CARL GOLDBERG® CLASSICS by Great Planes

Wingspan: 38 in [965mm]
Wing Area: 242 in² [15.6dm²]
Weight: 23-25 oz [650-710g]
Wing Loading: 13.7-14.8 oz/ft² [42-45 g/dm²]
Length: 28 in [710mm]
Radio: 4-Channel with four micro servos
Electric Motor: RimFire™ 400 (28-30-950kV)
ESC: 25A brushless

Super CHIPMUNK 400 ARF

ELECTRIC POWER

WARRANTY

Great Planes® Model Manufacturing Co. guarantees this kit to be free from defects in both material and workmanship at the date of purchase. This warranty does not cover any component parts damaged by use or modification. **In no case shall Great Planes' liability exceed the original cost of the purchased kit.** Further, Great Planes reserves the right to change or modify this warranty without notice.

In that Great Planes has no control over the final assembly or material used for final assembly, no liability shall be assumed nor accepted for any damage resulting from the use by the user of the final user-assembled product. By the act of using the user-assembled product, the user accepts all resulting liability.

If the buyer is not prepared to accept the liability associated with the use of this product, the buyer is advised to return this kit immediately in new and unused condition to the place of purchase.

To make a warranty claim send the defective part or item to Hobby Services at this address:

Hobby Services
3002 N. Apollo Dr., Suite 1
Champaign, IL 61822 USA
(217) 398-8970 Ext. 5

Include a letter stating your name, return shipping address, as much contact information as possible (daytime telephone number, fax number, e-mail address), a detailed description of the problem and a photocopy of the purchase receipt. Upon receipt of the package, the problem will be evaluated as quickly as possible.

READ THROUGH THIS MANUAL BEFORE STARTING CONSTRUCTION. IT CONTAINS IMPORTANT INSTRUCTIONS AND WARNINGS CONCERNING THE ASSEMBLY AND USE OF THIS MODEL.

TABLE OF CONTENTS

ADDITIONAL ITEMS REQUIRED

RADIO SYSTEM

The Chipmunk 400 ARF requires a four-channel radio with a small receiver that will fit into available space in the fuselage not already occupied by the battery. The following servos and servo extensions are also recommended:

- (4) Futaba® S3114 micro servos (FUTM0414)
- (2) Hobbico® Command™ 6" [150mm] extensions (HCAM2000)
- (1) Futaba dual servo extension (FUTM4130)

BATTERIES AND CHARGER

Most 3S (11.1V) LiPo batteries in the 1200mAh – 1500mAh range should fit fine in the Chipmunk. Following are a few suitable recommendations:

- 11.1V ElectriFly 1300mAh 25C (GPMP0505)
- 11.1V ElectriFly BP 1250mAh 20C (GPMP0715)
- 11.1V FlightPower® 1200mAh 30C (FPWP6105)
- 11.1V ElectriFly 1200mAh 30C (GPMP0836)
- 11.1V ElectriFly 1300mAh 30C (GPMP0840)

Be certain to read and follow all the instructions and precautions that come with LiPo batteries and chargers. Charge LiPo batteries only with chargers intended for LiPo batteries or with chargers that have a LiPo setting. Following is a suitable charger:

- Great Planes PolyCharge4™ DC-only LiPo battery charger (GPMM3015)
- Additionally, one (1) Great Planes ElectriFly Equinox™ LiPo Cell Balancer w/3S battery adapter (GPMM3160) for each battery to be charged simultaneously is recommended. (If you wish to charge three batteries simultaneously, three Equinox balancers will be required.)
- Finally, if charging the battery from a 120V AC outlet is preferred (rather than using a 12V battery), a 12 Volt power supply will also be required (Hobbico 12 Volt Power Supply - HCAP0250).

HARDWARE AND ACCESSORIES

Following is the list of additional hardware and accessories required to finish the Chipmunk 400. Order numbers are provided in parentheses.

- Great Planes *RimFire* 400 (28-30-950kV) out-runner brushless motor with prop adapter (GPMG4560)
- Great Planes *Silver Series* 25 Amp Brushless Electronic Speed Controller (GPMM1820)
- (1 pkg. of 3) Great Planes 3.5mm male/2mm female bullet adapters (GPMM3122)

- Great Planes 8x6 Power Flow™ Slo-Flyer Elec Prop (pkg. of 2, GPMQ6610)
- (1 pkg) Great Planes adhesive-back Velcro® (GPMQ4480)
- Double-sided foam mounting tape (GPMQ4440)
- Stick-on segmented lead weights (GPMQ4485)
- Great Planes 3/8"x3" [10x80mm] heat shrink tubing (GPMM1060)

ADHESIVES & BUILDING SUPPLIES

In addition to common household and hobby tools, this is the "short list" of the most important items required to assemble the Chipmunk 400. Great Planes Pro™ CA glue is recommended.

- Thin CA (1/2 oz. [15g] Thin Pro CA, GPMR6001)
- Medium CA (1/2 oz. [15g] Medium Pro CA+, GPMR6007)
- 30-minute epoxy (Pro 30-minute epoxy, GPMR6047)
- CA applicator tips (HCAR3780)
- Threadlocker thread locking cement (GPMR6060)
- #11 blades (5-pack, HCAR0211)
- #1 Hobby knife (HCAR0105)
- *The following drill bits were also used:* 1/16" [1.6mm], 1/8" [3.2mm], 5/64" [2mm]. *For precision, the following "numbered" drills were also used, but if you cannot get numbered drills a hobby knife could be used instead:* #57 (.043" [1mm]), #55 (.052" [1.3mm])

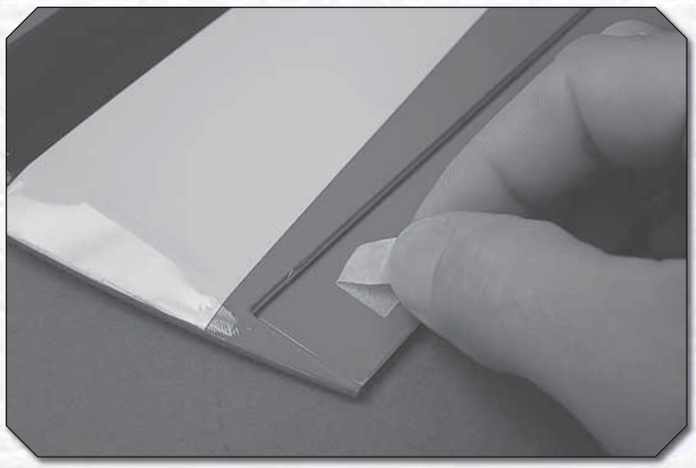
OPTIONAL SUPPLIES AND TOOLS

Here is a list of optional items mentioned in the manual that will help you build the Chipmunk 400.

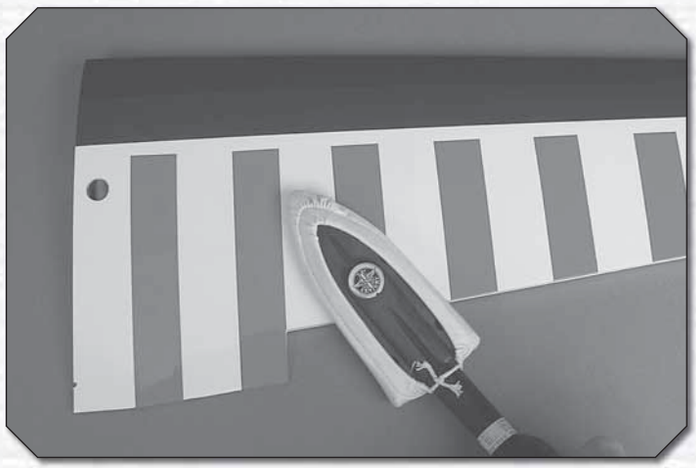
- Williams Brothers 1/8-scale Sportsman pilot (WBRQ1130)
- #2x1/4" [6mm] or #2x1/2" [12mm] screws and #2 washers (for mounting optional pilot)
- Hobby paints/paint brushes (for painting pilot)
- 2 oz. [57g] spray CA activator (GPMR6035) ***or*** 4 oz. [113g] aerosol CA activator (GPMR6034)
- CA debonder (GPMR6039)
- CG Machine™ (GPMR2400)
- Power Point Prop Balancer (TOPQ5700)
- A model airplane covering iron with a protective covering sock may also be necessary to retighten the covering and remove any wrinkles that may have formed after the model was originally covered at the factory. If you don't already have a covering iron, the 21st Century® sealing iron (COVR2700) and 21st Century iron cover (COVR2702) are recommended.

PREPARATION

1. Lay three or four paper towels over each other and cut the stack into small squares. These small paper towel squares, dampened with denatured alcohol, will come in handy for epoxy cleanup and other general cleanup during assembly.



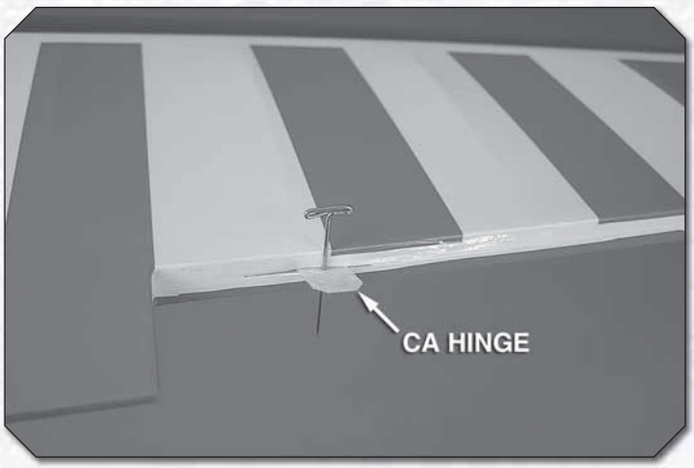
2. Remove the masking tape holding all the control surfaces to their main parts. If necessary, clean off any residual tape glue with a couple of your paper towel squares dampened with naphtha (lighter fluid).



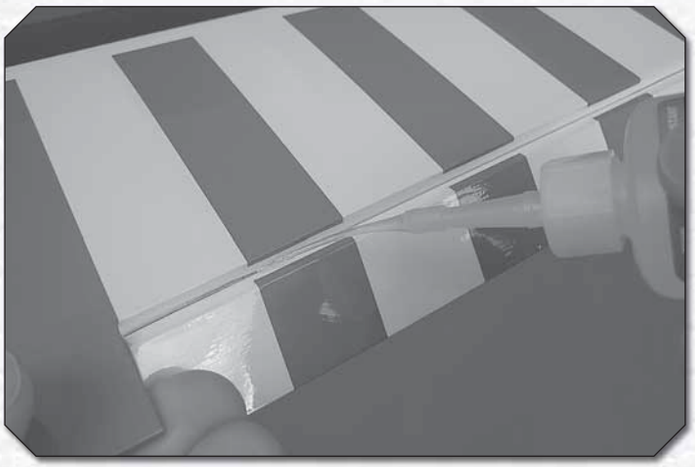
3. Refer to the separate instruction sheet titled ***How To Tighten Covering On ARF Models***. Follow the instructions to tighten the covering. If you prefer to get started on assembly right away, the tightening process could be done later (but it is usually easiest to do while the model is still in separate pieces).

ASSEMBLE THE WINGS

JOIN THE AILERONS AND MOUNT THE SERVOS

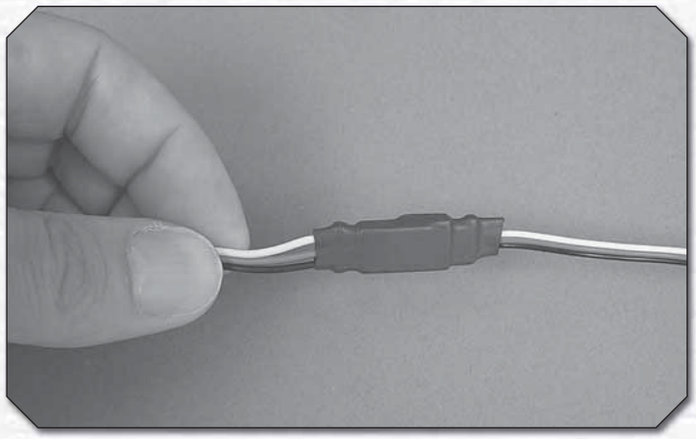


1. Stick a small pin through the middle of three CA hinges. Insert the hinges up to the pins into the hinge slots in one of the wings.

