TRICK WINGS

ZAGI 33-HP

ASSEMBLY MANUAL

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Recommendations and Notes

Read the entire manual to get an overview before beginning construction. To avoid injury or damage to the electronics, do not plug the battery into the speed control or install the prop on the motor until all of the installation steps have been followed. Do not use the motor to cycle batteries. Do not run the motor over 15 seconds on the bench or while holding the airplane. The motor and ESC are high performance electronics and require air flow for cooling. The pusher configuration does not provide prop wash for cooling.

A separate battery is not required for the receiver and servos. The Zagi 33 is powered by the 2300 mAh 3 cell (11.1 V LiPo) battery. Electronic Speed Controls (ESC) have a Battery Elimination Circuit (BEC). When the motor discharges the battery to a certain level the high voltage cutoff will turn the motor off leaving sufficient power to control the plane long enough for a landing. The ESC is programmed to prevent the LiPo battery from discharging below 3 V per cell.

The target weight for the Zagi 33 is 18.5 oz. The thrust to weight ratio of the Zagi 33 is 2 to 1 at 18.5 oz. The airplane is designed to balance at 8"-- measured back from the nose. To achieve these two objectives, the Zagi brushless power packs should be used. Any modifications, reinforcements or substitutions not described in this manual must be considered carefully. The - procedures in this manual should be followed to maintain the correct weight and balance. The Zagi 33 should need little or no nose weight.

3M Super 77 or 87 Spray Adhesives are the recommended adhesives for assembly. 3M 77 Spray Adhesive is recommended because it creates a permanent and flexible joint. 3M 77 Spray Adhesive will not damage EPP foam. If a substitute adhesive is selected, test spray a piece of scrap foam before spraying the cores. Epoxy, CA, Shoe Goo or Goop adhesives are not recommended for assembly.

An extra roll of poly tape in a contrasting color is recommended for visual orientation in flight. It is best to cover the top with a light color and the bottom dark. Trick Wings does not recommend any covering materials such as UltraCote, MonoKote, Solarfilm, or any other iron-on materials. If an alternate covering material is chosen, do a patch on scrap foam first.. The wing geometry can be changed by uneven heating and shrinkage of iron-on heat shrink coverings.

Tools and materials needed:

Optional: a second roll of contrasting color poly tape,

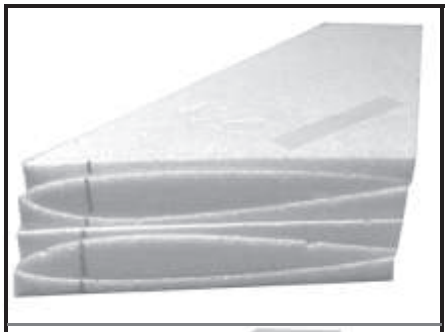
Sanding block,

80 to 150 grit sandpaper,

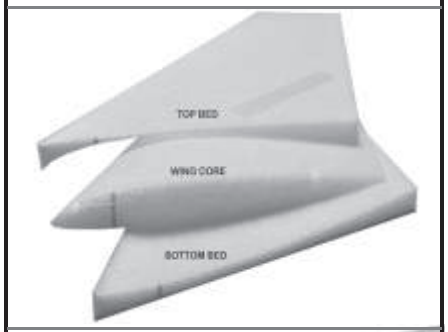
X-Acto knife or Dermel,

3M Super 77 or 87 Spray Adhesive,

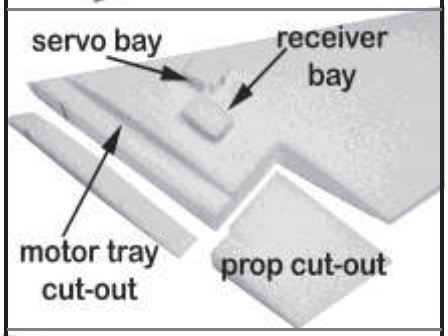
Longnose pliers or "Z bender tool"



The wing cores are shipped between the top and bottom beds. The beds are used as construction jigs, so do not discard them.

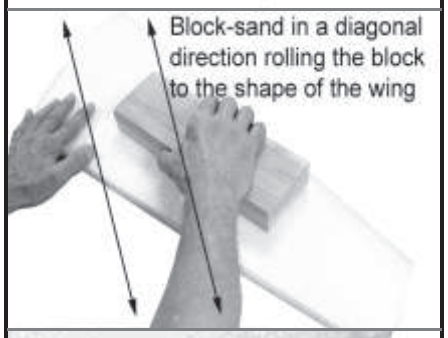


There are three parts to each wing panel. The top of the wing can be identified by its greater curvature. The left wing is the wing that would be on your left if you were in the cockpit. The right and left panels can be identified by the color mark at the root (the big end of the wing panel): Red on the right.

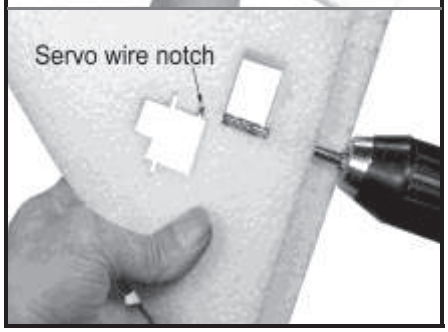


There are four important pre-cut features on the wing panels. The motor tray cut-out, the servo bays and the receiver bays. There are two receiver bays. One on each side. The bottom side of the wing has a pre-cut spar channel. The spar channel extends in a straight line across both wing panels.

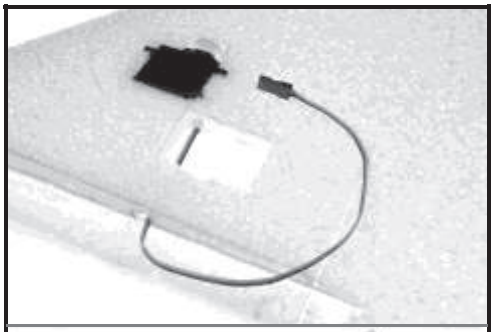
Use fiber tape to tape the two bottom beds together. Then tape the two top beds together. Remove the hairs and zigzags from the wing cores and beds by rubbing them with a scrap piece of EPP foam. Lay the bottom right and left wing beds on a flat surface. Set the wing cores on the beds and lightly block sand the wing panels (cores) with #100 or #80 sandpaper.



