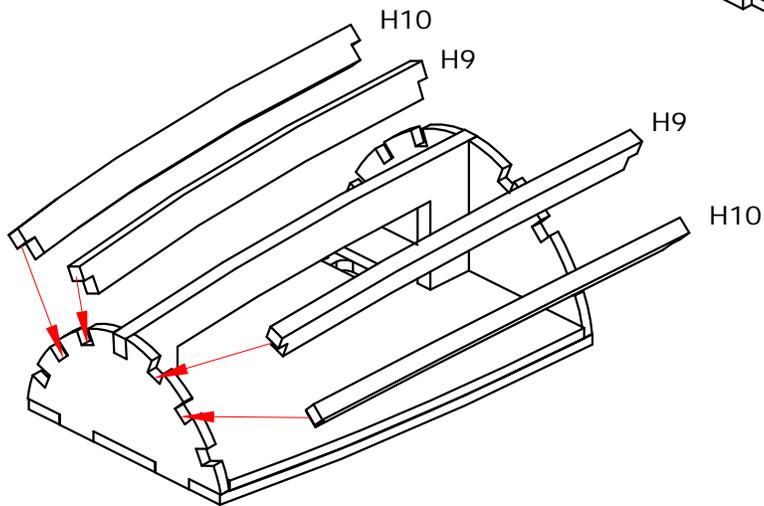
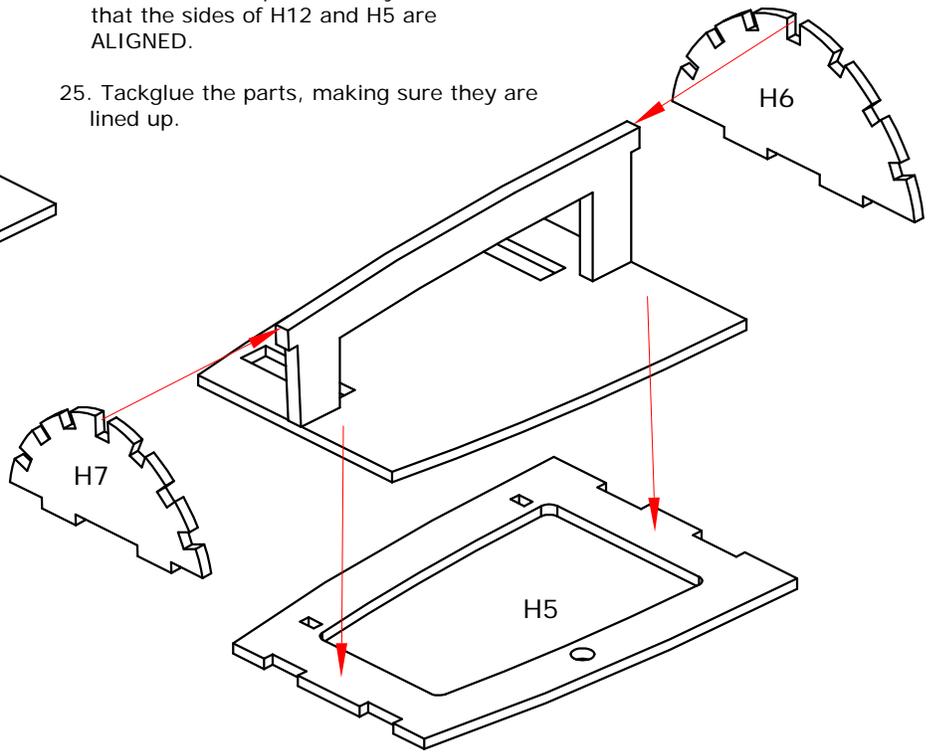
22. Glue in the pushrod housings, as shown on the plans. NOTE that they cross each other behind former 18. Trim them flush with the fuselage sides, where they exit.



23. Press H8 into H12.

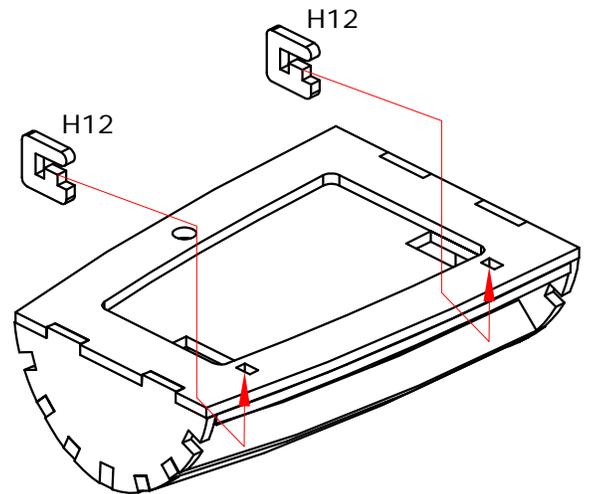
24. Press H7 and H8 onto H5, as shown below. Glue H12 onto H5, making sure the formers are pressed fully into H5 and that the sides of H12 and H5 are ALIGNED.

25. Tackglue the parts, making sure they are lined up.

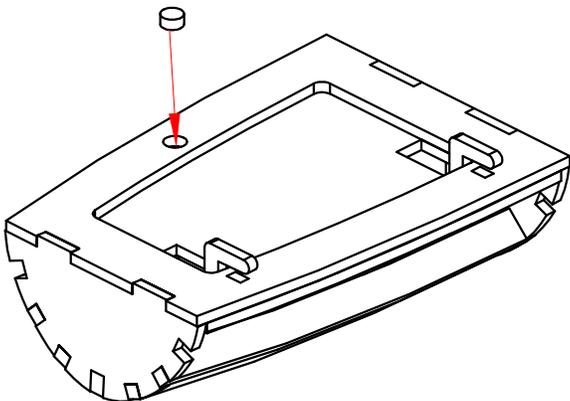


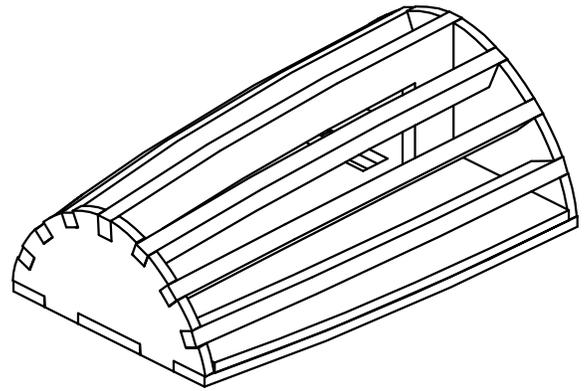
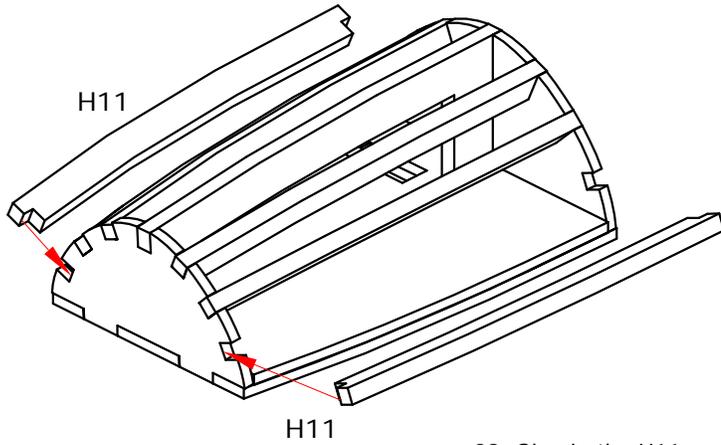
26. Press the H9 and H10 parts in place and glue with thin CA.

27. Slide the plywood H12 parts through the slots and pull the tabs through the slots in H5. Make sure they're pulled all the way through and glue with thin CA.



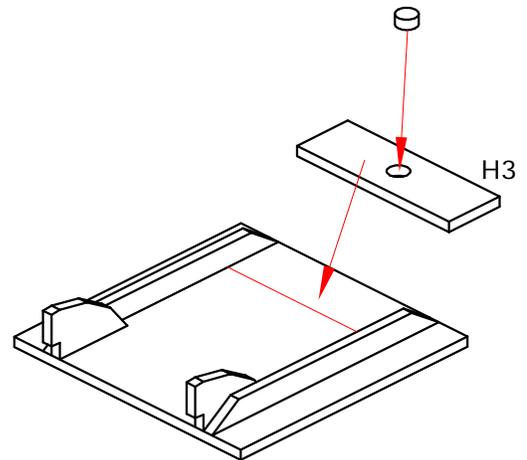
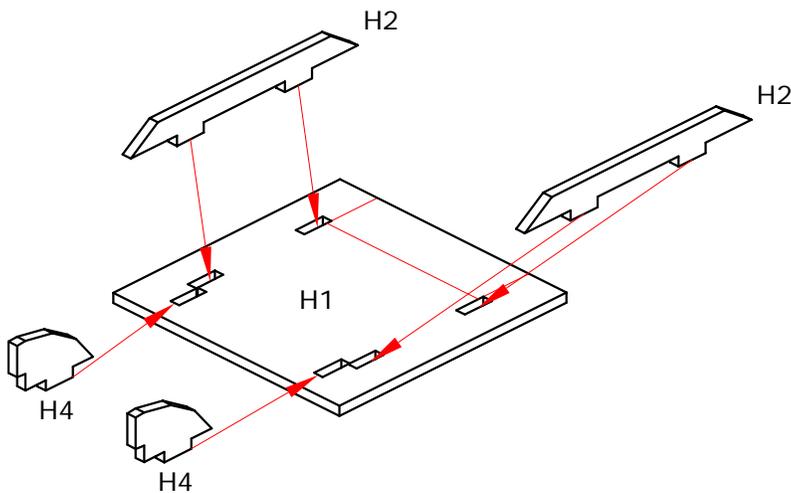
28. Place ONE magnet into H5, MAKING SURE THAT THE POLARITY is proper, so it "grips" the magnet already in the fuselage.





29. Glue in the H11 parts with thin CA.

30. HARDEN the bottom of flat hatch parts, H5 and H12 with thin CA. This will keep them from warping if you shrink the covering too much later on.

