

MICRO SPEEDWING[®] - BY ACER

ASSEMBLY INSTRUCTIONS

Thank you for choosing the Micro SpeedWing from SpeedWing.NET as your next project. This kit is easy to build and only requires a few hours to complete. Once finished, you will be rewarded with a stable, FAST, fun to fly wing that you can take anywhere. It is the perfect "take to work" plane store it in your breifcase and fly it on those lunch breaks or stop by the park on the way home. Although this kit isn't recommended for beginners because of its high speed and agility, once you master the basics of flying R/C planes you can handle this plane. Well lets get started. Below is a list of supplies and tools needed to complete the Micro SpeedWing

Supplies:

- ▶ Velcro Tape (for battery attachment)
- ▶ Dubro Micro EZ-Connects (for servo horns)
- ▶ Pen
- ▶ 5 minute epoxy
- ▶ 320 grit sand paper (or equivalent)
- ▶ Xacto knife
- ▶ Dremel Tool (optional)
- ▶ Thin CA (superglue)
- ▶ CA Accelerator (optional)
- ▶ Two sided foam tape (for servo anchor)
- ▶ 3M #600 3/4" tape (for hinges)
- ▶ Covering tape or Low Heat iron on covering
- ▶ 3M 77 Spray Adhesive
- ▶ 1" wide fiberglass strapping tape (found at Home Depot)

Radio Equipment:

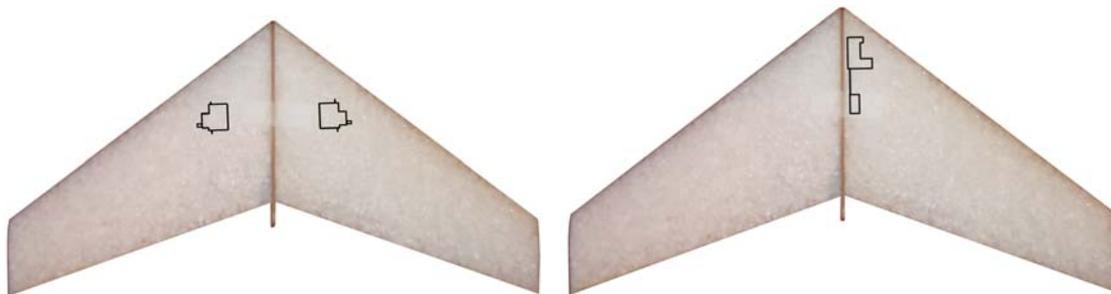
- ▶ Micro receiver (GWS 4P recommended)
- ▶ Micro Servos - 2 (HES 490, Blue Bird 306 or GWS Pico)
- ▶ Small Speed Control (2-5 amp)
- ▶ 2-cell 340-700 LiPoly (batteries that weigh ~1 oz. recommended)

Instructions:

1. Separate cores from their beds. Rub off excess EPP “hairs” that might be on the wings
2. Find the ply motor mount. Using 5 minute epoxy, glue the motor mount to one wing core. Make sure that the mount is aligned to the shape of the wing core and that the motor cutout is in the centerline of the wing. Once that is dry, epoxy the other wing core to the mount. Before the epoxy dries, make sure that the wing cores line up. Wait for the epoxy to dry. Lightly sand the leading edge so that it is rounded.



3. Mark the areas where you will recess your radio gear. You can put the gear where ever you like, but here is the recommended location. The servos are placed on top of the wing 2 ½ inches behind the nose and 1 ½ inches to the left and right of the center ply mount. The servo wires are put through the wing and into the ESC hole. The receiver and ESC location is on the bottom of the wing. Also mark where you will route the wires .