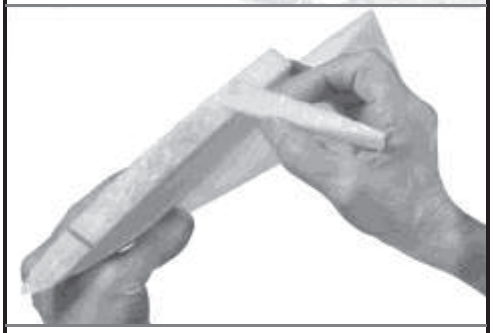
Block-sand the panels in a diagonal direction to avoid making flat spots. Roll the block to follow the contour of the wing surface. Take about 50% of the shine off of the foam. Put the wing panels in the top beds and sand the bottom of the wing. Be very careful when sanding the leading edge (LE). Do not flatten or sharpen the leading edge. Block-sand gently while rolling the block around the leading edge.



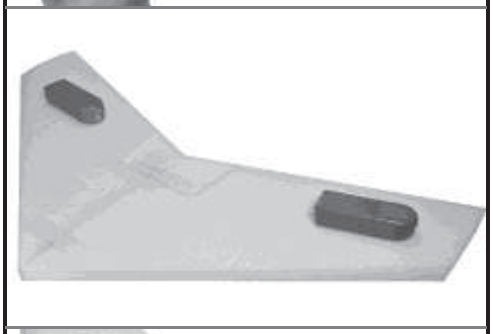
Remove the servo bay and the receiver bay cookies from the wing cores. Remove the motor tray cutout. Use a ¼" drill. Drill into the vertical surface of the motor tray cut-out through to the servo bay. The hole should end at the servo wire notch in the servo bay.



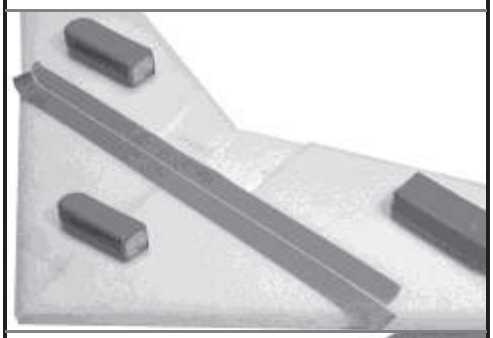
The hole should be large enough for the servo plug to fit through. Cut a notch in the receiver bay cookie large enough for the servo wire to fit through. A servo can be used to test the size and fit. The servo bay size may be adjusted for a servo that is larger or smaller than the die-cut. Add shims for smaller servos or cut away some foam for larger servos. Remove the servo and replace the cookies.



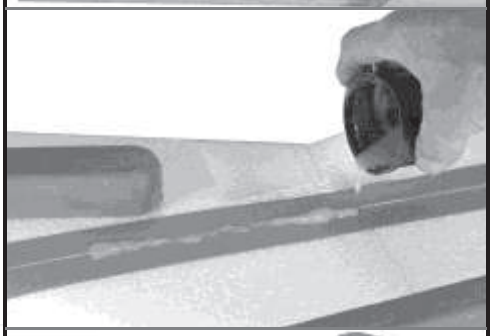
Remove the prop cutout from the panels. Spray 77 Adhesive into a container. A plastic cup will work. Aim the nozzle into the cup and press gently until the glue sprays slowly into the cup. Stir the glue for a few minutes until the slurry thickens. Use a small brush or a scrap of foam to apply the glue slurry to the wing roots. Apply the glue to both wing root faces and let them dry for about 15 minutes.



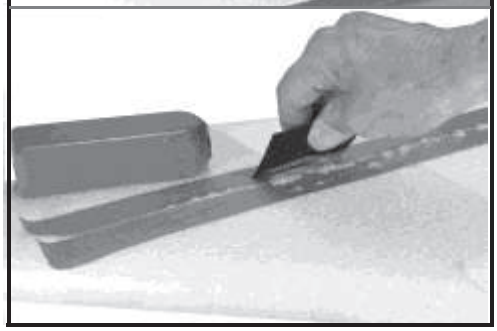
Place the top beds on a flat surface. Put the wing cores in the beds bottom-side-up. Press the panels together so that the spar channels on both panels are aligned. Fiber tape can be used to hold the wing panels together. Use weights to hold the wing in alignment.



Mask the spar channel on both sides with masking tape.



Pour the glue slurry along the length of the spar slot.

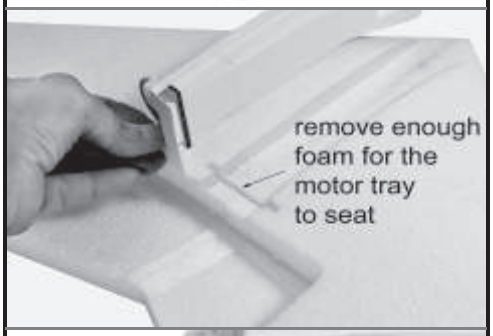


Use a piece of plastic as a squeegee to work the glue into the spar slot. Spray both sides of the spar with glue and press it into the channel while the glue is wet. Use the squeegee to press the spar to the bottom of the channel. Squeegee any overflow glue back into the channel over the buried spar. Let the glue set for at least 4 hours with the weights in place. Overnight is even better

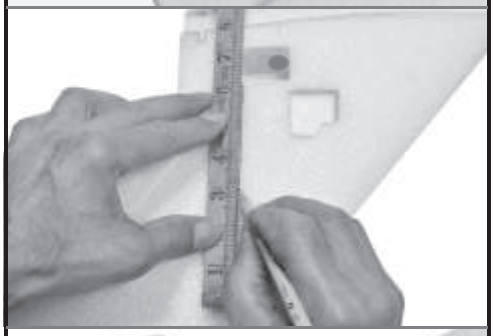
Cut the motor tray along the cut-line around the front and both sides. Do not remove the tab that extends down at the rear of the motor tray. Use sandpaper to dress the underside of the flange that makes contact with the wing to remove any part of the cut-line that remains.

Remove the rear bulkhead of the canopy by carefully tearing it free. Cut along the cut-line along the entire perimeter. Dress the edges with sandpaper.

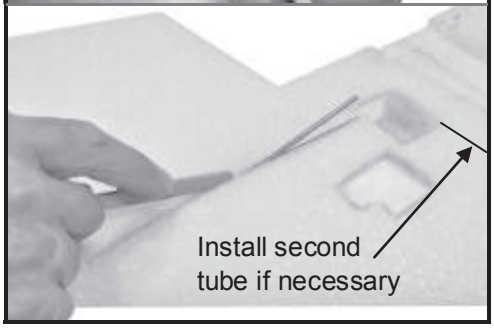
The vent hole in the canopy helps extend the performance and life of the battery and ESC by providing cooling air flow. The vent may be cut in different configurations. (left), Remove the rear bulkhead of the vent. (center), Remove the entire vent. (right), Remove the entire vent and hot-glue a piece of metal window screen inside the canopy.