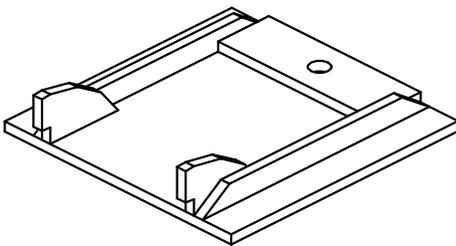


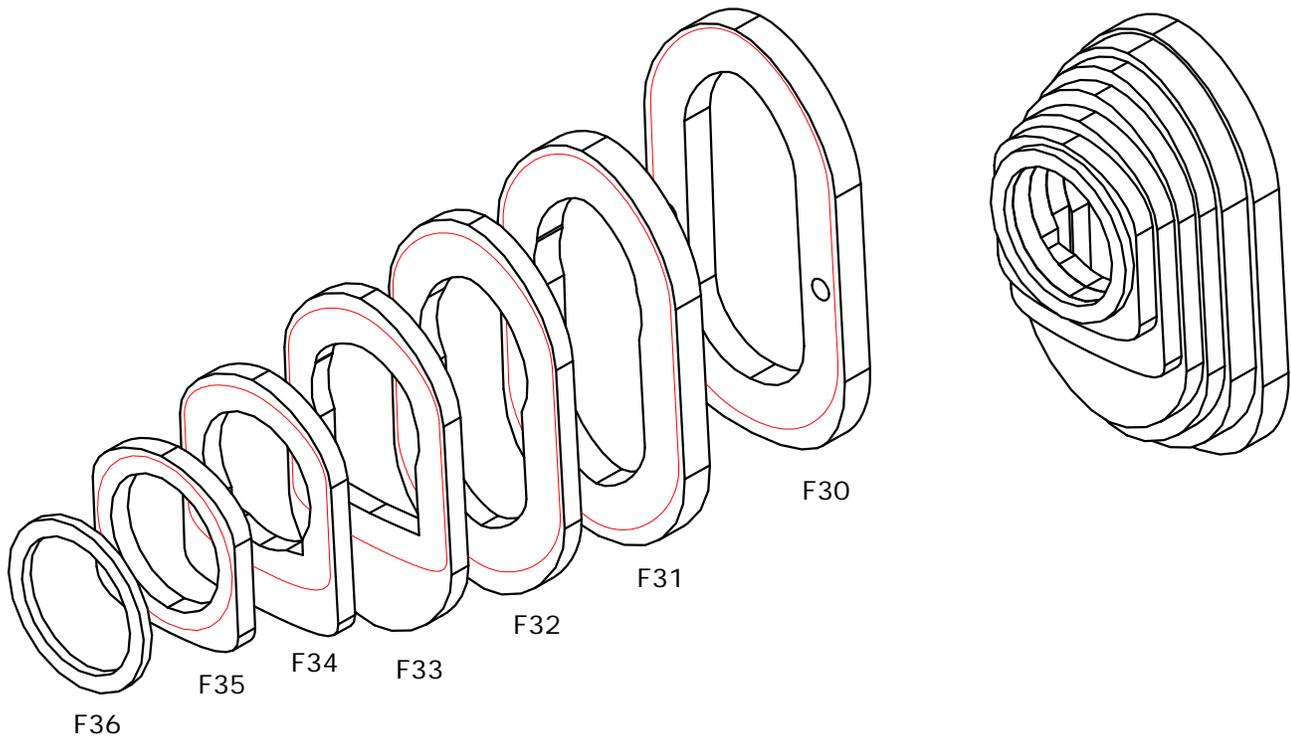
31. Press the H2 and H4 parts into H1, on the side that has the engraving on it. Glue them in place with thin CA.

32. Glue H3 onto H1 with thick CA, lining it up with the engraved lines on H1.

33. Glue in the remaining magnet, MAKING SURE the POLARITY is proper, compared to the magnet already in the fuselage.

34. Slightly harden the "inside" of the H1 part with thin CA.

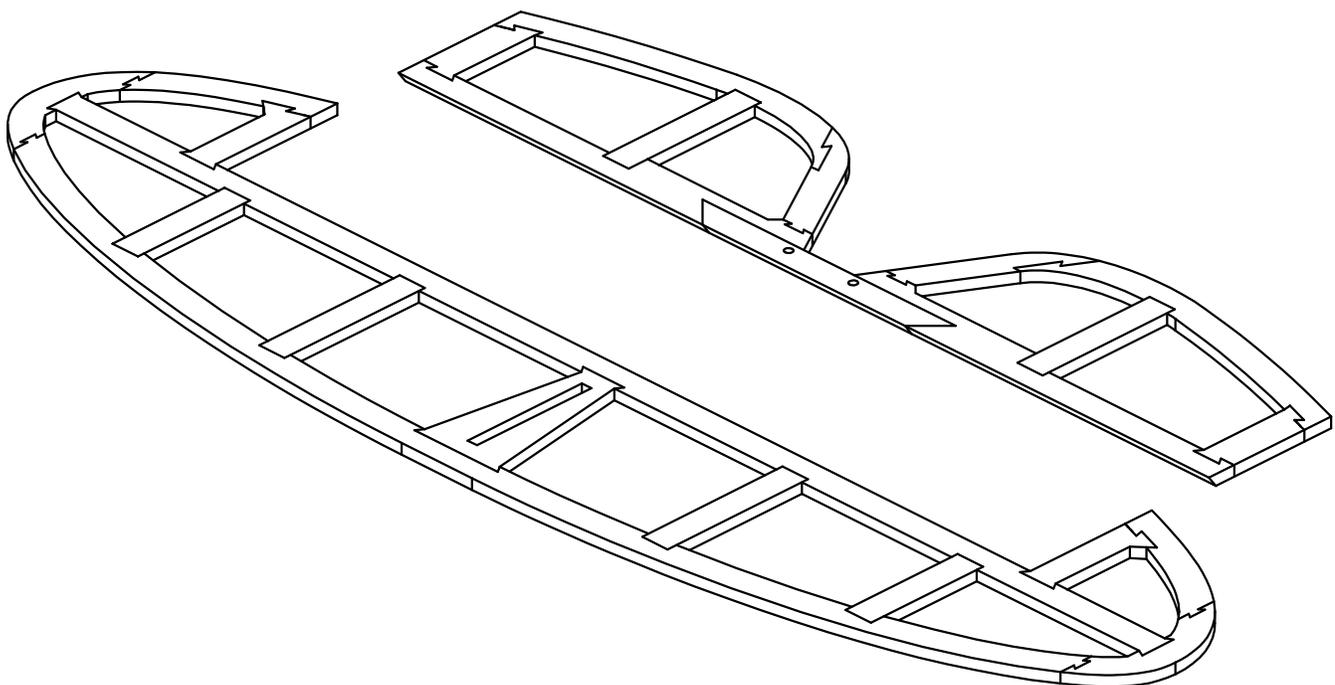
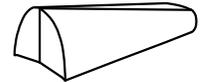
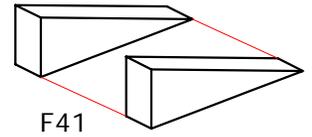


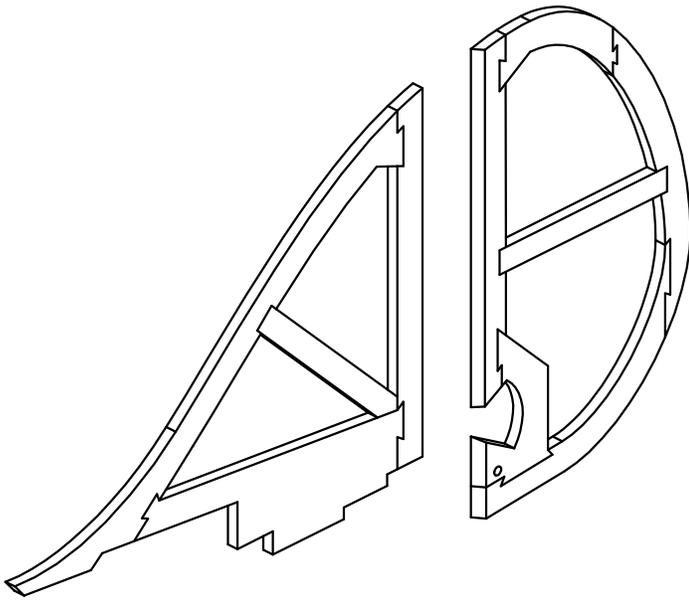


35. Glue the cowling parts together, as shown with thick CA, lining the parts up with the engraved line on the part behind it.

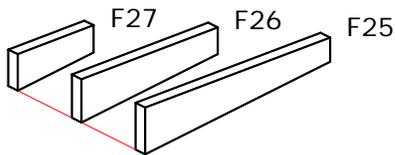
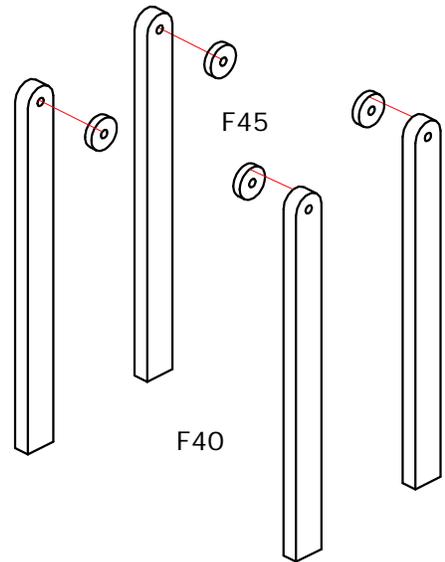
36. Glue the F41 parts together with thick CA.

37. Assemble the tail parts, using the plans as reference. Use a couple drops of thin CA on each joint. Use Thick CA to glue the basswood elevator joiner in place.

