

## 34" PELICAN FUSELAGE BUILD - by CRASH TEST HOBBY

The Pelican is a 34" trainer that can level its own wings and put its nose on the horizon once trimmed and balanced. It can handle more wind than most flying planes in its class. It is cut from EPP foam that won't dent or crush. The Pelican below is shown with laminated wing and tail and colored packing tape trim. Laminate for fuselage comes in kit. Add 10' laminate if you want to laminate the wing and tail. The aileron wing is on the left and the polyhedral wing is on the right.



### SPECIFICATIONS

- Center of Gravity: 2.00" (5 cm) back on the wing.
- The CG is critical and the plane will not fly with the CG too far back.
- The motor is installed on the nose of the plane.
- The motor angle is precut. The motor aims down and to the right to compensate for prop torque.
- Elevator Throws: 3/8" up/down/left/right (1 cm)
- Wing tip angle is up 3.5" to top of wingtip on polyhedral wing.
- Wing angle is 3.5" up on aileron wing with one side flat on table.
- Dowels back 6" and 15" from the nose of the fuselage for the poly wing
- A third dowel is used at 12" back from the nose if you are also flying with the aileron wing.
- Use four to six #64 rubber bands to secure wing
- We recommend the 2812 1534 kv motor, 20A ESC, 2 mg90 servos, 4 servos with aileron wing.
- 800-1300 mah 3S lipo battery
- You can cut 7x6 your prop to 5.5" if using the 2812 motor for lower amperage
- Target All-Up Weight: 10-18 oz (300-540 gm)
- Launch at 1/2 throttle and throttle up
- Lighter always flies better!!!!

### EQUIPMENT NEEDED

- Pelican kit, from CrashTeshHobby.com
- Add laminate for wing and tail if desired. (Adds over 4 ounces to the plane.)
- All electronics and accessories as desired (motor and #6 screws for mounting, props, esc, tx/receiver, servos)
- Low-temperature hot glue gun (and low-temp rated glue)
- Quick Grip Glue or "Goop" brand glue (preferably Household or Plumbers)
- Thin CA glue and baking soda
- Metal straight edge
- Soldering iron (either adjustable-depth tip, or a wheel collar to restrict depth.)
- Fine grit sand paper
- Pliers, Side cutters, or snips (must be flush on one cutting side)
- Razor blade
- Electric drill and small bit
- Philips head screwdriver, Velcro strip
- Iron for applying laminate (hobby iron or clothing iron may be used)
- Iron temperature is 185 to 220 F degrees.

Crashtesthobby.com - Pelican Fuselage Build



A strong hinge can be made with GOOP glue. It is flexible and works well with EPP.

Crashtesthobby.com - Pelican Fuselage Build



A strong hinge can be made with GOOP glue. It is flexible and works well with EPP.

A Goop hinge is flexible and works well on EPP foam. Pin the tail surfaces onto a piece of cardboard with the beveled edges up and barely touching. You don't want glue to flow down between the hinge line. Make your Goop hinge by spreading a thin layer of goop along the hinge line and immediately spreading thin with a razor blade. If you get too much Goop the hinge will be stiff and not work.

Crashtesthobby.com - Pelican Fuselage Build



Put a thin layer of GOOP glue down the hinge line. Spread it thinner with a razor blade.

Crashtesthobby.com - Pelican Fuselage Build



Trim the bottom back of rudder up 1.25 inches and past the hinge line so the elevator has room to move.

Trim the back corner of the bottom of the rudder off up 1.25" and extending past the hinge line so the elevator has room to move. Trim the top of the back of the fuselage off 2.75" to make a place to install the horizontal stab with elevator. Make sure all of the pieces fit and the elevator and rudder can move freely.

Crashtesthobby.com - Pelican Fuselage Build



Trim the top back of the fuselage 3 inches to make a place to install the horizontal stab.

Crashtesthobby.com - Pelican Fuselage Build



Mark the center of the fuselage and the tail and check the fit.

Crashtesthobby.com - Pelican Fuselage Build



This acts like a bumper for the pod motor and is a mounting block for nose mounted motors.

Crashtesthobby.com - Pelican Fuselage Build



This acts like a bumper for the pod motor and is a mounting block for nose mounted motors.



Glue two layers of laminate on the nose. The laminate makes a firewall for a nose mount motor but also strengthens the fuselage and is a bumper that protects the battery. We no longer recommend the pod motor on the Pelican. We found it makes the plane hard to launch and trim. The instructions will show parts of the pod installation but it is not recommended.