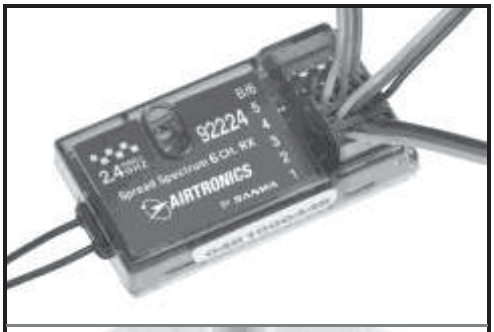
Fit the motor tray to the motor tray slot. Align the rear tab of the motor tray with the rear of the motor tray cut-out. Notice that the motor tray will not seat because of the plywood motor mount. Press the rear of the motor tray hard enough to make an impression on the foam beneath. Lift the tray and remove two small notches from the wing and a shallow slot across the bottom of the motor tray cut-out to seat the plywood motor mount.



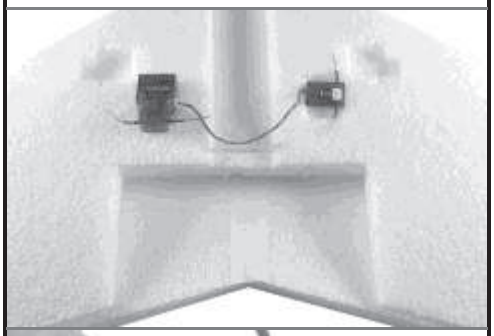
Skip this step if a 72 MHz receiver with a long antenna is being used. The antenna tube is for some 2.4 G radios only. 2.4G receivers with one or two long antenna wires will work with the tube. Locate the red antenna tube in the parts bag. Trim the length to 6”. Measure 6” spanwise from the corner of the bay receiver toward the tip. Make a 6” mark along the straight-edge.



Make a 1/2” deep slot 6” on the mark. Push the tube into the slot with a popsicle stick or a 1/16” scrap of wood. Glue is not necessary. An additional tube may be installed for an RX that has two antenna that are the same length. Install the second tube perpendicular to each other as recommended in the radio manual.

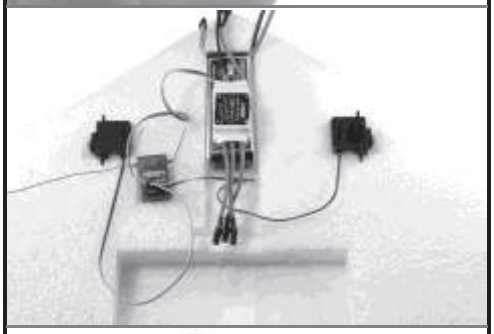


2.4G radio systems must bind to the transmitter. Most 2.4G receivers have a specified slot for binding. The ESC should be plugged into the throttle slot in the RX after binding is done. 72 MHz do not need binding. Refer to your radio instructions for radio binding procedures and RX slot assignments. Refer to your radio instructions for the mixing functions. Look for “delta mix” or “elevon mix”.



The Zagi 33 has two receiver bays to accommodate a two module receiver system provided by some 2.4G radio manufacturers. Notice that the antenna array is positioned 90 degrees to each other as specified.

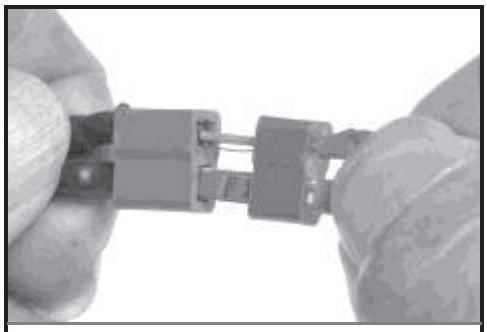
Remove the round servo control arm. Avoid stressing the gears by holding the edges of the round control arm to prevent travel when removing and replacing the screw. Do not over tighten the screw. Snug is tight enough. To maximize servo life, never move the servo control arm with the radio off.



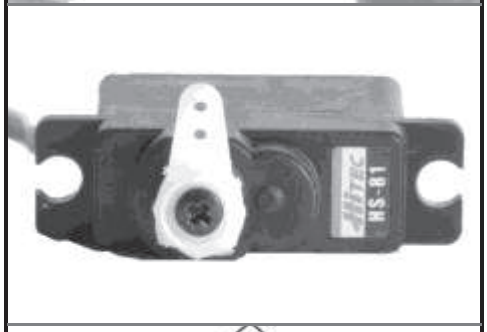
The servos must be centered before installation. Lay out the receiver (RX), battery, servos and ESC in roughly the configuration that they will be in the wing. Layout the components on the wing as shown. Make sure to position the servos with the lead wire and the control arm toward the back. **DO NOT HOOK-UP THE MOTOR TO THE ESC!**

The Hitec HS-81analog micro servo is moderately priced with adequate torque. The servo bay may be expanded or shimmed to fit a different size servo. Find the X-shaped control arm with four tabs in the parts bag supplied with the servo. Remove three of the tabs leaving only one.

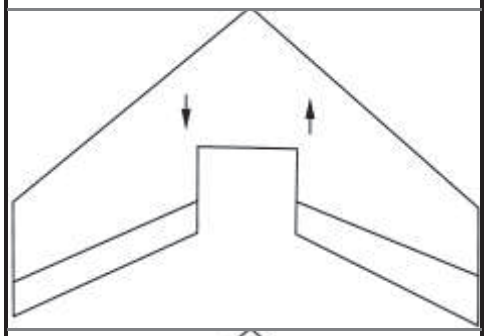
Power-up the TX. Check the TX battery condition. Charge or replace batteries if necessary. Always power-up the TX before powering-up the RX.



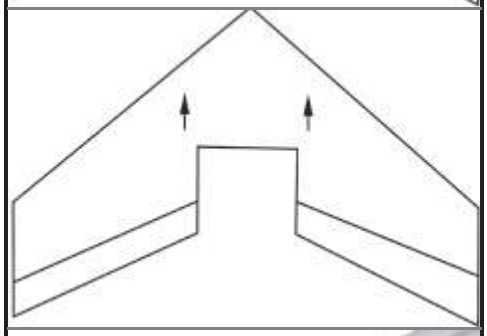
Plug the ESC into a fully charged 3 cell LiPo battery. The ESC supplies the RX with power. No other battery is necessary. Do not plug-in or hook-up or use the switch harness that is supplied with the radio system. The switch harness is only used on Zagi glider systems. The Zagi 33 does not have a switch. Plug and unplug the battery/ESC plugs for on/off.