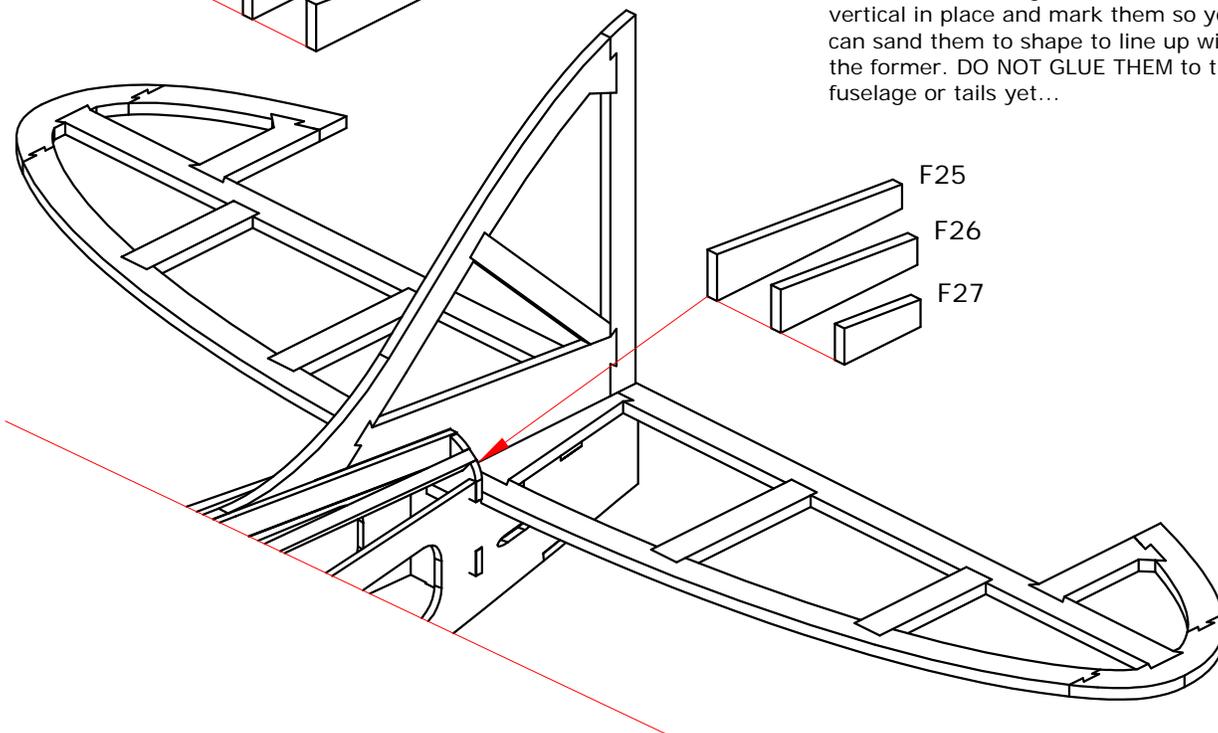


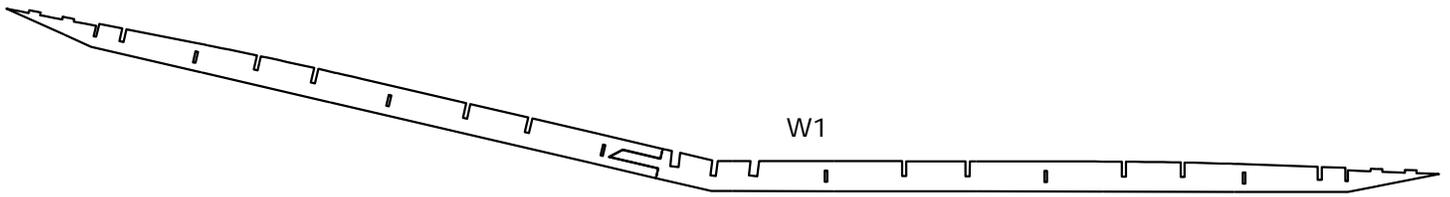


38. Glue one F45 plywood disk on each of the F40 basswood parts, with thick CA, LINING up the holes.



39. Laminate the tail block balsa parts, in the order shown. Make a LEFT and RIGHT. Set them on the fuselage with the stab and vertical in place and mark them so you can sand them to shape to line up with the former. DO NOT GLUE THEM to the fuselage or tails yet...

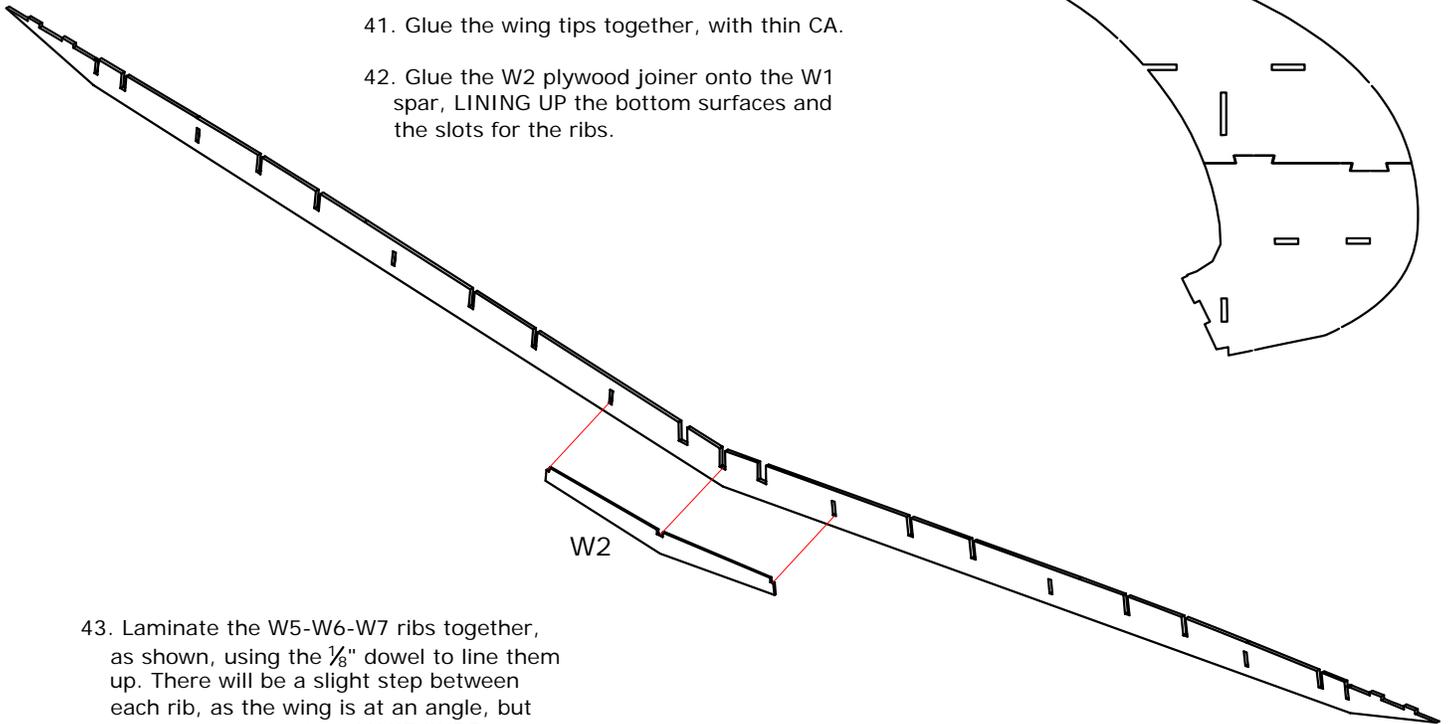
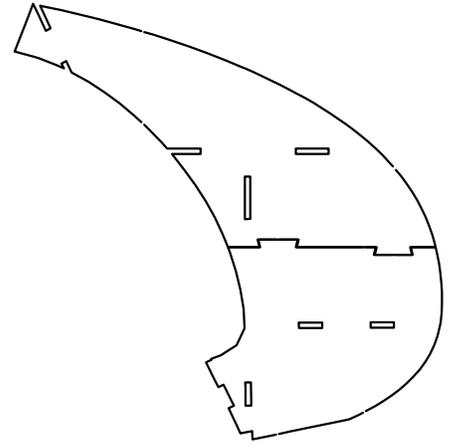




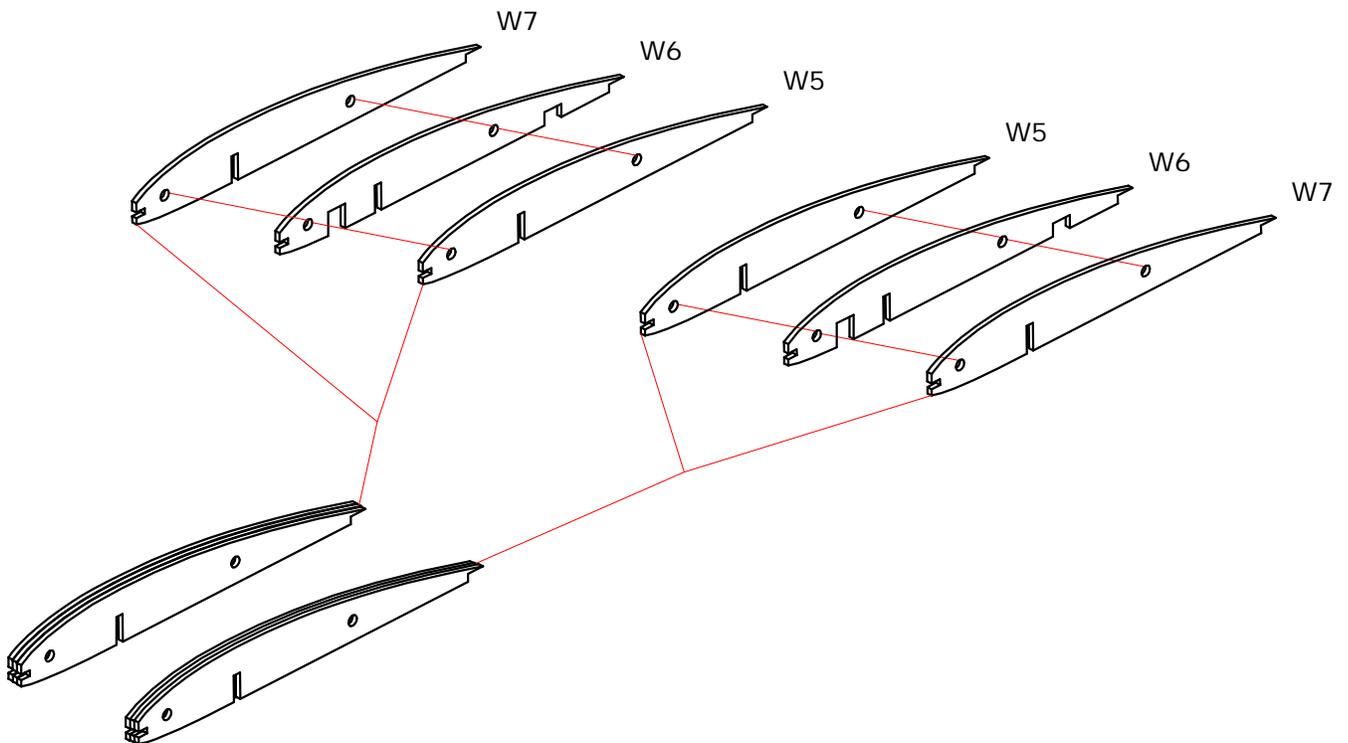
40. Glue the W1 parts together to make the W1 spar.

