

TEC Glider - Version 1 >>> Detailed Build Instructions

In your kit:

- Wing
- Fuselage (body of airplane)
- Dowel (for launcher)
- Rubber band (for launcher)
- Tail parts (horizontal and vertical stabilizers) + Extra piece of heavy paper
- Wing Root Stiffener (...approx. 1" x 1.5" rectangle)
- Sandpaper (to shape the wing into a classic airfoil shape)



What else you'll need:

- Glue (Preferably low temperature hot glue because it's cheap, safe, and quick)
- Clear tape to protect wing edges (3/4" wide regular 3M "Scotch" tape works well)
- One U.S.A. cent (Penny) for balance weight

-----Optional Items-----

- Markers for decoration
- Scissors to cut custom horizontal and vertical stabilizers and trim tape

Before you begin:

Layout your parts and equipment on a clean flat work surface.

Preview all steps and be sure you have what you need for your build.

A little bit of preparation will help your build go smoothly!



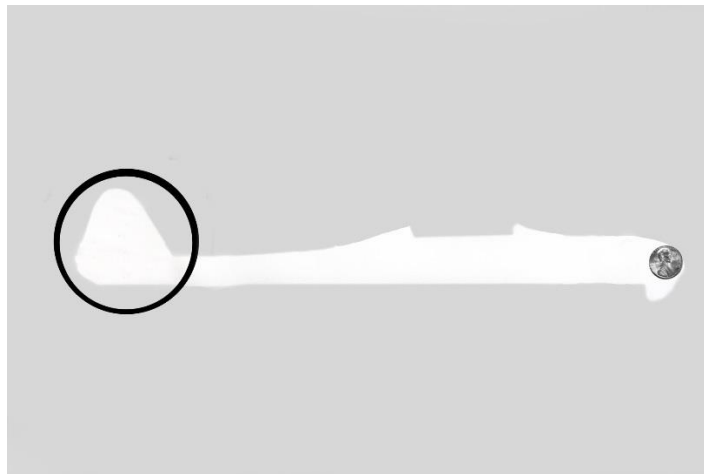
Note: Your TEC-glider will fly without any modifications to the wing. However, if you're willing to work a tiny bit harder, you can significantly boost your glider's performance by shaping the wing to achieve a simple airfoil. The instructions will tell you how.

STEP-by-STEP Building your TEC Glider:

1. Glue a penny all the way in front to one half of the fuselage. It should be even with the nose.



2. Locate and glue the vertical stabilizer to the back of the fuselage. If you'd rather design your own, you can look at pictures of airplanes to get ideas and then cut out your design using thick paper. After gluing on this part of the tail, your fuselage half should look something like this:



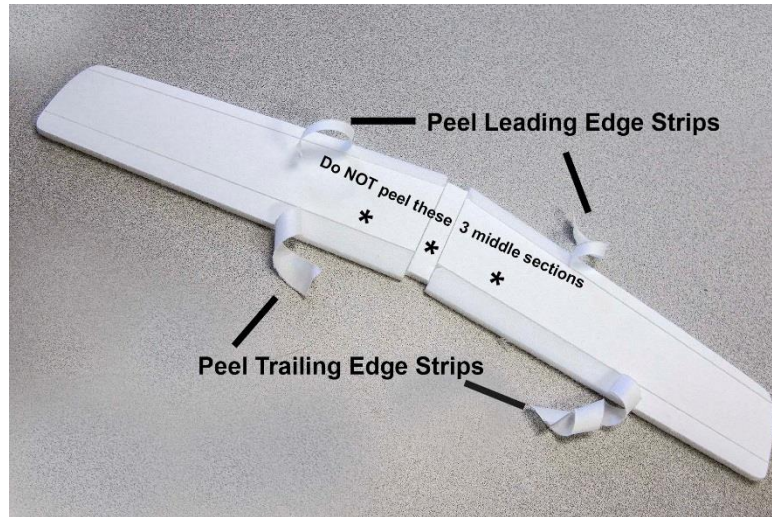
3. Being careful to keep the sides aligned as closely as you can, glue the other half of the fuselage to the first piece. This will sandwich the penny and vertical stabilizer between the two halves of the fuselage.