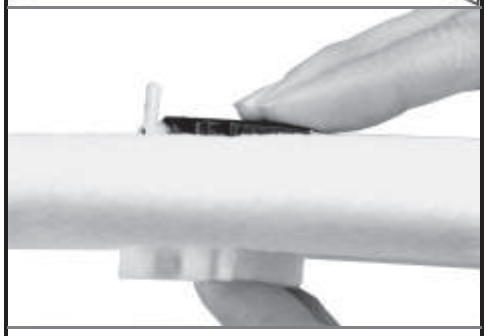
Center the trim levers on all of the controls. Plug the servos into the elevator and aileron slots of the RX. Plug the ESC ribbon wire into the throttle slot of the RX. Power-up the radio. Install the control arm at 90 degrees to the servo case in the hands-off position. Adjust the control arm by removing it and replacing it at 90 degrees to the servo case.



The arrows on this illustration wing indicate the direction the servo control arms must move when the right stick TX is moved to the right. The travel direction of the servo arms is determined by two factors: the RX slot used and the servo reverse function in the TX. Refer to the radio user manual for servo reversing.

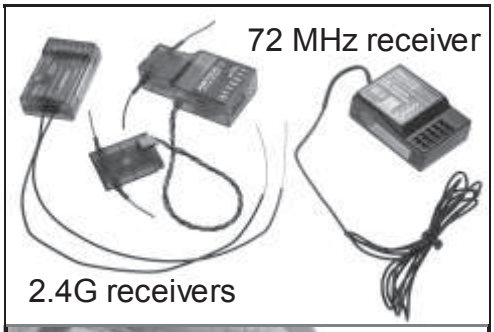


The arrows on this illustration wing indicate the direction the control arms must move when the right stick is moved straight back toward the bottom of the TX. The defaults on all radios is not the same so no single solution will work on all radios. Try combinations of plug reversing in the RX and servo reversing in the TX to get the wing to match the illustrations.

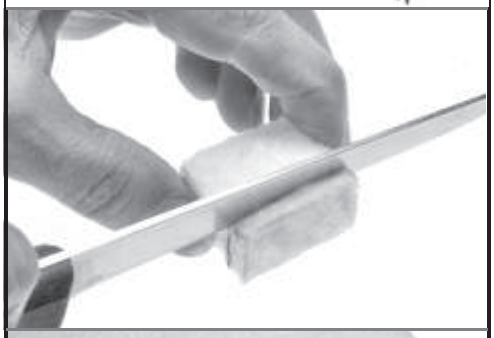


The shape of the cutout indicates the position of the servo. Push the servo into the cutout forcing the cookie through to the bottom side of the wing.

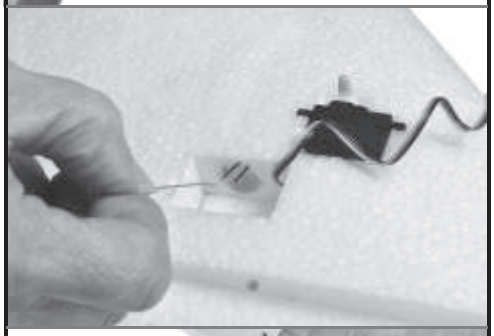
Adjust the depth of the servo to make it flush with the top of the wing. Press on the cookie from underneath to make sure that the cookie is snug under the servo. Use a razor knife or a sharp kitchen knife to cut the cookie flush with the bottom of the wing. Remove the remaining cookie. Dab the edges of the cookie with adhesive and push it back to make the servo bay floor.



2.4G radios have shorter antenna wire and often use an array of two antenna wires. Some 2.4G receivers have two separate RX modules connected by a wire. 2.4G radios do not have channel numbers and must bind to the TX. 72 MHz radios has one long antenna wire. The 72 MHz RX uses a crystal to tune the TX to the RX and has a channel number.



Remove the cookie from the RX bay. Make a mark 1/4” from the bottom on all four sides. Cut the 1/4” piece off. Dab the edges of the 1/4” slice and fit it in the RX bay from the bottom. When the RX bay floor is in place, the bay can be expanded to fit a larger RX.

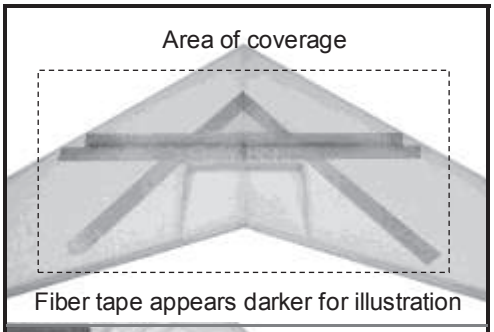


Straighten a paper clip leaving one small bend at the end. Heat the end of the clip with a torch lighter or stove. Use the heated end of the wire to hollow out a cavity to stow the extra lengths of servo wires. Work slowly with repeated heating of the wire. The cavity might need enlarging at final assembly.

Do not glue the motor tray in at this time. One of the servo wires must cross inside the motor tray. The RX, servos and servo wire must remain removable for service. Cut holes in the side of the motor tray to correspond to the servo wire holes drilled in the wing panels. Use a wire to fish the servo wire through to the RX bay. 2.4G, two module receivers require a connection wire between both RX bays.

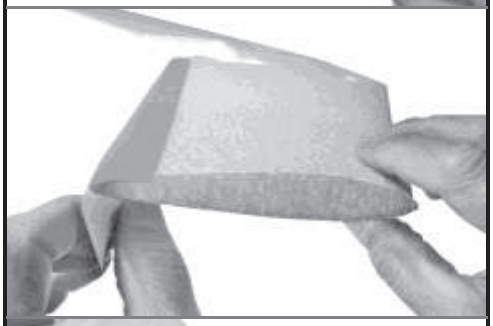
Locate the servo extension wire in the parts bag. The extension wire is for the ESC hook-up to the RX.

Remove the servos, motor tray and the RX. Dust the wing and beds to remove any foam dust left over from sanding and shaping. Dust the work bench to prepare for covering. Lay the wing in the top beds bottom-side-up.



Spray a light coat of adhesive on the bottom side of the wing. Let the adhesive dry for 15 minutes to allow the solvent and propellant to evaporate before taping. Apply four strips of fiber filament tape to the wing following the pattern pictured left. TIP: *The way to determine that the glue is dry enough to apply the tape is when the glue will not come off on your finger with a light touch.*

Put the wing top side up in the bottom beds. Put a weight on the left panel to hold it steady while taping. Spray a medium coat (no buildup) of adhesive on the top surface of the right wing panel. Make sure to spray the tips and trailing edges. Spray 2 inches of the bottom of the wing at the trailing edge (TE). Let the propellant and solvent evaporate before taping. Start taping at the TE and work forward.