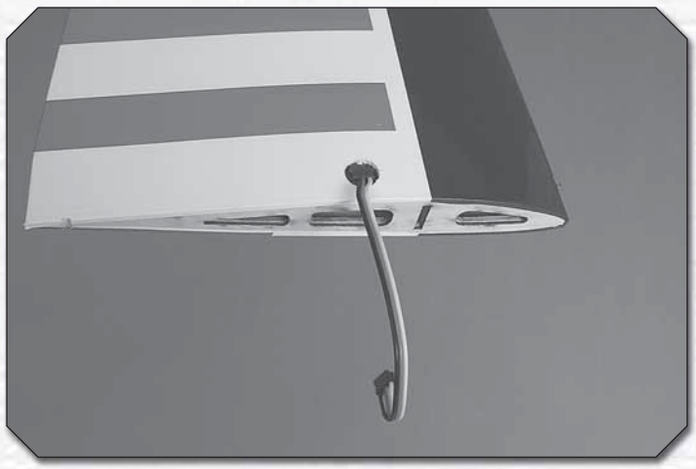


2. Fit the matching aileron to the hinges in the wing and take out the pins. Make sure there is a small gap between the leading edge of the aileron and the wing—just enough to see light through or to slip a piece of paper through. Add three or four drops of thin CA to the top and bottom of each hinge, waiting a few seconds between each drop to allow the CA to wick all the way in.

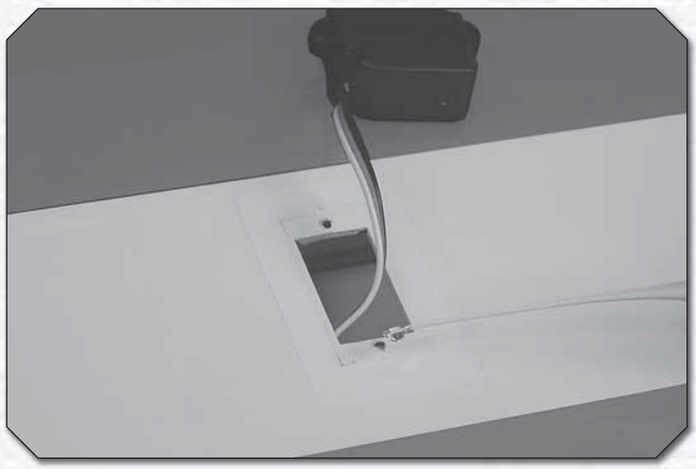
3. Hinge the other aileron to the other wing the same way. After the CA has hardened, rapidly move the ailerons up and down several times to “break in” the hinges so the ailerons will move more freely.



4. Connect a 6" [150mm] servo extension to one of your aileron servos. Use a piece of Great Planes 3/8" x 3" [10 x 80mm] heat shrink tubing (GPMM1060, not included) cut in half (or tape or other suitable clips intended for this purpose) to secure the servo plugs so they cannot accidentally become disconnected. Use a hobby torch or a heat gun to shrink the tubing.



5. Guide the servo wire down through the ribs and out the hole in the top of one of the wings.

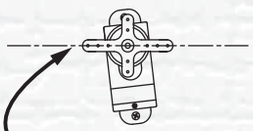


6. Temporarily mount the servo in the wing with two of the included 2 x 4mm Phillips wood screws—the screw holes are predrilled. Remove the screws and take the servo out of the mount. Add a few drops of thin CA to the screw holes, allow to harden, and then remount the servo.

7. Mount your other aileron servo in the other wing the same way.

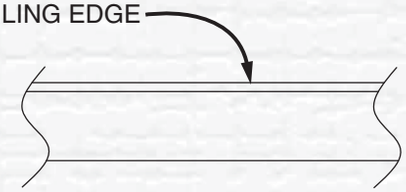
HOOK UP THE AILERONS

Refer to this photo while hooking up the ailerons.

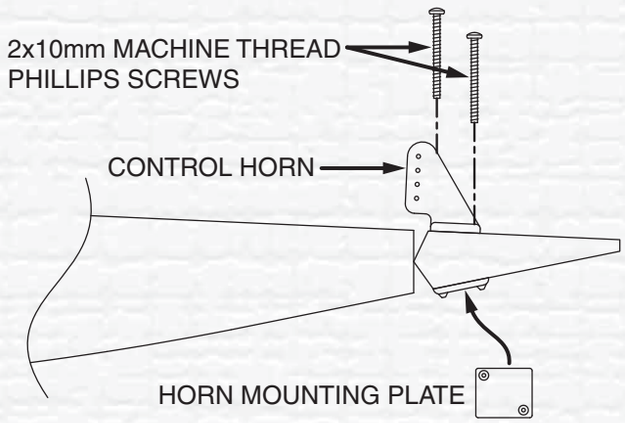


PARALLEL WITH WING TRAILING EDGE

WING TRAILING EDGE

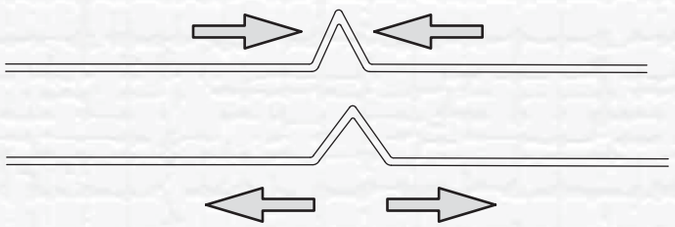


1. Connect one of the aileron servos in the wing to your receiver. Turn on the transmitter and hook up a charged battery and the ESC so you can operate the servo with the transmitter. With the trims on the transmitter centered, mount the arm to the servo so it will be parallel (or as close to parallel as you can reasonably get) with the trailing edge.



2. Enlarge the holes in one of the control horns included with this kit with a #57 (.043" [1mm]) drill or a hobby knife so the aileron pushrod wire will fit. Drill 5/64" [2mm] (or 3/32" [2.4mm]) holes through the aileron for the horn mounting screws and hook up the aileron as shown—note in the photo that the horn is located on the aileron so the pushrod will be perpendicular to the wing trailing edge and the servo arm.

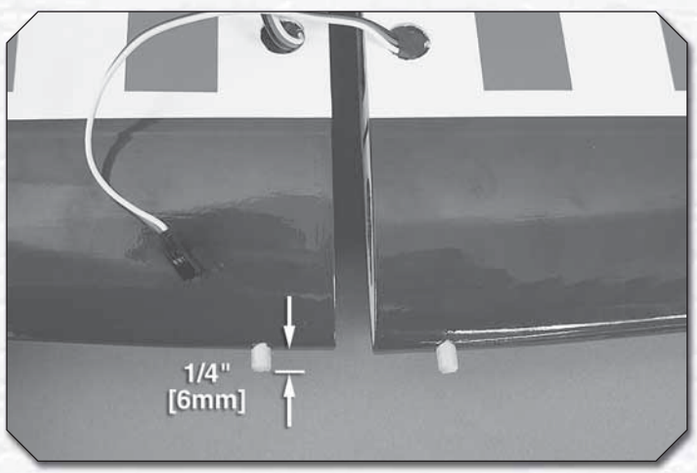
ADJUST THE "V" BEND



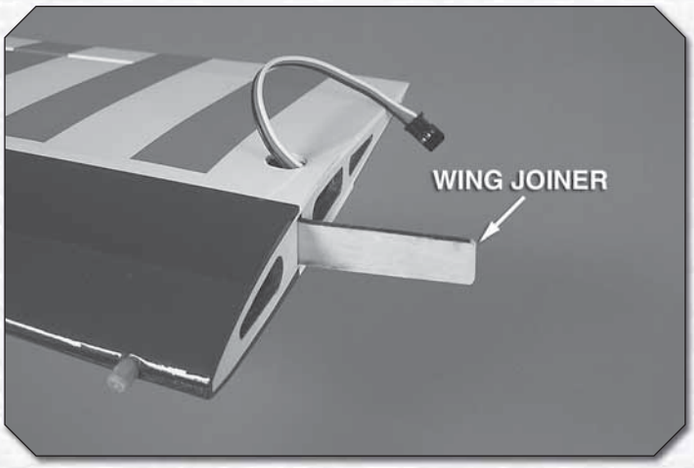
3. Use pliers to adjust the V-bend in the wire so the aileron will be centered.

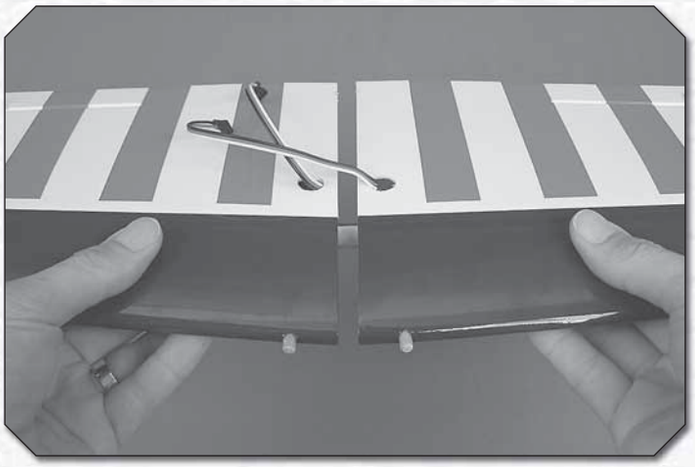
4. Hook up the other aileron the same way. Note that the aileron pushrods are connected to the servo arms nearest the wing tips. This will allow the ailerons to move in opposition (as they should).

JOIN THE WINGS

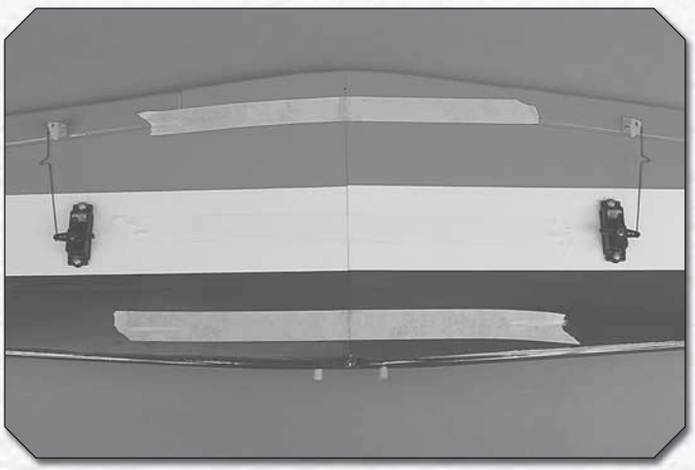


1. Use epoxy to glue the **wing dowels** into each wing with 1/4" [6mm] protruding.





2. Without using any glue, test fit the wing halves together with the plywood **wing joiner**. Make sure the wings fit well with no gap. Make any adjustments necessary for a good fit.