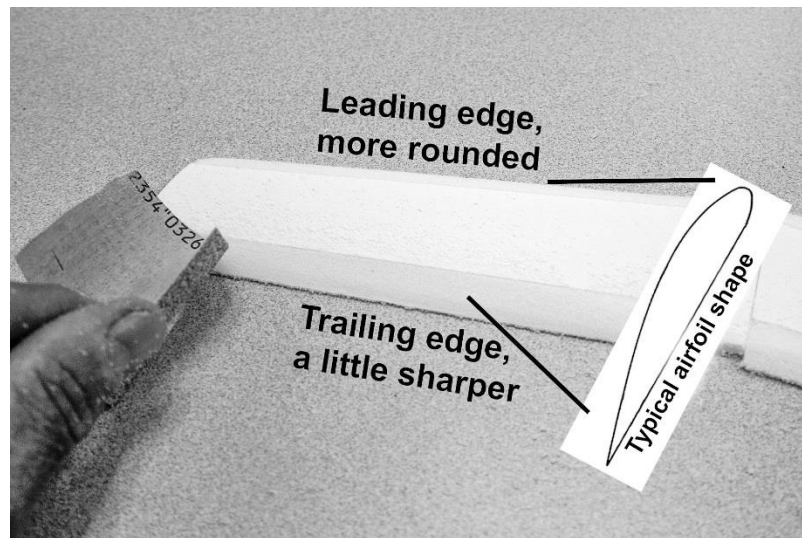
4. Locate the two identical horizontal stabilizers (tail “wings”) and glue them to the top edge of the fuselage halves on either side of the vertical stabilizer. Tip: You can use your dowel to apply pressure to the edge of the stabilizer to set the glue. After applying glue and placing the piece, lay the dowel alongside the vertical stabilizer and push gently while the glue dries. (Be careful not to glue the dowel to the glider, though! As with the vertical stabilizer you can also choose to design and cut your own pieces from thick paper, instead of using the pieces provided in the kit.



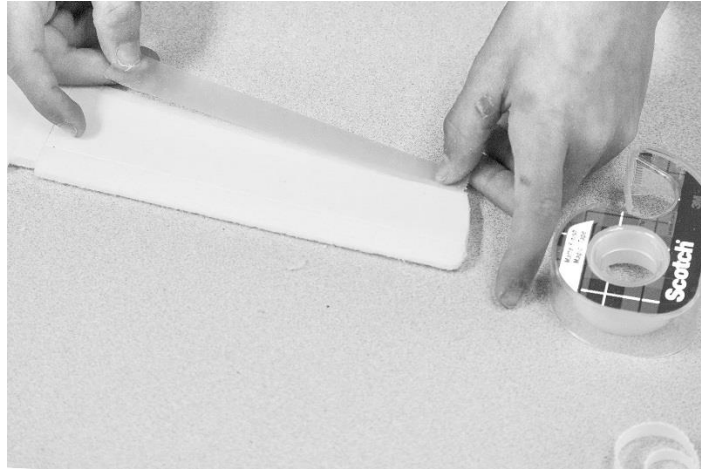
5. To shape your wing for best performance (optional, but highly recommended), you can use sandpaper to round-off the leading and trailing (front and back) edges of the wing. **FIRST**, carefully peel away the four narrow strips of paper--two from the front and two from the back edges of the **TOP** of the wing. **IMPORTANT:**
>>>DO NOT peel off the paper from the 3 sections in the middle of the wing!



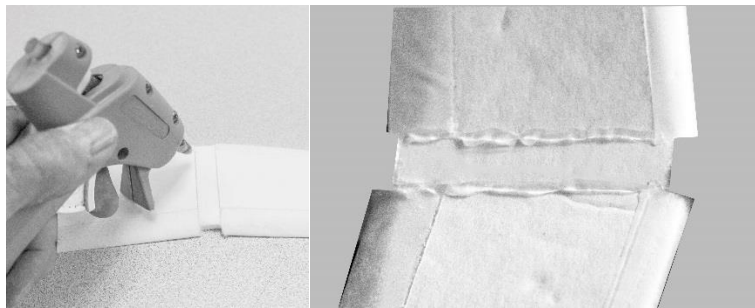
After the paper is peeled off, **GENTLY** sand the front and back edges to shape the airfoil. The trailing edge should be a little sharper than the leading edge for best performance. It will be very easy to sand the foam and make a nice, clean-looking wing. **Try to shape the left side and right side of the wing the same to balance the aerodynamic characteristics.**



6. After shaping the wing, use wrapping tape to cover and protect the foam. Try to use just one long strip of tape on each section. It should take just 4 strips of tape to cover the left and right leading and trailing edges of the wing. Try to place the tape so that you can gently roll it around from the top to the bottom of the wing without any wrinkles...but it's ok if you get a few wrinkles.... don't try to pull the tape off to eliminate wrinkles after you've put it on or you may damage the foam.