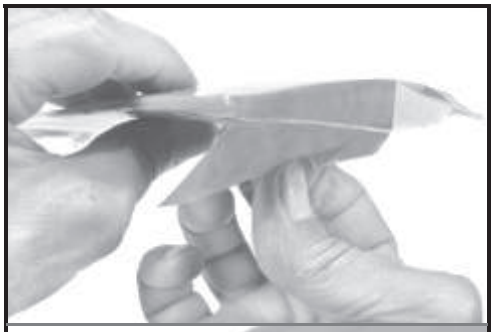


Wrap the first strip of tape around the TE from the top of the wing to the bottom being careful to follow the shape. TIP: *Covering the top and bottom of the wing in contrasting colors provides visual orientation making it easier to tell the top from bottom at a glance. Use the darker color on the bottom surface. An optional roll of color tape will be required.*

Apply strips of tape working forward from the TE. Overlap each strip of tape a quarter of an inch. Pull the desired length of tape off of the roll. Extend the tape two inches beyond the tips. View the tape directly over the wing for a better aim. Touch the tape down at the motor tray. Chase the tape with a very gentle touch toward the tip. Cut the tape two inches beyond the tip.

Continue overlapping the strips of tape until the entire top right wing panel is covered. Pictured here is an alternated pattern of orange and yellow.

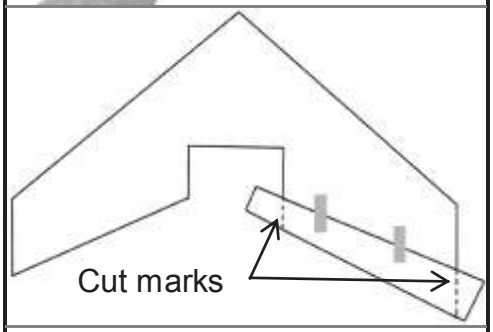
Trim the tape that extends beyond the LE.



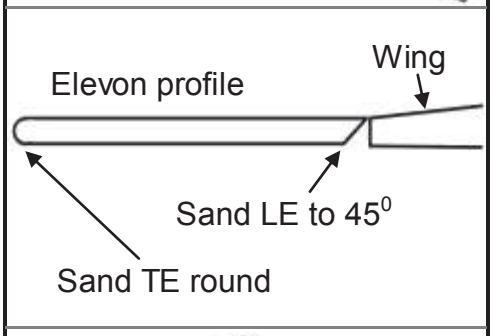
Fold the tape around the tip and cut it to the contour of the bottom surface. Spray a light coat of 77 Adhesive on the bottom surface of the wing.

Fold the tape around the motor tray cut-out so that it sticks to the inside wall of the cutout. Clear the servo wire hole drilled earlier. Trim and remove tape from the cut-out floor. Repeat the covering process on the top side of the other panel.

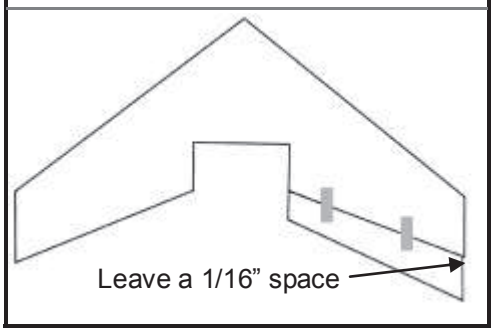
Place the wing in the top beds bottom-side-up. Cover and trim the bottom of the wing one panel at a time. Apply color tape working from the TE to the LE. The final strip of tape is wrapped around the LE from top to the bottom. Cut an “X” pattern in the tape covering the servo and receiver bays. Fold the tape into the servo and receiver bays. Fit the servos in place. Cut away any tape that prevents entry.



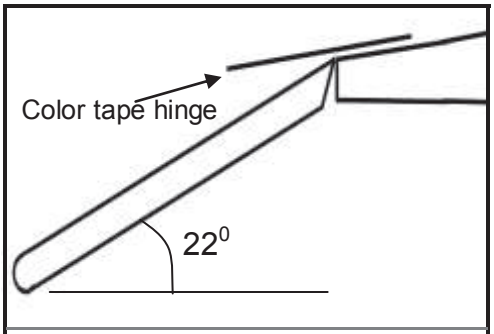
Use two small pieces of masking tape to temporarily hold the elevon in position against the TE. Hold a straight-edge against the wing tip. Make a mark on the elevon to continue the line of the wing tip. Make a second mark inboard to continue the line of the prop cut-out. Repeat this procedure for the other side. Trim and sand the ends of both of the elevons at the pencil mark.



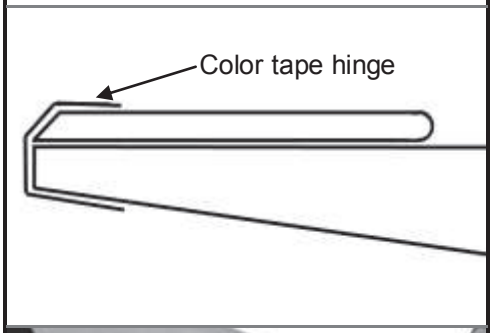
Sand a 45 degree angle into the LE of the elevon (the LE is the edge of the elevon that makes contact with the wing). Sand the elevons and smooth all the surfaces. Round the TE and both ends of the elevons. Spray the elevons with adhesive and cover them with color tape.



Place the wing in the bottom beds, top side up. Place weights on the wing. Position the elevon against the trailing edge of the wing. The wide end of the elevon goes outboard. Align a straightedge with the wing tip. Leave a 1/16” space between the end of the elevon and the wing tip. Make a placement reference mark on the TE of the wing at both ends of the elevons.



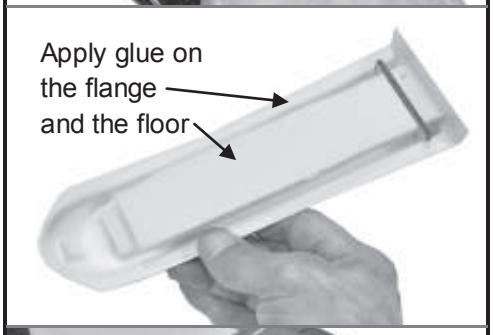
Position the wing with the TE on the edge of the work-bench. Use a strip of color tape to make the top elevon hinge. Apply the tape to the top of the wing so that half of the width extends beyond the TE. Align the elevon with the placement reference marks. Hold the elevon at about a 22 degree down angle and slide the elevon along the TE up to the hinge tape. Press the hinge tape to the elevon.



Rotate the elevon to the top of the wing and temporarily tape it to the top of wing with a piece of masking tape. Apply another strip of color tape to the bottom of the elevon. Make sure that it wraps around the elevon and the wing TE.

Fit the motor tray in the motor tray cutout. Make a pencil outline around the perimeter of the motor tray. Use enough pressure to make an impression with the pencil.