41. Glue the wing tips together, with thin CA.

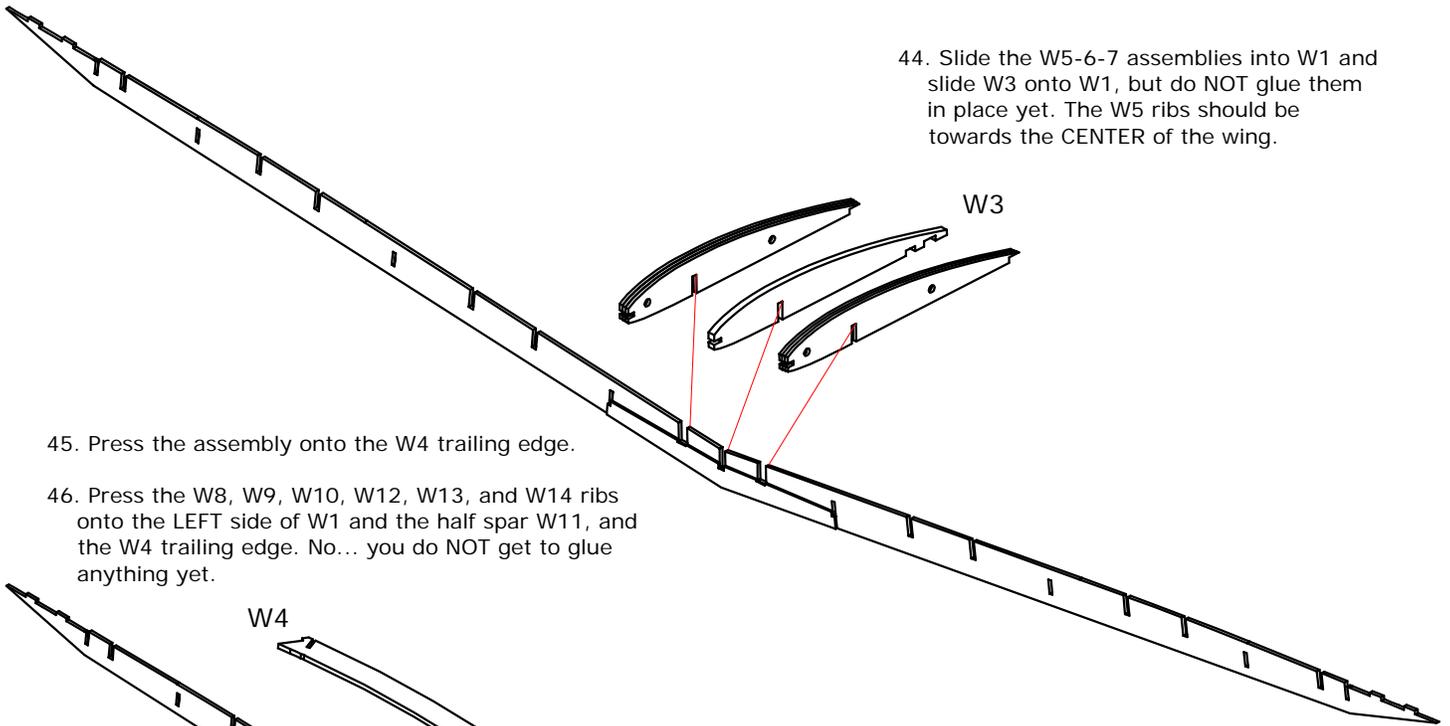
42. Glue the W2 plywood joiner onto the W1 spar, LINING UP the bottom surfaces and the slots for the ribs.



43. Laminate the W5-W6-W7 ribs together, as shown, using the $\frac{1}{8}$ " dowel to line them up. There will be a slight step between each rib, as the wing is at an angle, but these ribs are vertical. MAKE SURE you make a LEFT and RIGHT, as shown below!!!!!!!!!!!!

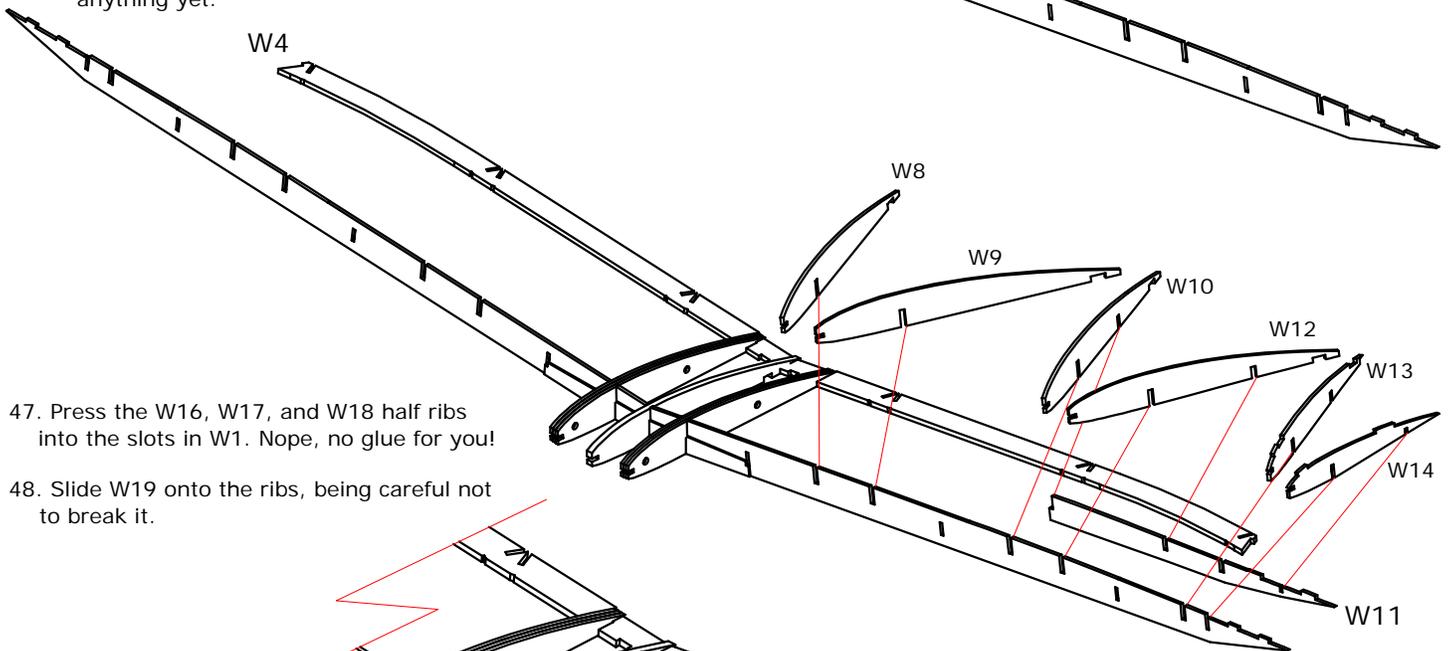


44. Slide the W5-6-7 assemblies into W1 and slide W3 onto W1, but do NOT glue them in place yet. The W5 ribs should be towards the CENTER of the wing.



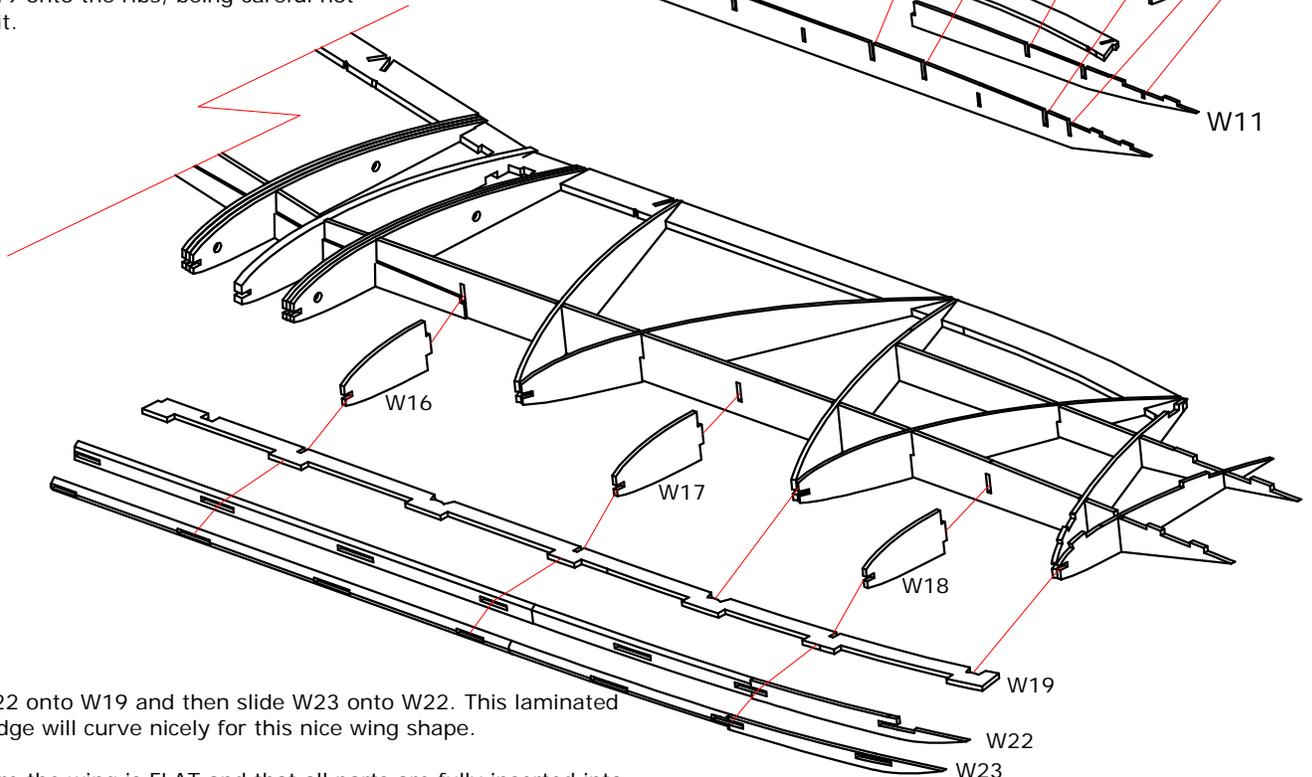
45. Press the assembly onto the W4 trailing edge.

