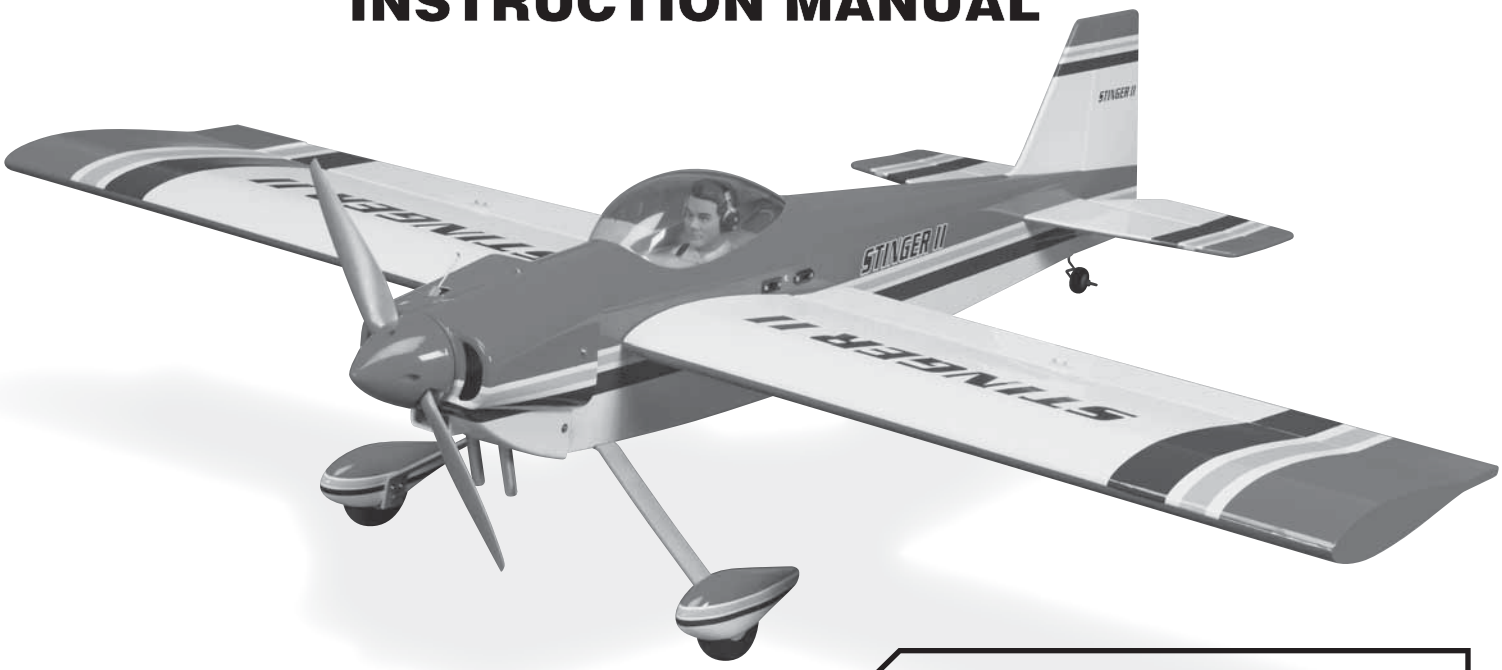
STINGER™ II

INSTRUCTION MANUAL



SPECIFICATIONS

Wingspan:	49.5 in [1255mm]	**Weight:**	5 – 5.5 lb [2270 – 2490 g]	**Length:**	46 in [1170mm]
Wing Area:	586 in² [37.8 dm²]	**Wing Loading:**	20 – 22 oz/ft² [61 – 67 g/dm²]	**Radio:**	4-Channel with 5 standard servos and standard receiver
				Engine:	.46 – .55 cu in [7.5 – 9cc] 2-stroke .70 – .72 cu in [11.5 – 12cc] 4-stroke

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 the address below:

Hobby Services
3002 N. Apollo Dr. Suite 1
Champaign IL 61822 USA

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.

LANIER RC™ By Great Planes®

Champaign, Illinois
(217) 398-8970, Ext 5
airsupport@greatplanes.com

GPMA1010 Mnl

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INTRODUCTION

Congratulations on your purchase of the Stinger II .46 ARF! Whether you're just purchasing your second or third plane, or you're a veteran pilot, the simplicity of the Stinger assembly and the performance in flight will surely satisfy all. Much of the building has already been completed at the factory assuring your Stinger will spend less time on the bench and more time in the air. Once in the air, the Stinger will take whatever you throw at it and ask for more. The Stinger airframe holds up to aggressive flying, but can fly slow and track straight when asked to.

For the latest technical updates or manual corrections to the Great Planes Stinger II .46 ARF visit the Great Planes web site at www.greatplanes.com. Open the "Airplanes" link, then select the Stinger II .46 ARF. If there is new technical information or changes to this model a "tech notice" box will appear in the upper left corner of the page.

AMA

Academy of Model Aeronautics: If you are not already a member of the AMA, please join! The AMA is the governing body of model aviation and membership provides liability insurance coverage, protects modelers' rights and interests and is required to fly at most R/C sites.

Academy of Model Aeronautics
5151 East Memorial Drive
Muncie, IN 47302-9252
Tele. (800) 435-9262
Fax (765) 741-0057
modelaircraft.org

IMPORTANT!!!
Two of the most important things you can do to preserve the radio controlled aircraft hobby are to avoid flying near full-scale aircraft and avoid flying near or over groups of people.

PROTECT YOUR MODEL, YOURSELF & OTHERS... FOLLOW THESE IMPORTANT SAFETY PRECAUTIONS

1. Your Stinger II .46 ARF should not be considered a toy, but rather a sophisticated, working model that functions very much like a full-size airplane. Because of its performance capabilities, the Stinger, if not assembled and operated correctly, could possibly cause injury to yourself or spectators and damage to property.

2. You must assemble the model **according to the instructions**. Do not alter or modify the model, as doing so may result in an unsafe or unflyable model. In a few cases the instructions may differ slightly from the photos. In those instances the written instructions should be considered as correct.

3. You must take time to **build straight, true** and **strong**.

4. You must use an R/C radio system that is in first-class condition, and a correctly sized engine and components (fuel tank, wheels, etc.) throughout the building process.

5. You must correctly install all R/C and other components so that the model operates correctly on the ground and in the air.

6. You must check the operation of the model before **every** flight to ensure that all equipment is operating and that the model has remained structurally sound. Be sure to check clevises or other connectors often and replace them if they show any signs of wear or fatigue.

7. If you are not an experienced pilot or have not flown this type of model before, we recommend that you get the assistance of an experienced pilot in your R/C club for your first flights. If you're not a member of a club, your local hobby shop has information about clubs in your area whose membership includes experienced pilots.

8. While this kit has been flight tested to exceed normal use, if the plane will be used for extremely high stress flying, such as racing, or if an engine larger than one in the recommended range is used, the modeler is responsible for taking steps to reinforce the high stress points and/or substituting hardware more suitable for the increased stress.

9. **WARNING:** The cowl and wheel pants included in this kit are made of fiberglass, the fibers of which may cause eye, skin and respiratory tract irritation. Never blow into a part to remove fiberglass dust, as the dust will blow back into your eyes. Always wear safety goggles, a particle mask and rubber gloves when grinding, drilling and sanding fiberglass parts. Vacuum the parts and the work area thoroughly after working with fiberglass parts.

We, as the kit manufacturer, provide you with a top quality, thoroughly tested kit and instructions, but ultimately the quality and flyability of your finished model depends on how you build it; therefore, we cannot in any way guarantee the performance of your completed model, and no representations are expressed or implied as to the performance or safety of your completed model.

Remember: Take your time and follow the instructions to end up with a well-built model that is straight and true.

DECISIONS YOU MUST MAKE

This is a partial list of items required to finish the Stinger II .46 ARF that may require planning or decision making before starting to build. Order numbers are provided in parentheses.

Radio Equipment

The Stinger requires a minimum 4-channel radio system with five 44 oz.-in. [3.2 kg-cm] minimum standard sized servos.

In addition, two 6" [152mm] servo extensions are required for the aileron servos. If you are using a radio system that does not support mixing functions, a Y-harness will also be required to connect the aileron servos to the receiver.

Recommended part numbers for the radio components are provided below:

- ❏ (5) Futaba® S3004 Standard Ball Bearing Servo (FUTM0004)
- ❏ (2) Hobbico® 6" Extension Futaba J (HCAM2000)
- ❏ Futaba Dual Servo Extension 6" J (FUTM4130)
- ❏ Ernst Charge Receptacle Futaba J FM (ERNM3001)

Engine Recommendations

The recommended engine/motor size for the Stinger is a .46-.55 cu in [7.5-9cc] two-stroke engine or a .70-.72 cu in [11.5-12cc] four-stroke engine. A pitts muffler is also required. Choose a propeller based on the engine manufacturer's recommendation. Order numbers are provided below:

- ❏ O.S.® .46AX ABL w/Muffler (OSMG0547)
- ❏ Bisson Pitts Muffler O.S. 55AX (BISG4046)
- ❏ O.S.® FS72-A Ring (OSMG0877)

ADDITIONAL ITEMS REQUIRED

Hardware and Accessories

This is the list of hardware and accessories required to finish the Stinger. Order numbers are provided in parentheses:

- ❏ R/C foam rubber 1/4" [6mm] (HCAQ1000)
- ❏ 3' [900mm] standard silicone fuel tubing (GPMQ4131)

Adhesives and Building Supplies

This is the list of Adhesives and Building Supplies that are required to finish the Stinger II .46 ARF:

- ❏ 1/2 oz. [15g] Thin Pro™ CA (GPMR6001)
- ❏ Pro 30-minute epoxy (GPMR6047)
- ❏ Threadlocker thread locking cement (GPMR6060)
- ❏ Denatured alcohol (for epoxy clean up)
- ❏ Drill bits: 1/16" [1.6mm], 5/64" [2mm], 3/32" [2.4mm]
- ❏ Great Planes Tap & Drill Set 6-32 (GPMR8102)
- ❏ Tap handle (GPMR8120)
- ❏ Rotary tool with cutting bit
- ❏ Revell® Premium Soft Handle Knife w/Blades (5) (RMXR6900)
- ❏ Top Flite® MonoKote® sealing iron (TOPR2100)
- ❏ Top Flite Hot Sock™ iron cover (TOPR2175)
- ❏ Panel Line Pen (TOPQ2510)
- ❏ Hobbico Steel T-Pins 1" (100) (HCAR5100)
- ❏ Harry Higley's 3/16" Extended Drill (HIGR1020)
- ❏ Small clamps
- ❏ Masking tape
- ❏ Household oil

Optional Supplies and Tools

Here is a list of optional tools that will help you build the Stinger II .46 ARF:

- ❏ 1/2 oz. [15g] Thick Pro CA- (GPMR6013)
- ❏ 1/2 oz. [15g] Medium Pro CA+ (GPMR6007)
- ❏ 2 oz. [57g] spray CA activator (GPMR6035)
- ❏ 4 oz. [113g] aerosol CA activator (GPMR6034)
- ❏ CA applicator tips (HCAR3780)
- ❏ CA debonder (GPMR6039)
- ❏ Great Planes Pro Epoxy 6-Minute Formula 4 oz (GPMR6042)

- ❏ Epoxy brushes 6, (GPMR8060)
- ❏ Mixing sticks (GPMR8055)
- ❏ Mixing cups (GPMR8056)
- ❏ Pliers with wire cutter (HCAR0630)
- ❏ T.A. Emerald Performance Duster Compressed Air (TAEC1060)
- ❏ Servo horn drill (HCAR0698)
- ❏ Hobby Heat™ micro torch II (HCAR0755)
- ❏ Dead Center™ Engine Mount Hole Locator (GPMR8130)
- ❏ Precision Magnetic Prop Balancer (TOPQ5700)
- ❏ AccuThrow™ Deflection Gauge (GPMR2405)
- ❏ CG Machine™ (GPMR2400)
- ❏ Hobbico Flexible 18" Ruler Stainless Steel (HCAR0460)
- ❏ Top Flite MonoKote trim seal iron (TOPR2200)
- ❏ Top Flite MonoKote heat gun (TOPR2000)
- ❏ Hobbico Pin Vise 1/16 Collet w/6 Bits (HCAR0696)
- ❏ Hobbico 8-Piece Ball Tip Hex L Wrench SAE (HCAR0520)
- ❏ Hobbico 7-Piece Ball Tip Hex L Wrench Metric (HCAR0521)
- ❏ Great Planes Clevis Installation Tool (GPMR8030)

Building Stand

A building stand or cradle comes in handy during the build. We use the Robart Super Stand II (ROBP1402) for all our projects in R&D, and it can be seen in pictures throughout this manual.