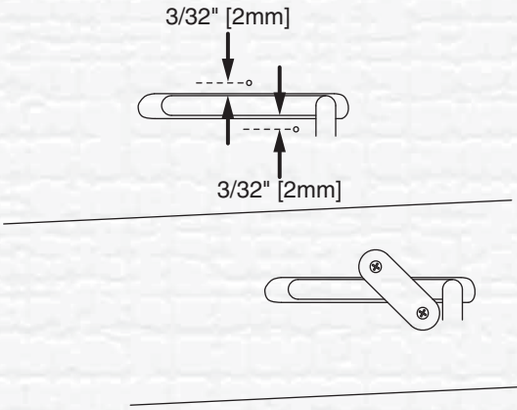


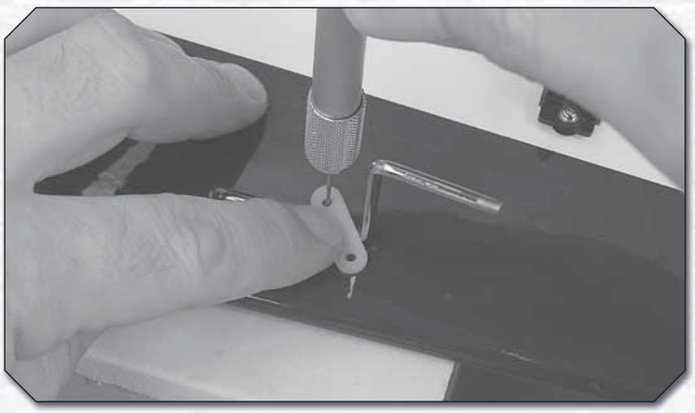
3. Use 30-minute epoxy to glue the wings together with the joiner—be certain to coat **all** mating surfaces—inside the pockets where the joiner goes, **all the way around** the joiner and the ends of both wing halves. Use masking tape to hold the halves together and wipe away excess epoxy before it hardens.

4. After the epoxy has hardened, carefully peel off the masking tape. If necessary, use your covering iron to reattach any lifted covering back down to the balsa underneath.

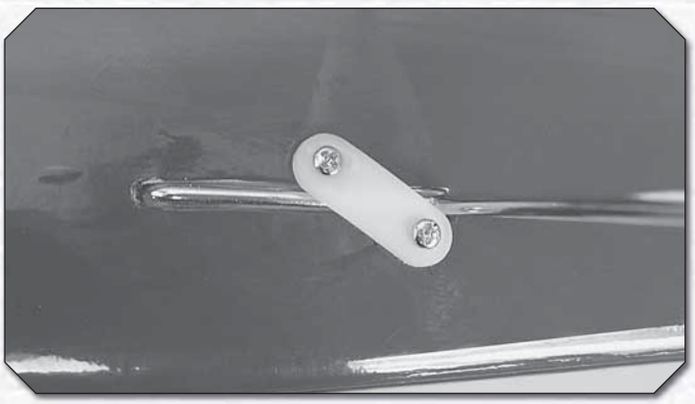
MOUNT THE WHEELS AND LANDING GEAR

1. Insert the right and left **main landing gear wires** into the wing so they will be angled forward.





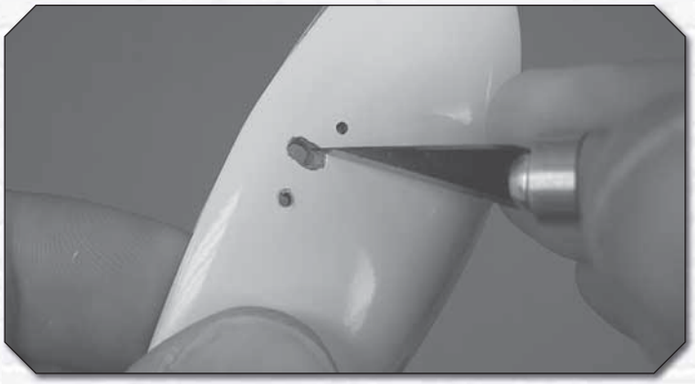
2. Holding a flat landing gear strap over one of the gears in the wing, drill a 1/16" [1.6mm] hole into the bottom of the wing using the hole in the strap as a guide—note that the strap must be mounted at an angle so the holes will be no farther than 3/32" [2mm] from the wire. Otherwise, the screws will miss the hardwood rail inside.



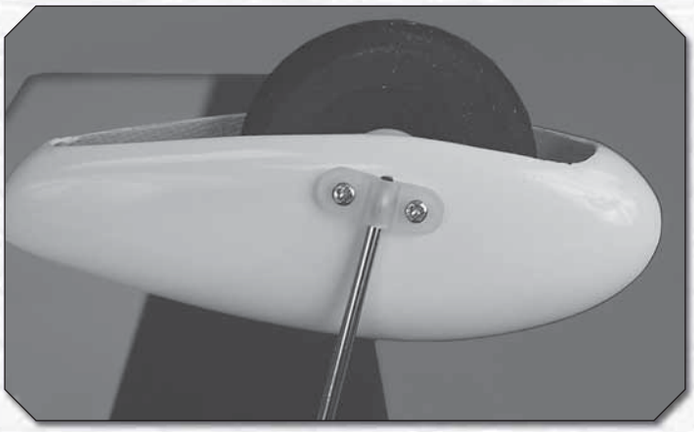
3. Mount the strap to the wing with a 2 x 8mm Phillips wood screw. Holding the strap at an angle so the second hole will be no farther than 3/32" [2mm] from the front of the wire, drill the hole and install the second screw.

4. Mount the other strap over the other gear the same way. Remove all the screws, add a drop of thin CA to each hole, allow to harden, and then reinstall the straps and screws.

Now you can mount the wheel pants…



5. Use a hobby knife to chamfer the top of the hole on the inside of both wheel pants so it will fit all the way to the wire gear leg.

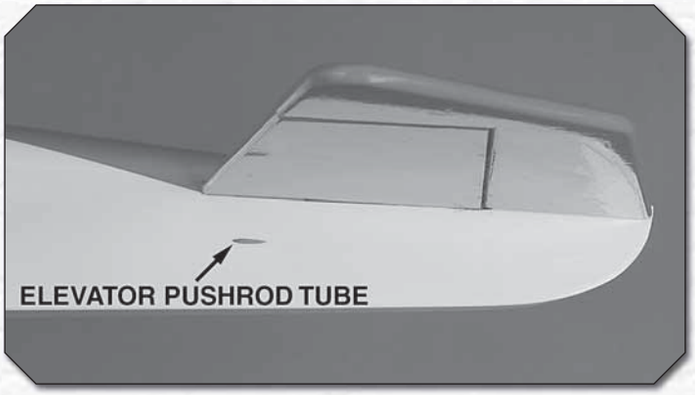


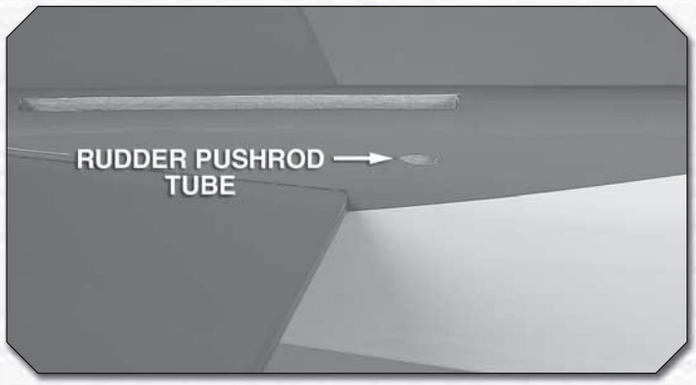
6. Mount the pants and wheels to the landing gears with a humped mounting strap and two 2 x 4mm Phillips wood screws in the predrilled holes. Same as has been done all along, remove the screws, add a drop of thin CA to the screw holes, allow to harden, and then remount the pants.

ASSEMBLE THE FUSELAGE

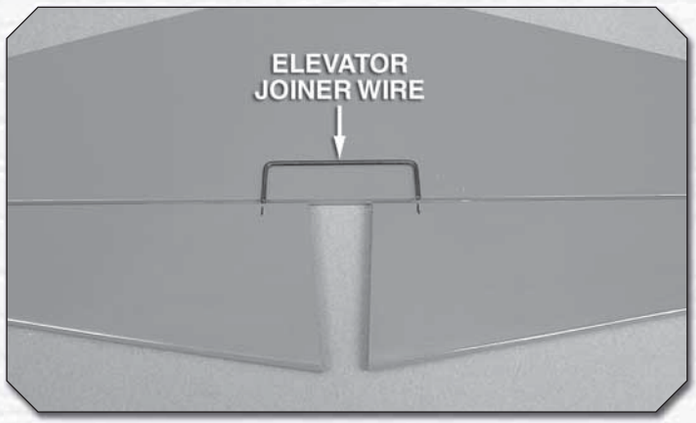
GLUE IN THE HORIZONTAL STABILIZER (STAB)

Disregard the elevator and stab in the first two pictures. They are not actually installed until step 16.

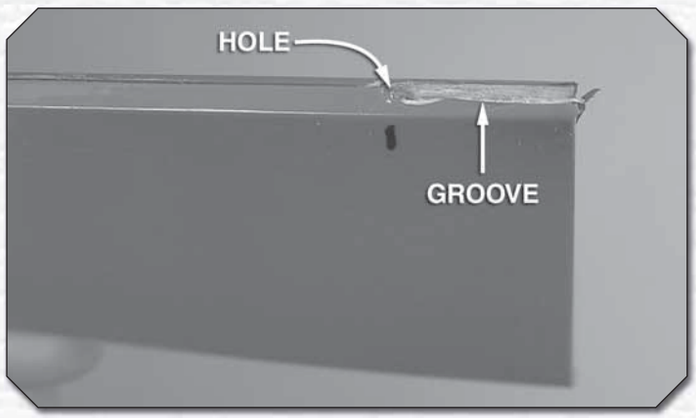




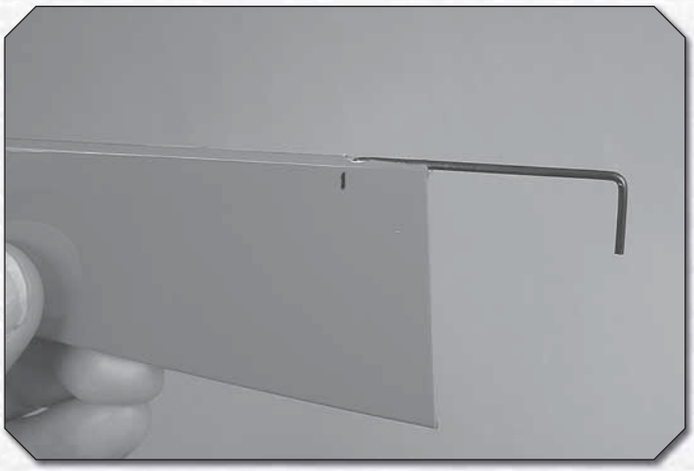
1. Use a hobby knife with a sharp blade to cut the covering from the fuselage over the exit slot for the elevator pushrod guide tube (located just under the leading edge of the slot for the horizontal stabilizer) and from the exit slot for the rudder pushrod guide tube (located just behind and below the slot for the vertical stabilizer). The stab is shown already in position, but yours should not yet be in place.



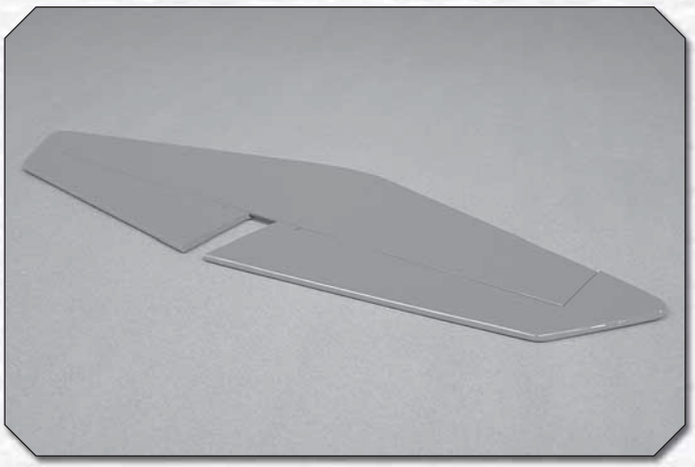
2. Temporarily join the elevators to the horizontal stabilizer (stab) with two hinges in each side—at this time, the centering pins aren't required—they will be used when permanently installing the hinges later. Make certain there is a small gap between the ends of the elevators and the balance tabs on the elevators. Center the **elevator joiner wire** on the stab as shown on the previous page. Mark both elevators at the ends of the wire.