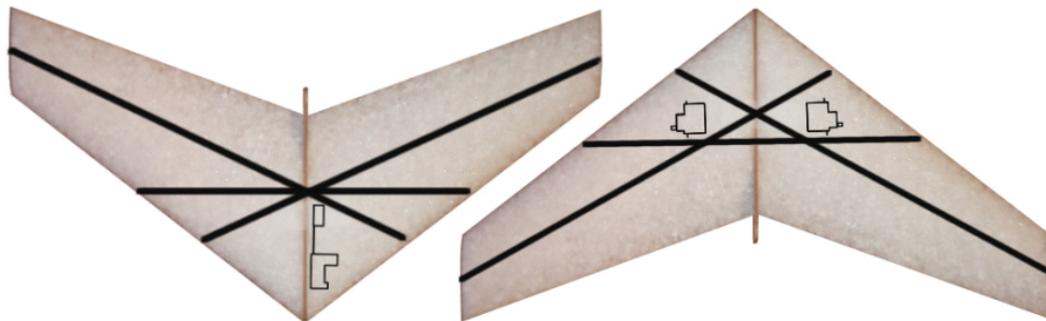
4. Once everything is marked out, take a sharp Xacto knife and cut around the outlines you just made (only cut as deep as the part you are going to recess). Once that is finished take a Dremel tool or other means to remove just enough foam for your radio gear to sit flush with the surface of the wing. Temporarily mount all radio gear to make sure everything fits snug. Once you are sure of the fit, remove gear. Mix a little 5 minute epoxy and paint it in the servo holes. This helps the servo tape to stick.
5. Lightly mist the whole wing with 3M 77 spray. Let the wing dry for about 20 minutes.

6. Now permanently install the radio gear making sure that your servos are centered and that the servos move in the right direction for elevon operation. Take the Xacto and slice a shallow line in the wing from the receiver to the tip of the wing. Bury the antenna in the slice using your nail. Just work slowly as it is a little tedious. Leave the excess antenna dangle at the tip of the wing for now.
7. You will have to cut a small piece of EPP away from the back of the motor mount so that your motor can fit into the mount. Use your motor as a guide to cut a small piece at a time until your motor fits snugly between the EPP when inserted fully into the mount.

Installing the Carbon Fiber Reinforcement:

To install the carbon fiber tape, you'll need some paper tape, thin CA, CA accelerator, a plastic bag, your wing beds, and some type of weights.

1. First, we are going to install the carbon fiber on the bottom of the wing. Take your upper wing beds and place them on an elevated (use a couple of 2x4's or something) surface. Now set your wing into the beds upside down. Place the carbon fiber tape through the hole in the side of the mount and use masking tape (off the wing) to hold the carbon fiber in the position shown (next page) and stretched tight. Put some small weights on the wing (not on the tape) to make sure that the wing is perfectly flat. Now wrap your finger in a plastic bag (to keep the CA off of you) and squeeze out thin CA along the carbon fiber tape, Use your finger to rub in and spread the CA. At this time you could use CA Accelerator if you want to speed up the process. Make sure you rub the carbon tape down IMMEDIATELY after you squirt on the accelerator. Keep rubbing down the carbon tape until the CA is completely dry. (Note: radio equipment omitted for clarity. You should have all radio gear installed before installing CF tape)

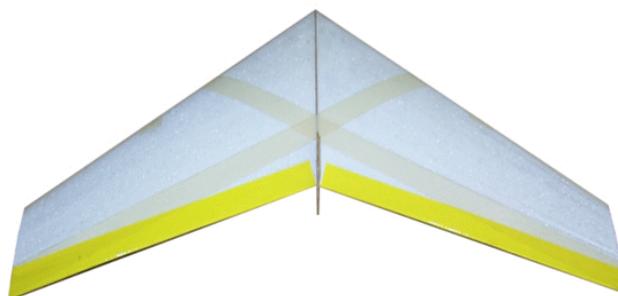


2. Now use the exact process to install the carbon tape on the upper surface of the wing. Tape down the carbon tape in this position for the top of the wing.
3. Use the 1" strapping tape and tape down the leading edge. This is used to keep the L.E. from being ripped or cut when hitting wires, poles, etc..

Covering the Wing:

You can cover the wing any way you want. For weight savings, I recommend a light weigh covering called Solite (a.k.a. Nelsons Lite Film). Be sure to use LOW HEAT on your iron. Here is the instructions on how to cover the wing with colored tape if you choose to go this route.