IMPORTANT BUILDING NOTES

- When you see the term ***test fit*** in the instructions, it means that you should first position the part on the assembly **without using any glue**, and then slightly modify or *custom fit* the part as necessary for the best fit.
- Whenever the term ***glue*** is written you should rely upon your experience to decide what type of glue to use. When a specific type of adhesive works best for that step, the instructions will make a recommendation.
- Whenever just ***epoxy*** is specified you may use ***either*** 30-minute (or 45-minute) epoxy ***or*** 6-minute epoxy. When 30-minute epoxy is specified it is **highly** recommended that you use only 30-minute (or 45-minute) epoxy, because you will need the working time and/or the additional strength.
- **Photos** and **sketches** are placed **before** the step they refer to. Frequently you can study photos in following steps to get another view of the same parts.
- The stabilizer and wing incidences and engine thrust angles have been factory-built into this model. However, some technically-minded modelers may wish to check these measurements anyway. To view this information visit the web site at ***greatplanes.com*** and click on "Technical Data." Due to manufacturing tolerances which will have little or no effect on the way your model will fly, please expect slight deviations between your model and the published values.

ORDERING REPLACEMENT PARTS

Replacement parts for the Stinger II .46 ARF are available using the order numbers in the Replacement Parts List that follows. The fastest, most economical service can be provided by your hobby dealer or mail-order company.

To locate a hobby dealer, visit the Great Planes web site at **greatplanes.com**. Choose "Where to Buy" at the bottom of the menu on the left side of the page. Follow the instructions provided on the page to locate a U.S., Canadian or International dealer.

Parts may also be ordered directly from Hobby Services by calling (217) 398-0007, or fax at (217) 398-7721, but full retail prices and shipping and handling charges will apply. Illinois and Nevada residents will also be charged sales tax. If ordering via fax, include a Visa® or MasterCard® number and expiration date for payment.

Mail parts orders and payments by personal check to:

Hobby Services
3002 N. Apollo Drive, Suite 1
Champaign, IL 61822

Be certain to specify the order number exactly as listed in the **Replacement Parts List**. Payment by credit card or personal check only; no C.O.D.

If additional assistance is required for any reason, contact Product Support by telephone at (217) 398-8970, or by e-mail at **productsupport@greatplanes.com**.

REPLACEMENT PARTS LIST

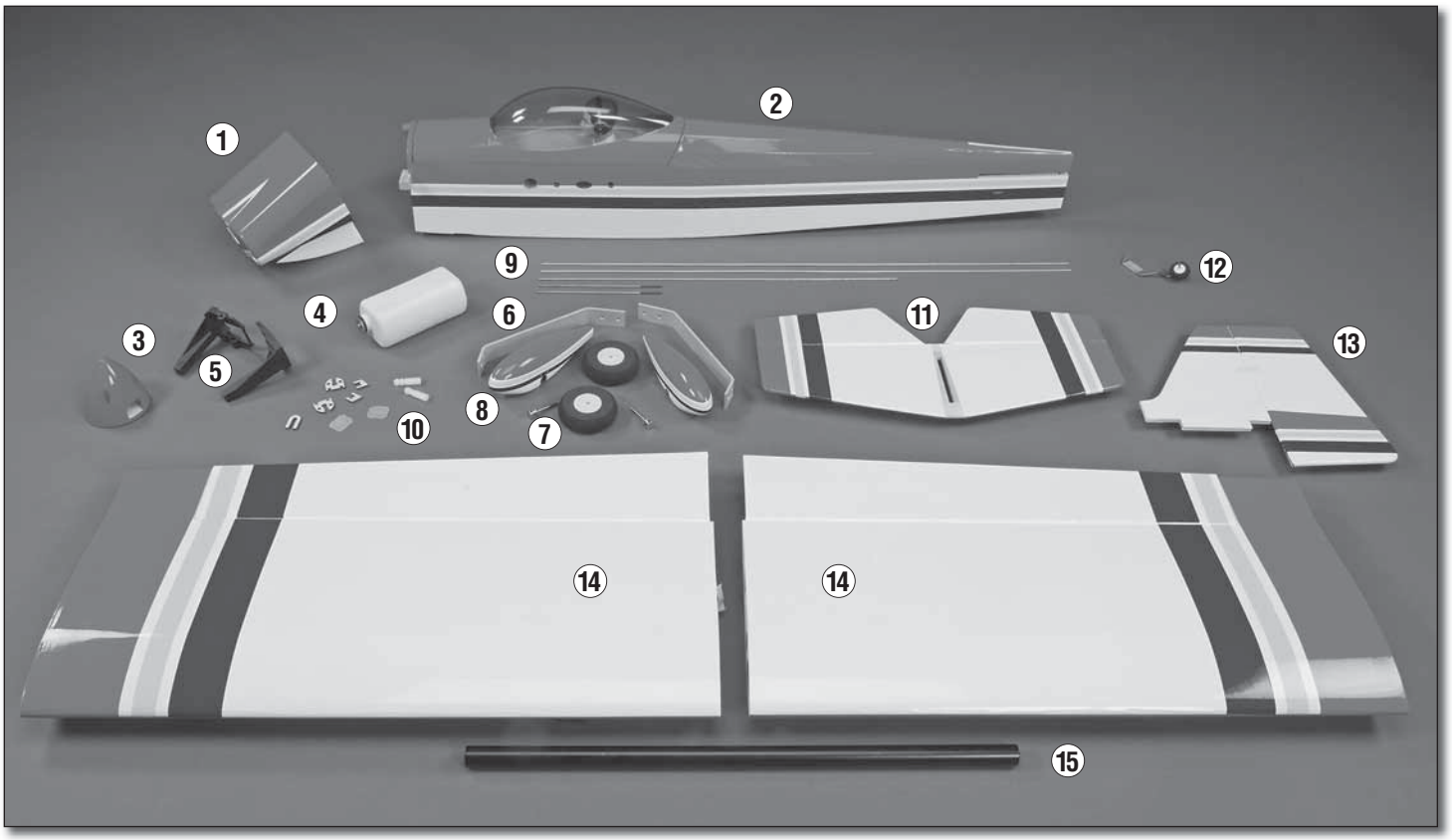
Order No.	Description
GPMA4230	Wing
GPMA4231	Fuselage
GPMA4232	Tail Surface Set
GPMA4233	Hatch
GPMA4234	Cowl
GPMA4235	Landing Gear
GPMA4236	Wheel Pants
GPMA4237	Spinner
GPMA4238	Wing Tube
GPMA4239	Decals
NOTE ▶	Full-size plans are not available. You can download a copy of this manual at www.greatplanes.com.

KIT INSPECTION

Before starting to build, take an inventory of this kit to make sure it is complete, and inspect the parts to make sure they are of acceptable quality. If any parts are missing or are not of acceptable quality, or if you need assistance with assembly, contact Product Support. When reporting defective or missing parts, use the part names exactly as they are written in the Kit Contents list.

Great Planes Product Support:
3002 N Apollo Drive, Suite 1
Champaign, IL 61822
Telephone: (217) 398-8970, ext. 5
Fax: (217) 398-7721
E-mail: airsupport@greatplanes.com

KIT CONTENTS



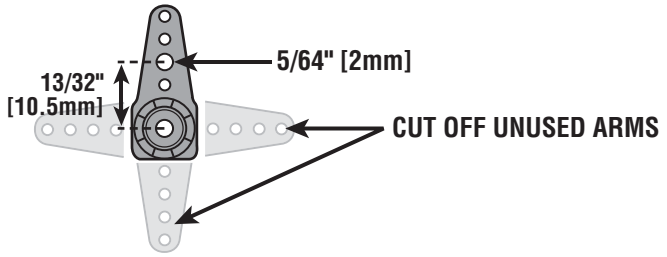
1. Cowl
2. Fuselage
3. Spinner
4. Fuel Tank
5. Engine Mount
6. Main Landing Gear
7. Main Wheels and Axles
8. Wheel Pants
9. Pushrods
10. Hinges/Hardware
11. Horizontal Stabilizer
12. Tail Wheel Assembly
13. Vertical Fin
14. Wing Halves
15. Wing Tube

PREPARATIONS

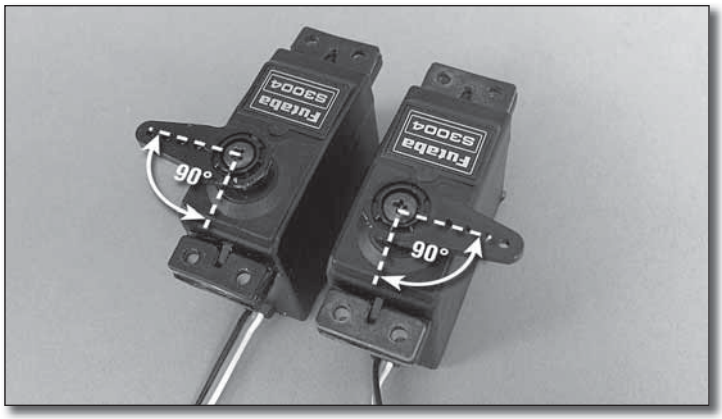
❏ 1. If you have not done so already, remove the major parts of the kit from the box and inspect for damage. If any parts are damaged or missing, contact Product Support at the address or telephone number listed in the “Kit Inspection” section on page 5.

❏ 2. Remove the tape and separate all the control surfaces. Use a covering iron with a covering sock on high heat to tighten the covering if necessary. Apply pressure over sheeted areas to **thoroughly** bond the covering to the wood.

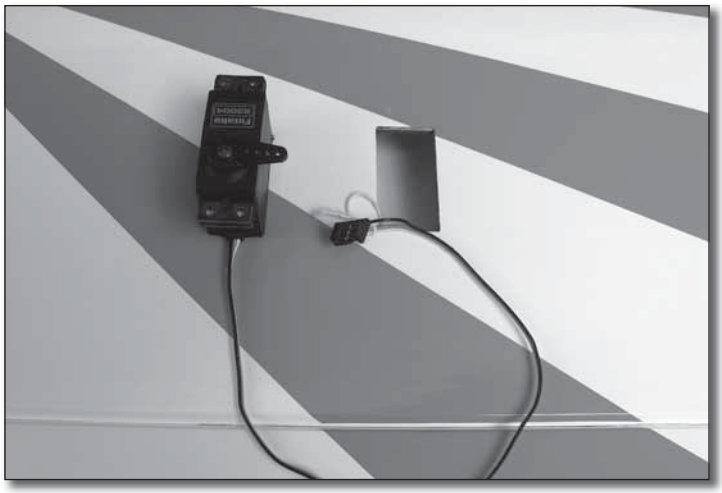
ASSEMBLE THE WING

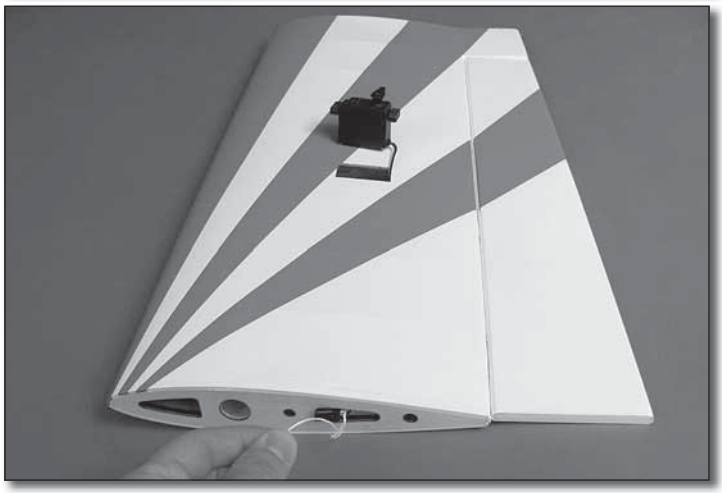


❏ 1. Use your radio system to electronically center the aileron servos. Choose the best orientation of the arms on the servo outputs shafts so they are parallel with the servo cases. Cut three arms from a four-armed servo arm for each aileron servo so they match the photo in step 2. Enlarge the second inner hole of each remaining arm with a 5/64" [2mm] drill bit.

