

# Combat Wings® - Mini XR

Thanks for choosing the Combat Wings - Mini XR as your next or first model airplane. The Mini XR's wings are made from 100% EPP (expanded polypropylene) foam which is extremely durable. For this reason, the Mini XR is recommended for builders and flyers of all skill levels. The Mini XR will loop, roll, and fly inverted with ease. The target weight of this airplane is 14 oz. and is designed for use with mini/micro size radio gear. Please read the instructions carefully before you start to assemble anything. To make things easier for you, we have created a very detailed set of picture instructions following each step involved in the building process.

Visit our website for videos, pictures, and message board tech support which is available 24/7. We have also setup a technical support line at 714 968 4491.

[www.combatwings.com](http://www.combatwings.com)



## Parts List:

- EPP Foam Wings (2)
- Carbon Fiber Spar (1)
- Coroplast Wing Tips (2)
- Pre-Cut Balsa Elevons (2)
- Du-Bro® Control Horns (2)
- Stainless Steel Screws (4)
- Metal Clevises (2)
- Control Rods 2-56 (2)

## Recommended/Required\* Accessories:

- 2" Strapping Tape (# M901)\*
- 3/4" Strapping Tape (# M902)
- 1" Hinge Tape (# M904)
- Covering Tape (# M905-911)\*
- 3M 77 Spray Glue (# M915)\*
- Shoe Goo (# M916)\*

## Recommended Radio Gear:

- Mini Size Servos (# S605)
- Flat 600mah Receiver Battery (# B808)
- Micro/Standard Size Receiver
- 2 Channel Radio w/Mixing (# R403)
  
- Battery Charger (# C706)
- Rechargeable Transmitter Batteries (# B807)

## Required Tools:

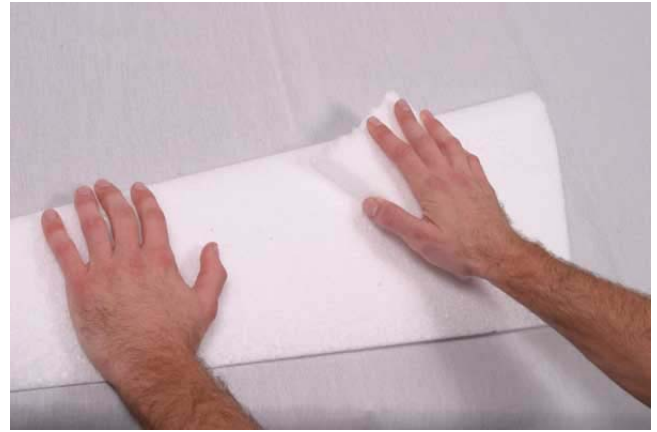
- Hobby Knife
- Philips #1 Screwdriver
- Sanding Block (150grit)
- Pliers/Wire Cutters

Most of these items are available on our website or at most hobby stores. Part numbers refer to our website.

**Warranty/Disclaimer:** Combat Wings guarantees all of our unassembled kits to be free from defects in both material and workmanship at the date of purchase. This warranty does not cover incorrect application, incorrect installation, components worn by use, tampering, misuse or shipping. Since Combat Wings has no control over the final assembly, no liability shall be assumed nor accepted by Combat Wings for any damage resulting from the use by the user of the user-assembled product. If you do not agree with these terms, please return the kit immediately to the place of purchase for a full refund.



**Step 1:** Remove the wing core (airfoil) from the upper and lower wing beds. Save the bottom wing beds as they can be used to build the wing in. This will keep your wing flat on the table while working.



**Step 2:** Sand off any melted foam debris using a piece of scrap foam or using 150 grit sandpaper.



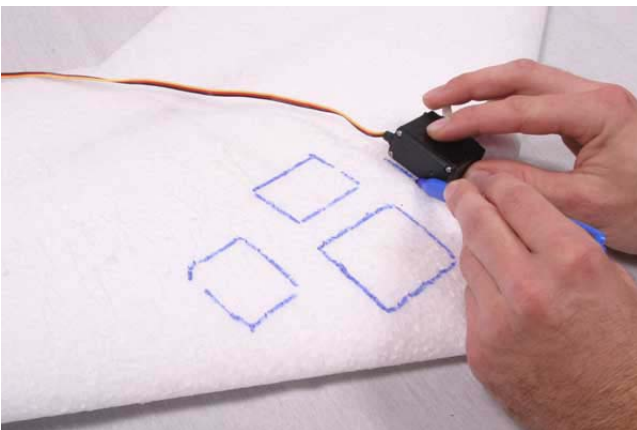
**Step 3:** Spray the center of the wings with a heavy coat of 3M 77 spray glue and spread evenly. Let the glue dry for about 5-10 minutes before you proceed.