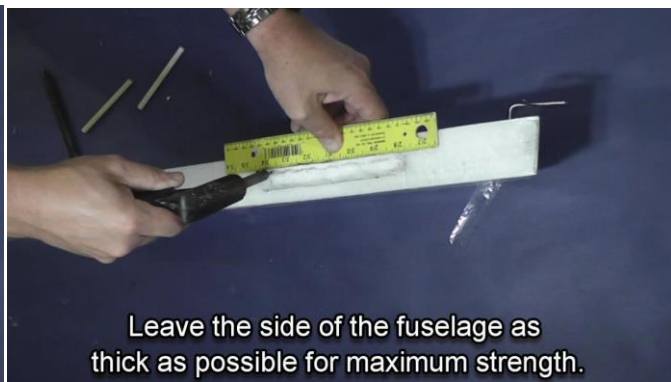
Cut slits for wing dowels 3/4" deep back 6" and 12". Roll the dowels and roll them into the slit. Enlarge the holes with iron. If you are flying both the aileron and poly wings you can put two 1/4" dowels in the back so you can use both wings on the same fuselage.



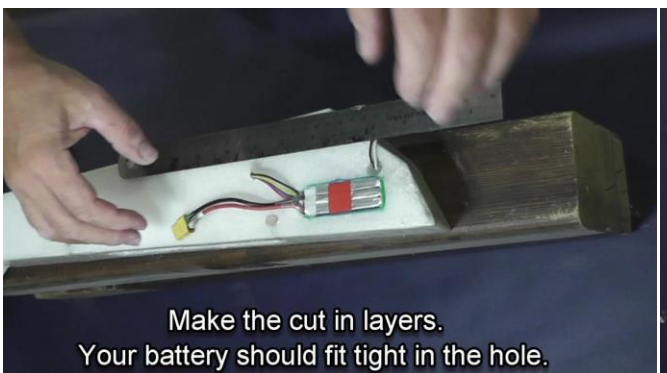
Wrap the nose of the plane in bidirectional reinforced tape back 8" on the fuselage. Extreme Tape by Scotch is one of our favorites. This tape will stick to EPP foam. Open the dowel holes and pod hole with a soldering iron or hobby knife.



Put a strip of tape around the fuselage over the rear dowel location to prevent the back dowel from ripping out in an accident. Laminate the fuselage with an iron about 190-210 degrees or just hot enough water will boil on the surface. It is easiest if you start on the top and wrap the laminate around the fuselage from each side.



Cut out your radio compartment and battery hole. I like to make a radio compartment that starts at the back of the pod and is 3/4" wide, 6" long and 1.5" deep. I cut with a box knife or a soldering iron. It is easiest if you cut the laminate and the E-Tape with a razor blade before trying to cut with a soldering iron. Keep the battery as far forward as possible to help with center of gravity. Make a slit for a piece of 3/4" Velcro to keep the battery in place.

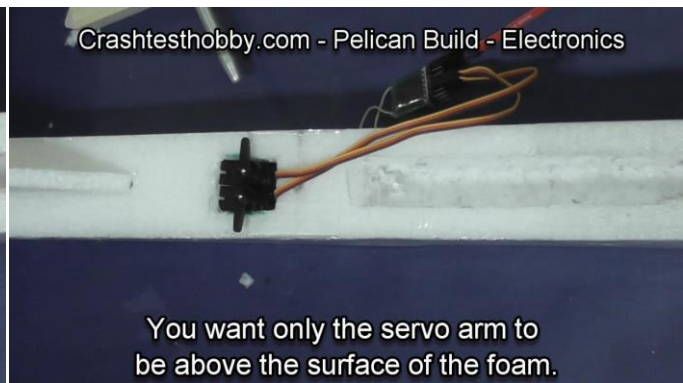




Glue on the tail surfaces with a low temperature hot glue gun making sure that the tail is square with the fuselage and level with the table and the wing. Punch a few holes with the soldering iron to allow glue into the foam when gluing the vertical stabilizer and rudder into place. The wing and tail is not usually laminated to help keep the weight forward.



Install the servos behind the rear dowel so the top of the servo body is below the surface of the foam. Cut or melt a slit for the servo wires to enter the radio compartment.