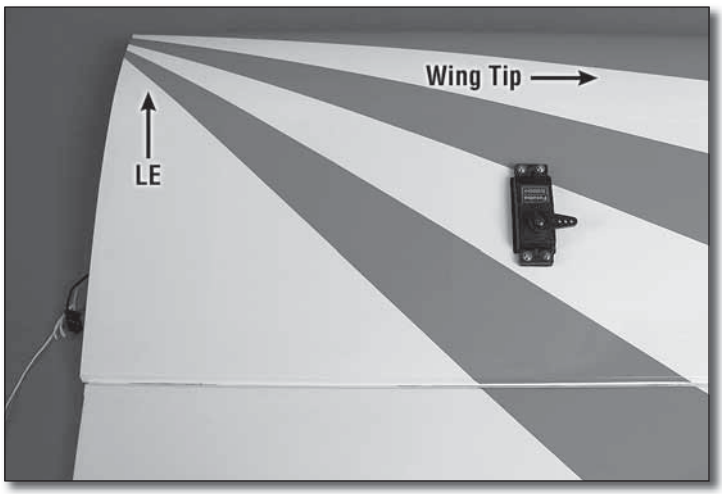


❏ 2. Center the servos with your radio system and install the servo arms to the servos perpendicular to the servo cases as shown. Be sure to reinstall the servo arm screws into the servos. Install the rubber grommets and eyelets onto the servo mounting tabs.

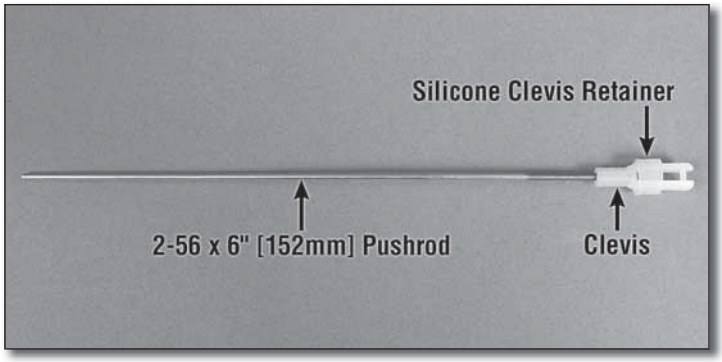




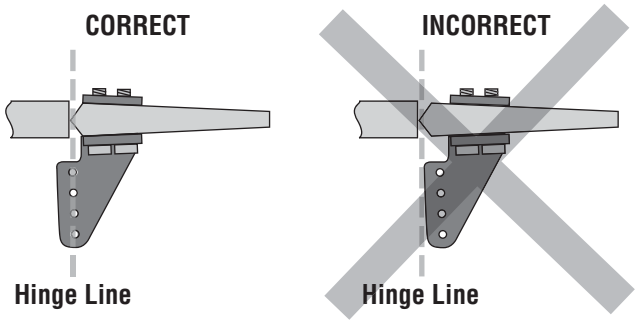
❏ 3. Use the strings taped inside the aileron servo openings to pull the servo leads through the wing.

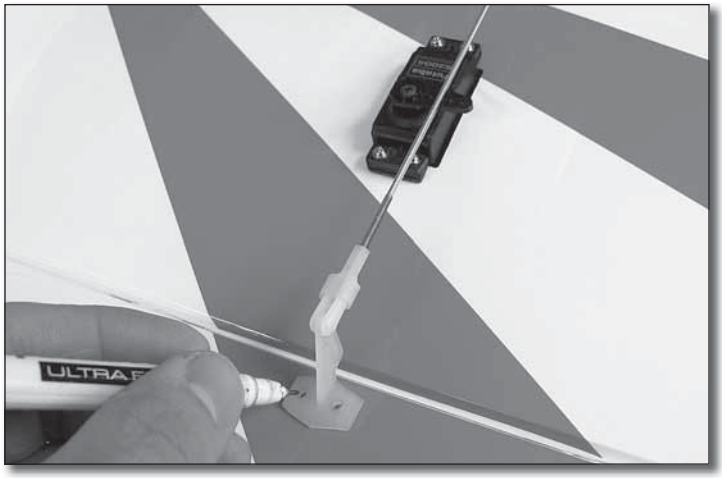


❏ 4. Fit the servos into the servo openings and drill 1/16" [1.6mm] holes through the eyelets on the servos into the rails. Thread a servo mounting screw (included with the servo) into each hole and back it out. Apply a drop of thin CA to each hole to harden the surrounding wood. When the CA has dried, install the servos into the openings as shown using the screws supplied with the servos.



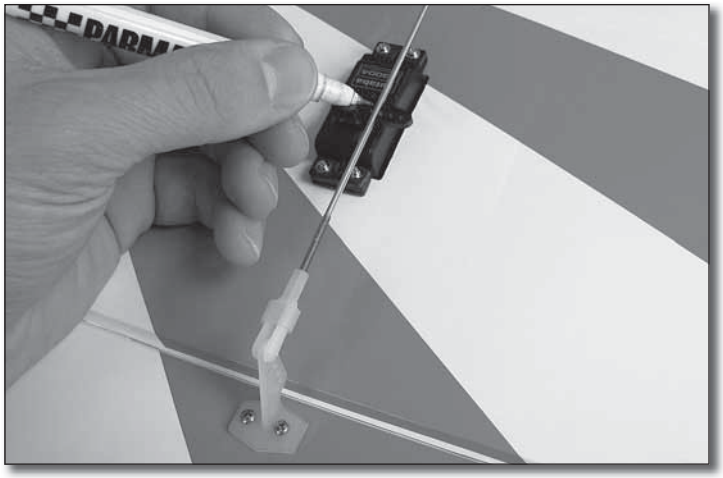
❏ 5. Thread a nylon clevis onto each of the two 6" [152mm] pushrods 20 complete turns. Slide a silicone clevis retainer onto the base of each clevis.



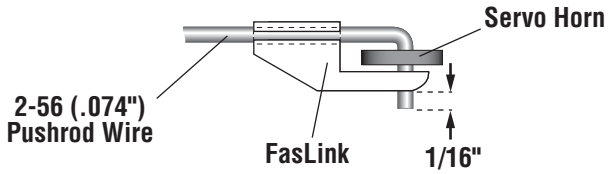


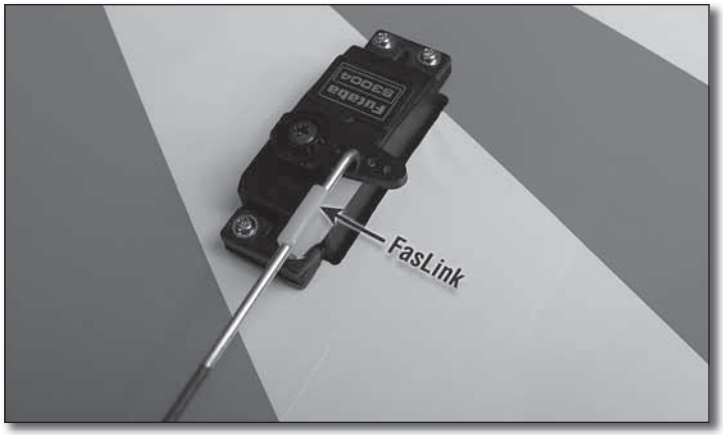
❏ 6. Attach a clevis to the outer hole of a large control horn. Position the control horn onto the aileron, aligning the pushrod with the second inner hole of the aileron servo arm. Position the control horn over the plywood plate in the aileron (if you cannot see it, hold the aileron at a shallow angle in good lighting or use a small pin to puncture the covering). When satisfied, use a felt-tip pen to mark the location of the control horn mounting holes onto the aileron. Repeat this step for the other wing panel.

❏ 7. Drill 5/64" [2mm] holes at the marks you made. Install the control horns onto the ailerons using 2-56 x 5/8" [16mm] machine screws and control horn backplates.



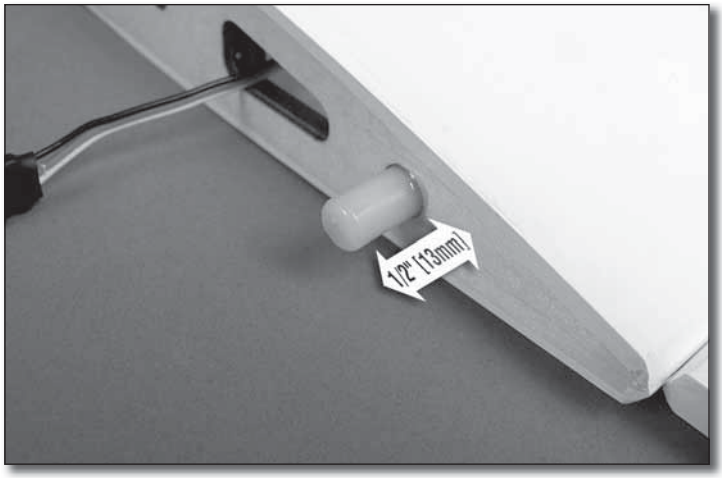
❏ 8. With the ailerons in the neutral position (use tape or small clamps to hold them in place) and the servos centered, mark the pushrod wires where they cross the second inner holes in the servo arms.





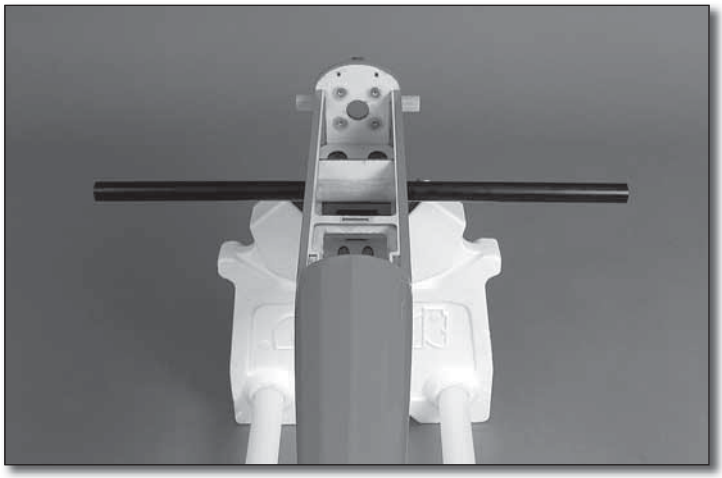
❏ 9. Make a 90° bend at the mark on each pushrod and cut off the excess pushrod 1/4" [6mm] beyond the bends. Attach the pushrods to the servo arms using nylon FasLinks. Thread the clevises up or down on the pushrods as necessary to center the ailerons with the servo arms still perpendicular to the servo cases. When satisfied, slide the silicone clevis retainers to the ends of the clevises to secure them.

