

# Pencil Eraser Popsicle Plane

## INSTRUCTIONS FOR ASSEMBLY

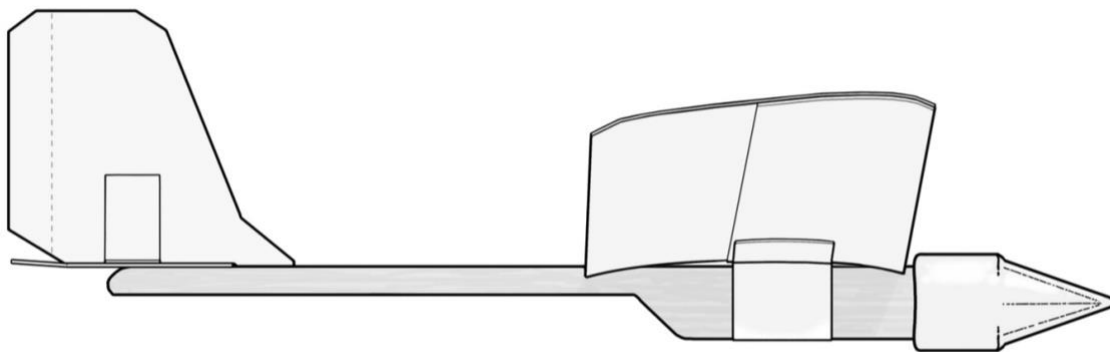
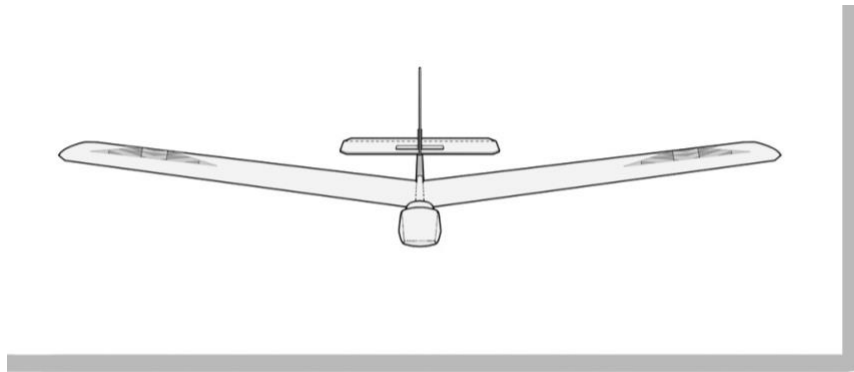
1. Print the plans onto an 8.5" x 11" sheet of card stock. Use 65 lb. card stock, also called *light* card stock (the most common weight for printers).
2. Cut out the wing, horizontal stabilizer, fin, and braces. Follow the inside edge of the black outlines. (Note that the short 45-degree cuts on the wing can be made after the wing has been folded and glued.)
3. The long dotted line on the wing becomes the leading edge. Use a ruler or the edge of a table to establish a crease, then fold the front section down and under. Open it back up, apply a layer of glue (preferably with a glue stick), and fold it under again. Press the two layers together. Place a large book on top of the wing and let it set as you work on other things.
4. Shape a popsicle stick to match the reference image. First, use sandpaper to remove about 1mm from the top and bottom, and lightly sand the sides. CAUTION—Injury possible! Hold the popsicle firmly and use a sharp blade or fine-tooth saw. Make several passes and avoid excessive force. Sand it again to remove burrs and sharp edges.
5. Crease the rectangular braces on the dotted lines, then form them to 90-degree angles. Apply a thin layer of glue (preferably liquid glue) to the smaller panels of the wing braces, then attach them to the fuselage. Next, glue the fin braces on top of the horizontal stabilizer, leaving a tiny gap between them for the fin. Allow the glue to cure for a few minutes.
6. On the dotted line of the fin, make a crease to define the rudder, then return the rudder to a neutral position. Glue the fin in place.
7. Cut the four short lines at the leading and trailing edges of the wings. Next, give the wing some undercamber (refer to the guide on the plans). This can be done by placing your fingertips on top of the leading edge of the wing while slowly sliding it over the edge of a table a few times. Repeat the process with the trailing edge of the wing.
8. Make creases on the two dotted lines at the center of the wing to make the wing dihedral. The wing tips should be raised about 12 degrees above horizontal.
9. Use liquid glue to attach the wing to the fuselage, being careful that it is perpendicular to the fuselage. Make sure the braces are well aligned and pinch them with the underside of the wing. It's fine if the middle part of the wing rises above the top of top of the fuselage a bit (as seen in the drawing below). The leading and trailing edges should drop below the top of the fuselage.
10. Apply glue on the top of the tail boom (the aft end of the fuselage). Carefully attach the tail assembly, making sure it is parallel with the wing. Keep an eye on the fin as the glue cures, and

make adjustments if it starts to lean to the left or right.

11. Place a pencil tip eraser over the nose. It should almost reach the leading edge of the wing.

12. If desired, apply dots of liquid glue underneath the wing roots, near the leading and trailing edge of the wing, to add strength. This can also be done at the base of the fin.

13. Check the glider for warps and twists, and gently correct them. It is very important the right the left and right halves of the wing mirror each other. Also, raise the elevator to about 10 degrees of deflection. It is best to test the glider indoors. Throw it gently and level. If it tends to dive, raise the elevator a little more. If it tends to pitch up and lose control, either lower the elevator or slide the eraser a little farther forward. Adjustments should be very small! If the glider turn slightly left, deflect the rudder to the right, and vice versa. If it turns and rolls to the left or right, the two halves of the wing are likely twisted relative to each other, or differ in their contour. Try to fix this as best you can.



[images not to scale]