

Aery Glider “Quick Build” Instructions

1. Familiarize yourself with the three pages of plans. (This assumes you are using one piece of sheet balsa for the flying surfaces, one spruce stick for the fuselage and cyanoacrylate glue.)
2. On the fuselage stick, mark where the wing, vertical tail, and horizontal stabilizer are attached. Also, mark the location of the Center of Gravity and Neutral Point. Label all these marks.
3. If necessary, cut the fuselage stick to the proper length.
4. Draw the wing, vertical tail (vt), and horizontal stabilizer (hs) onto your sheet of balsa wood. They must all fit on this single piece of wood. Draw the wing and horizontal stabilizer as solid pieces, not as two halves.



5. Carefully cut all the pieces out of the balsa. Do NOT cut the wing or horizontal stabilizer in half! If you wish, sand the edges of the pieces so they're rounded.
6. Center the wing on the top of the fuselage stick at the proper mark and glue it on. Make sure that it is on straight and square!
7. See the Horizontal Stabilizer Construction sheet.
8. See the Vertical Tail Construction sheet.
9. Place a pencil or X-Acto knife on a table. Then, put the glider on top of it such that the CG mark is directly above the pencil / knife. Now, add weight to the nose of the glider until it balances at the CG mark. (It can be a few millimeters either way, if absolutely necessary.) The amount of mass listed in the plans can be used as a starting point for this process. (The amount listed in the plans will not be exactly right.)
10. Hold the fuselage of the glider with a finger at the front and back ends. Now you must balance the glider from side-to-side. Add weight to the appropriate wing tip until the glider balances.
11. Once your Chief Engineer “signs off” on your prototype, you’re ready to begin test flying! (See Flying Your Glider.)

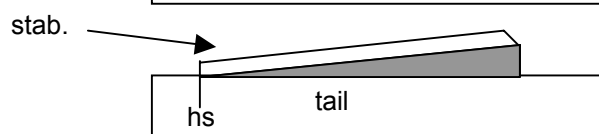
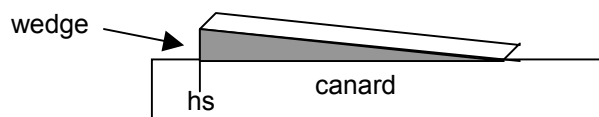
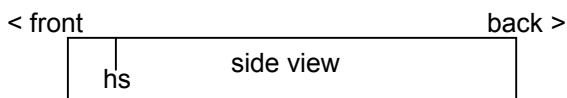
Horizontal Stabilizer Construction

1 Piece Stabilizer (stronger)

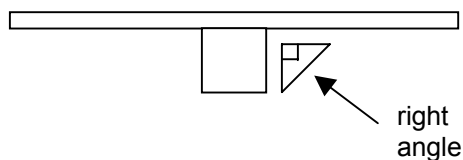


Only possible if it is NOT at the same place as the vertical tail.

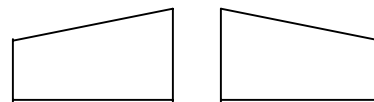
1. Cut out the wedge pattern from the 3rd page of the glider plans.
2. Using an extra scrap of wood from the fuselage, use the pattern to cut out a wooden wedge. Sand the sides of the wedge flat.
3. Glue the wedge to the top of the fuselage. THE DIRECTION YOU GLUE IT ON DEPENDS ON WHETHER YOUR GLIDER HAS A TAIL OR A CANARD!



4. Hold the stabilizer on top of the wedge. Check to make sure that is parallel to the wing by looking at it from the front or back end. If it isn't straight across from left to right, sand the wedge a bit and recheck.
5. Glue the stabilizer to the top of the wedge with their front edges aligned.

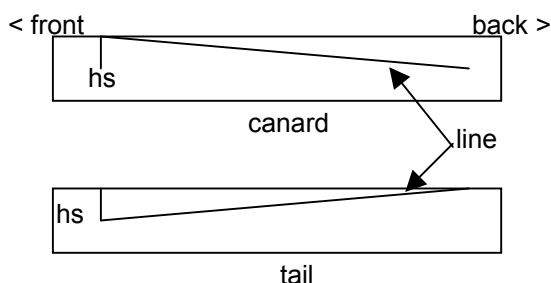


2 Piece Stabilizer

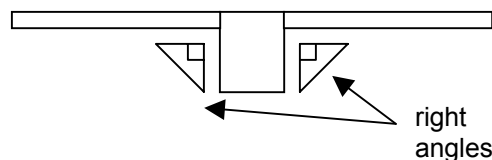
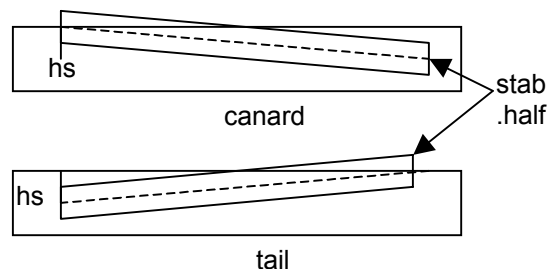