❏ 10. Attach a 6" [152mm] servo extension to each aileron servo. Secure the connections using the included pieces of heat shrink tubing. A heat gun, hair dryer or lighter can be used to shrink the tubing onto the connections.

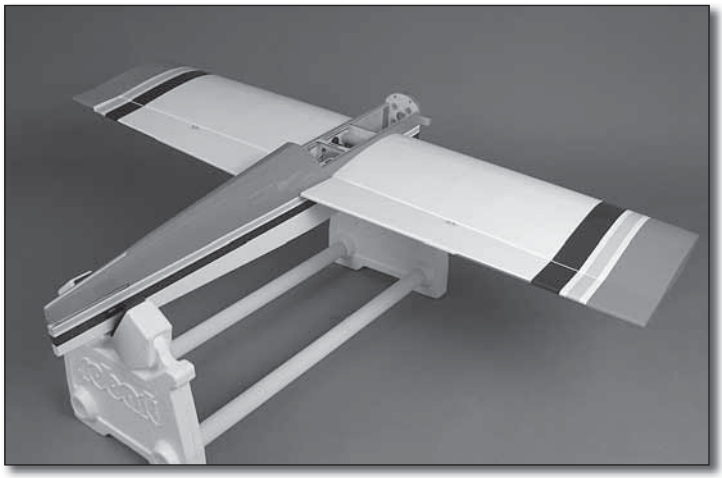


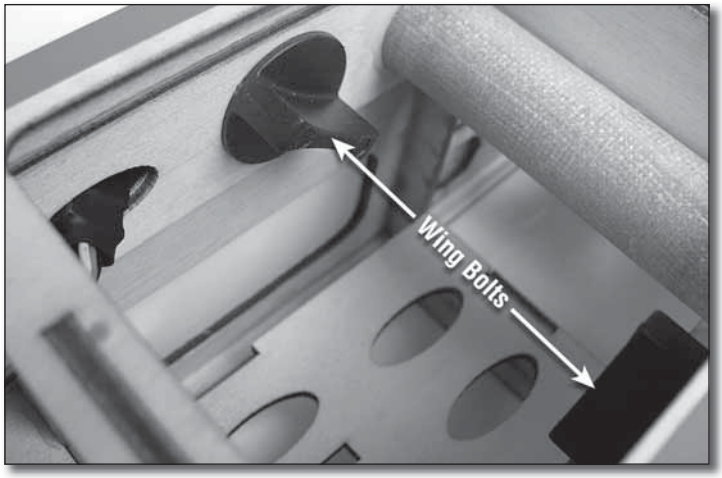
❏ 11. Mix up a small batch of epoxy (6-minute epoxy will work fine) and coat the grooved ends of the nylon anti-rotation pins. Insert the pins into the root ribs of the wing panels leaving the smooth ends protruding out 1/2" [13mm]. Wipe away any excess epoxy using a cloth dampened with denatured alcohol and allow the epoxy to cure undisturbed.

ASSEMBLE THE TAIL SECTION



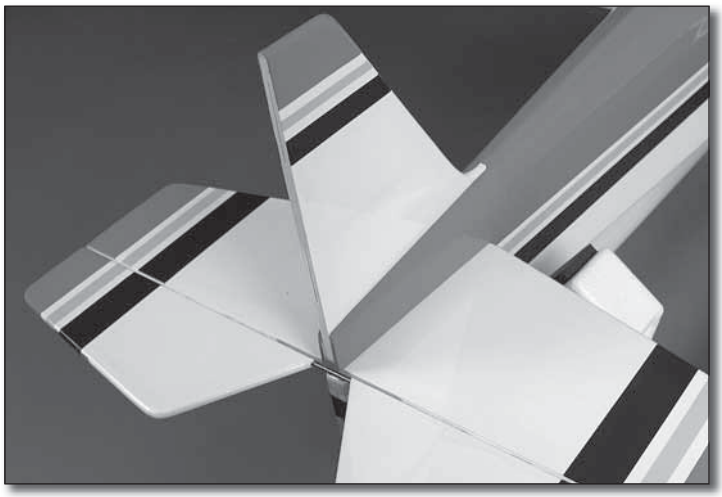
❏ 1. Insert the wing tube into the fuselage and center it left and right.



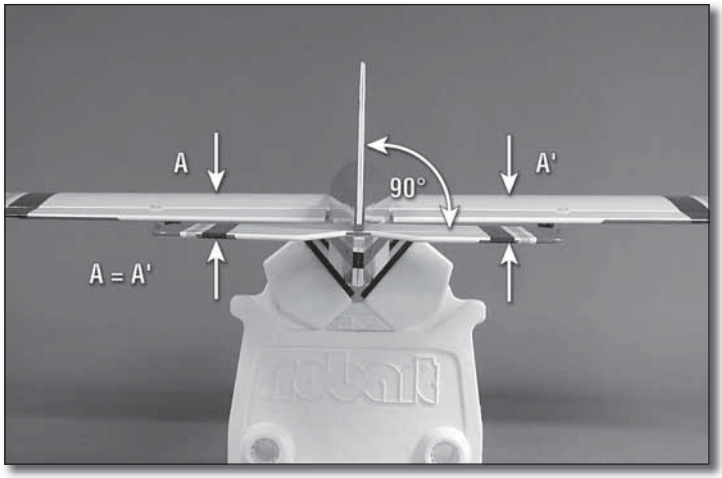


❏ 2. Fit the wings onto the wing tube. The aileron servo leads should pass through the cutouts in the fuse sides and the anti-rotation pins fit into their mating holes in the fuse. Use the included nylon wing bolts to tighten the wings to the fuselage.

❏ 3. Test fit the horizontal stabilizer into the stab slot in the fuselage.



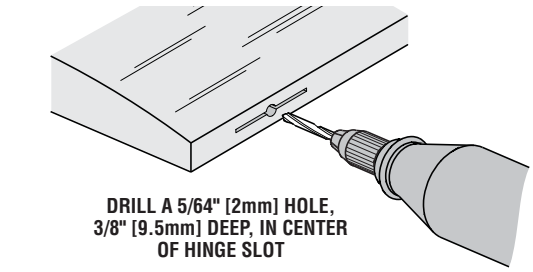
❏ 4. Insert the vertical fin into the slot on the top of the fuselage. The tab at the bottom of the fin fits into the slot in the stabilizer which will align the position of the stabilizer in the fuselage.

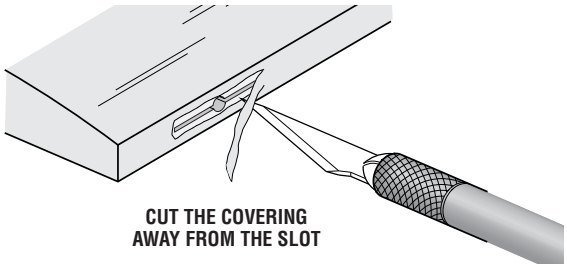


❏ 5. Stand back 15-20ft [5-6m] and check to be sure the stab is parallel to the wing. If necessary, adjust the stab saddle as needed by lightly sanding it until the stab and wing are parallel. Weight can also be added to the high side of the stab to bring it parallel with the wing. Also confirm that the vertical fin is square to the stab. If not, make note of this and be prepared to use some masking tape to pull the vertical fin square with the stab when gluing the parts in place in the next step.

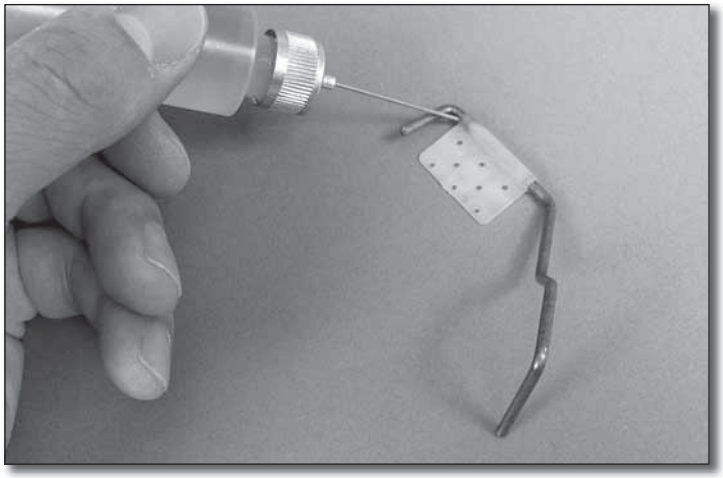
❏ 6. Mix up approximately 3/8 oz [10cc] of 30-minute epoxy. Coat the exposed wood on the horizontal stab with epoxy as well as the inside of the stab slot **in the fuselage**. Fit the stab into the stab slot and wipe away any excess epoxy with alcohol. Coat the exposed wood on the vertical fin and install it into the fuselage. Thoroughly clean the tail section with alcohol and take another step back to view the model from behind. Add weight to one side of the stab if necessary to bring it parallel with the wing and use tape to pull the fin square with the stab if necessary. When satisfied, let the epoxy completely cure undisturbed.

❏ 7. You can now remove the wing panels and set them aside.

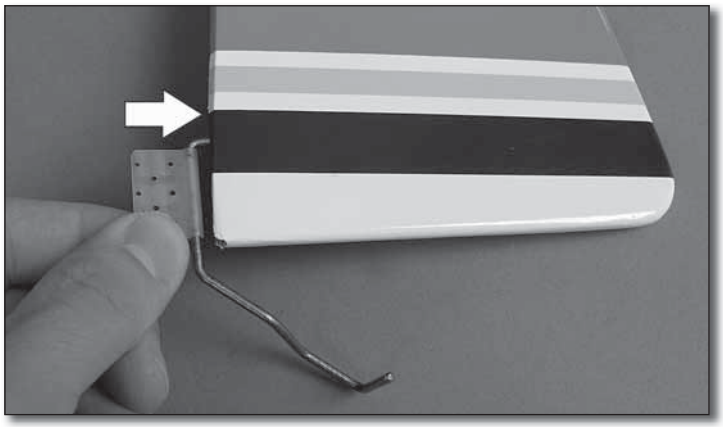




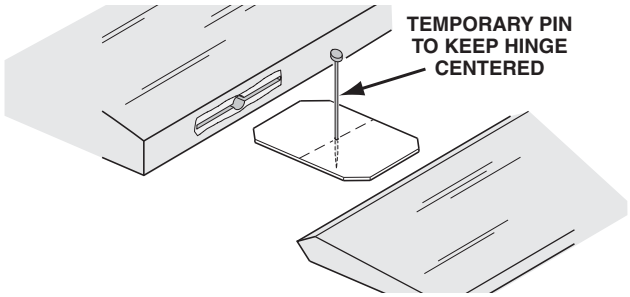
❏ 8. Prepare the rudder hinge slots by drilling a 3/32" [2.4mm] hole 1/2" [13mm] deep in the center of each hinge slot in the vertical fin (and fuselage) and rudder. Use a sharp hobby knife to carefully cut away the covering just around each hinge slot.

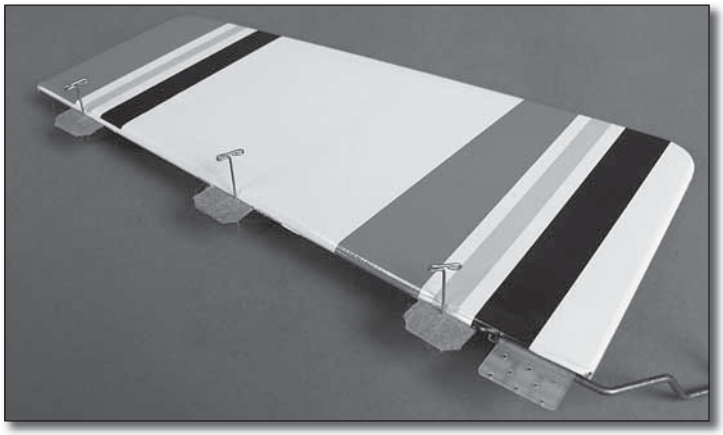


❏ 9. To prevent epoxy from hardening in the tail wheel wire tab, apply some oil (household oil works fine) to both ends of the tab hinge.