As long as your CG is correct the battery, radio and servo location is not important. Bind your radio and center your servo arms with the trims adjusted to center. Drill out the third hole from center on each servo and install the pushrods from the bottom up to keep the pushrods close to the body of the fuselage. I have the elevator servo on the left and rudder servo on the right when standing behind the plane.

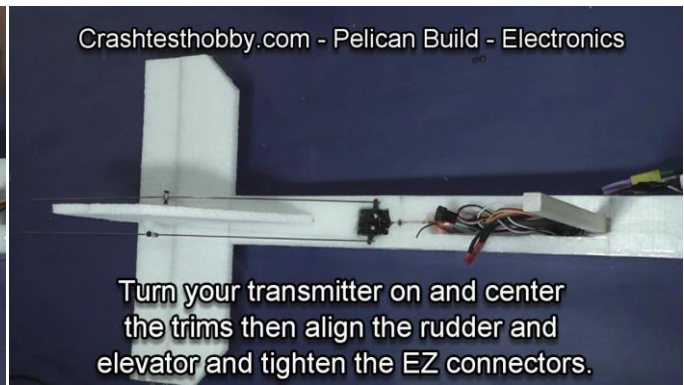


Install your elevator control horn in a place it won't interfere with the rudder. Cut a slit with a hobby knife and melt a hole for the glue to flow up around the control horn. Glue the control horn in place from both the top and the bottom with the holes in the control horn at the hinge line for the best leverage.



Glue your servos in place from the top only so you can get them out if you have servo problems. Drill the top hole in the control horn with a 1/16" bit and install the EZ connectors. After you have turned on your radio and centered the servos tighten the EZ connectors and cut the pushrod to length.