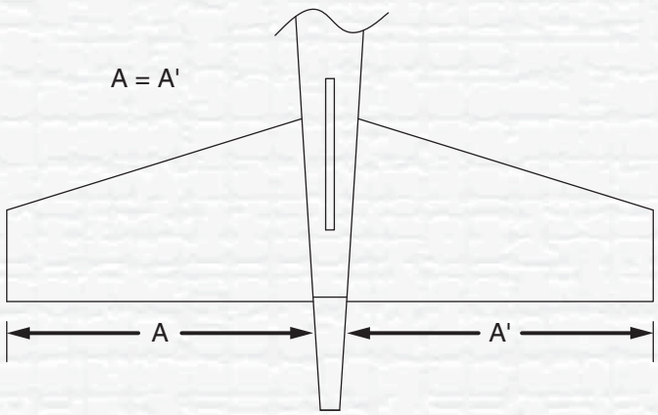
3. Drill a 1/16" [1.6mm] hole into the leading edge of both elevators at the marks. Use a hobby knife or a 1/16" [1.6mm] drill to cut grooves in the leading edge of the elevators to accommodate the joiner wire.



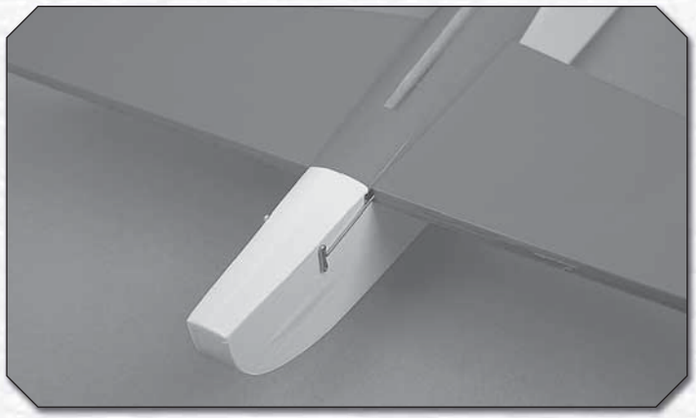
4. Test fit the joiner wire and make sure it goes all the way into both elevators.



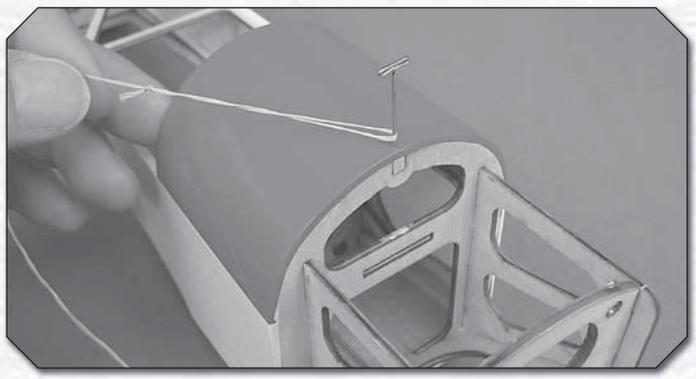
5. Test fit the elevators to the stab with the joiner wire and the hinges. Be certain the elevators are parallel with each other and that the gaps still exist between the ends of the stab and the elevator balance tabs. If necessary, remove the wire and bend it so the elevators will be parallel with each other and lie flat on your workbench.



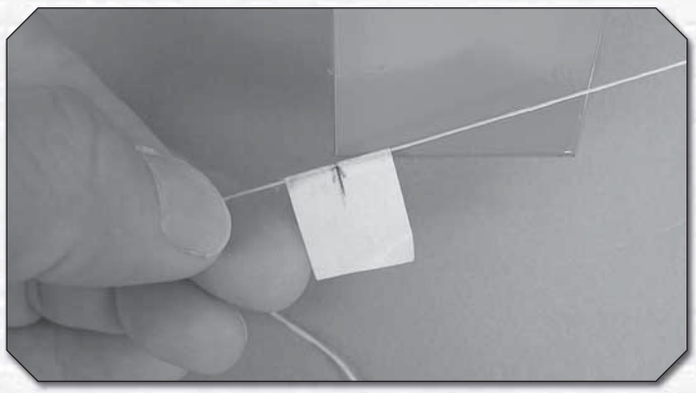
6. Separate the elevators from the stab and take out the hinges. Install the stab into the fuselage. Taking accurate measurements from side-to-side, center the trailing edge by equalizing the distance between both ends of the stab and the fuselage.

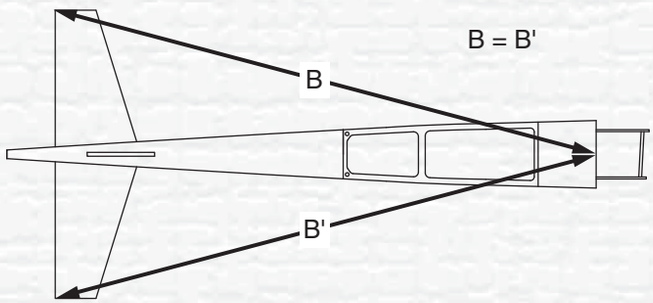


7. Once the stab is centered, stick pins into the trailing edge tightly to both sides of the fuselage, holding the trailing edge in place.



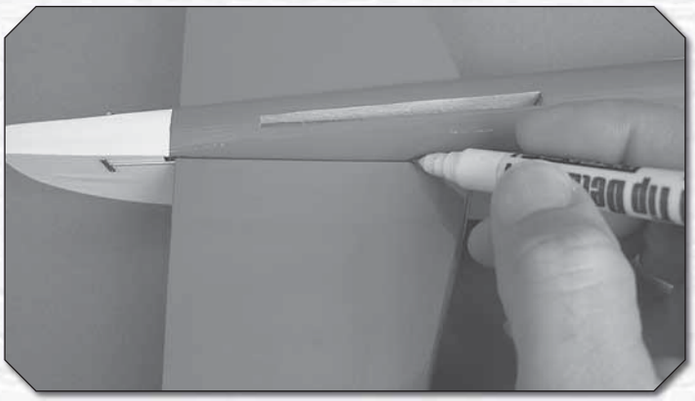
8. Stick another pin into the top of the front of the fuselage centered over the stringer. Tie a loop in one end of an approximately 30" [760mm] length of K+S #801 Kevlar thread or similar non-elastic line.



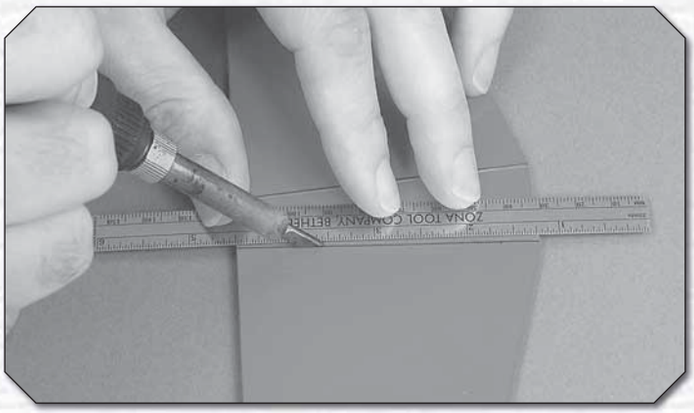


9. Wrap a piece of masking tape over the line near the other end and mark an arrow or a line on it. Slide the tape

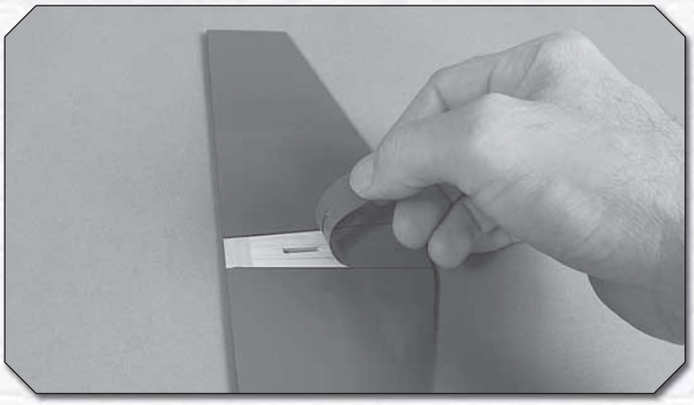
along the string until the arrow aligns with one end of the stab. Swing the string over to the same spot on the other side of the stab to see if the distances are equal as shown in the sketch. Adjust the stab and slide the tape along the string until the stab is aligned.



10. Once the stab is centered, use a fine-point felt-tip pen to mark the fuselage sides around the top and bottom of the stab.



11. Remove the stab from the fuselage. Using a soldering iron with a fine tip guided by a metal straightedge, cut through the covering 1/32" [1mm] inside the lines. If you have an iron with an adjustable temperature, set it to approximately 400° F [200° C]. Gliding the iron at just the right speed will cut the covering without melting a wide path or without burning into the wood. If you don't have a soldering iron, a hobby knife with a sharp, new blade could be used, but care must be taken not to cut into the wood.

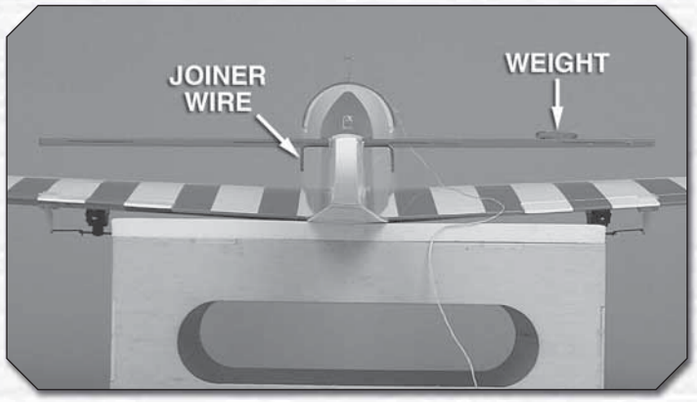


12. Peel the covering from the middle of the stab to expose the bare balsa underneath. Wipe off any residual ink with a few of your paper towel squares dampened with denatured alcohol.

13. If necessary, use a 1/8" [3.2mm] drill to clear any epoxy from the wing bolt hole near the trailing edge of the wing. Cut the covering from the bottom of the wing around the wing bolt hole for the plywood **wing bolt washer**. Glue the washer into position while simultaneously mounting the wing to the fuselage with a 3 x 20mm Phillips screw and a 3mm washer. (The wing will be used as a reference for stab alignment in the following steps.)

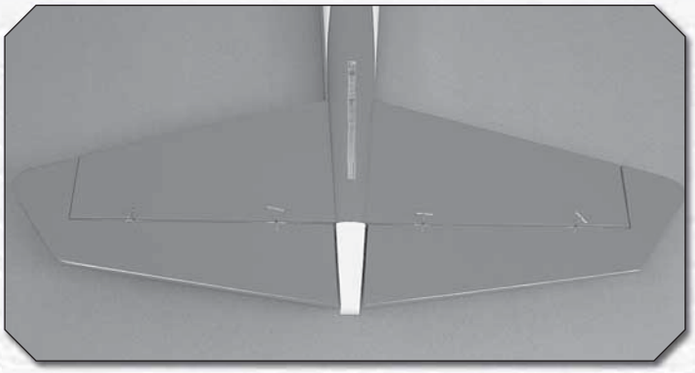
14. Use coarse sandpaper to roughen the elevator joiner wire so glue will adhere. Place the joiner wire in the slot in the fuselage for the stab.

15. When ready to glue in the stab, mix 1/4 oz. [5cc] of 30-minute epoxy. **Thoroughly** coat the middle of the top and bottom of the stab with epoxy. Slide the stab into position. Use a piece of cardstock or your finger to work some of the epoxy that was wiped off the stab back in. Then, wipe off any excess. Reinsert the pins into the trailing edge of the stab on both sides of the fuselage and use the pin and string to re-align the stab the same way you did before. Proceed immediately to the next step.