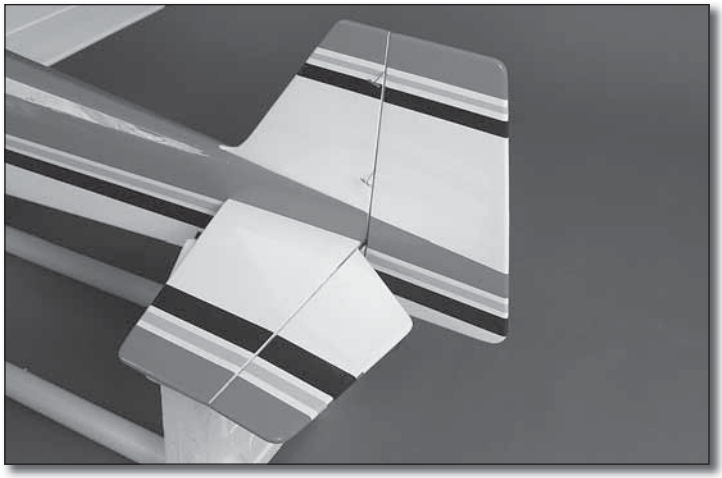


❏ 10. Test fit the tail wheel wire into the rudder as shown.





❏ 11. Fit a CA hinge into each hinge slot in the rudder. If the hinges are difficult to install, use a hobby knife to slightly enlarge the slots. Push a pin (T-pins work well for this) through the middle of each hinge to keep them centered.

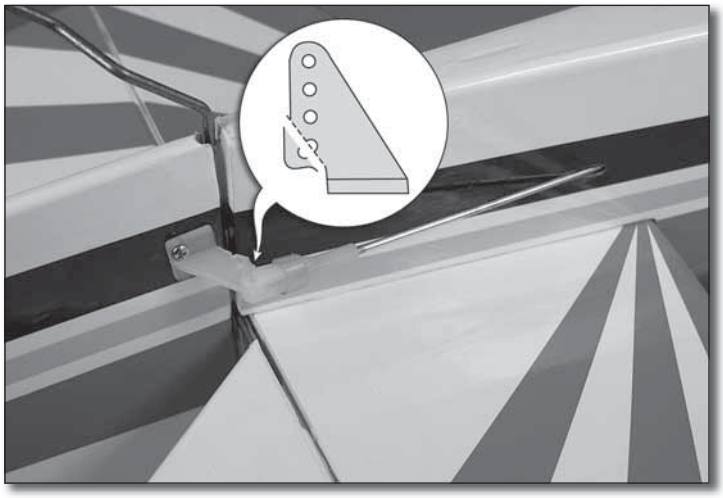


❏ 12. Test fit the rudder to the fuselage by inserting the other sides of the hinges into their mating slots and the nylon tab on the tail wheel wire into the larger slot at the bottom of the fuse. If necessary, use a hobby knife to enlarge the hinge slots to more easily accept the hinges.

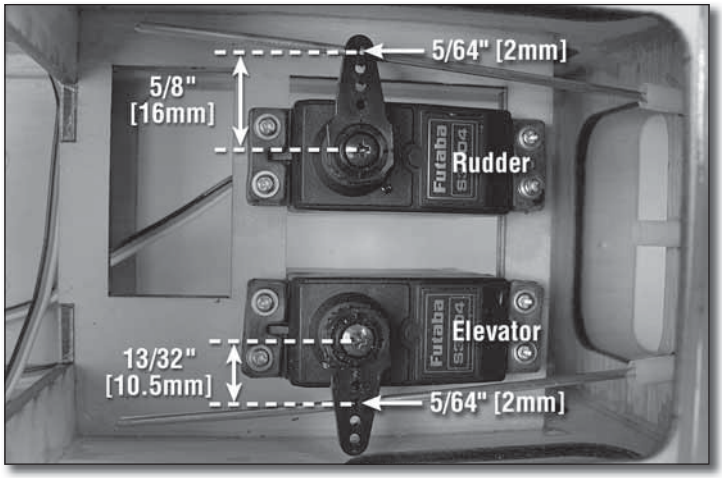
❏ 13. When satisfied with the fit, remove the rudder from the fuse and remove the tail wheel wire from the rudder. Mix up a small batch of epoxy and apply a light coating to the end of the tail wheel wire that fits into the rudder and also to both sides of the nylon tab. Reinstall the rudder onto the fuse (using the CA hinges) taking care to wipe away any excess epoxy with alcohol. Remove the pins from the hinges and position the rudder against the TE of the fin. The hinge gap between the rudder and fin should only be wide enough to allow a small line of light through. When satisfied, apply 6 drops of thin CA glue to the center of each hinge on both sides (the hinges will hold the rudder in place while the epoxy on the tail wheel wire and tab hardens). When the CA has dried, gently pull on the rudder to confirm that it is securely glued in place.

INSTALL THE TAIL PUSHRODS AND SERVOS

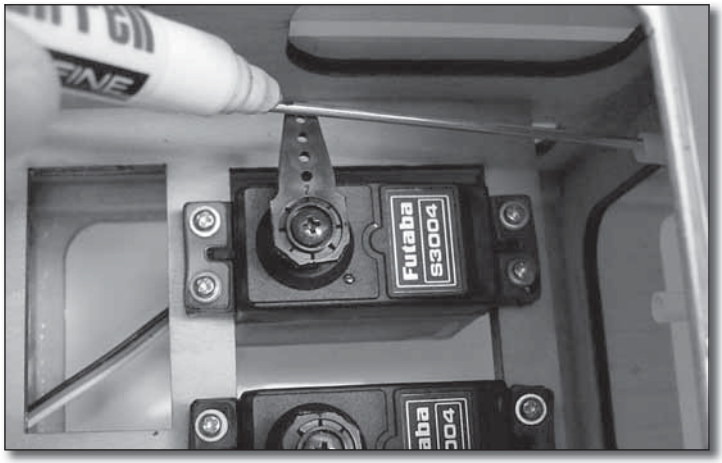
❏ 1. Thread a nylon clevis onto each of the 27" [686mm] pushrods along with silicone clevis retainers. Attach the clevis of one pushrod to the outer hole of a large control horn. Insert the pushrod into the elevator pushrod exit slot. Use the pushrod to position the control horn onto the underside of the right elevator half with the holes aligned over the hinge line and mark the location of the control horn mounting holes. Drill 5/64" [2mm] holes at your marks and install the control horn using two 2-56 x 1/2" [13mm] screws and a control horn backplate.



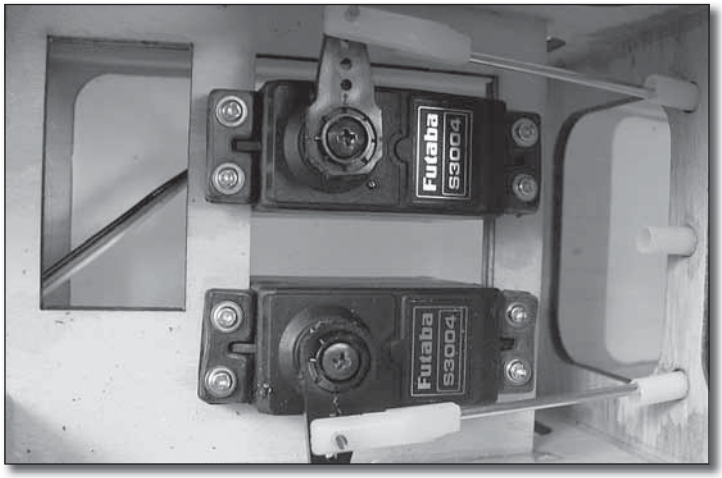
❏ 2. Trim the bottom corner from the rudder control horn (small control horn). Install the control horn onto the left side of the rudder using two 2-56 x 1/2" [13mm] machine screws in the same manner as you did with the elevators.



❏ 3. Trim three arms from two four-arm servo arms. Center the servos using your radio system and install the arms onto the servos in the orientation shown being sure to reinstall the servo arm screws. Align the second inner hole of the elevator servo arm with the elevator pushrod and mount the servo to the servo tray. Align the outer hole of the rudder servo arm with the rudder pushrod and mount the rudder servo to the tray in the same manner.

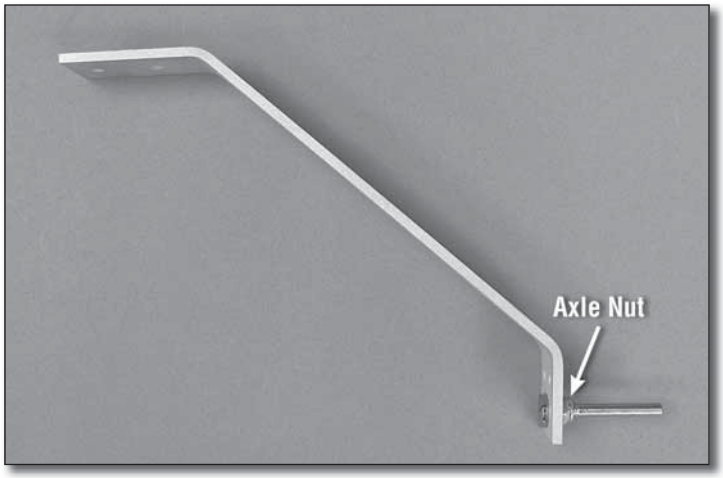


❏ 4. Use tape or small clamps to hold the elevators and rudder in the neutral position. As you did with the ailerons, mark where the pushrods cross the holes in the servo arms referenced in the previous step.

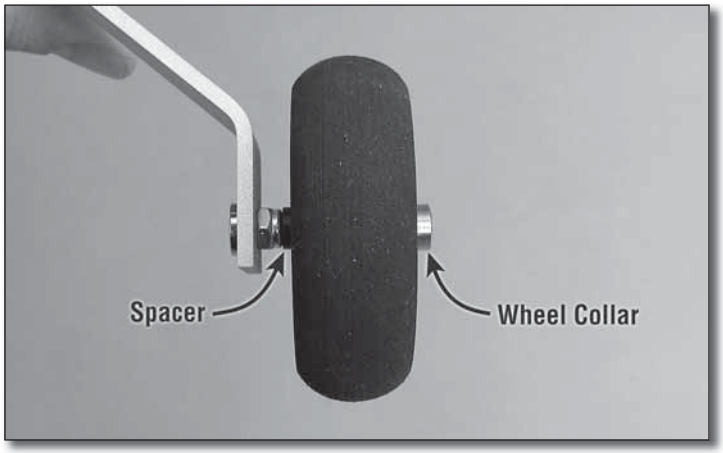


❏ 5. Make 90° bends at your marks and cut off the excess pushrod 1/4" [6mm] beyond the bends. Connect the pushrods to the tail servos using nylon FasLinks.

ASSEMBLE AND INSTALL THE LANDING GEAR

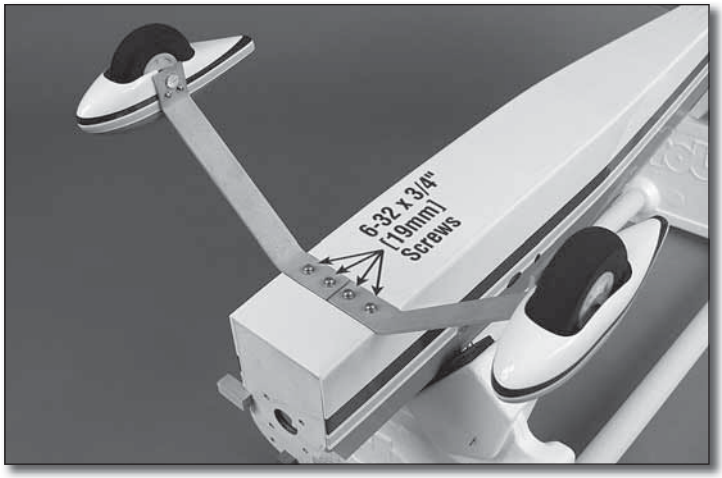


❏ 1. Install an axle into each main landing gear leg and tightly secure them using 7/32"-28 nuts.

