

# XE2 Speed 400

## Kit Includes

- EPP Foam Wings (2)
- Carbon Fiber Spar (1)
- Motor Mount (1)
- Motor Screws (2)
- Coroplast Wing Tips (2)
- Pre-Cut Balsa Elevons (2)
- Control Horns (2) and Screws (4)
- Metal Clevises (2)
- Control Rods 2-56 (2)
- Speed 400 Motor/Prop (Basic Kit)
- Motor/Prop/ESC/Battery (Complete Kit)



## Building Materials Required

- 3/4" & 2" Strapping Tape
- Sanding Block 100-150 grit
- Hot Glue or Shoe Goo (or similar)
- 3M 77 Spray Adhesive
- Xacto Knives (Sharp)
- Covering (Ultracote or Tape)
- Hinge Tape (optional)

## Radio Gear Required

- Radio System with mixing (Focus III or similar)
- 15-20 amp Speed Control
- 8 cell 600ae or 1000mah battery
- Speed 400 Motor & Prop

## Warning!!!

- When you crash, if you leave the throttle on for even a second after the plane hits the ground, you will burn up your speed control. Be careful, as no speed control warranty will cover this type of user error. Simply, shut the throttle off before you crash and don't turn off the transmitter till the plane is turned off.
- Take note when replacing props. Most props are not pushers, so when installing them, you may need to flip them around so that they become pusher. If you don't, the prop will only produce about 60% power and the plane may not have enough power to get off the ground.
- **Do Not** use epoxy any where on this wing. It is too brittle and will crack the foam on impact. You need to use shoe goo, household goop, hot glue, or 3M 77 spray glue.

**Need Help???** Visit our website, post your questions on the message board and get help from other combat wing users. Also, download flying instructions, launching techniques, troubleshooting tips, and much more all on [www.combatwings.com](http://www.combatwings.com)

### 3M 77 Notice

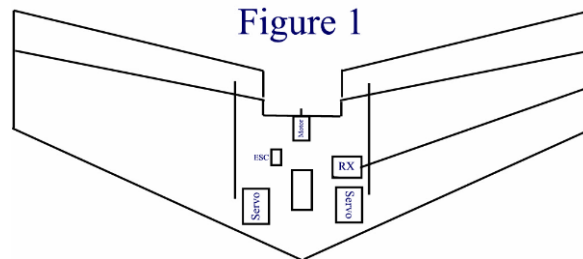
- The new 3M 77 spray glue is **okay** to use on our EPP (Expanded Poly Propylene) foam. Yes, you can use it to glue the wings together, if you can't find shoe glue. The new 3M 77 spray glue will melt EPS (Expanded Poly Styrene) foam, which many other brands of wings are made of.

### Wing Assembly

1. Remove the foam cores from their beds. Use the sandpaper or a scrap piece of foam to clean off any melted foam debris. Save the foam beds to use while building. There is a top set and a bottom set.
2. There are two ways to install the carbon spar. One you can use the pre-drilled hole and glue the wings together. Two (if the spar hole doesn't line up well enough for you), glue the wings together without the spar. Then after the glue is dry, trace the spar on the bottom of the wing about where the hole was. Once traced, cut the foam out with a razor blade deep enough to fit the spar in. Glue the spar in the cut out groove with hot glue or Shoe Goo. Not Epoxy!!!
3. Glue the wings together with either 3M 77 or Shoe Goo. Not Epoxy!!!
4. The wings are now CNC cut so you do not have to round the leading edge.

### Radio Installation -*Install Motor after Covering*

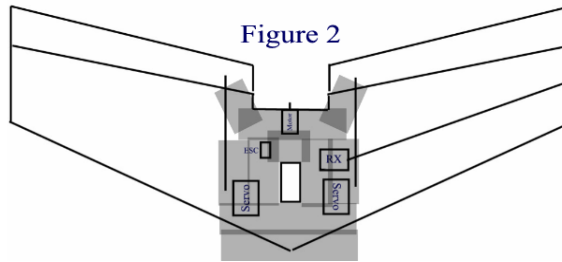
1. Trace your radio gear on the foam with a pen or marker (See Figure1). The marks on the foam are for **standard gear**. If you decide to use mini gear, you can move everything forward about  $\frac{1}{2}$ " to compensate for the reduction in nose weight.