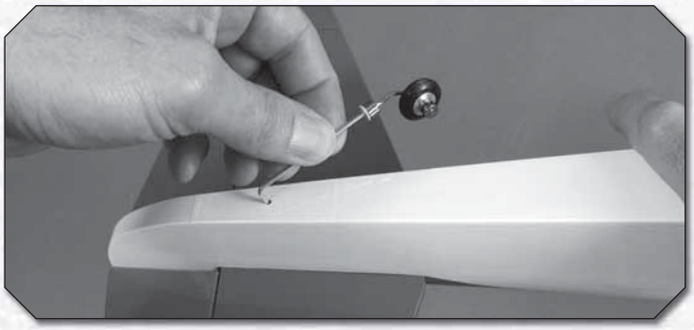


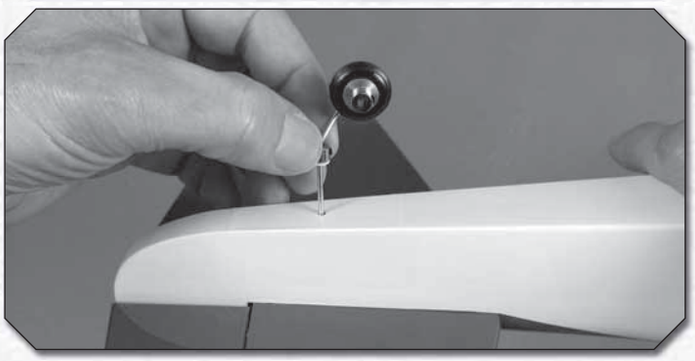
16. View the model from the rear and see if the stab is parallel with the wing. If necessary, place small weights (coins, lead ballast) on the "high side" of the stab to bring it into alignment with the wing. Once the stab has been perfectly aligned, use a few more paper towel squares dampened with denatured alcohol to wipe off any remaining epoxy. Double-check the stab alignment one last time. Do not disturb the model until the epoxy has hardened.

HINGE THE ELEVATORS AND RUDDER



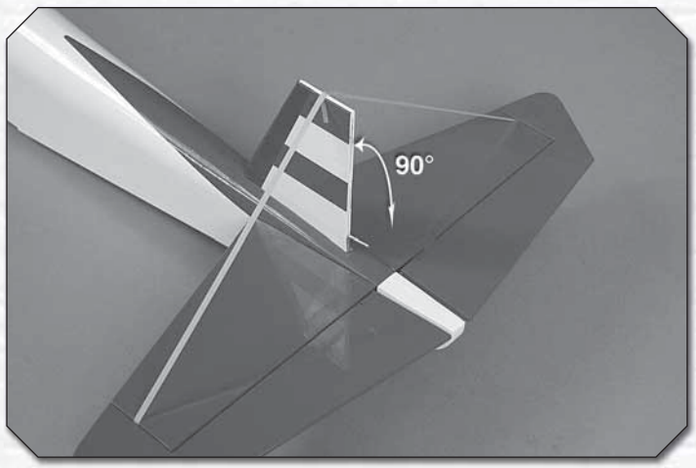
1. If you haven't yet done so, remove the wing from the fuselage. Coat the "arms" of the joiner wire where they go into the elevators with epoxy and use a piece of wire to work some epoxy into the holes in the elevators. Join the elevators to the stab and joiner wire with the hinges—this time using the pins to center the hinges the same as when hinging the ailerons. Double-check to make certain the elevators are parallel with each other and make any adjustments necessary. Wipe away any excess epoxy that comes out of the elevators and use thin CA to permanently glue in the hinges.



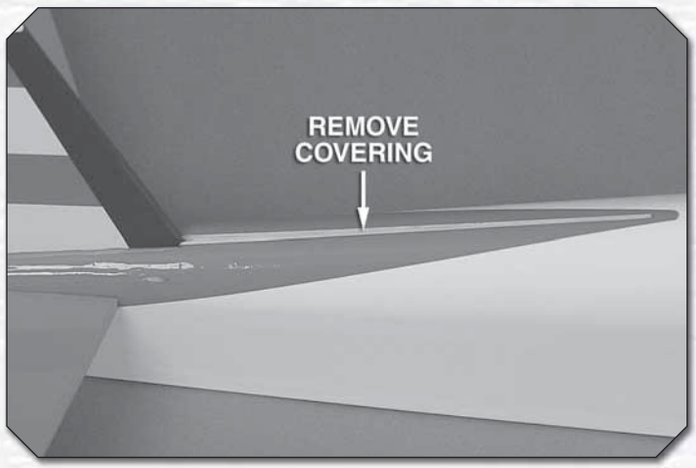


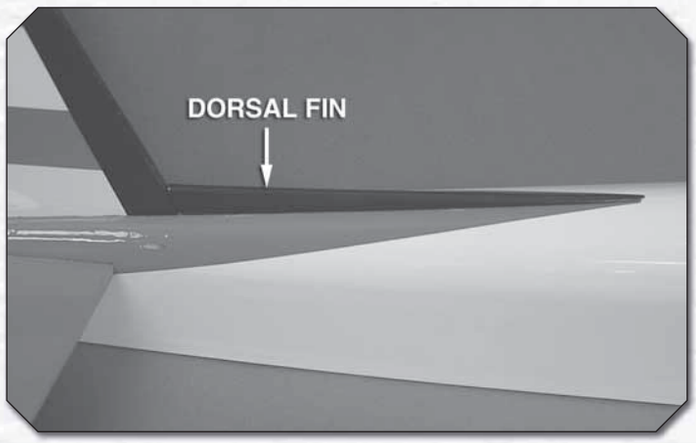
2. Cut the covering from the tail gear hole on the bottom of the fuselage, then insert the tail gear assembly "backwards" as shown. Once you get the gear up into position through the slot in the horizontal stab turn it around the other way as shown.

3. The same as was done for the horizontal stabilizer, fit the vertical stabilizer (fin) into the fuselage. Use a fine-point felt-tip pen to mark the fuselage on both sides and cut the covering from the fin.

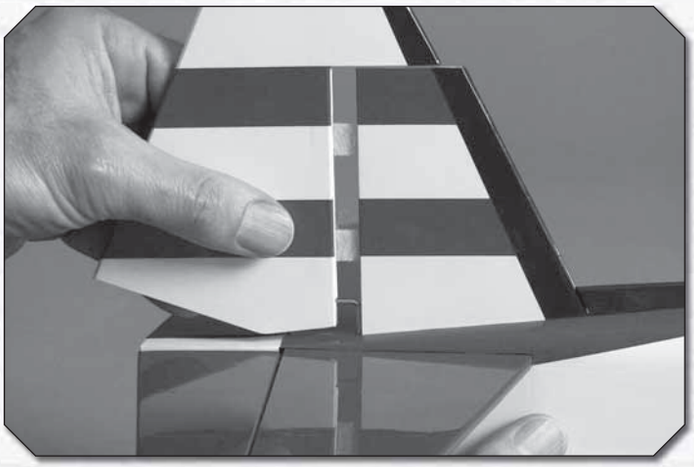


4. Glue the fin into position, making certain it is perpendicular to the stab—use strips of tape—varying the tension on whichever side necessary, to hold it vertical.





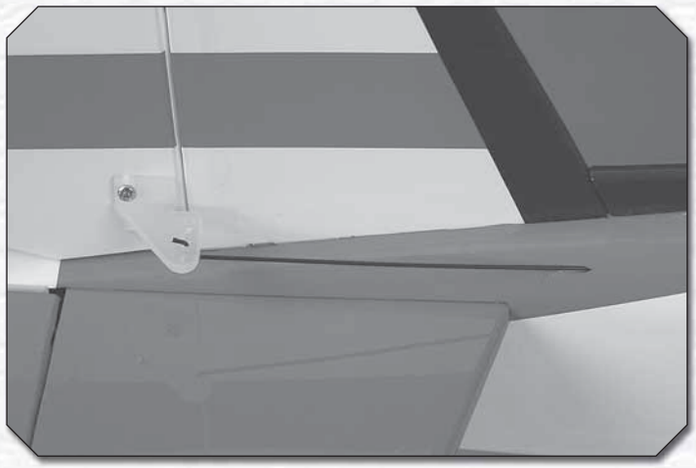
5. After the epoxy from the previous step has hardened, cut a 5-3/4" [145mm] long, 1/16" [2mm] wide strip of covering from the top of the fuselage for the **dorsal fin**. Glue the dorsal fin into position, tightly contacting the leading edge of the fin.



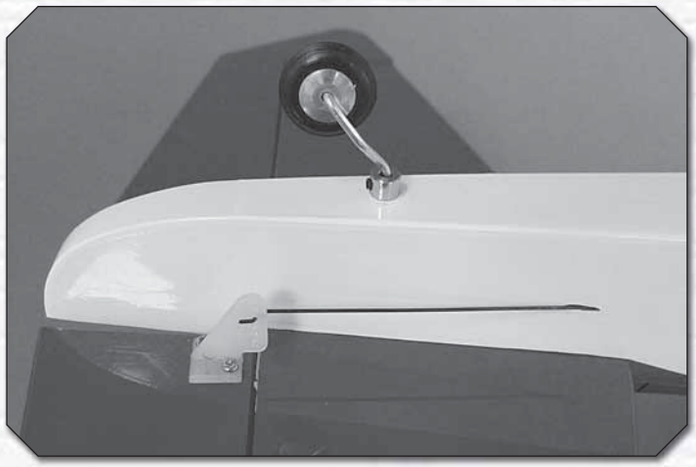
◗ 6. Same as was done for the elevator joiner wire, drill the hole and cut the slot in the rudder for the tail gear wire, making sure the plastic washer and the collar are up against the bottom of the fuselage. Permanently join the rudder to the vertical stabilizer using epoxy to glue the joiner wire into the rudder and thin CA for the hinges.

HOOK UP THE ELEVATOR AND RUDDER

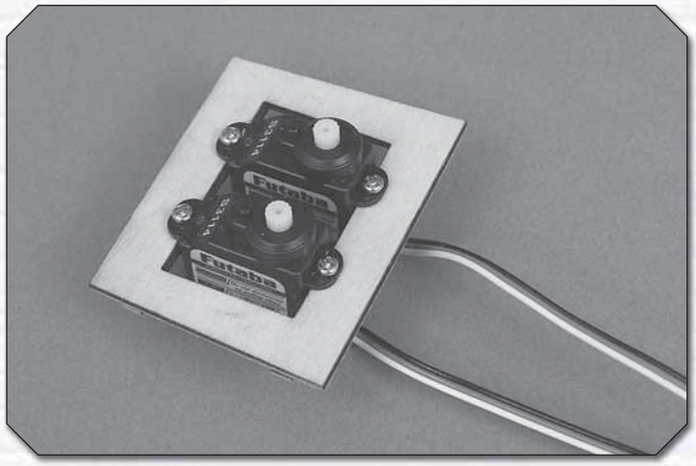
◗ 1. Enlarge the holes in the remaining two control horns with a #57 (.043" [1mm]) drill or a hobby knife so the pushrod wires will fit.



◗ 2. Connect one of the pushrod wires to the second-from-the-outer hole of a control horn. Slide the wire up into the rudder guide tube in the fuselage. Then, mount the horn to the rudder the same way the horns were mounted to the ailerons (by drilling 5/64" [2mm] or 3/32" [2.4mm] holes for the screws and mounting the horn with two 2 x 10mm machine-thread Phillips screws and the horn mounting plate on the other side).

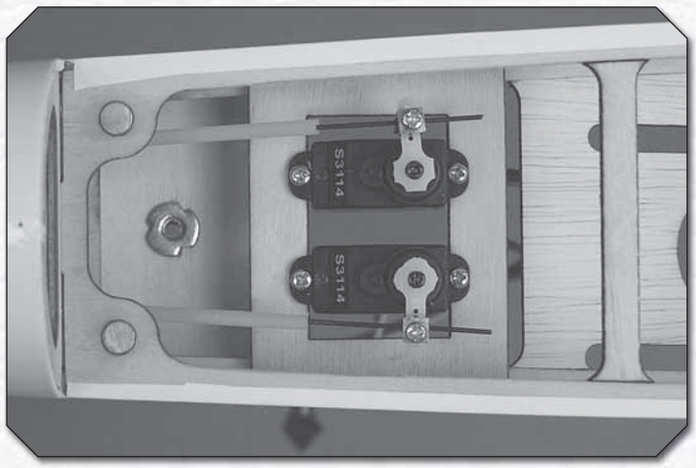


◗ 3. Connect the other pushrod to the last control horn and mount it to the elevator the same way.