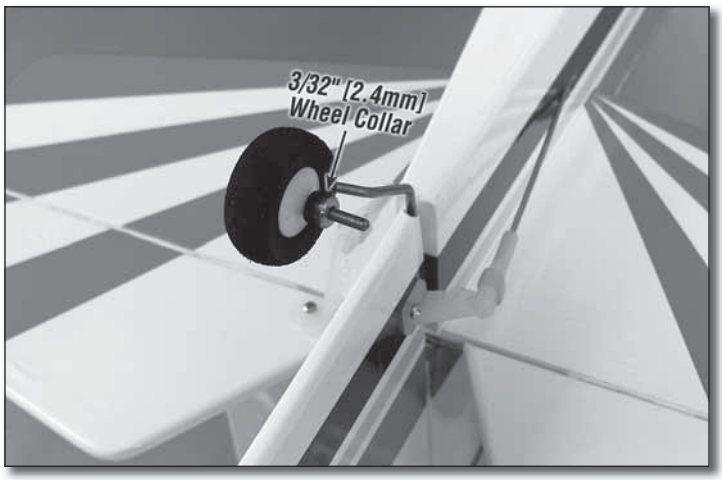


❏ 2. Slide a plastic spacer followed by a wheel and then a 5/32" [4mm] wheel collar onto each axle. Apply thread locking compound to two 6-32 set screws and screw them into the wheel collars. Tighten the set screws against the flat spots on the axles being sure that the wheels rotate freely. A couple drops of oil to each axle is recommended.

❏ 3. Install the wheel pants onto the landing gear legs with four 2-56 x 3/8" [9.5mm] machine screws, four #2 lock washers and thread locking compound.

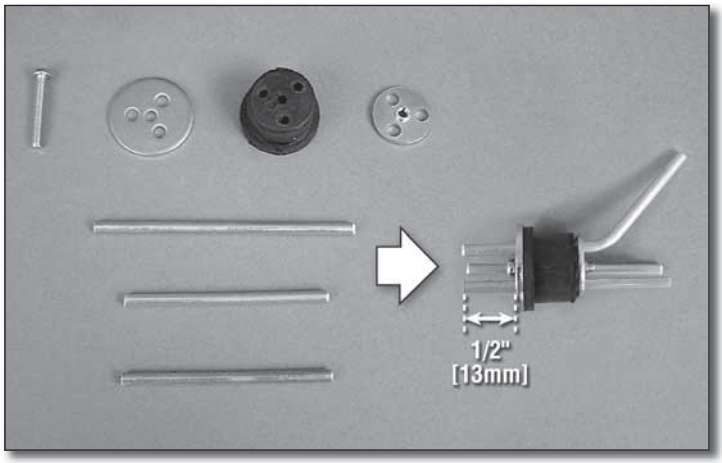


❏ 4. Mount the main landing gear to the fuselage using four 6-32 x 3/4" [19mm] screws, four #6 flat washers, four #6 lock washers and thread locking compound.

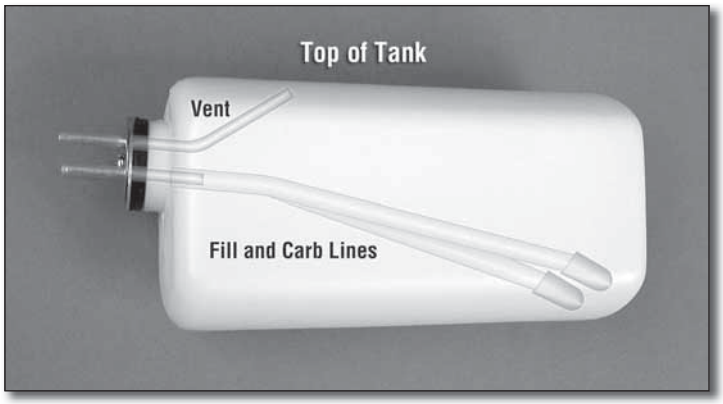


❏ 5. Install the tail wheel onto the tail wheel wire and secure it in place with a 3/32" [2.4mm] wheel collar and 4-40 set screw. Oil the axle as necessary.

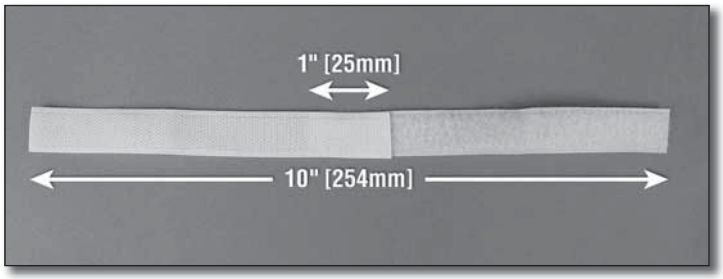
INSTALL THE ENGINE



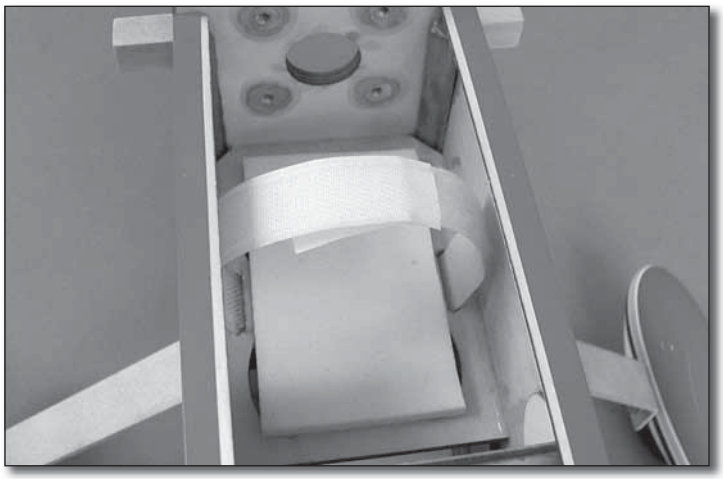
❏ 1. The fuel tank can be assembled as a two line system consisting of a vent (pressure) line to the muffler and a carb line. Filling and emptying of the tank would need to be done through the carb line, or an optional fuel fill valve (not included). The tank can also be assembled as a three line system having a vent line, carb line, and fill line. If installing a fill line, puncture the top of the stopper above the sealed off fuel tube hole. The fill and carb lines should extend out 1/2" [13mm] beyond the stopper and the vent line should be bent upwards and left uncut. With the tubes installed in the stopper, fit the stopper plates loosely in place with the 3 x 25mm phillips screw to hold the assembly together.

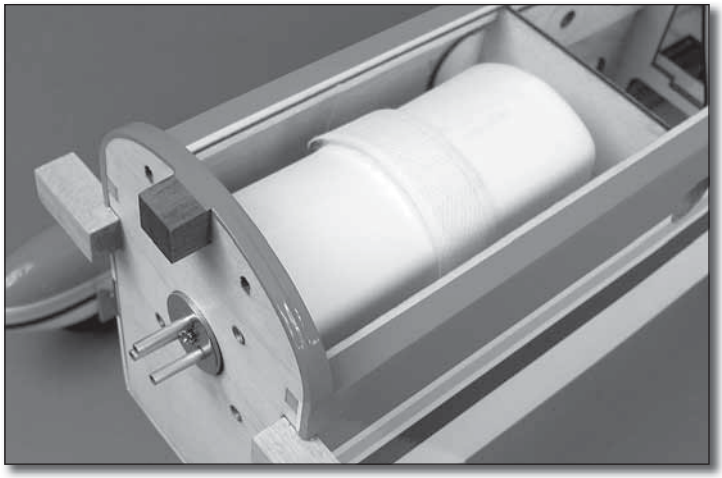


❏ 2. Fit the stopper assembly into the tank with the vent line pointing toward the top of the tank, but not touching. The fuel tubing and clunks (fuel pickup) on the carb and fill lines should almost reach the back of the tank but not touch. The clunks must be able to move freely inside the tank when assembled. Adjust the length of the fuel tubing accordingly. When satisfied, tighten the 3x25mm screw in the stopper to secure it in place (do not over-tighten). Mark the side of the tank that must face up when installed in the plane, and we also suggest marking the tubes in the stopper.

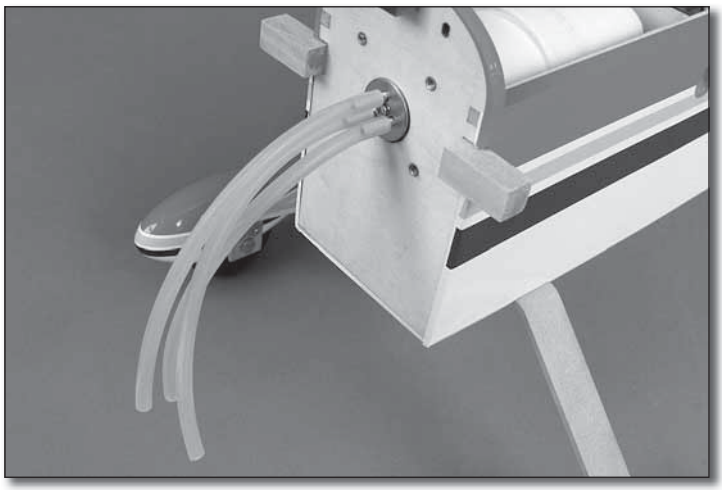


❏ 3. Make a 10" [254mm] strap from the included hook and loop material by overlapping the mating ends of two 6" [152mm] pieces of strap by approximately 1" [25mm].

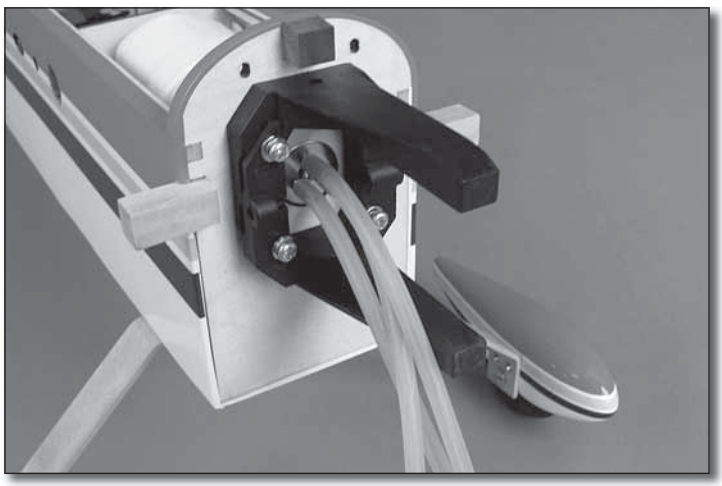




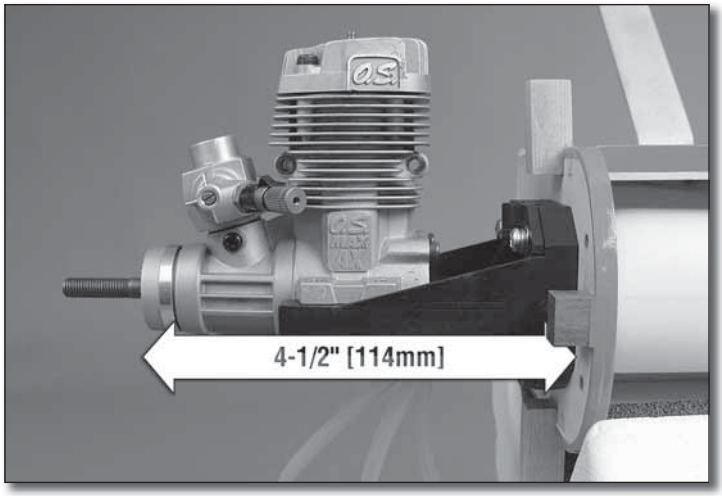
❏ 4. Cut a piece of 1/4" [6mm] foam rubber (not included) and place it on the fuel tank tray. Insert the hook and loop strap through the slots in the fuel tank tray. Fit the fuel tank through the hole in the firewall (with the correct side of the tank facing up) and use the strap to tightly secure the tank to the tray.