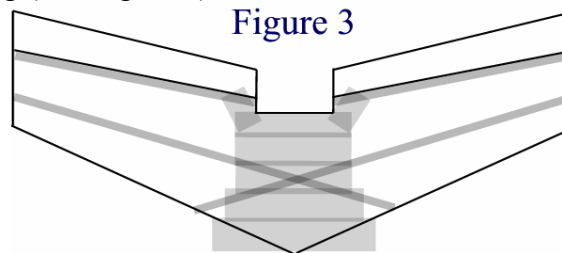
2. Use the Xacto knife to cut out the foam for the servos. Cut them deep enough so that the horn sticks out the top and top of the servo is flush with the airfoil.
3. The battery slot is already cut out for you. Just check to make sure the battery slides in and out without too much effort. You want it tight but not so tight you have to rip the wires off to get the battery out.
4. Cut out the slot for the motor and prop clearance (See Figure 1).
5. Cut the receiver hole deep enough so when the servos are plugged in, the wires don't stick out above the surface.
6. For the ESC, you want to make sure the wires will reach the motor. The motor will be installed later (after covering).
7. Make a cut about  $\frac{1}{4}$ " deep in the foam for the antenna from the receiver to the end of the wing and push the antenna into the cut. Make cuts in the foam about  $\frac{1}{4}$ " deep to run servo and battery wires to the receiver.
8. Glue all gear in place with Hot Blue or Shoe Goo. Let dry.
9. Before you continue, check your radio and make sure everything is working properly.

## Taping the Wing

1. You will need to spray a light coat of 3M 77 on the areas where the tape is to go. You should wait about 5 minutes after spraying before you apply the tape.
2. Use the 2" strapping tape to strengthen the nose area on top. Basically, what you want to do is tape over the gear helping to hold it in place (See Figure 2).



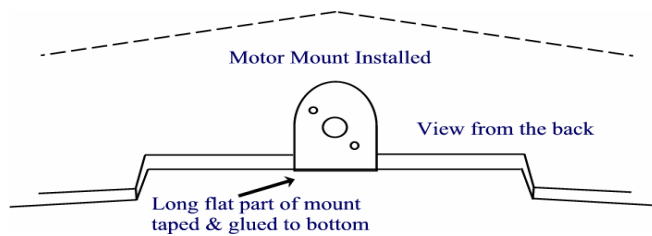
3. Use the 2" tape on the bottom and use about 5 pieces that run perpendicular to the center of the wing (See Figure 3).



4. Use the 3/4" strapping tape to tape the T.E. (trailing edge) from the tip all the way to the L.E. For combat or beginners, it is recommended that you add another piece of strapping tape that runs down the center of the wing (See Figure 3).
5. Now turn the wing over and use the 3/4" strapping tape, just like you did on the bottom. The center section of the top should already be taped.
6. After the top and bottom have been taped, put a piece of 3/4" strapping tape along each L.E.

## Covering - *Install Motor Mount after Top is Covered*

1. Covering could be considered the most difficult part. A good covering job will make your wing look professional. Remember all wrinkles in the tape will show in the covering. Your iron should be at about 350 degrees. Don't go any higher than this. You will melt the foam very quickly. You can still melt the foam at 350, so we recommend setting it at 325 till you get the hang of it (or 1/2 of maximum heat). Follow the instructions on the Ultracote packaging.
2. In order for the covering to stick to the foam, you need to spray the foam with 3M 77 glue. Let the glue dry for about 5 minutes before ironing the covering. Do the top first. After the top is covered, spray and cover the bottom.
3. Cover the top first. Let about a 1/2" to 3/4" of covering hang over the L.E. and T.E. and iron it to the bottom. This will help prevent the covering from pulling up. When ironing the covering, start in the center and work your way towards the edges.



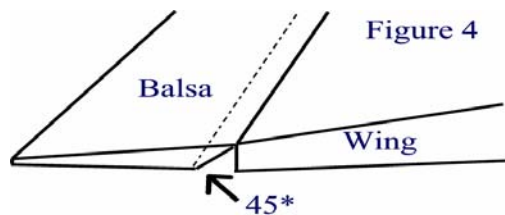
4. Now the top is covered, you can **INSTALL** the **MOTOR MOUNT**. To install the motor mount, simply apply some hot glue or shoe goo and glue it to the bottom, centering it in the motor cutout. The motor mounts on the top, so be sure to have the motor mount installed correctly. See picture above.