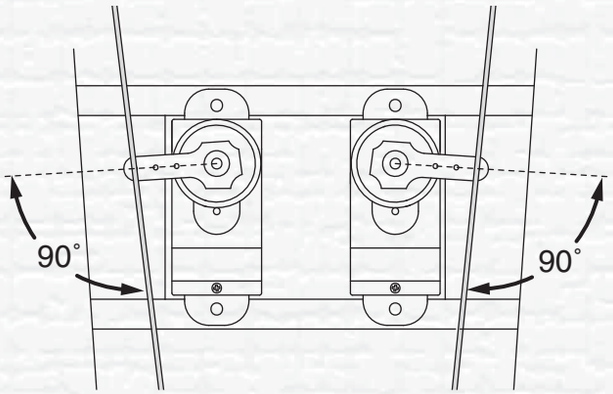


◗ 4. Use the included 2 x 4mm Phillips wood screws to mount your elevator and rudder servos in the plywood servo tray.

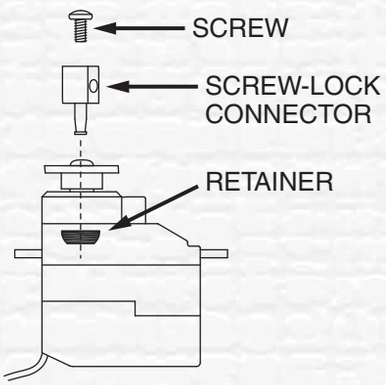
Refer to this photo for the following five steps.



◗ 5. Fit the servo tray into the fuselage where shown, but do not yet glue it into position.



6. Connect the servos to your receiver and power up the system with the trims on the transmitter centered. Fit the servo arms on the servos so they will be as close to 90 degrees as possible to the pushrods (but they don't have to be perfect). Cut off the unused servo arms.

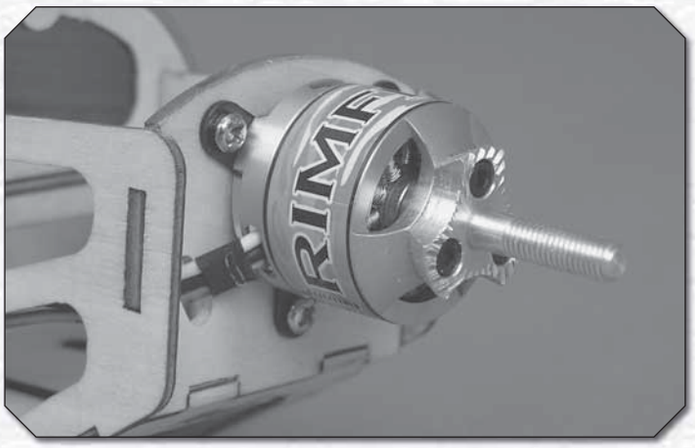


7. Use a #55 (.052" [1.3mm]) drill or a hobby knife to enlarge the holes in the servo arms. Then, mount a screw-lock connector to each arm using the nylon retainer as shown.

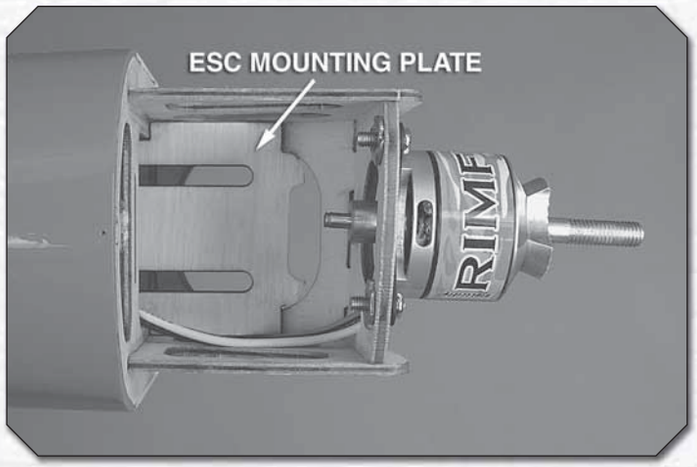
8. Fit the pushrods into the screw-lock connectors on the servo arms. Position the servo tray wherever the servos align with the pushrods. Securely glue the servo tray into place.

9. One last time, turn on your radio and power the servos. Center the elevator and rudder. Next, add a drop of threadlocker to the screws in the screw-lock connectors and tighten them down. Cut the pushrods approximately 1/2" [10mm] past the screw-locks.

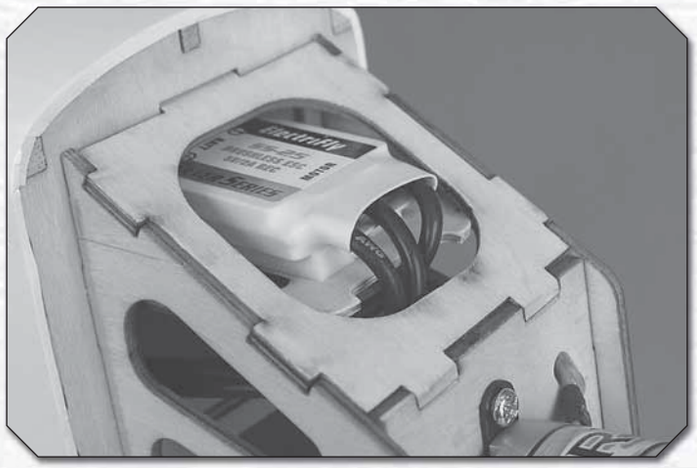
MOUNT THE MOTOR AND ESC



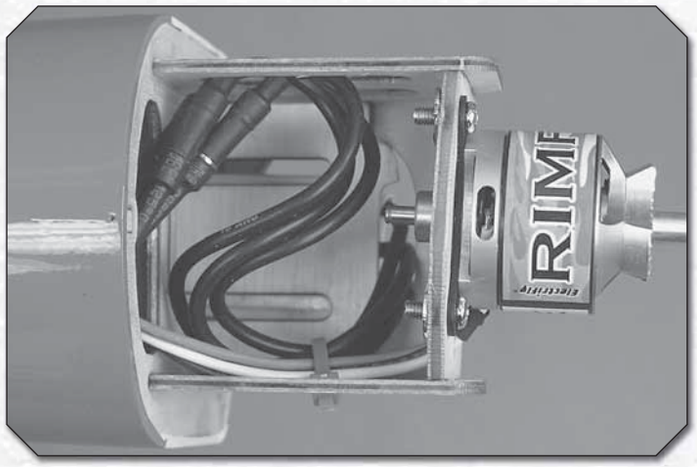
1. Guide the motor wires through the hole in the firewall and mount the motor with three 3 x 8mm Phillips screws and a drop of threadlocker on the threads.



2. Fit, then glue the plywood **ESC mounting plate** into position.



3. Mount the ESC to the ESC mounting plate with double-side foam mounting tape (not included).

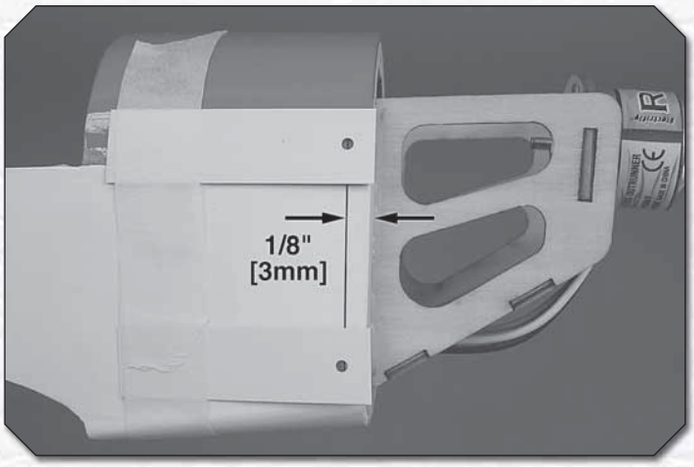


4. Using 3.5mm male bullet to 2.0mm female bullet adapters (GPMM3122, not included), connect the ESC wires to the motor wires, keeping as much of the wiring as you can in front of the fuselage in the cowl area so it will not be in the way of the battery—when installing the battery later, it should be placed forward to reduce any nose ballast that will be required to get the proper C.G.

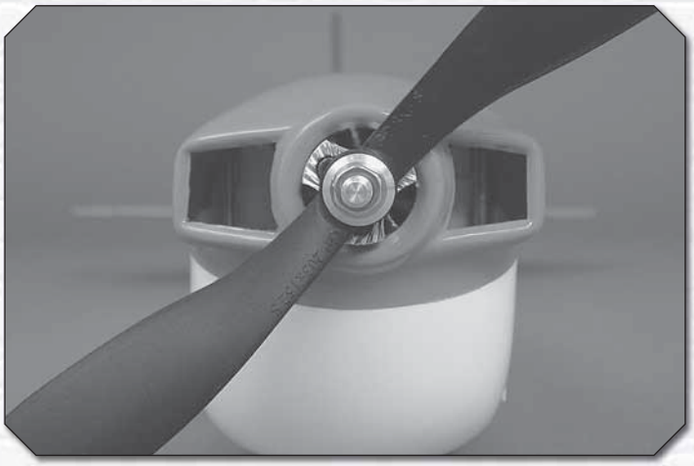
5. Turn on the radio and connect the battery to momentarily power up the system. Make certain the motor turns and does

so in the correct direction when you advance the throttle stick. If necessary, reverse the servo direction for the throttle channel (to get the motor to turn when you advance the throttle). If the motor turns, but in the wrong direction, switch any two motor wires with each other connected to the ESC. Once the motor has been properly set up, disconnect the battery and turn off the Tx.

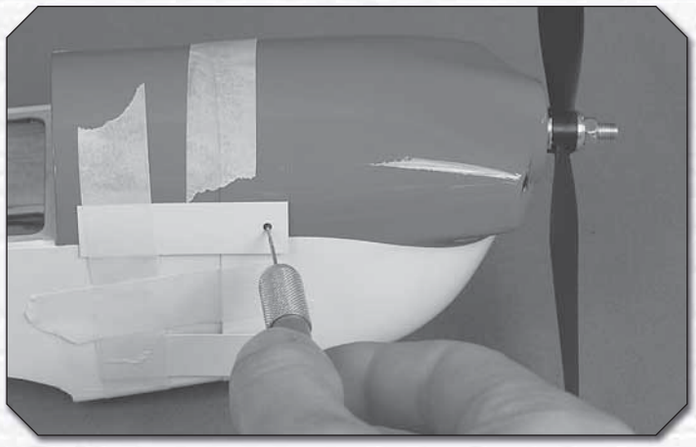
Now the cowl can be mounted…



6. Draw a vertical line on both sides of the fuselage 1/8" [3mm] back from the front edge. Make four templates from thin cardstock or heavy paper as shown. Tape them to the fuselage so the holes in the template are centered over the lines near the top and bottom of the fuselage.



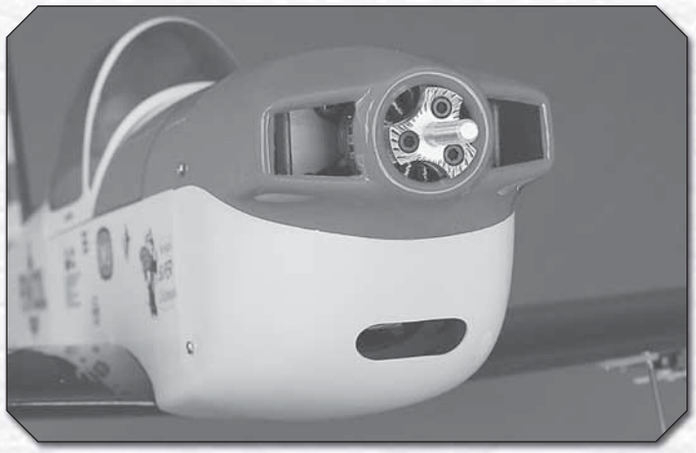
7. Slide the cowl over the fuselage under the cardstock templates. Mount the propeller (not included). Checking to be sure the red and white paint line on the cowl aligns with the red and white covering on the fuselage, tape the cowl into position—also make sure the cowl is centered over the propeller shaft and there will be approximately 1/8" [3mm] clearance between the front of the propeller and the cowl.