46. Press the W8, W9, W10, W12, W13, and W14 ribs onto the LEFT side of W1 and the half spar W11, and the W4 trailing edge. No... you do NOT get to glue anything yet.



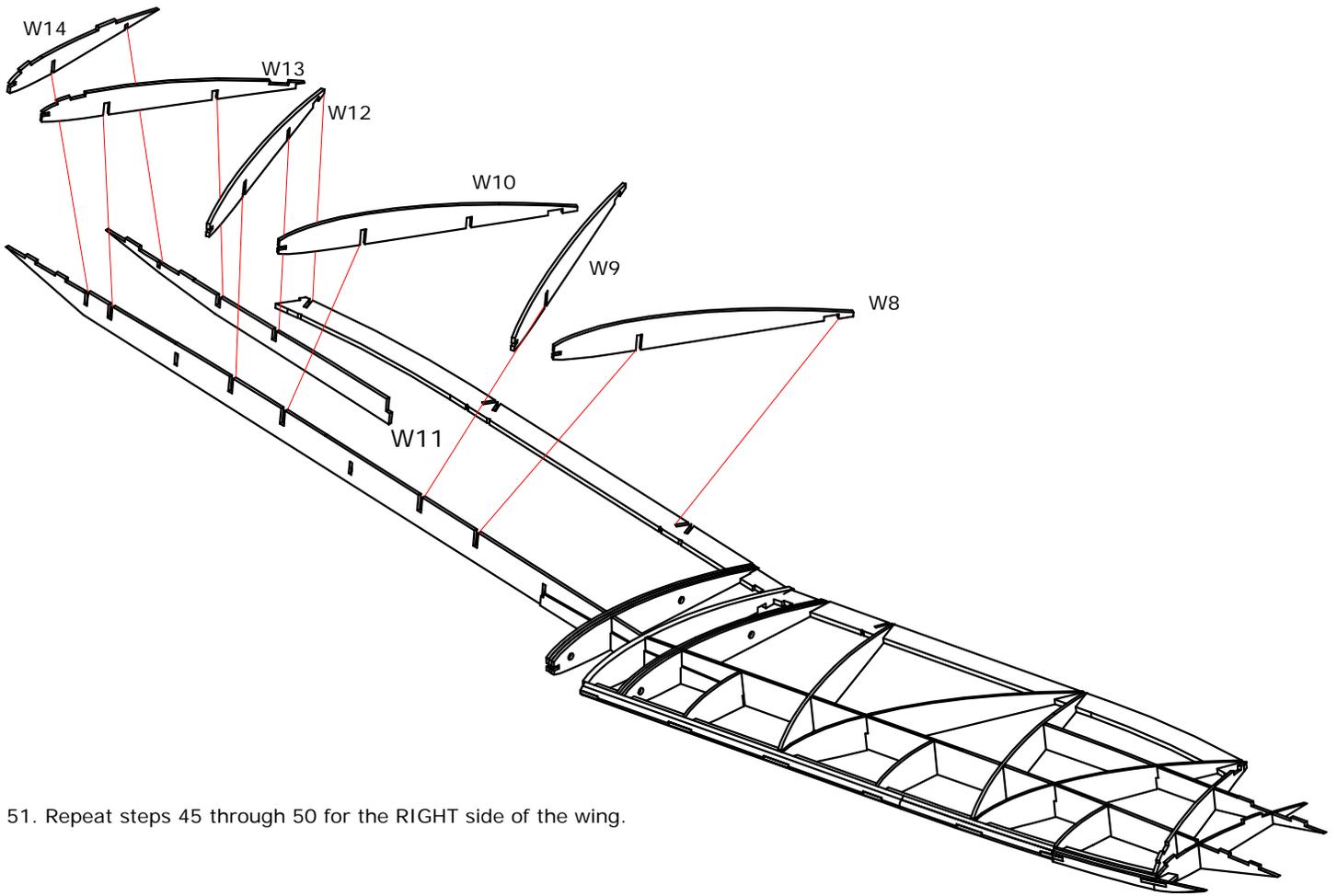
47. Press the W16, W17, and W18 half ribs into the slots in W1. Nope, no glue for you!