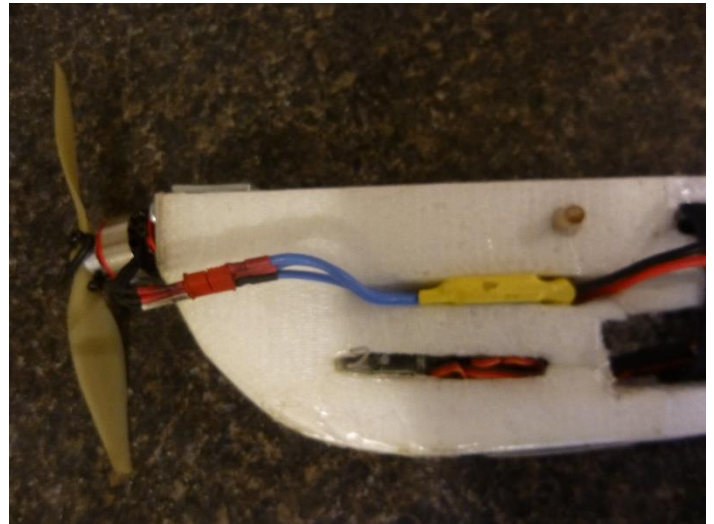
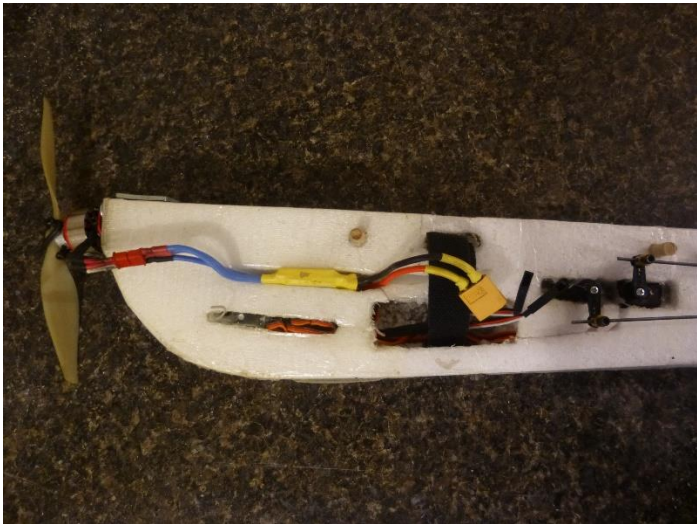
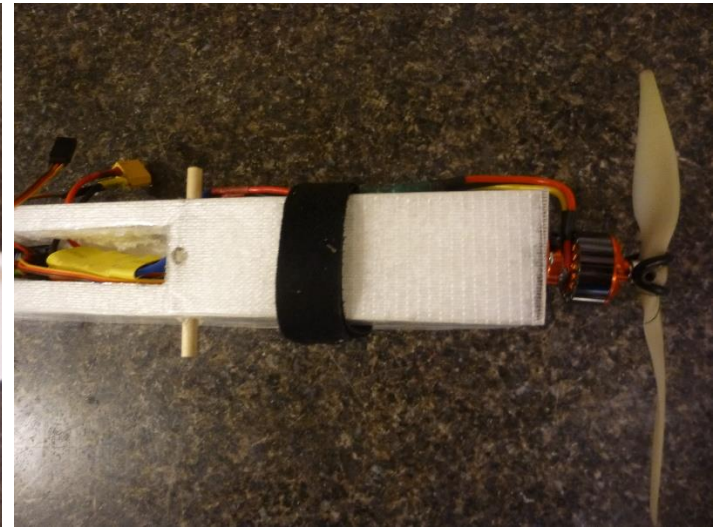
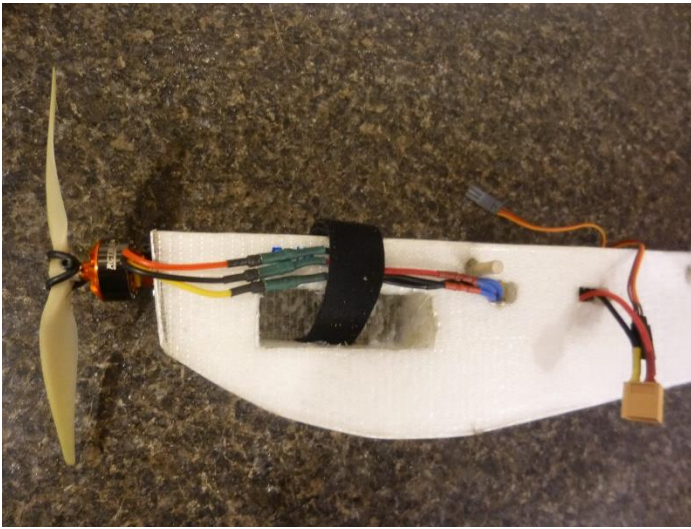
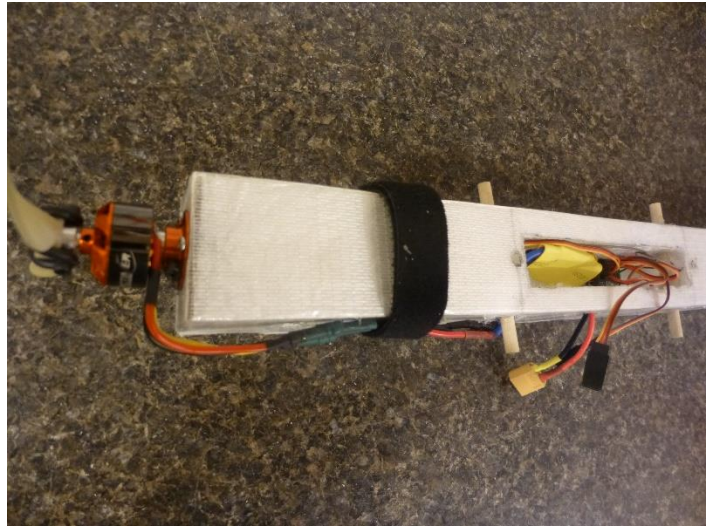


Pull the servo wires out of the way and glue in the dowels with a low temperature glue gun. Roll the dowels as you apply the glue to spread the glue around.



**Radio installation:** There are many ways to set up the radio. I like to start by laying out the motor, ESC, receiver and servos and see how they line up on the fuselage. Over the years I have installed the radio several different ways. Screw the motor high on the front of the laminate on the nose. The big variation is how I connect the ESC to the motor. I find the easiest and cleanest option is to put extensions on the motor wires so I can put the ESC under the wing. See the following pictures:







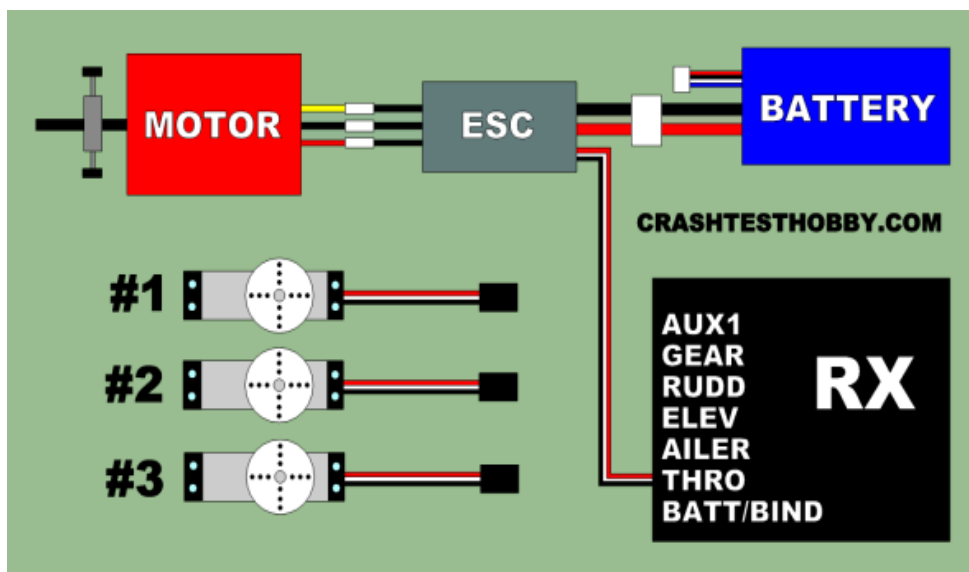
**PREFLIGHT CHECK**

The CG on the Pelican is 2” or 5 cm back from the leading edge of the wing, and relative to the wing, not the front of the fuselage. Make sure all other electronics or hardware are sitting in their proper place on the plane, including the battery, motor, ESC, Rx, servos, and push rods.

1. The wing will be held to the fuselage with 4-6 rubber bands. Not only is this an effective way to attach the two parts, but it allows for simple takedown, travel, and storage.
2. If the plane does not balance you can add weight to the nose or the tail of the plane until it balances correctly. **Remember the CG is relative to the wing not the fuselage and the plane won't fly tail heavy.**

**SETTING TRIM/THROW & ELECTRONICS TESTING**

3. Consult the instructions for your Tx/Rx set to properly bind the two together, and then make sure the servos and ESC are connected into the proper channels on your receiver.
4. A simple wiring diagram is below. Notice how the plugs from the motor and battery connect to the ESC and that the ESC plugs into the Throttle plug on the receiver. Servos will plug into the Aileron for the Rudder and the Elevator for the elevator. Some receivers have the throttle in the #1 plug position and others have the throttle in the #3 plug.



5. Remove the servo arms from the servos. Connect all electronics, including a battery, but for safety purposes, remove your propeller. Turn on your transmitter, plug in your battery, and allow the servo gears to “center” themselves.
6. Put the Z-bend end of the push rod through a middle hole in the servo arm (still unattached to the servo) and the other end into the EZ connector. Then re-attach the servo arm to the servo so that the arm is centered.
7. Install the EZ connector in the top hole of the control arm for the best leverage.
8. With the EZ connectors still loose, use the trim function on your transmitter to set the servo arms completely straight. This should allow for less movement from center when trimming the wing as it flies.
9. Make sure your elevator and rudder are straight, then tighten the set screw on the EZ connectors, and use snips to trim off any excess push rod.
10. Set the wing on a flat surface, and hold a ruler vertically next to the trailing edge of the elevator. Use your tx to set the throw (range of movement) on the elevator to 3/8” (1cm) up and 3/8” down. Make sure your stick movement translates to the proper up/down on your elevator:
11. Hold the ruler horizontally next to your rudder, and again use your tx to set the throw of the rudder, the same amount: 3/8” (1 cm) left, and 3/8” right.

STICK UP	Elevator down	NOSE DOWN
STICK DOWN	Elevator up	NOSE UP
STICK LEFT	Rudder left	NOSE LEFT
STICK RIGHT	Rudder right	NOSE RIGHT

12. Test the throttle and make sure the motor is turning in the correct direction. If not, trade two of the three connectors between the motor and the ESC and the motor will turn the opposite direction

13. Be sure your prop is facing forward with the lettering on the front.
14. Center the wing. Use four rubber bands to attach the wing to the fuselage.
15. It's always a good idea to have someone else double check your work. Field test and range check your equipment, then launch, trim, and enjoy!