**Note:** The new 3M 77 spray glue is safe for use with EPP foam and will NOT melt the wing cores.



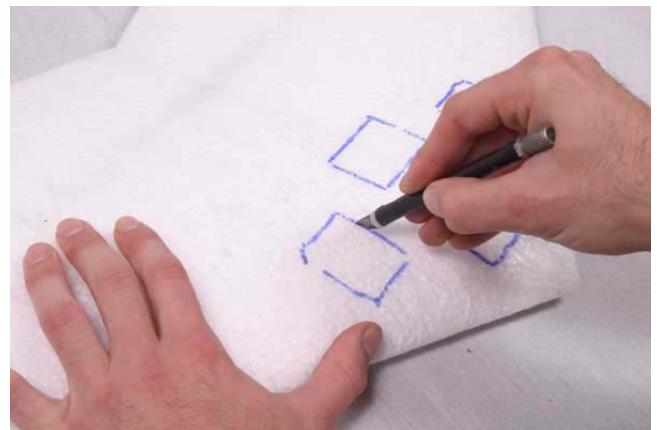
**Step 4:** Install the carbon rod in the pre-drilled hole and slide the wings together. This step must be done immediately after the 5-10 minute drying period from Step 3.

**Note:** If wings do not stick together, you can repeat Step 3 with a shorter drying period.

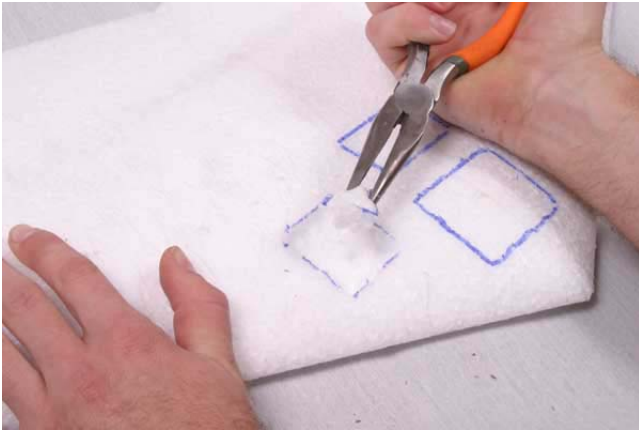


**Step 5:** Use a marker to trace the exact size of your radio gear in the locations pre-marked. Battery goes in front, receiver in back, servos on both sides.

**Note:** Marked locations are for **Standard Size Gear**. Using smaller gear will require lead weight in the nose to balance the wing (1-3oz. is common).



**Step 6:** Use a hobby knife to cut out the foam deep enough to install your gear flush with the surface of the airfoil. You will remove the foam inside the markings in Step 7.



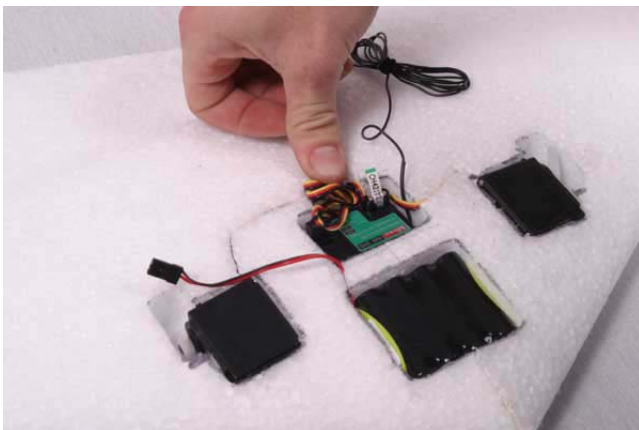
**Step 7:** Remove the foam inside the marked areas with a pair of pliers so that your radio gear can be installed.