## Motor Installation

1. After you have covered the top and bottom, you can now install the motor using the motor screws. You may need to cut some foam out of the way so that the motor is not forcing the motor mount to bend out of shape.
2. When you put the prop on, make sure to flip it around so the lettering is facing the back. This is true for most any prop that you will use. Since this is a pusher plane, when you hook the ESC to the motor, you need to hook it up backwards. That's right, Black to Red and Red to Black. This will cause the motor to run in reverse, making it a pusher.

## Elevons

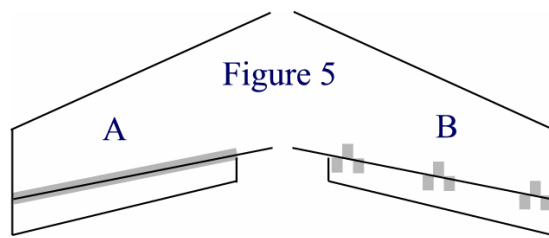
1. You will first need to bevel a 45-degree angle on the bottom of each elevon (See Figure 4).



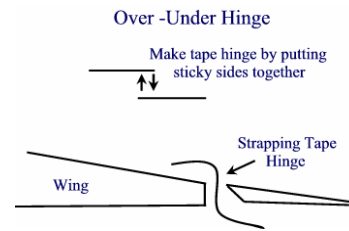
2. Once beveled, you need to cover them with Ultracote. Top first, leaving about a 1/4" to fold and iron over the front of the elevon. This will help prevent the covering from peeling up.
3. Cover the bottoms and trim the edges with a blade. Be careful not to slip and cut the balsa wood.

## Hinging the Elevons

1. There are several different hinging methods, some harder than others. The easy way is using some clear hinge tape (available on our website). You simply tape the elevon to the T.L. and leaving enough room so it doesn't bind. You can add some strapping tape reinforcements at each end of the elevon, to help prevent tearing of the tape (See Figure 5a).
2. The hard way would be the "over-under hinge." You have to make each hinge with strapping tape and there are about 18 hinges. These hinge are very tuff but time consuming (See Figure 5b).



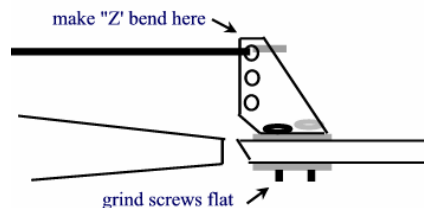
3. Check to make sure the elevons don't bind.



## Hooking Up the Horns

1. Hook up the control rods and clevises to the servos horns and hold them parallel to the center of the wing. Make a mark on the elevons where the control horns should go.
2. Screw the horns in place. Make sure the holes on the control horn are directly over the hinge line.
3. Make a "Z" bend in the control rod and attach the rods to the control horns.

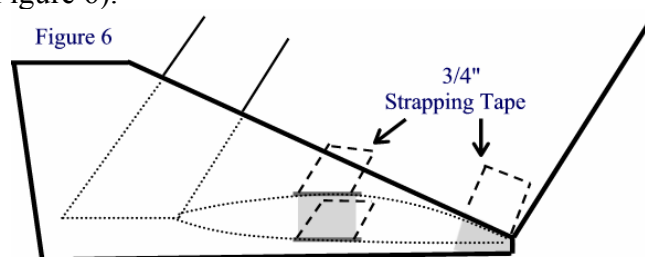
Control Horn Linkage



4. Use the top hole on the control horn for beginners or less sensitive controls. As you feel the need for more throw, lower the rods one hole on the control horn. You may need to ream out the hole to make the control fit.
5. Control throws should be about  $\frac{1}{4}$ " up and  $\frac{1}{4}$ " down. If you need more, you can add it later. Use that a starting point.

## Attaching the Wing Tips

1. Make two cuts in the plastic wing tips to feed  $\frac{3}{4}$ " strapping tape in the slit. Use another piece of strapping tape on the front of the wing tip and attach them to the wing (See Figure 6).



## Balance Check

1. The completed XE2 should balance at about  $7\frac{1}{2}$ " to  $7\frac{3}{4}$ " from the nose.  $7\frac{1}{2}$ " would be the recommended balance for a beginner or trick flying. It will make it easier to learn and handle.  $7\frac{3}{4}$ " is more of a thermal balance point.
2. To balance the plane, add lead weight in the nose. Some times you don't have to add any and sometimes you may have to add up to an ounce. This will depend on your gear placement and tape usage. If you don't have any lead, you can use coins as temporary weight. Just tape them on the nose.