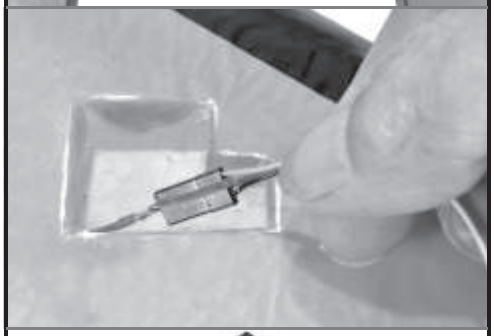
Make a glue slurry in a cup. Apply glue inside the pencil line. Brush the glue onto the motor tray cutout floor. Do not apply adhesive to the vertical walls of the cutout.



Brush on some glue to the outside of the motor tray floor. Apply glue to the underside of the flange of the motor tray that makes contact with the top of the wing.

Let the glue dry for about 15 minutes. Push the motor tray in place. Put a weight in the motor tray to make sure it bonds to the foam underneath. Pictured here is a 5 pound exercise weight.

Thread a fish-tape made of flexible thin wire from the receiver bay to opposite servo bay. Pass the fish-tape through the motor tray holes drilled earlier. Pictured here is a 9 inch length of plastic coated twist-tie wire.

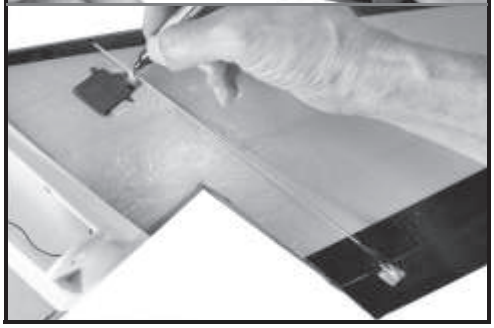


Twist or tape the servo plug to the fish-tape. Pull the right side servo wire through the motor tray into the RX bay.

Press the servos into the servo bays. Insert the antenna wire into the antenna tube. Press the RX into the RX bay. Plug the servos and ESC extension into the RX. Roll-up the extra wire from the left servo and stow it in the cutout.

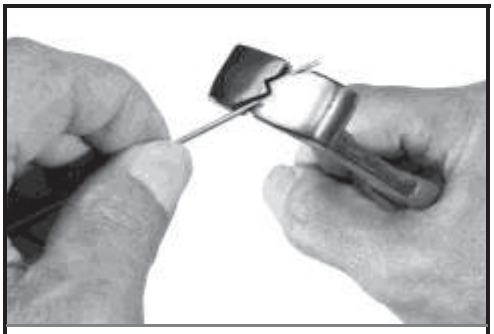
Position a straightedge from the outboard side of the servo control arm to the elevon. The line should be parallel to the center line. Make a mark on the elevon. That is where to center the control horn.

Center the control horn on the line on the elevon. Use a punch or any pointed tool to mark the position of the holes in the control horn foot. Drill two holes big enough for the 2 x 56 self tapping machine screws. Thread the machine screws through the elevon into the nylon locking pad. Snug the screws down enough to make a slight impression in the balsa wood. Do not over tighten!

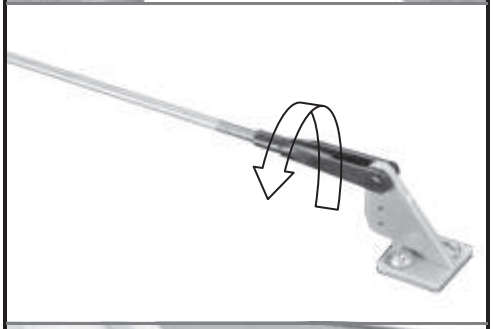


NOTE: Make sure that the servos are centered with the radio on and with the trim levers centered.

Screw the threaded clevis onto the control rod so that equal threads are showing on both sides of the clevis. Hold the elevon in the neutral position and make a mark where the rod matches the holes in the control arm.

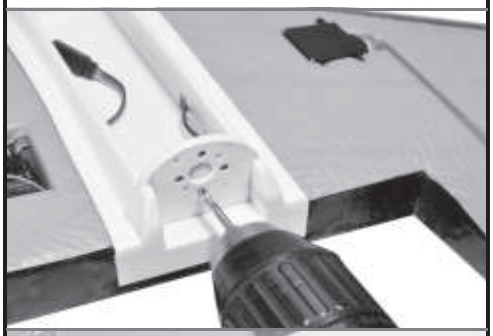


The diameter of the control rod may be reduced with a file or belt sander to fit better into the control arm. The control arm hole may be enlarged with a drill or by spinning an X-Acto blade in the hole. Attach control rods to the servo control arms with a Z-Bend. (NOTE:Z-bend pliers may be purchased from your local hobby dealer to make this operation easier.) Long-nose pliers will also work to make a Z-bend.



Mechanical fine tuning of the elevon neutral position can be achieved by removing the clevis from the control horn and screwing it in or out.

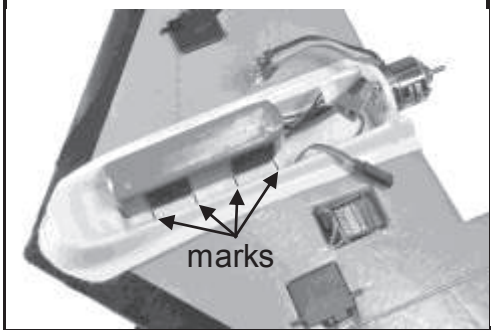
Apply a piece of color tape over the servos to hold them in place.



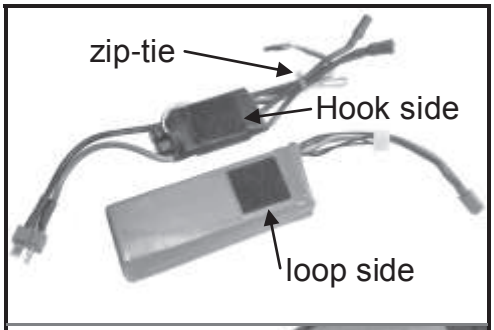
The horizontally and vertically opposed holes in the motor mount are the holes that fit the recommended motor. The brushless motors use 3mm screws. Cut the plastic out of the holes with an Xacto blade or use a 1/8” drill. Measure the hole pattern on the motor if a different motor is chosen.

Set the motor in place to check the alignment of the motor with the holes in the motor mount. The wires should be in the top right quarter position. Make sure that the motor seats flush against the mount. Start all four screws before snugging them down. Use the washers. Loctite may be used to secure the screws. DO NOT INSTALL THE PROP!