8. Using the holes in the templates as a guide, drill 1/16" [1.6mm] holes through the cowl into the fuselage.

9. Remove the cowl. Temporarily screw four 2 x 8mm Phillips wood screws into the holes drilled in the fuselage. Remove the screws and add a drop of thin CA to each hole.

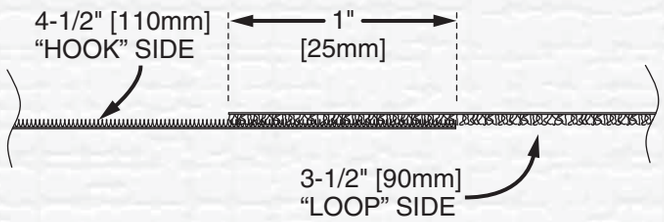
10. Enlarge the holes **in the cowl only** with a 5/64" [2mm] drill. After the CA from the previous step has hardened, mount the cowl to the fuselage with the screws. Turn the motor and make certain it is not rubbing in the cowl. Make any adjustments required.

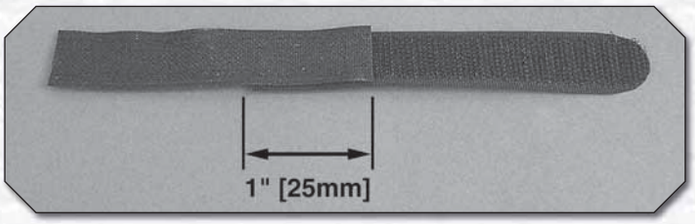


11. Cut an air inlet hole in the cowl to help cool the ESC.

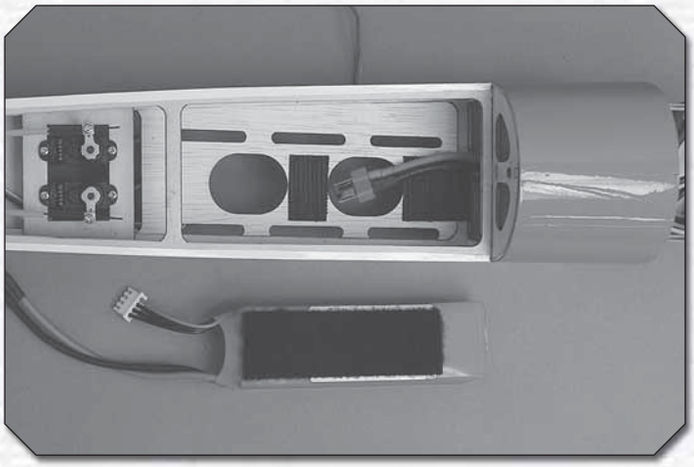
12. Cut the covering from the holes in the bottom of the fuselage to allow cooling air to exit.

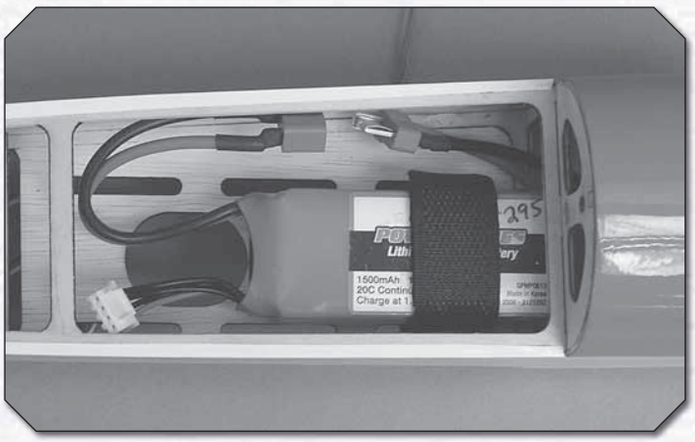
MOUNT THE BATTERY AND RECEIVER





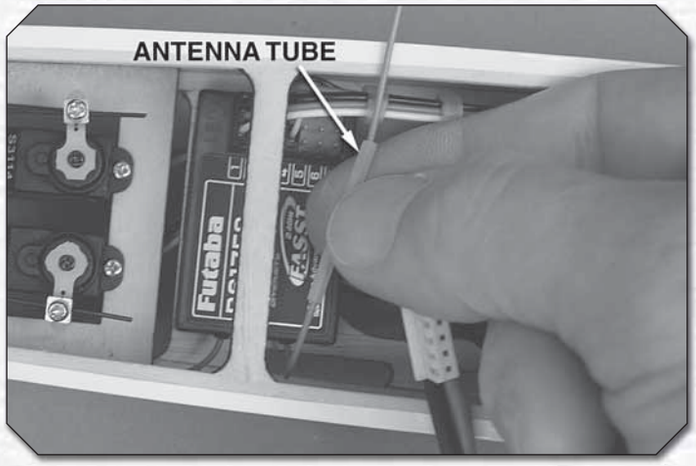
1. If using the recommended 1250 or 1500mAh 11.1V ElectriFly Power Series battery, cut a 4-1/4" [110mm] strip from the rougher, "hook" side and a 3-1/2" [90mm] strip from the softer, "loop" side of the included hook-and-loop material. Connect the pieces with a 1" [25mm] overlap to make the battery strap. If using a different battery, make the battery strap as necessary to fit.





2. As noted previously, it is best to get the battery forward. Keeping this in mind, attach a strip of Great Planes adhesive-backed Velcro (GPMQ4480, not included) to the battery and opposing patches to the battery mounting plate in the fuselage. Place the battery on the mounting plate and hold it down with the strap.

3. Connect the servo wires and a dual aileron extension wire to the receiver. Use double-sided foam mounting tape to mount the receiver where desired. If your receiver is small enough, it could be mounted next to the battery on the left side of the fuselage, but this one was mounted behind the battery.

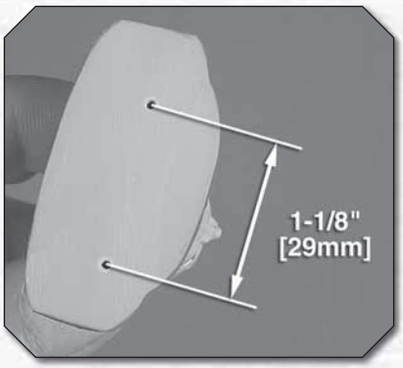


4. If using a 2.4GHz receiver, cut pieces of the small tubing supplied and glue the tubes inside the fuselage for guiding the antennas. If using a 72MHz receiver, guide the antenna down through the antenna tube in the fuselage.

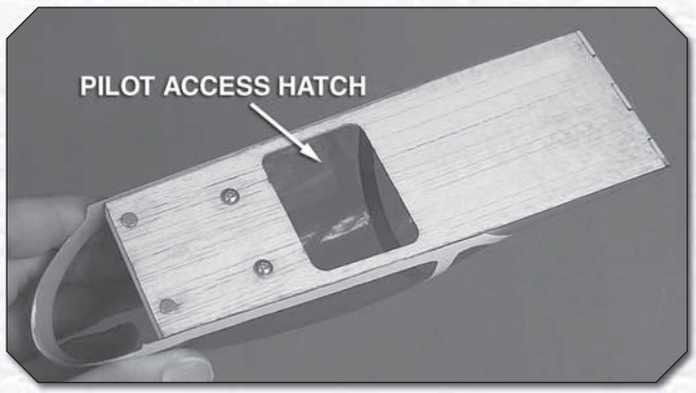
OPTIONAL: INSTALL PILOT FIGURE (NOT INCLUDED)

1. If installing an optional pilot figure, cut the pilot access hatch the rest of the way through the cockpit floor (shown in the photo in step 4).

2. Glue together and paint your pilot. The pilot used for this model was a William's Brother's 1/8-scale Sportsman pilot (WBRQ1130). Cut 1/16" [2mm] from both shoulders so the figure will fit between the canopy sides. Test fit the pilot, adjust if necessary, and paint using water-base acrylic paint and craft brushes available at hobby shops or craft stores.



3. Drill 1/16" [1.6mm] holes through the bottom of the pilot 1-1/8" [29mm] apart to align with the holes in the bottom of the cockpit floor for the pilot mounting screws.



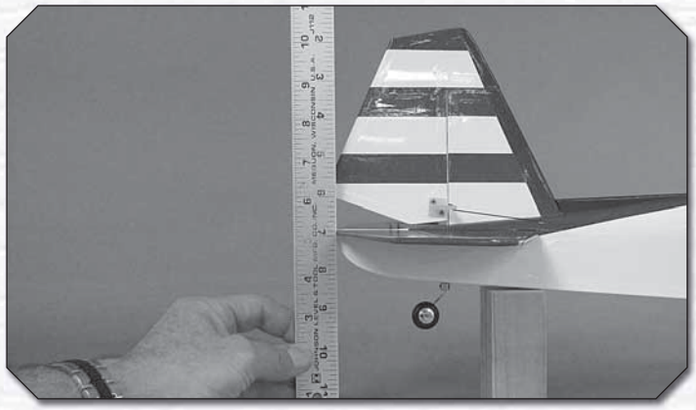
4. Mount the pilot to the cockpit floor with two #2 x 1/4" [6mm] or #2 x 1/2" [12mm] screws and #2 washers (not included).

GET THE MODEL READY TO FLY

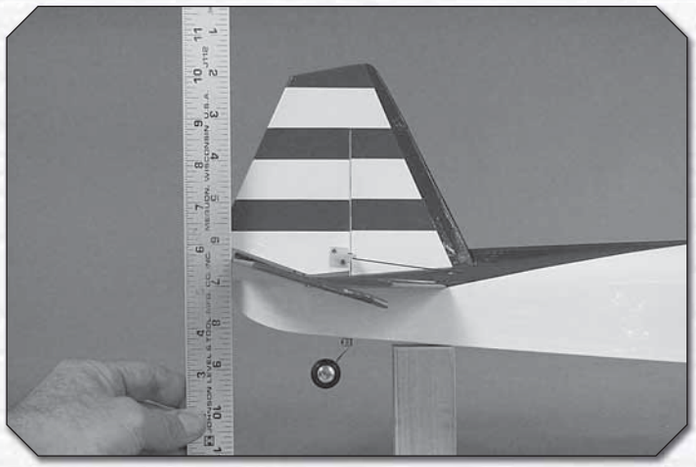
SET THE CONTROL THROWS

1. If measuring the control throws in degrees, follow the instructions that came with your throw measuring tool to set the throws according to the measurements that follow. If using a ruler, proceed with the following instructions.

2. Set the throws on the elevator first. Use a small box or something similar to prop up the bottom of the fuselage until the wings and horizontal stabilizer are level.



3. With the transmitter and receiver on and the elevator centered, hold a ruler up to the trailing edge of the elevator at the **widest** part (nearest the fuselage).



4. Use the transmitter to move the elevator up and move the ruler forward so it will still be touching the trailing edge. The distance the elevator moves is the "up elevator" control throw. Use the endpoint adjustment in your transmitter or move the screw-lock pushrod connector in the elevator servo arm to a new hole to increase or decrease the throw as necessary.

5. Measure and set the up and down and left and right control throws for all of the control surfaces. If your radio does not have dual rates, we recommend setting the throws at the high rate setting. **NOTE**: The elevator and rudder throws are measured at the **widest part**.