48. Slide W19 onto the ribs, being careful not to break it.

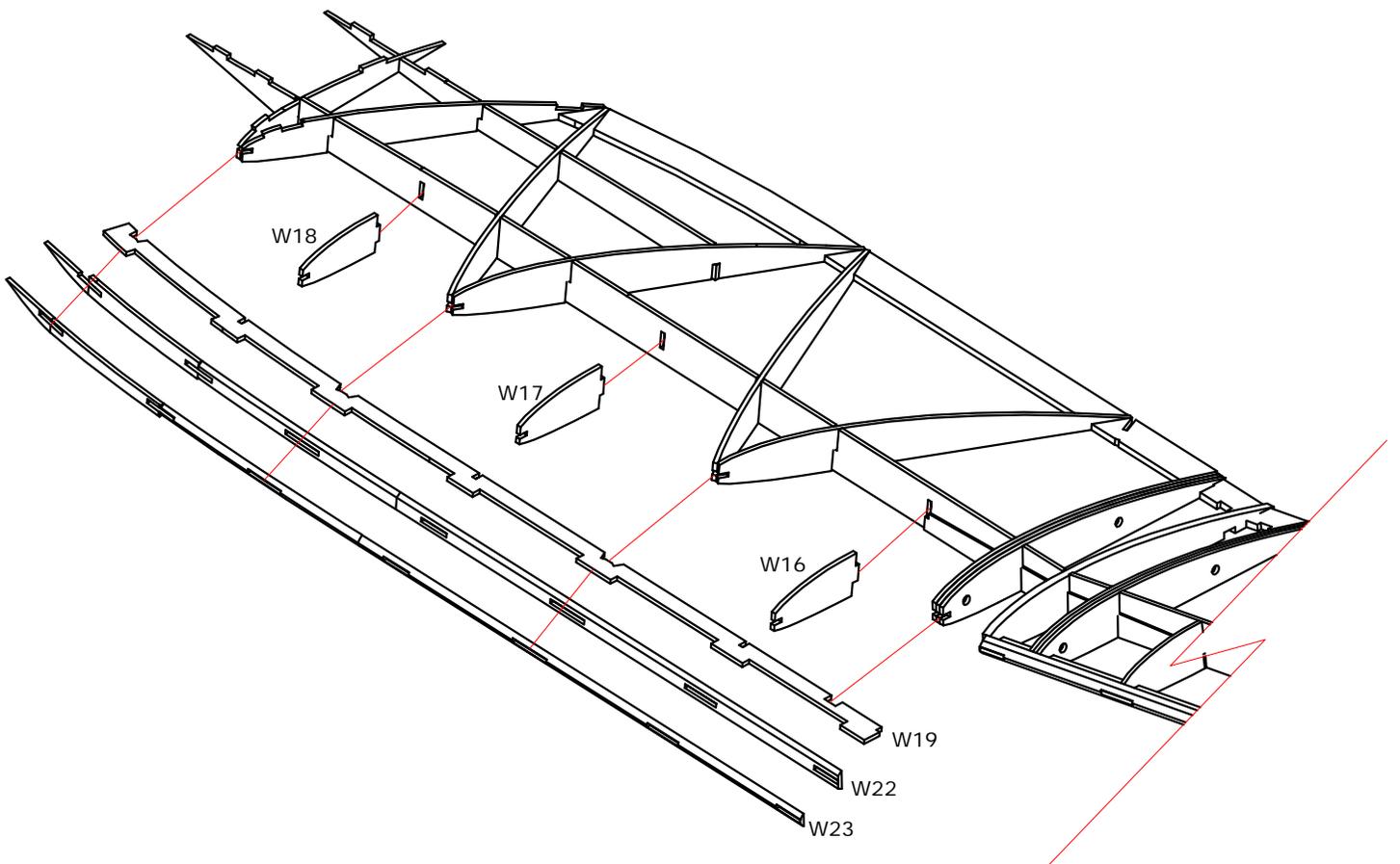


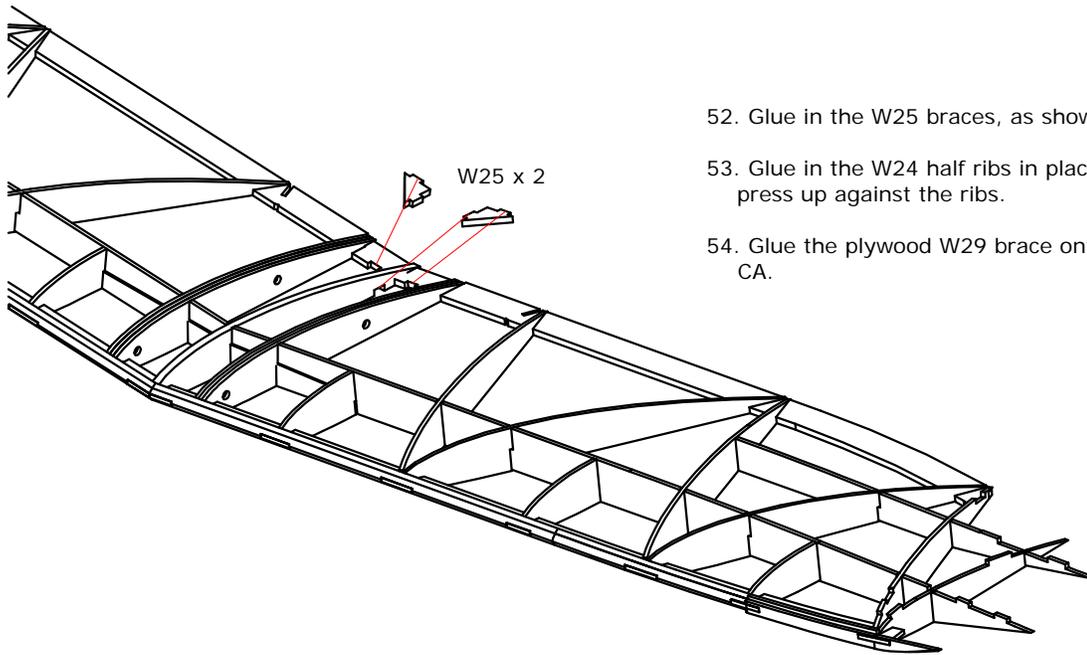
49. Slide W22 onto W19 and then slide W23 onto W22. This laminated leading edge will curve nicely for this nice wing shape.

50. Make sure the wing is FLAT and that all parts are fully inserted into each other. Secure the joints with thin CA. As you get to the wing tip, you can use some thick CA to bond the leading edge laminations.



51. Repeat steps 45 through 50 for the RIGHT side of the wing.

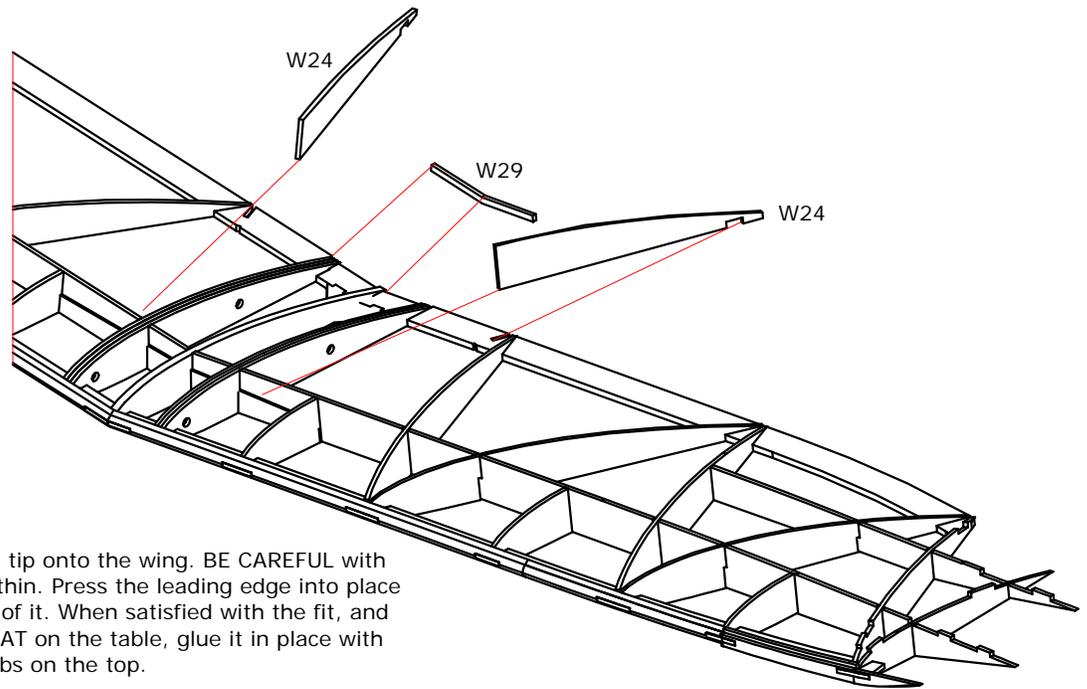




52. Glue in the W25 braces, as shown, with thick or thin CA.

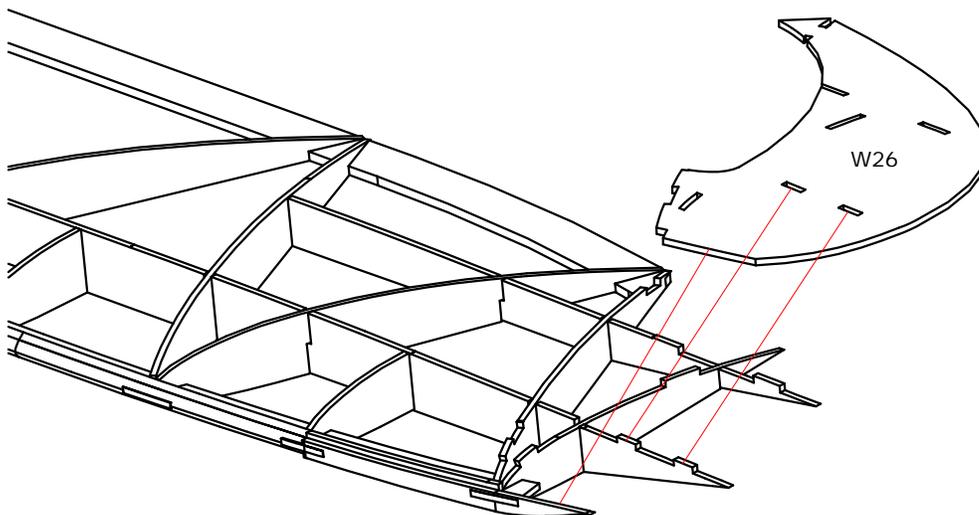
53. Glue in the W24 half ribs in place, with thick CA. They should press up against the ribs.

54. Glue the plywood W29 brace onto the trailing edge with thick CA.



55. Test fit the LEFT wing tip onto the wing. BE CAREFUL with the last rib, as it gets thin. Press the leading edge into place first and then the rest of it. When satisfied with the fit, and with the wing panel FLAT on the table, glue it in place with thin CA through the tabs on the top.

56. Glue on the other wing tip.



57. Sand the entire airframe, sanding the bottom front of the fuselage to a nice rounded shape, sand the wing leading edge to a nice rounded Airfoil profile, and finish sanding the parts with 320 grit minimum.

58. Bevel the hinge surfaces of the elevator and rudder to a 45 degree angle.

59. Sand the bottom of the head rest by laying sandpaper on the rear turtledeck area and rubbing the headrest back and forth.

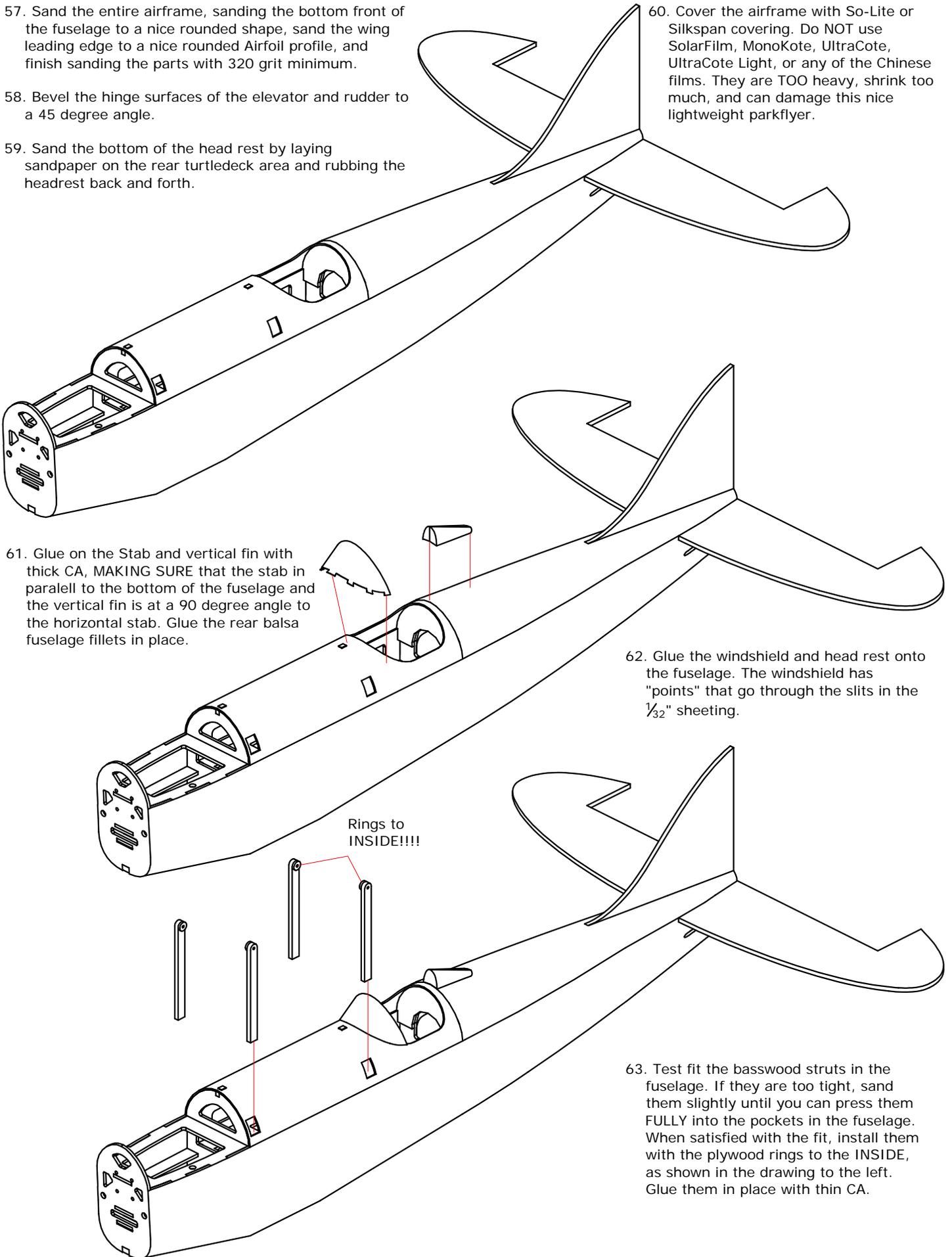
60. Cover the airframe with So-Lite or Silkspan covering. Do NOT use SolarFilm, MonoKote, UltraCote, UltraCote Light, or any of the Chinese films. They are TOO heavy, shrink too much, and can damage this nice lightweight parkflyer.