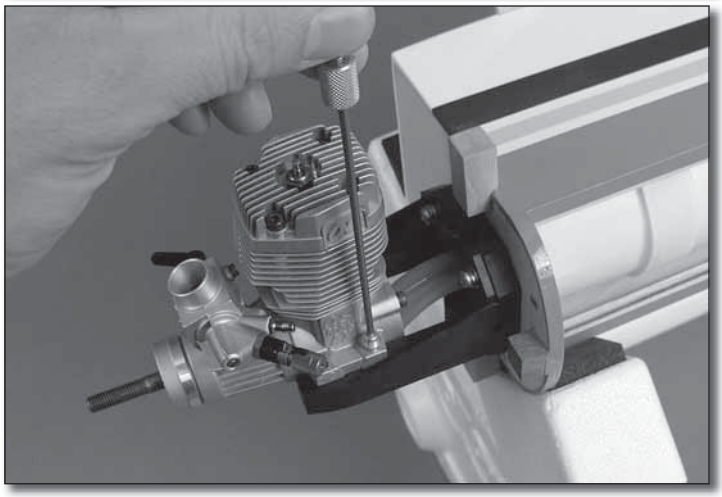


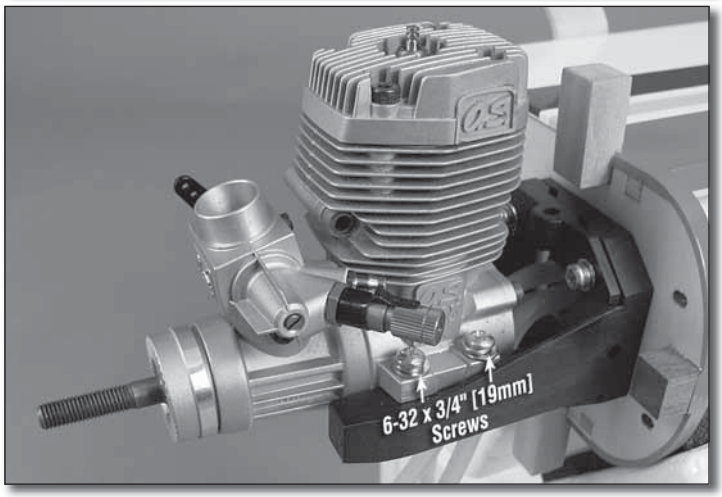
❏ 5. Connect a 6-7" [152-178mm] piece of standard fuel tubing to each tube protruding from the fuel tank.



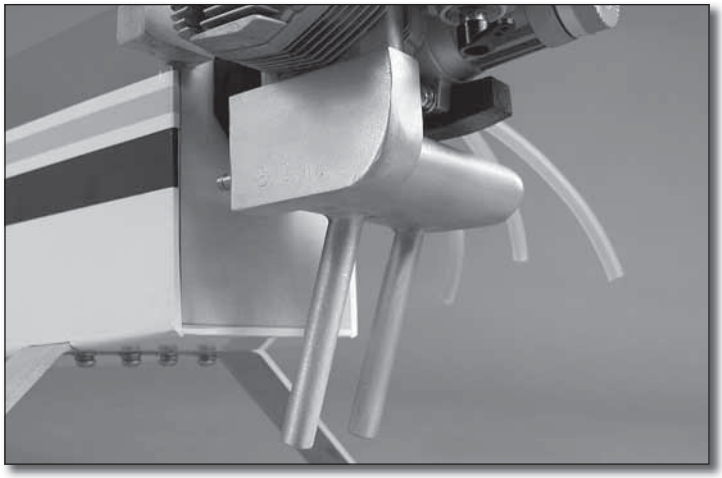
❏ 6. Install the engine mount side mounted to the firewall using four 6-32 x 1" [25mm] machine screws, four #6 flat washers, four #6 lock washers and thread locking compound. Leave the screws slightly loose. Test fit your engine between the mount halves. Slide the mount halves against the sides of the engine and finish tightening the mount screws.



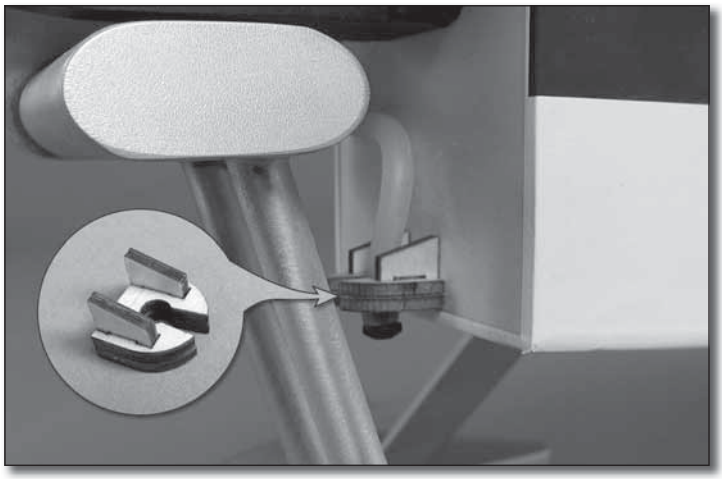




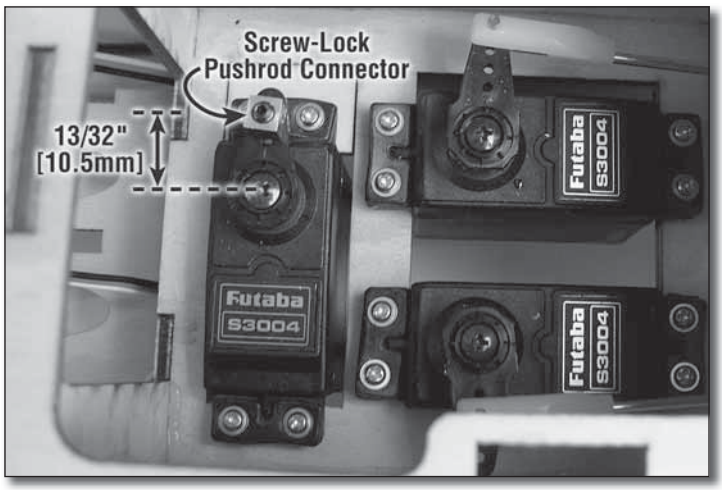
❏ 7. Position the front of the engine drive washer 4-1/2" [114mm] from the front of the firewall. Mark the location of the engine mount holes onto the mount rails using a Dead Center Hole Locator. Remove the engine from the mount and use a 6-32 tap and drill set to create threads in the four mounting holes. Attach the engine to the mount using four 6-32 x 3/4" [19mm] screws, four #6 flat washers and four #6 lock washers.



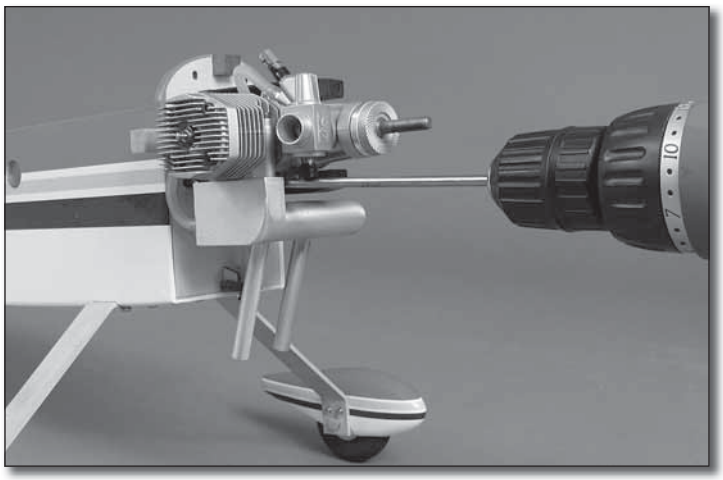
❏ 8. Install a muffler onto the engine. We used a Bisson pitts muffler (BISG4046).



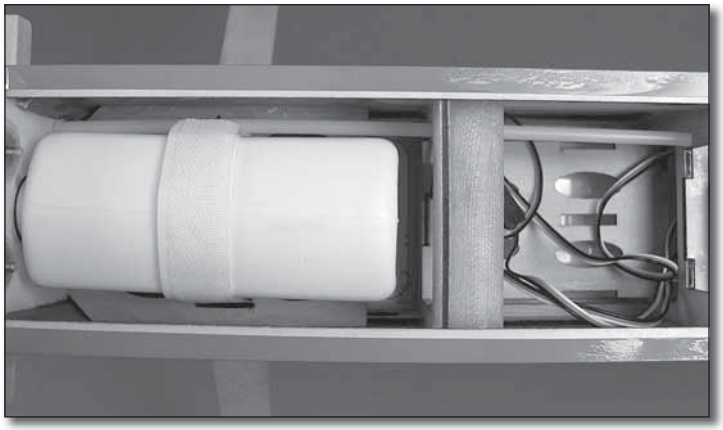
❏ 9. Cut the fuel tubing coming from the tank to the proper length and connect the pressure and carb lines to the engine. The fill line (if installed) should be plugged with the included fuel line plug. A plywood fill line clip is included and is glued together as shown. Be sure to fuel proof the clip with lacquer, epoxy, or CA glue. Glue the clip in the location shown and route the fill line through the clip.

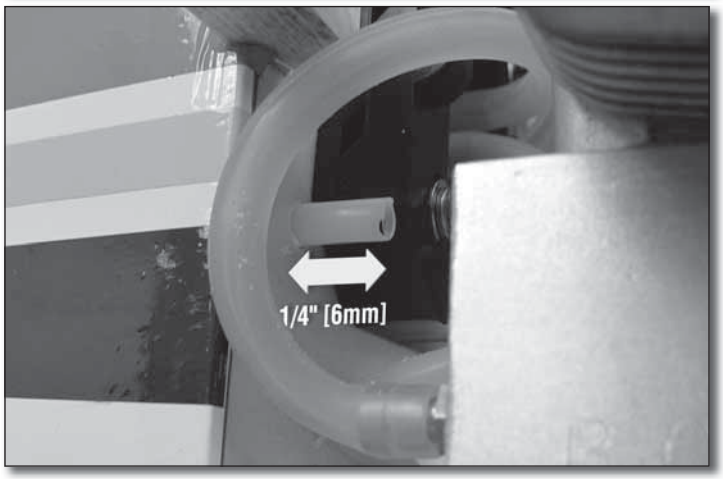


❏ 10. Cut five arms from a six-armed servo arm included with your throttle servo. Center the servo with your radio system (50% throttle) and install the arm inline with the middle case. Install a screw-lock pushrod connector into the outer hole in the remaining arm and secure it in place with a nylon screw-lock connector retainer. Loosely install a 4-40 set screw into the screw-lock pushrod connector. Install the throttle servo onto the throttle servo tray using the hardware supplied with the servo.