Use in all other situations

1. Cut out the wedge pattern from the 3rd page of the glider plans.
2. Use the pattern to draw an angled line on both sides of the fuselage at the horizontal stabilizer mark. THE DIRECTION OF THE LINE WILL DEPEND ON WHETHER YOUR GLIDER HAS A TAIL OR A CANARD!



3. Cut the stabilizer into two halves.
4. Doing one side at a time, glue each half directly onto the angled line. Make sure that each side sticks straight out from the fuselage.

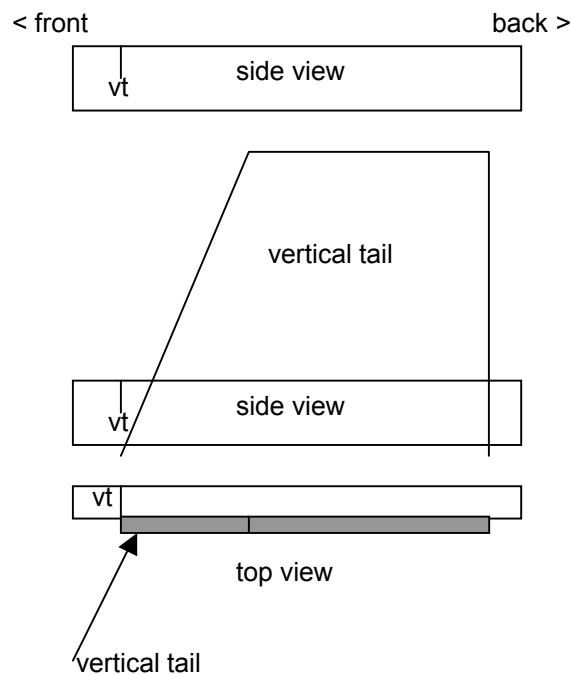


Vertical Tail Construction

Glued to Side of Fuselage (stronger)

You can only use this method if your vertical tail and horizontal stabilizer are at completely different places.

Very simple. Just glue the vertical tail to either the left or right side of the fuselage stick. Position the bottom edge even with the bottom of the fuselage. Position the front edge even with the vertical tail mark on the fuselage.

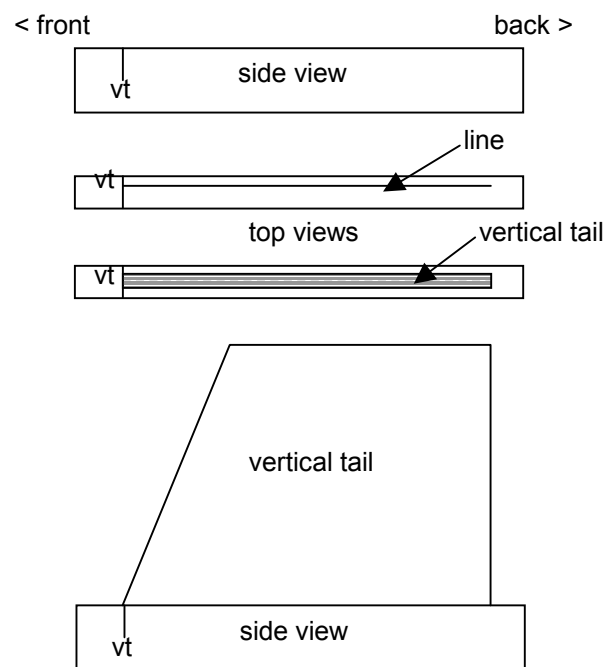


Glued to Top of Fuselage

This method may be used with any design.

Draw a line down the center of the fuselage top starting at the vertical tail mark.

Glue the bottom edge of the vertical tail directly onto this line. Make sure that it sticks straight up and is at a right angle to the wing and horizontal stabilizer.



Flying Your Glider

So, how do you throw your glider at 22 km/hr? (or whatever value you selected in Aery?) You need to use the time honored engineering method of "trial and error." Remember, 1 km/hr is about 1 foot/second.