61. Glue on the Stab and vertical fin with thick CA, MAKING SURE that the stab in parallel to the bottom of the fuselage and the vertical fin is at a 90 degree angle to the horizontal stab. Glue the rear balsa fuselage fillets in place.

62. Glue the windshield and head rest onto the fuselage. The windshield has "points" that go through the slits in the $\frac{1}{32}$ " sheeting.

Rings to INSIDE!!!!

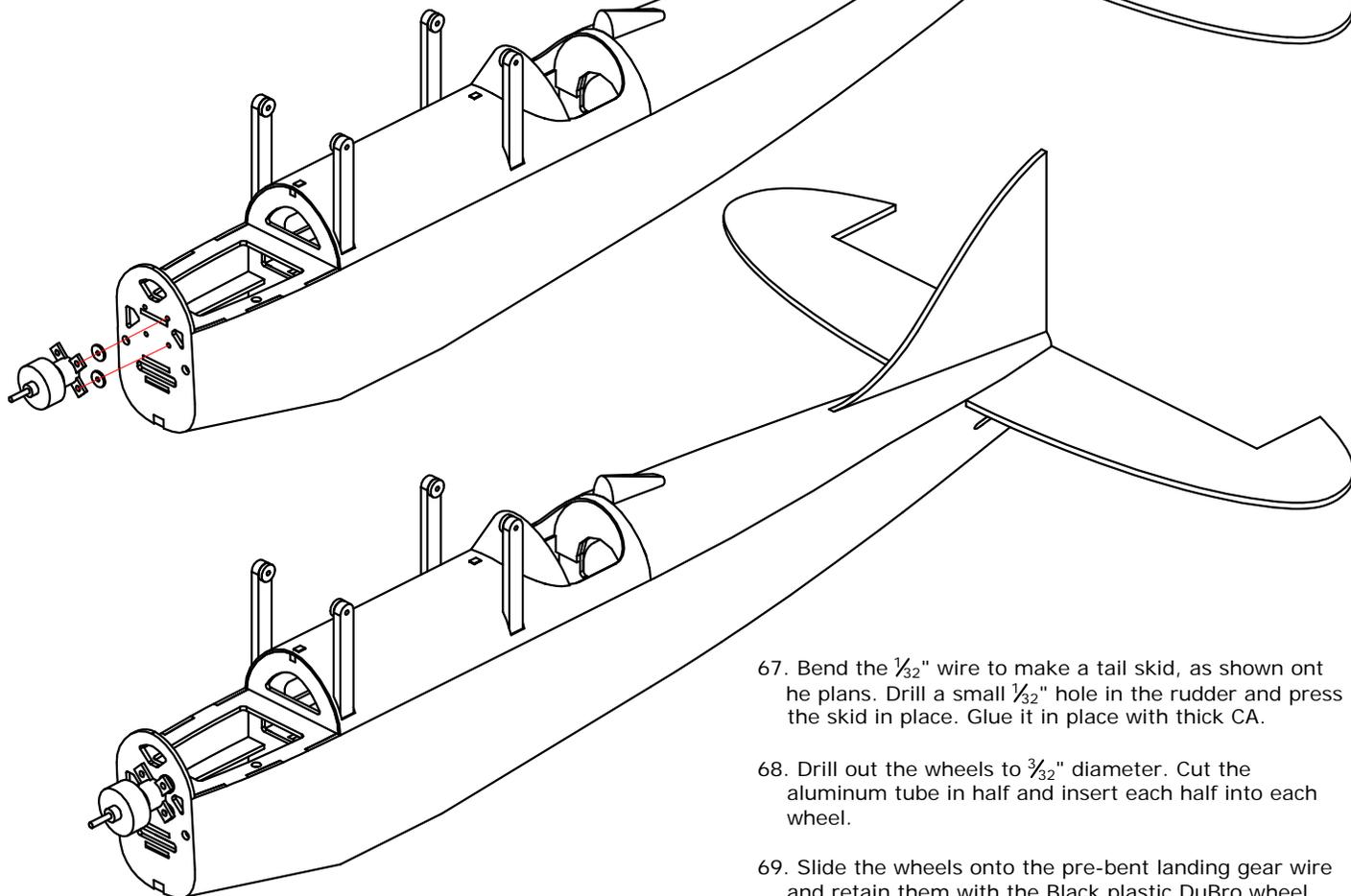
63. Test fit the basswood struts in the fuselage. If they are too tight, sand them slightly until you can press them FULLY into the pockets in the fuselage. When satisfied with the fit, install them with the plywood rings to the INSIDE, as shown in the drawing to the left. Glue them in place with thin CA.



64. Mount the motor to the firewall with the included #2 x 1/4" screws. Place the 1/32" washers behind the motor mount on the LEFT SIDE. This gives you right thrust, which is needed for this model.

65. Mark the screws that come through the hatch area and remove them. Cut them off at the mark, so they do not interfere with the top hatch.

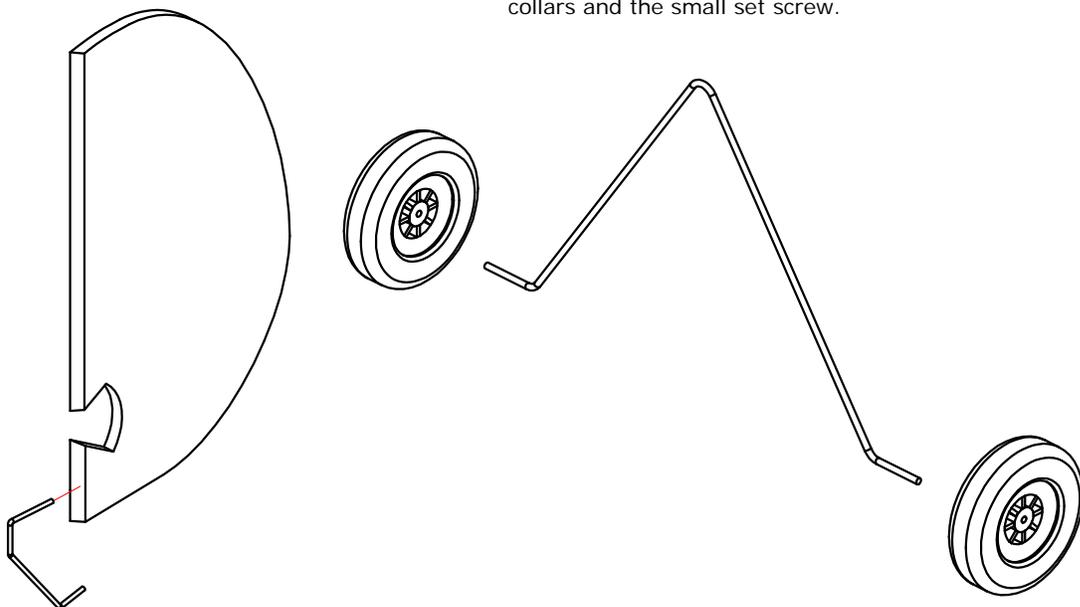
66. Place a scrap piece of balsa on the screw points in the battery compartment area, to prevent your LiPo from getting punctured in a "hard arrival". A punctured LiPo is not a good sight!