**Note:** You will want your servos to be flush with the airfoil, so that the horn sticks above the airfoil.



**Step 9:** Use Hot Melt Glue, Shoe Goo, Goop, or 3M 77 to glue your radio gear in place.

**Note:** Servos lay on there side with the horn sticking above the surface of the airfoil.

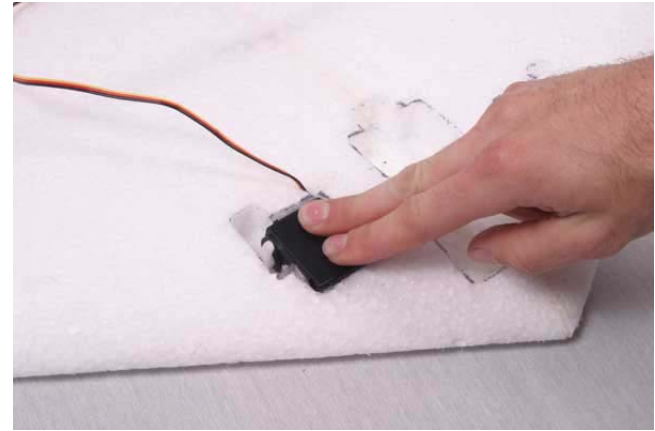


**Step 11:** Plug your servos into the receiver leaving the battery wire unplugged. There is no need to use a switch on this airplane. You will plug the battery wire directly into the receiver to turn the airplane on.

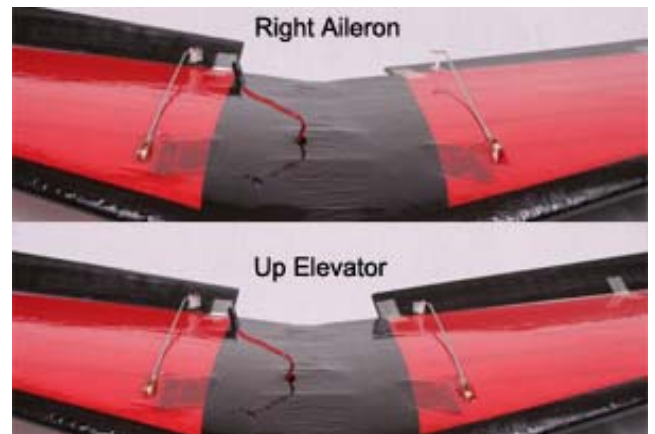
**Note:** Extra wires can be stored behind the receiver.



**Step 8:** You will need to install the correct servo horn on your servo before you can install the gear. Find the horn with two arms on it and cut one arm off. If your horn has 4 arms you will need to cut 3 of them off.



**Step 10:** Hold gear in place until glue is dry. For glues that have longer drying periods, you may want to use tape to hold the gear in place while drying.

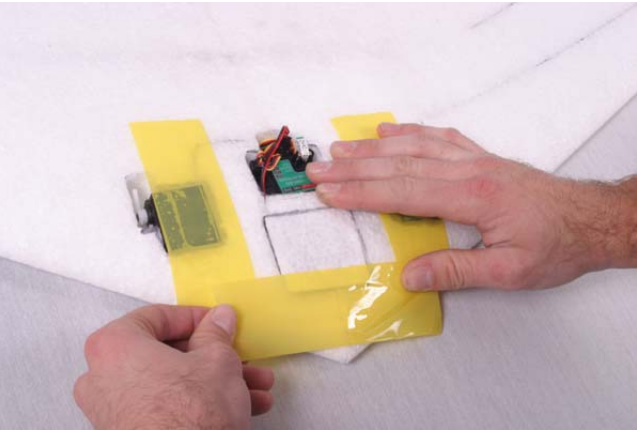


**Step 12:** Are your servos hooked up correctly? Picture shows the completed wing with control surfaces attached, which are not needed for testing. The right servo should move forward when you give the controls right aileron. Both servos should move forward when you give the controls up elevator.



**Step 13:** Press the antenna wire into a 1/4" deep cut made with a hobby knife. The antenna is longer than the wing, so you will need run the extra wire back toward the center of the wing or you can let it hang out the side of the wing.

**STOP:** Check to make sure all your gear is working!!!



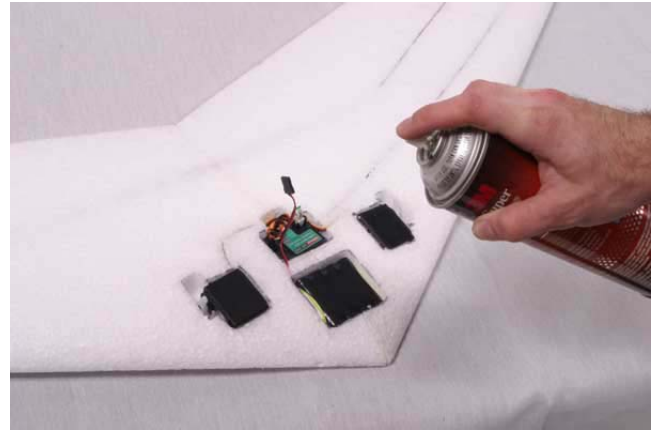
**Step 15:** Using 2" pieces of the strapping tape, cover the radio gear and center section to add strength to the nose.