These are the recommended control surface throws:

	HIGH RATE		LOW RATE	
	Up	Down	Up	Down
ELEVATOR	5/16" [8mm] 9˚	5/16" [8mm] 9˚	3/16" [5mm] 6˚	3/16" [5mm] 6˚
	Right	Left	Right	Left
RUDDER	1" [26mm] 18˚	1" [26mm] 18˚	3/4" [19mm] 13˚	3/4" [19mm] 13˚
	Up	Down	Up	Down
AILERONS	1/4" [6mm] 13˚	1/4" [6mm] 13˚	1/8" [3mm] 7˚	1/8" [3mm] 7˚

IMPORTANT: The Carl Goldberg Chipmunk 400 ARF has been extensively flown and tested to arrive at the throws at which it flies best. Flying your model at these throws will provide you with the greatest chance for successful first flights. If, after you have become accustomed to the way the Chipmunk flies, you would like to change the throws to suit your taste, that is fine. However, too much control throw could make the model difficult to control, so remember, "more is not always better."

BALANCE AND MOUNT THE PROPELLER

1. For optimum performance and motor efficiency, balance the propeller using a Top Flite Precision Magnetic Prop Balancer (TOPQ5700) or other suitable balancer. Use a hobby knife or sandpaper to sand the one side of the heavy blade until you can get the prop to balance.

2. Mount the propeller with the propeller washer and propeller nut. Tighten the nut with an 8mm or 5/16" wrench.

APPLY THE DECALS

1. Use scissors or a sharp hobby knife to cut out the decals.

2. Be certain the model is clean and free from oily fingerprints and dust. Prepare a dishpan or small bucket with a mixture of liquid dish soap and warm water—about one teaspoon of soap per gallon of water. Submerse the decal in the soap and water and peel off the paper backing. **Note:** Even though the decals have a "sticky-back" and are not the water transfer type, submersing them in soap & water allows accurate positioning and reduces air bubbles underneath.

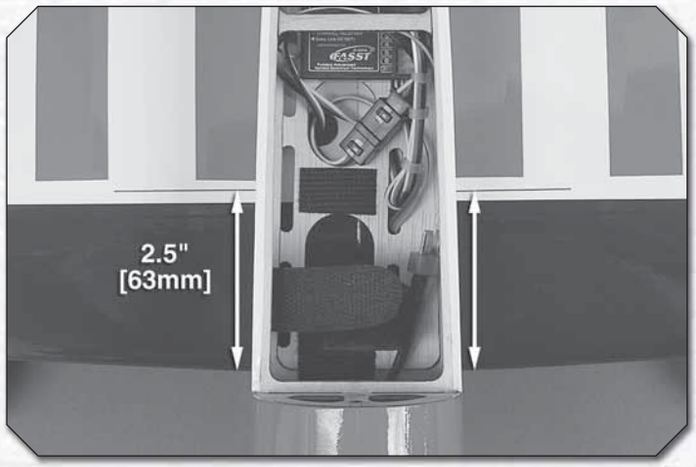
3. Position decal on the model where desired. Holding the decal down, use a paper towel to wipe most of the water away.

4. Use a piece of soft balsa or something similar to squeegee remaining water from under the decal. Apply the rest of the decals the same way.

BALANCE THE MODEL (C.G.)

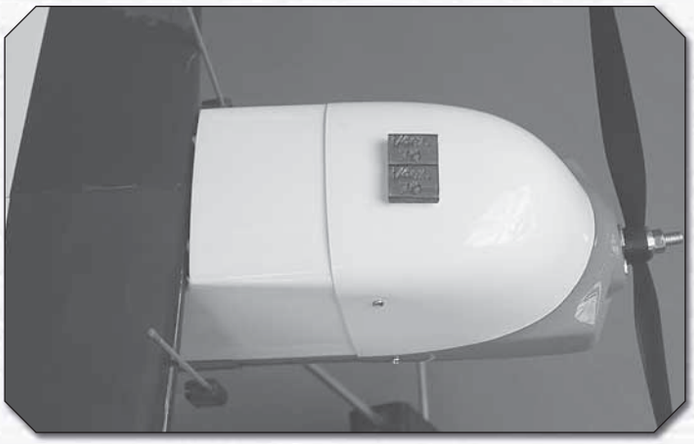
More than any other factor, the **C.G.** (balance point) can have the **greatest** effect on how a model flies, and may determine whether or not your first flight will be successful. If you value this model and wish to enjoy it for many flights, **DO NOT OVERLOOK THIS IMPORTANT PROCEDURE.** A model that is not properly balanced will be unstable and possibly unflyable.

At this stage the model should be completely ready-to-fly with all of the systems in place including the motor, propeller, motor battery, ESC, a pilot (if used) and the complete radio system.

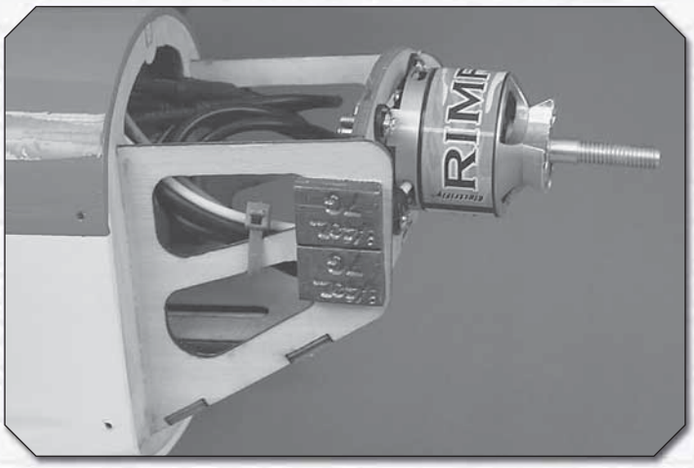


1. If using a Great Planes C.G. Machine to balance the Chipmunk, set the rulers to 2.5" [63mm]. If not using a C.G. Machine, use a fine-point felt-tip pen to draw short lines marking the balance point on the top of the wing 2.5" [63mm] back from the leading edge at the fuselage sides. Place 1/16" [1.5mm] strips of tape over the marks so you will be able to feel the balance point with your fingers when you turn the model upside-down.

This is where your model should balance for the first flights. Later, you may wish to experiment by shifting the C.G. up to 1/4" [6mm] forward or 1/4" [6mm] back to change the flying characteristics. Balancing the Chipmunk at the forward C.G. location will increase its stability, making it easier to fly for beginners but less maneuverable and aerobatic. Balancing the Chipmunk at the aft C.G. location will decrease its stability, making it more aerobatic for advanced pilots. In any case, **start at the recommended balance point** and never fly the Chipmunk outside the recommended range.



2. Place the model on your C.G. Machine or lift it with your fingers at the balance point you marked on the top of the wing. When the model is balanced correctly the wing and horizontal stabilizer will be level as shown in the photo. If the tail is low additional ballast will be required in the nose. To find out how much, carefully lay segments of Great Planes "stick-on" lead (GPMQ4485) on the fuselage over the location where it will be permanently attached inside.



3. Once you know how much weight is required, attach it to the model—do not attach nose weight to the cowl because it will place too much stress on the wood and cowl around the cowl mounting screws. Nose weight may be attached to the "engine box" next to the motor. Tail weight may be attached to the fuselage under the horizontal stabilizer. For the Chipmunk, it is likely that approximately 1/2 oz. [15 g] will be needed in the nose.

4. **IMPORTANT:** If you found it necessary to add any weight, recheck the C.G. after it has been attached.

BALANCE THE MODEL LATERALLY

1. With the model sitting in the assembly stand, lift the model by the tail skid and the propeller shaft several times and note which wing tip drops.

2. If one wing always drops, it means that side is heavy. Balance the airplane by adding weight to the bottom of the opposite wing near the tip. **An airplane that has been laterally balanced will track better in loops and other maneuvers.**

FLYING

The Carl Goldberg Chipmunk 400 ARF is a great-flying model that flies smoothly and predictably. The Chipmunk does not, however, possess the self-recovery characteristics of a primary R/C trainer and should be flown only by R/C pilots who have some experience.

PREFLIGHT

Monitor and limit your flight time using the timer in your transmitter or the timer on your wrist watch. When the batteries are getting low you will usually notice a performance drop before the ESC cuts off motor power, so when you notice the plane flying slower you should land. Often (but not always!), power can be briefly restored after the motor cuts off by holding the throttle stick all the way down for a few seconds.

To avoid an unexpected dead-stick landing on your first flight set your alarm or timer to a conservative 4 minutes. When the alarm sounds you can land your model; or, if you are an experienced pilot, you may continue to fly but plan for a dead-stick landing to see just how long the motor will run. Circle the plane upwind of the landing area until the motor quits. Note the run time, then land.

When you learn how much flight time you are getting you can adjust your timer accordingly. Always be conservative so the motor won't quit unexpectedly and you will have enough battery to land under power.

TAKEOFF

The Chipmunk may take off from very short grass or pavement, but short grass is best because it will track better. Taking off from a paved surface should be no problem as long as the model is pointing directly into any prevailing wind. If the nose is not pointing into the wind, and if there is anything stronger than a slight breeze, the model may "weathervane" into the wind as soon as you advance the throttle. If the conditions do not allow for a ROG (rise off ground) takeoff, the Chipmunk may be hand-launched instead. After checking the controls, simply advance the throttle to full power and have an assistant launch the model into the air at a straight-and-level or slightly nose up attitude. Keep the wings level, but allow the model to briefly sink until it gains enough airspeed to climb.

If taking off from the runway, smoothly but rapidly advance the throttle until the model gains enough speed. The rudder will not be very effective until the model is almost ready to take off. Once the plane has built up enough speed, apply "up" elevator to lift the model into the air. Continue to climb until the model has reached an altitude that is comfortable for you and make the first turn away from the runway.

FLIGHT

Continue to fly around for a minute while getting used to how the Chipmunk responds. The next priority will be to adjust the trims to get it to fly straight-and-level. Continue to fly around, getting the model properly trimmed while you learn its characteristics and get a good feel for how it flies. While still at a high altitude, test to see how it handles when it's time to land by cutting motor power to check the glide path. Allow it to glide as long as you like. Then, apply power and climb again to altitude. Perform this exercise a few times so you will be ready to make a good landing. Remember to monitor your flight time so the motor doesn't cut off.

LANDING

Landing any model directly into the wind is always preferred, but with a small, lightweight plane such as this it is even more important. A headwind will help keep the wings level, make the controls more effective and allow for a slower ground speed for softer touchdowns. When ready to land and on the downwind leg, cut or reduce motor power to allow the model to descend. Make the turn across the wind toward the runway, simultaneously keeping the nose down so the model maintains airspeed. Add power if the model is too far away and not going to reach the runway. When the model is a few feet [1 meter] off the ground, apply increasing amounts of up elevator allowing the model to slow while it continues to descend. Ideally, in calm conditions, you will be holding full up elevator at the point of touchdown. If the conditions are breezy you may have to "fly" the model to the ground with a small amount of motor power and less up elevator. Once the model touches down and has lost flying speed, hold full up elevator to keep the tail down.

One final note about flying your Chipmunk. Have a goal or flight plan in mind for every flight. This can be learning a new maneuver(s), improving a maneuver(s) you already know, or learning how the model behaves in certain conditions (such as on high or low rates). This is not necessarily to improve your skills (though it is never a bad idea!), but more importantly so you do not surprise yourself by impulsively attempting a maneuver and suddenly finding that you've run out of time, altitude or airspeed. Every maneuver should be deliberate, not impulsive. For example, if you're going to do a loop, check your altitude, mind the wind direction (anticipating rudder corrections that will be required to maintain heading), remember to throttle back at the top, and make certain you are on the desired rates (high/low rates). A flight plan greatly reduces the chances of crashing your model just because of poor planning and impulsive moves.

REPLACEMENT PARTS

Replacement parts for the Super Chipmunk EP ARF are available from your hobby dealer or mail-order company:

GPMA4270 . . . . Fuselage
GPMA4271 . . . . Wing
GPMA4272 . . . . Canopy
GPMA4273 . . . . Landing Gear
GPMA4274 . . . . Tail Set
GPMA4275 . . . . Cowl
GPMA4276 . . . . Wheel Pants
GPMA4277 . . . . Decals

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