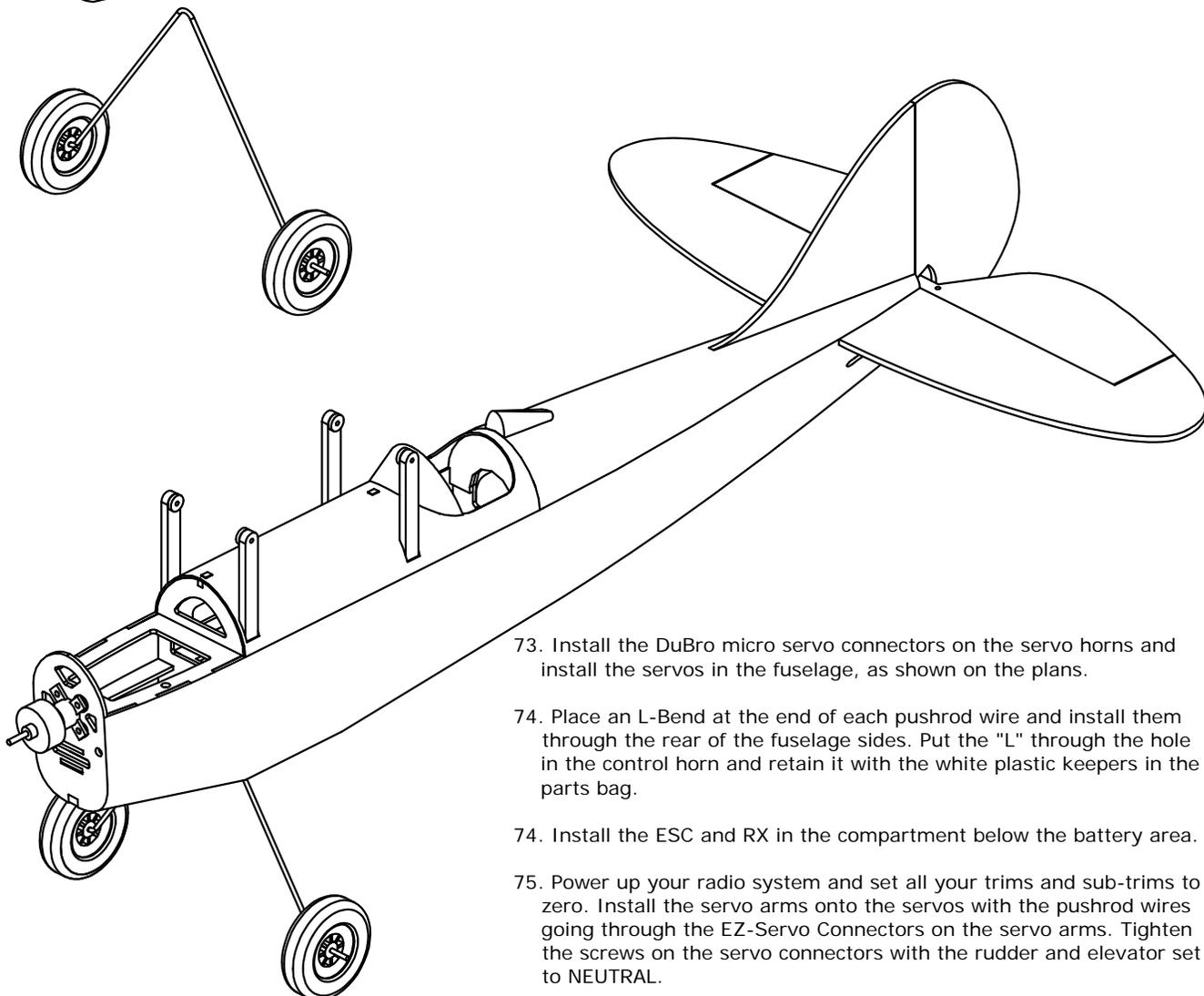
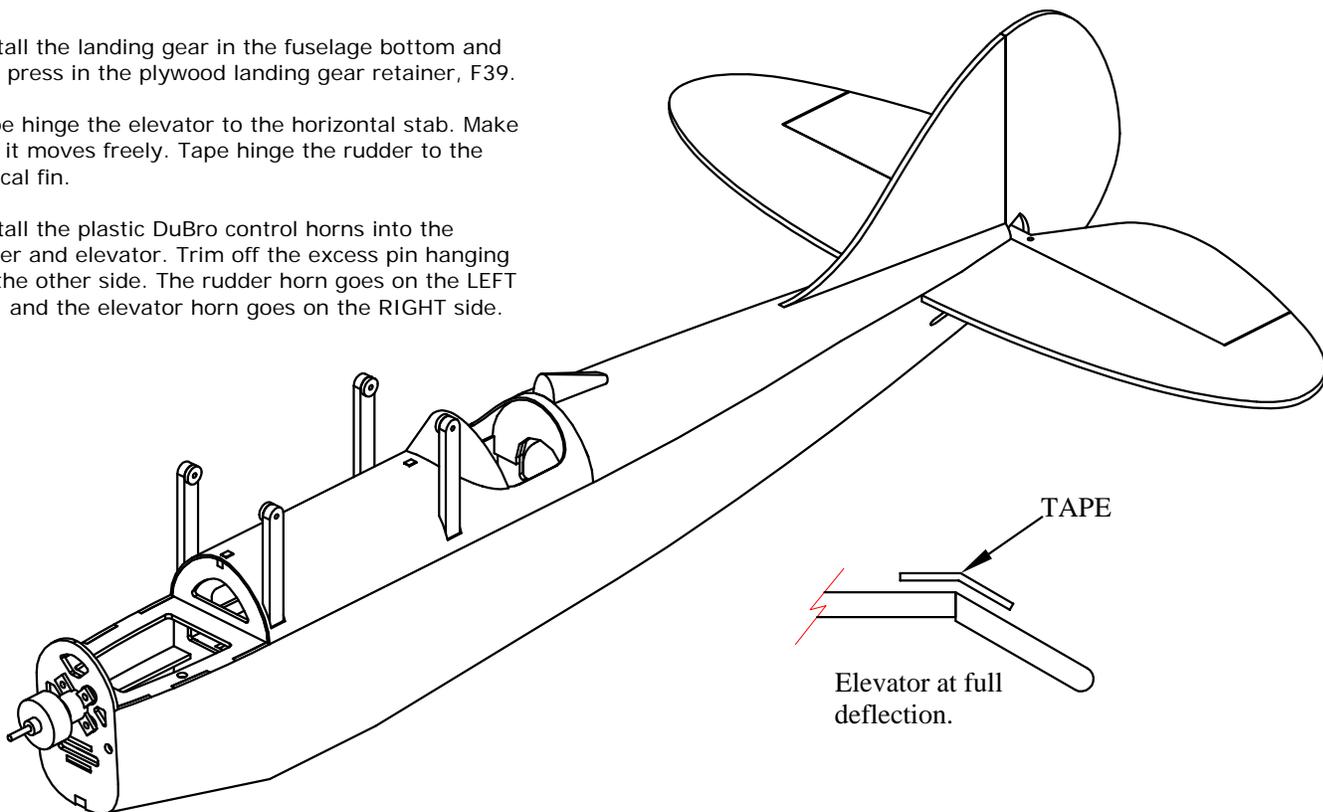
67. Bend the 1/32" wire to make a tail skid, as shown on the plans. Drill a small 1/32" hole in the rudder and press the skid in place. Glue it in place with thick CA.

68. Drill out the wheels to 3/32" diameter. Cut the aluminum tube in half and insert each half into each wheel.

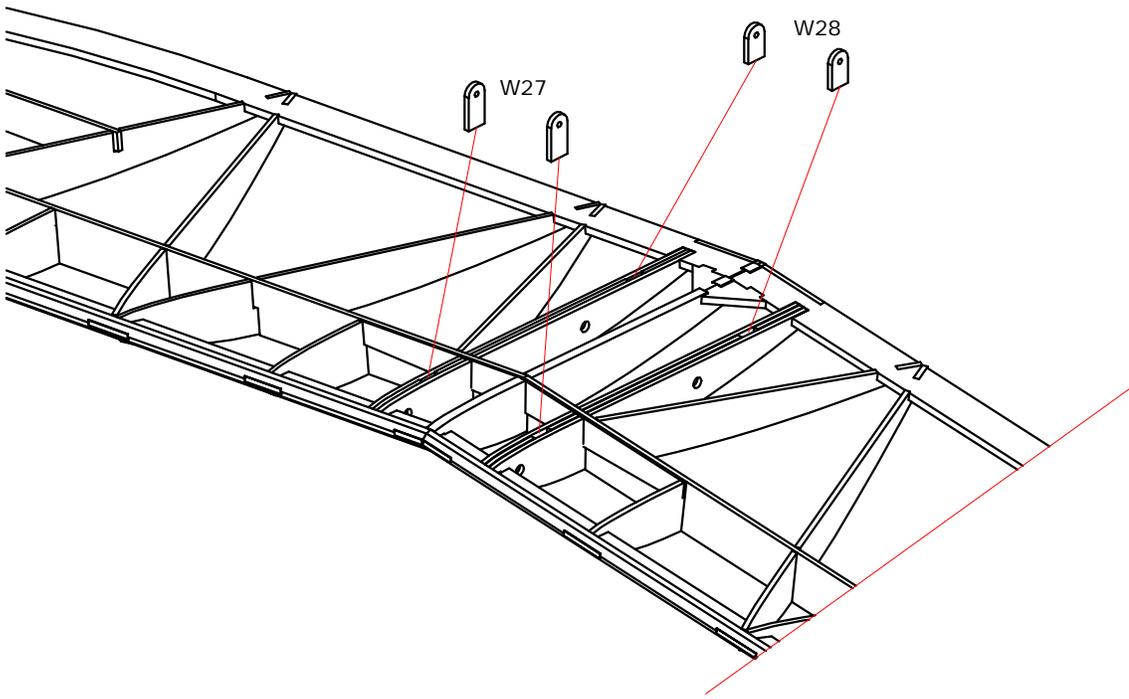
69. Slide the wheels onto the pre-bent landing gear wire and retain them with the Black plastic DuBro wheel collars and the small set screw.



70. Install the landing gear in the fuselage bottom and then press in the plywood landing gear retainer, F39.
71. Tape hinge the elevator to the horizontal stab. Make sure it moves freely. Tape hinge the rudder to the vertical fin.
72. Install the plastic DuBro control horns into the rudder and elevator. Trim off the excess pin hanging out the other side. The rudder horn goes on the LEFT side, and the elevator horn goes on the RIGHT side.



73. Install the DuBro micro servo connectors on the servo horns and install the servos in the fuselage, as shown on the plans.
74. Place an L-Bend at the end of each pushrod wire and install them through the rear of the fuselage sides. Put the "L" through the hole in the control horn and retain it with the white plastic keepers in the parts bag.
74. Install the ESC and RX in the compartment below the battery area.
75. Power up your radio system and set all your trims and sub-trims to zero. Install the servo arms onto the servos with the pushrod wires going through the EZ-Servo Connectors on the servo arms. Tighten the screws on the servo connectors with the rudder and elevator set to NEUTRAL.



76. Mount the battery in the battery area with the sticky backed velcro included in the parts bag.

77. Glue the wing mount attachment brackets into the slots in the wing, as shown. PAY ATTENTION to which ones go in front. THIS IS IMPORTANT. The W27 parts go in the FRONT pockets.

78. Mount the wing to the fuselage struts with the #2 x $\frac{3}{8}$ " screws. Install them through the wing attachment and into the struts. Remove the screws and harden the threads in the wood with thin CA. After letting the CA cure COMPLETELY, reinstall the screws to retain the wing.

79. Set your control throws as follows:

LOW RATES:

Rudder: $\frac{3}{8}$ " Each Direction

Elevator: $\frac{1}{4}$ " Each Direction (at widest spot on elevator)

HIGH RATES:

Rudder: $\frac{5}{8}$ " Each Direction

Elevator: $\frac{1}{2}$ " Each Direction

80. Balance your plane at $1\text{-}\frac{5}{8}$ " behind the leading edge of the wing.

81. HAPPY FLYING!!!!!!!!!!!!