**Note:** Do a nice job here as wrinkles in the tape will show up later when you cover the wing.



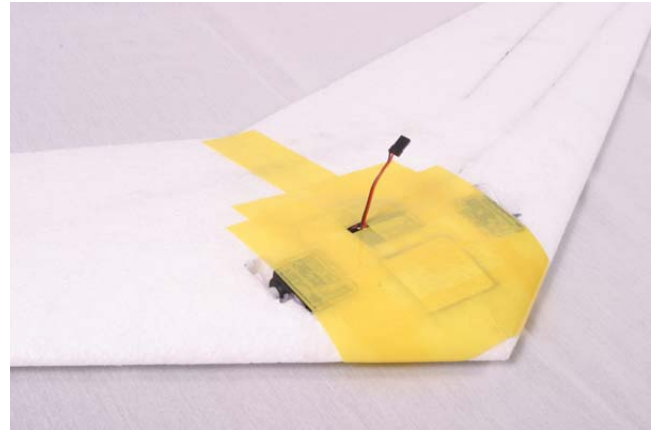
**Step 17:** Use strapping tape to reinforce the bottom of the wing as you did on the top. Follow the pattern from the picture in Step 16.

**Remember:** Always spray 3M 77 before taping!



**Step 14:** Spray a light coat of 3M 77 over the center section of the wing were the radio gear is installed. Let glue dry for about 5 minutes and continue on to Step 15 where you will be applying the strapping reinforcement tape.

**Note:** Always use 3M 77 before applying any tape.



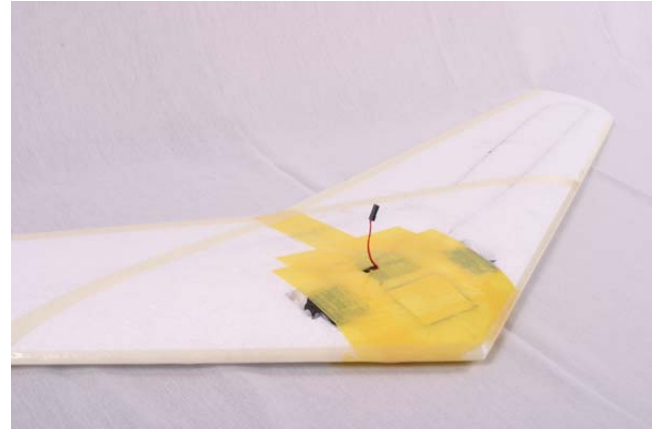
**Step 16:** Make sure you covered all the gear with strapping tape. Your servo horns should stick up about 1/4" above the airfoil so that you can hook up your linkage at the end. The battery wire should be left hanging out of the wing with a small hole above the receiver giving access to the battery slot to turn the plane on.



**Step 18:** Apply a piece of 3/4" strapping tape along the trailing edge from the tip of the wing, all the way to the leading edge. This will give the wings strength and help prevent them from flexing during high stress maneuvers.



**Step 19:** Repeat Step 18 on the top of the wing and apply another piece of 3/4" strapping tape along the leading edge from the tip to the center of the wing.