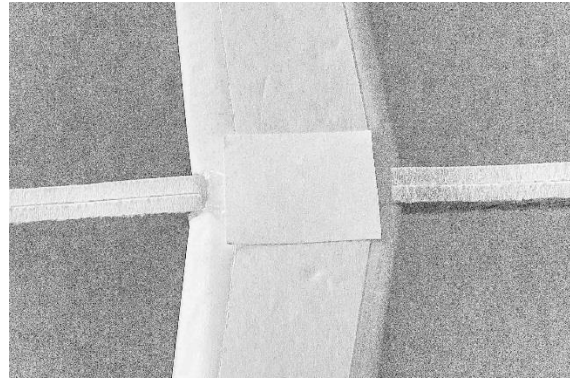
7. Almost done! Add a little glue along the two little grooves across the center top of the wing and before the glue dries, GENTLY bend the wing upward to give the wing a slight "V" shape, which is called "dihedral." This gives the plane extra "roll" stability when flying.



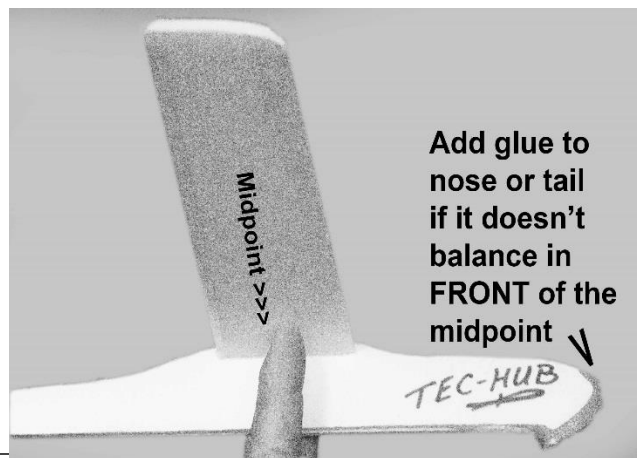
Dihedral



8. Carefully Glue the wing into the matching groove on the top of the fuselage with the wings “V” shape (dihedral) angled upwards. After the wing is firmly attached to the fuselage, glue a small rectangle piece of thick paper—about 1” by 1.5”—over the center of the wing to add strength to the wing ‘root.’



9. Add some extra hot glue to cover the very front of the nose. This will serve as a bumper for ‘crashes.’ Also, use glue to reinforce the hook under the nose. These additions will make your plane much sturdier in a crash and also prevent damage when launching with the rubber band.
10. **CHECK BALANCE** to make sure the plane isn't nose heavy or tail heavy. Hold up two fingers and support the plane's body between your fingers until it balances. It should balance when your fingers are just forward of the midpoint of the wing and not touching the fuselage. Add a glob of glue to the nose or tail portion of the fuselage until it balances at the right place.



11. Last step!! Tie the rubber band to one end of the dowel to make your launcher. Add a ‘glob’ or two of glue to hold the rubber band in place.

Go fly!!

We recommend a few test flights inside without the launcher to get your glider adjusted well. Try to get it to fly straight and level. You can bend the back edges of the horizontal stabilizers up a tiny bit if your glider tends to nose dive. If it tends to curve up and then stall, you can bend the back edges down a bit.

When you feel confident or you just can't wait anymore, go outside and launch your glider with the rubber band! If you bend the back edge of the horizontal stabilizers up a little bit more than for level flight, you can make your plane do some nice loops! Look out, though, it might loop right back to where you're standing! ☺

FLY SAFELY

WARNINGS WHEN USING THE RUBBER BAND LAUNCHER:

1. **NEVER** LAUNCH THE GLIDER DIRECTLY TOWARD A NEARBY PERSON!
2. **REMEMBER** THAT THE GLIDER MAY LOOP BACK AND HIT YOU OR SOMEONE ELSE, SO **BE SURE YOU HAVE PLENTY OF ROOM TO FLY!**

Tips for Coaches and “Flight Instructors”

Use the fun of building and flying a glider to teach some basic aeronautical terms. Go online and learn the following terms and share what you learn with others...

Here's one example information source; there are many others!

<http://www.kids.ct.gov/kids/cwp/view.asp?q=330926>

Soon your 'students' will be ready to fly with the best!

<i>LIFT</i>	<i>FUSELAGE</i>	<i>RUDDER</i>	<i>DIHEDRAL</i>	<i>CLIMB</i>
<i>DRAG</i>	<i>EMPENNAGE</i>	<i>ELEVATOR</i>	<i>AIRFOIL</i>	<i>DIVE</i>
<i>THRUST</i>	<i>HORIZONTAL STABILIZER</i>	<i>AILERON</i>	<i>STALL</i>	<i>ROLL</i>
<i>WEIGHT</i>	<i>VERTICAL STABILIZER</i>	<i>FLAPS</i>	<i>SPIN</i>	<i>GLIDER!!</i>