1. First take the color of tape that will be on the top of the wing. Run a strip of the colored tape along the trailing edge making sure that equal amounts are on the top and bottom of the wing. *(Note: this is a picture of a similar wing, the same method applies)*



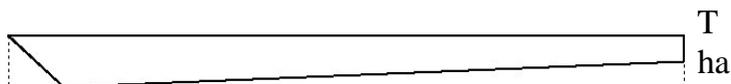
2. Cover the top of the wing first. Only cover half at a time making sure to overlap the center of the wing by about 2 inches. Start from the trailing edge and work your way to the leading edge. Make sure that you have a very sharp Xacto handy while covering. Also make sure that you don't introduce a warp in the wing.

3. Once the top is covered, cover the bottom in the same way, preferably with a contrasting color of tape. Once again working your way from trailing edge to the leading edge. You can take the warp out that you may have introduced with the top covering by stretching the bottom tape before applying.



4. Now use a strip of the bottom covering and overlap the top covering at the leading edge.

5. Find the elevons in your kit. The elevons are pre-cut, but you



ve to sand in the bevel on the bottom of the elevon. Also sand an angle at the front of the elevon for clearance.

6. Lightly spray the elevon with 77 spray and let dry (if you are using iron on covering, don't spray). Cover the elevon with the colored tape you used for the bottom of the wing.

7. Now attach the elevons to the top of the wing using 3M 600 3/4" tape. Bend the elevons to their maximum deflection before taping to the wing. Also put a couple of small strips of tape (2") on the bottom of the elevon making sure to deflect the elevon before taping to the wing.



8. Use the included templet to cut out the triplets from the coroplast included in your kit. Use an xacto to make a small hole in the side of one triplet and run your antenna through the hole and into the flutes. Pull the excess antenna through the triplet. Attach the triplets to the wing using medium CA or a small amount of 5 minute epoxy, leaving about 1" extending under the wing.

9. Now run the excess antenna back and forth through the flutes in the triplet, leaving a couple inches extending out the back of the triplet. (Here is an example of the antenna routed through the triplet)



Final Setup:

1. Find the micro control horns and install them in the top of the elevons. Just push them through making sure that they are lined up with the control horns of the servos. Cut the covering away from where the micro control horns sit. Now permanently attach the horns with thin CA. Once that is dry, you can cut off the post sticking through the elevon.

2. Make a small "Z" bend in the end of both music wire pushrods. Attach the pushrods to the elevons. Make sure that your servos are centered, then cut the pushrods to the correct length. If you are using the Dubro micro EZ-Connects, all you have to do is



slide the pushrods through the EZ-Connect and tighten the screw making sure that the elevon has a very slight reflex (up angle) to the wing. If you are not using the EZ-

Connects, mark the location of the servo arm on the pushrod and make another z-bend. Then insert the z-bend into the control horn of the servo. I recommend the Dubro EZ-Connects as it makes for a MUCH simpler setup.

3. Attach the battery to the bottom of the wing using Industrial strength Velcro.

4. Attach the prop to the motor making sure that the letters on the prop are facing forward. Attach the motor to the motor mount using the tie wraps included. Make sure that you tighten the tie wraps fully. Plug the motor in to the speed control the red wire attaches to the red wire on the speed control and the black attaches to the black.



Control Throws:

Here are the recommended control throws. If you have a radio with exponential, I recommend at least -70% expo on all surfaces. Start on the mild setting. When measuring control throws, measure at the tip of the elevon at its widest point.

Mild

Elevator: 3/16" up, 3/16" down

Aileron: 5/16" up, 5/16" down

Wild

Elevator: 1/4" up, 1/4" down

Aileron: 3/8" up, 3/8" down

Center of Gravity:

The center of gravity is located 3 11/16" back from the nose. Just move the battery back and forth until you find the right C.G.

First Flight:

Make sure that your control surfaces move in the right directions. When you give up both elevons should go up. When you give right, the right elevon goes up and the left elevon goes down. You will need to have a slight amount of UP elevator dialed in. This is called reflex. All wings need a certain amount of reflex to fly. To launch the wing use the finger launch built into the motor mount. Toss, then start the motor after it leaves your hand. Trim it for level flight.

Flight Performance:

The Micro SpeedWing has a very wide flight envelope. It can fly as fast as 40 m.p.h. or it can slow down and just cruise around. It is very acrobatic also, able to do consecutive loops and about 6 barrel rolls per second with the “wild” control throws. I hope you enjoy your new Micro SpeedWing. If you have any questions, email me at: acer@speedwing.net