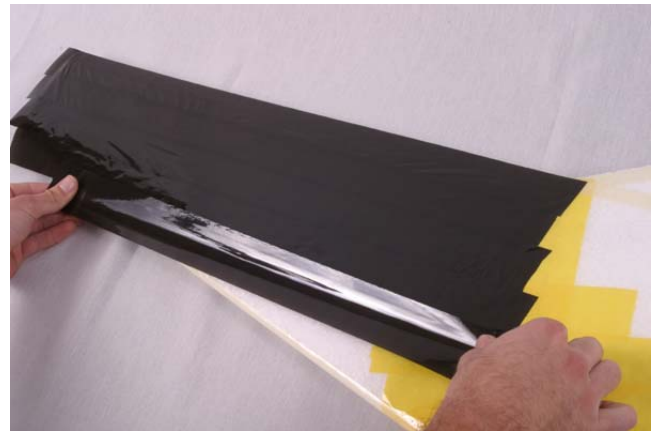


**Step 20:** Your wing should now have strapping tape in all the proper locations and look similar to the picture above.

**Note:** The battery wire hanging out of the wing.

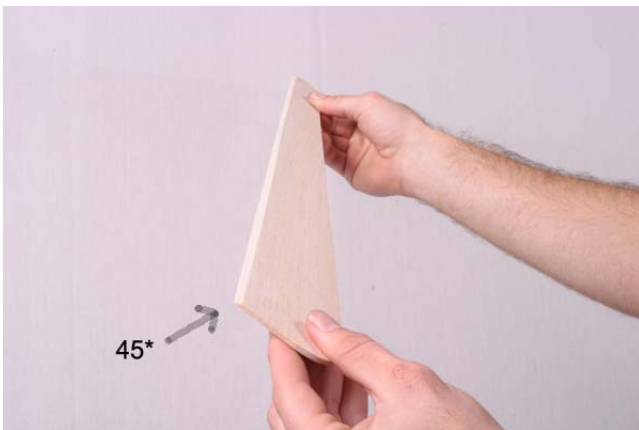


**Step 21:** Before covering the wing with the colored tape, you will need to spray it with 3M 77 to help the tape stick. Let the glue dry for about 5 minutes. Apply the



**Step 22:** Work your way forward until the whole wing is covered. Repeat the process on the top of the wing. Trim the edges with a hobby knife and allow for about 1/2" of

**Option:** *Ultracote can be instead of the colored tape. Ultracote is a low temp. covering material and requires a hobby iron to apply. It allows for more detailed designs but cost more than tape. Instructions can be downloaded from our website.*



**Step 23:** You will need to sand a 45\* angle on the bottom of both your elevons (doesn't have to be exactly 45\*). Hold the elevon on the edge of the table and use a sanding block to create the 45\* angle (like in the picture above). **Remember, you need to sand one for the left wing and one for the right.**



**Step 24:** Cover the elevons with the covering tape (top and bottom). If you forget this step, the elevons will not last very long as the tape adds strength to the balsawood.

**Tip:** Apply low heat for a nice finish on both the elevons and the wing. Too much heat and you will melt the tape.



**Step 25:** Make a tape hinge and attach your elevons to the trailing edge of the wing. Use strapping tape for added reinforcement at both ends of the elevons.

**Note:** The wider portion of the elevon should be at the tip of the wing and the thinner portion towards the center.

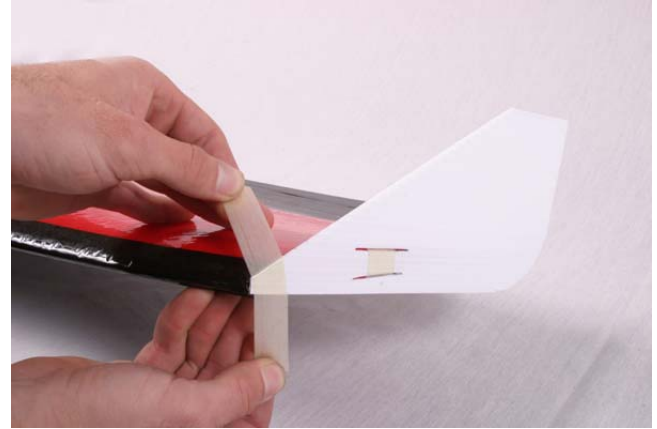


**Step 26:** Install the control horns using the self tapping screws (supplied).

**Tip:** Hook up the control rod to the servo first. Use the control rods as a guide for the location of the control horns. You want your linkage parallel to each other.



**Step 27:** Make a "Z" bend in the control rod at the location of the control horn. You will be able to adjust the length of the linkage by threading in or out the gold clevis. If needed, ream out the holes with your hobby knife.



**Step 28:** Attach the wing tips using 3/4" strapping tape. Use one piece on the tip (toward the leading edge) and another piece through the slit in the wing tip which you need to cut with your hobby knife (see picture). Wing tips should attach with about 1/2"-3/4" hanging below.



**Step 29:** To check the balance, hold the wing on the tip of your finger at the center of gravity (C.G.). The C.G. is 6" from the nose (very tip). If you built the wing correctly, you should need little to no weight to balance the wing. If C.G. is off, add some lead fishing weights or coins to the nose or tail until it balances.



**Step 30:** Trim out the elevons to be neutral (angled slightly upward). Starting throws should be about 1/4" up and 1/4" down. Add more/less depending on your flying style.... You're done.... Charge the batteries and it's time to go fly. Launch, from the nose, over your head with your thumb on top and your fingers on bottom.