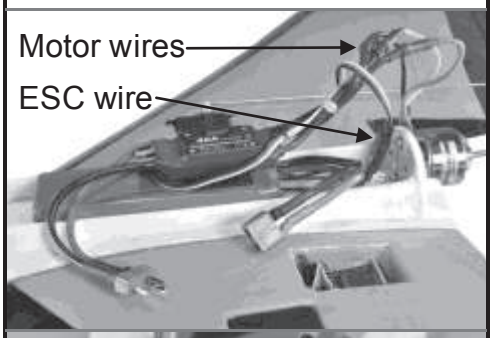
Measure 1/2” from the end of the battery opposite the wires and make a mark. Find the 1” X 1” mated hook and loop (Velcro) pieces in the parts bag. Peel the paper backing from the loop side of the Velcro and apply it on the 1/2” mark. Apply a second loop side piece 1” from the end of the first piece.



Place the battery on edge in the motor tray. Position the battery all the way forward. Make four marks on the motor tray to match the Velcro pieces on the battery. Use the marks to stick the hook side of the 1” X 1” Velcro to the battery bay floor.



Measure 1/2” from the end of the battery and make a mark. Apply a loop side Velcro square to the battery on the mark. Peel and stick the hook side of the Velcro on the center of the ESC on the side opposite the label. Roll up the RX wire and bundle the excess wire together with the motor hook-up wires. Tape or zip-tie the wires all together.



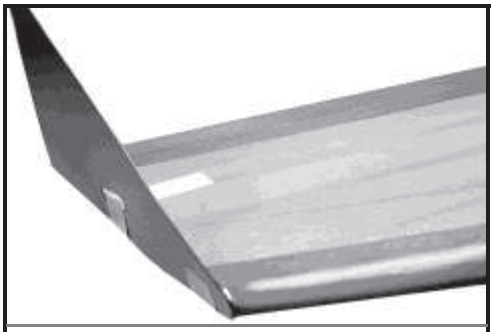
Install the battery all the way forward in the battery bay and press it in place. Press the ESC in place on the top of the battery. Plug the three ESC bullet connectors together with the three motor connectors. Plug the ESC ribbon connector into the RX throttle extension wire. DO NOT INSTALL THE PROP!

Test the motor without the prop. Check the TX and RX batteries. Power-up the TX. Set the TX throttle stick the full low motor (down) position. Plug the ESC’s two terminal Deans male connector into the battery. Move the throttle stick forward until the motor moves. The motor should turn counter-clock-wise; (CCW) when viewed from the rear. Reverse any two of the three motor wires to reverse the direction.

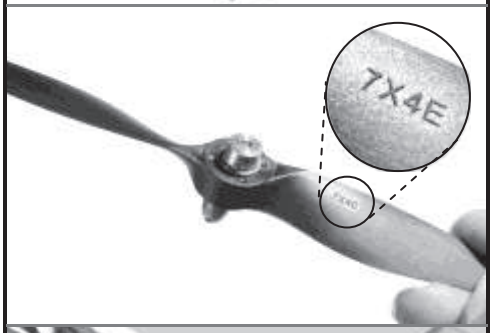
Rollup the motor and ESC wires tight enough to stow between the battery and the motor mount.

Cut two of the 1” X 1” Velcro pieces in half. Apply the loop side of the Velcro to the front and rear sides of the motor tray. Apply the hook side to the inside of the canopy opposite the loop side.

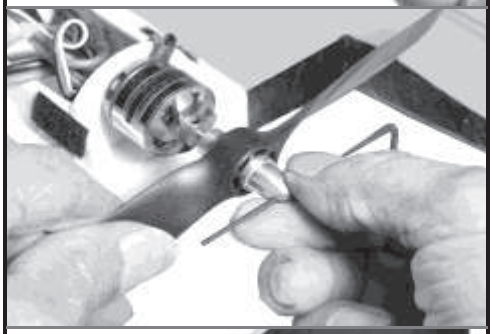
Attach the canopy by spreading the end of the canopy while sliding until the front Velcro seats. Then slide the rear of the canopy to seat on the Velcro on the back sides.



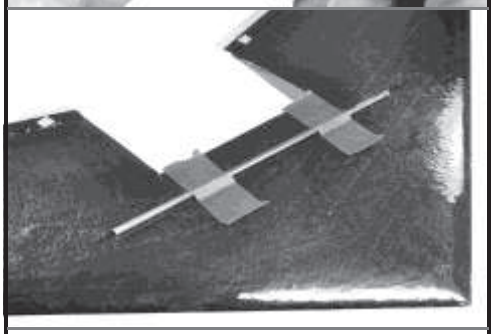
Put a piece of fiber filament tape through the winglet slot to the top of the wing and wrap it around to the bottom of the wing. Add two more pieces of tape to secure the winglet in place. Make sure that the elevon will not bind against the winglet as it moves.



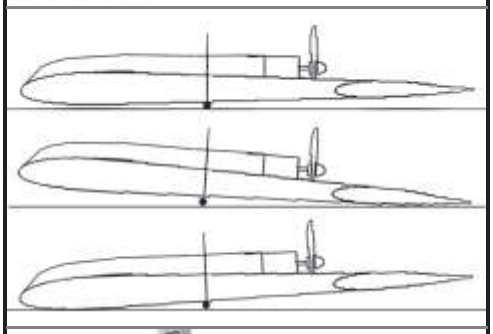
Install the prop for balancing. Assemble the prop with the appropriate insert. The “7X4E” lettering on the prop blades should be facing toward the motor.



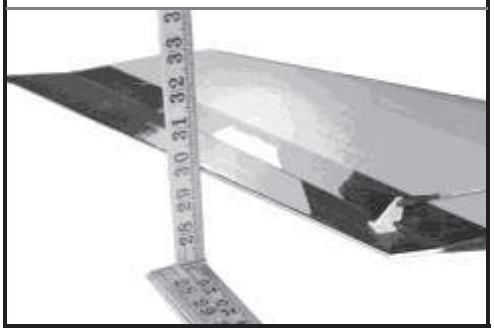
A 1/16” allen wrench may be used as a tightening tool for the prop hub. Put the allen wrench through the hole in the hub. Hold the hub and wrench between your fingers and turn the hub tight. Do not turn hard enough to bend the allen wrench.



Lay the wing bottom-side-up. Tape a 1/4” dowel 7-3/8” inches back from the nose, That’s 3/8” forward of the carbon spar. A round pencil can be used as a balance tool.



Place the wing right-side-up on a flat surface. Balance is achieved when the wing stays in the nose up and nose down positions. Nose weight is usually not necessary but an ounce or so may be used if necessary. See The website zagi.com for video building tips.



Adjust the throw settings of the elevons. Remove the prop. Turn the transmitter on and then the receiver. Set the wing on a couple of rolls of tape. Hold a ruler near the elevon. Pull the elevator stick back to the full up position. The travel should be 1/4”. The full down travel should be the same. Push the stick to the full right position. The elevon travel should be 1/4” and down 1/4”.

Preflight range test and glide test

Check the radio manual for pre-flight range test procedures. Always range test the radio system before flying. Do a preflight check before every flight. Always turn the transmitter power on before the motor battery in the airplane is plugged in. Make sure that the throttle control stick is in the full down position. Make sure that the controls are working properly. Check the trim levers on the transmitter. Pull the elevator control stick back and observe that both elevons move upward. Push the control stick to the right and observe that the right elevon moves up and the left elevon moves down. Hold the wing securely by the nose. Move the throttle stick to the half throttle position momentarily. The first glide test should be done on flat land in a light breeze. The wing should be held by the nose with your palm up over your head and your thumb wrapped around to the top. Hold the wing over your head with the nose pointed straight ahead. Run slowly into the wind. Give it a gentle push STRAIGHT AHEAD. Do not point the nose upward. Correct the flight path with the radio control stick. The test is successful when the wing flies straight ahead with a slow sink rate to a sliding landing. If the wing turns in either direction after the launch, compensate by adding 2 or 3 clicks of trim in the opposite direction. If the wing pitches up and immediately dives, add 2 or 3 clicks of down trim. Repeat the glide test until the Zagi HP flies straight ahead with a slow sink rate to a sliding landing. Increase the launch speed each time to provide longer control flights.

First flight

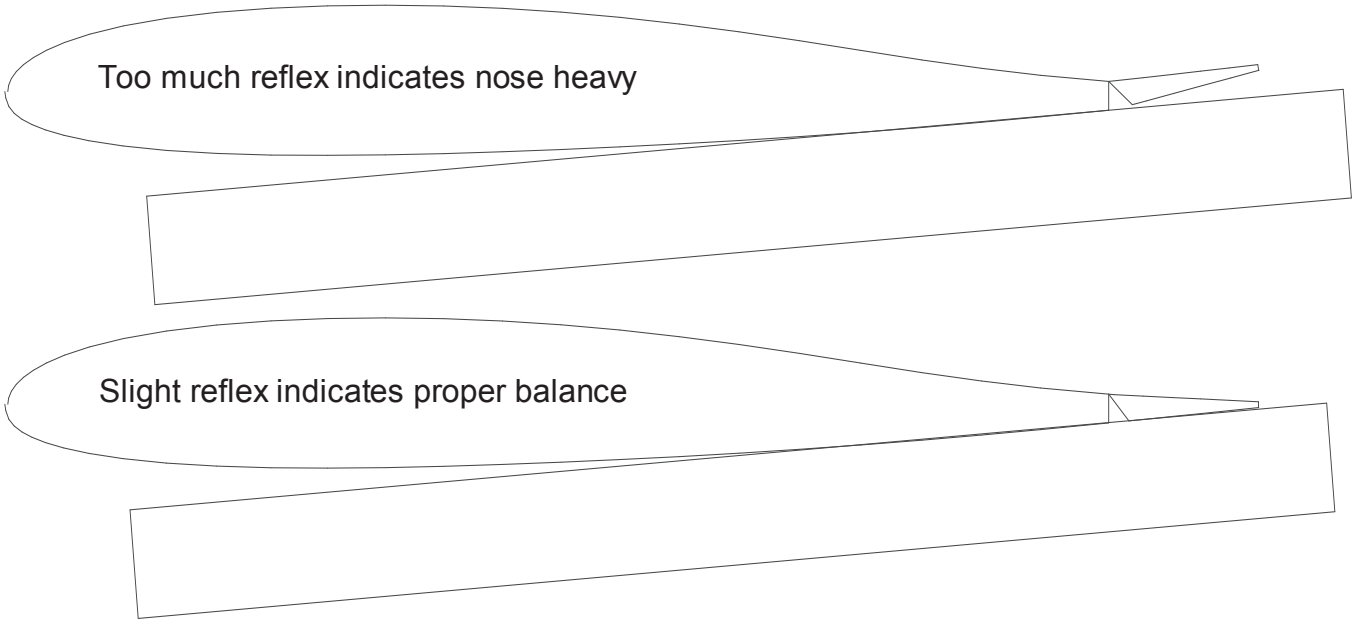
If a 72 MHz transmitter is used, check the frequencies (channel number) of all pilots within visual range before turning on your transmitter. 2.4 G radios do not have channel numbers. Turning on your 72 MHz transmitter with the same channel number as someone who is flying will certainly cause his plane to crash. The Zagi HP is capable of high speed. Flights at a high rate of speed can cause considerable damage to someone or something if a collision occurs. Please exercise caution while flying. It is recommended that you join the Academy of Model Aeronautics (AMA) (1 -800-435-9262) to provide insurance, awareness of safe flying practices, and knowledge of what's going on in the modeling field. At some flying sites it is mandatory that you are a member of the AMA. Do not launch the Zagi HP with the motor running. Hold the wing by the nose with your palm up over your head and your thumb wrapped around to the top. Take a step or two forward and give the wing a good strong throw into the wind. A follow through with a little finger tip will increase the launch speed. Slide the throttle stick to the full forward position when the Zagi 33 is a comfortable distance from the ground. Get some altitude and experiment with some throttle settings. Full motor is fun but will use up the battery quickly.

First flight evaluation

In flight trim can be done with the trim levers to correct tendencies of pitch or roll. The objective is to achieve level flight with neutral stick (without any stick input). Try different speeds and watch for pitch changes at various speeds. Nose heavy airplanes will fly level at a moderate speed but pitch up on acceleration to a higher speed.

Trimming for efficiency

Check the position of the elevons after the first flight.



Troubleshooting:

"Tip stall" -- A stall in a turn will result in a spin. Spins happen because of too much control or too little speed. The control surface travel can be reduced mechanically by moving the control rod down one hole on the servo control arm. Some radios have ATV (adjustable travel volume) and dual rate settings for aileron and elevator. Set the dual rate to 60% to start and make adjustments till it feels right.

"Tip stall" -- A nose heavy wing will dive in a turn. Rebalance the wing. The CG can be moved slightly forward no more than 1/2" if the elevator seems too touchy.

Trick Wings guarantees this kit to be free from defects in both workmanship and material at the date of purchase. This does not cover any components or parts damaged by use, misuse or modification. In no case shall Trick Wings' liability exceed the original price of the purchased kit. Since Trick Wings has no control over the final assembly, no liability shall be assumed for any damage resulting from the use by the user of the final user-assembled product. By the act of using the final user-assembled product, the user accepts all resulting liability.

Basic kit inventory

- Wire cut EPP wings in beds
- Carbon fiber spar
- Molded canopy and motor tray with Velcro and hardware
- 2 die-cut winglets
- 55 yds. 2 mil color poly-tape
- 15 yds. Fiber filament tape
- Shaped elevons
- Hardware pack with control rods and control horns