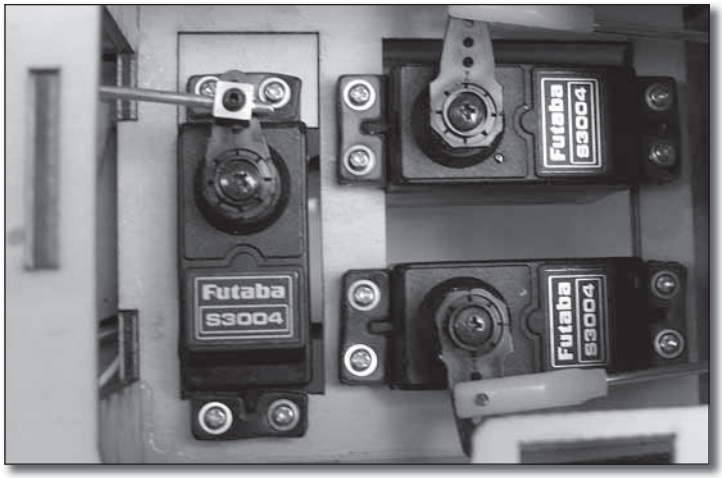


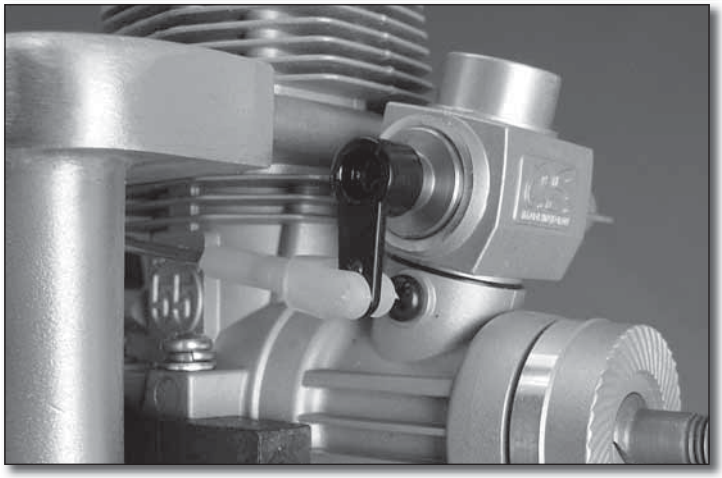
❏ 11. Drill a 3/16" [4.8mm] hole in the firewall inline with the throttle arm on the carburetor. An extra long drill bit is very useful for this step (drill bit HIGR102 is shown) Be sure that you do not drill into the fuel tank (if in doubt, unstrap the tank from the tray and move it aside when drilling the hole).



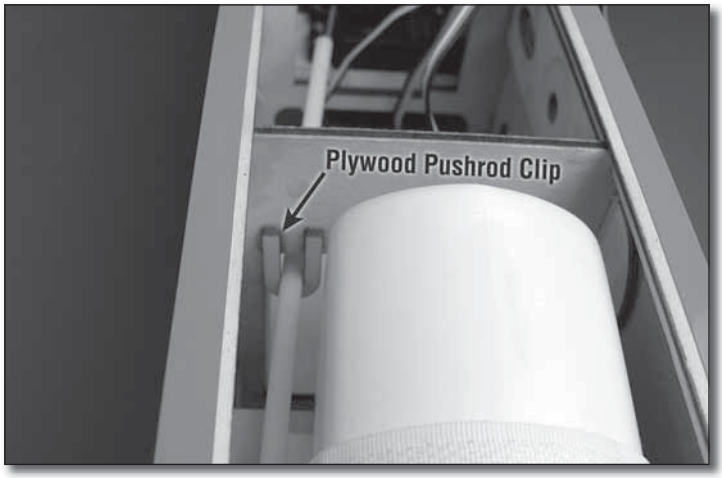


❏ 12. Insert the included outer pushrod tube through the firewall leaving it approximately 1-1/4" [32mm] from the throttle servo arm. Mark the tube 1/4" [6mm] in front of the firewall and cut it to length. Sand the pushrod where it passes through the firewall and clean it with alcohol.





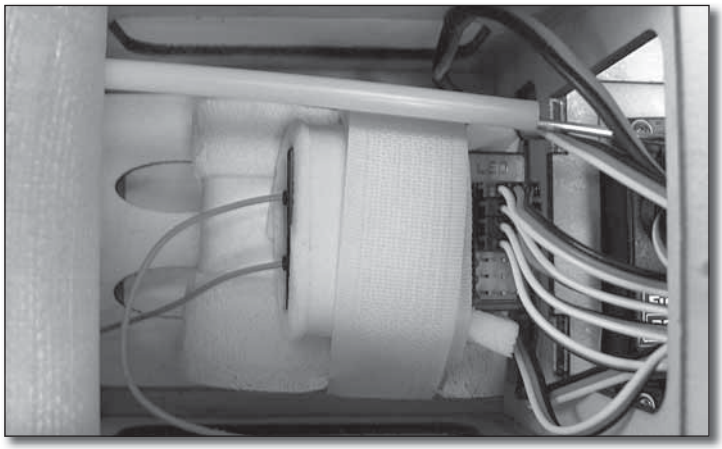
❏ 13. Thread a nylon clevis with silicone clevis retainer onto the 17-1/2" [445mm] pushrod. Insert the pushrod into the outer pushrod tube. The aft end of the pushrod should pass through the screw-lock connector. Attach the clevis to the throttle arm. Adjust the pushrod position in the connector so that the throttle servo properly opens and closes the carburetor. When satisfied, tighten the set screw in the connector against the pushrod and cut off the excess pushrod behind the connector. Use the radio system to test the operation of the throttle.



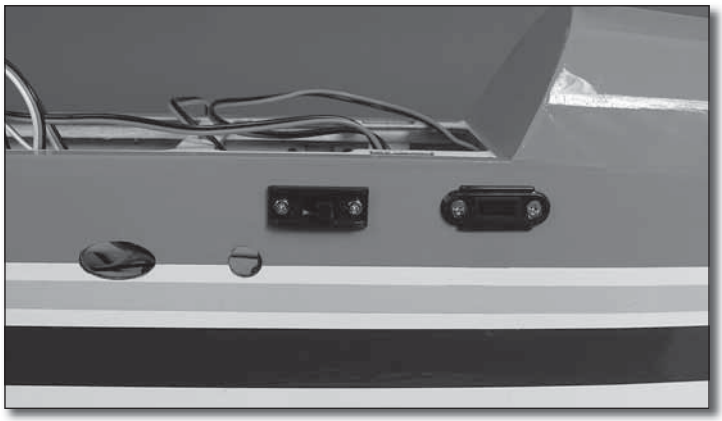
❏ 14. Use the plywood pushrod clip to secure the outer pushrod tube to the fuselage former in the location shown. Thoroughly glue the clip in place. Apply some CA glue where the outer pushrod tube passes through the firewall.

FINISH THE MODEL

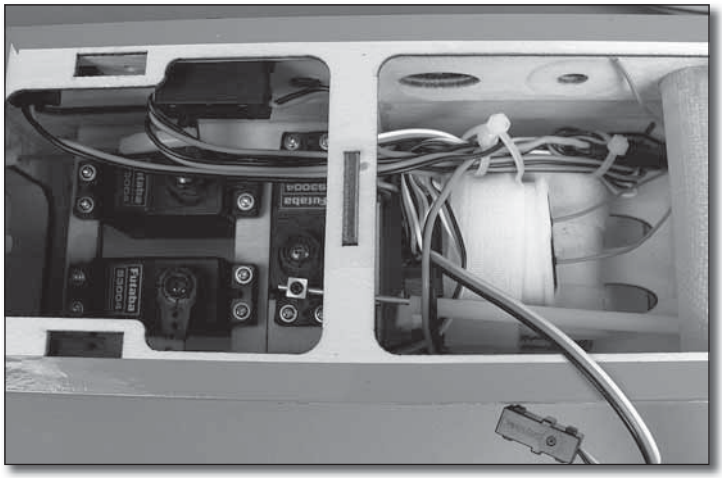
Install the Receiver and Battery



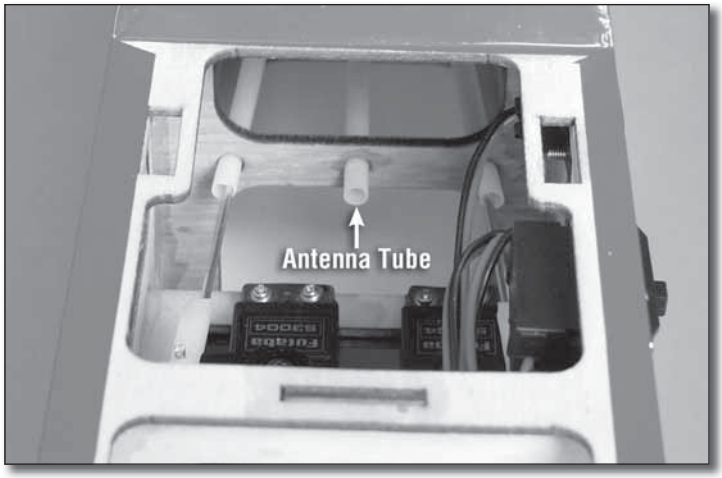
❏ 1. Wrap your receiver and receiver battery pack in foam rubber. Make a strap from the remainder of the included hook and loop material to fit both of the components when stacked. Strap the receiver and pack to the tray as shown. Connect the rudder, elevator and throttle servos to the receiver. Connect a Y-harness to your aileron channel.



❏ 2. Mount your switch harness and charge jack to the fuselage side in the location that you prefer.



❏ 3. The remaining piece of heat shrink should be used for the connection between your receiver battery and switch harness. Use tie straps (not included) or something similar to bundle the excess servo wires out of the way of the servos.

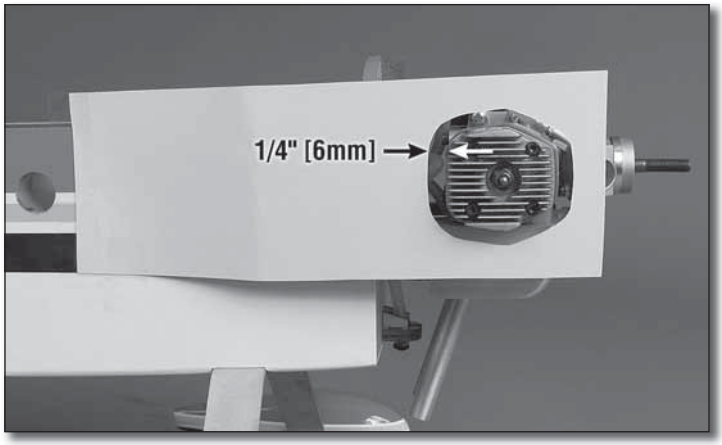


❏ 4. A receiver antenna tube is provided if you are using an FM receiver.

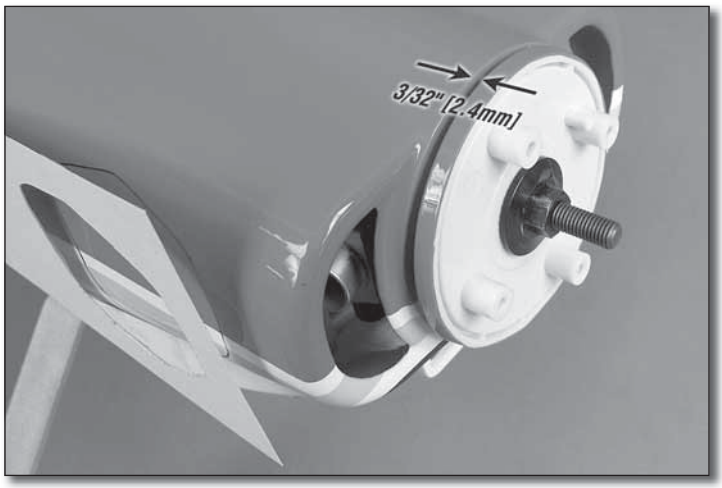
❏ 5. Scrap pieces of fuel tubing can be used to support the ends of 2.4GHz receiver antennas in the orientation described in the radio manual.

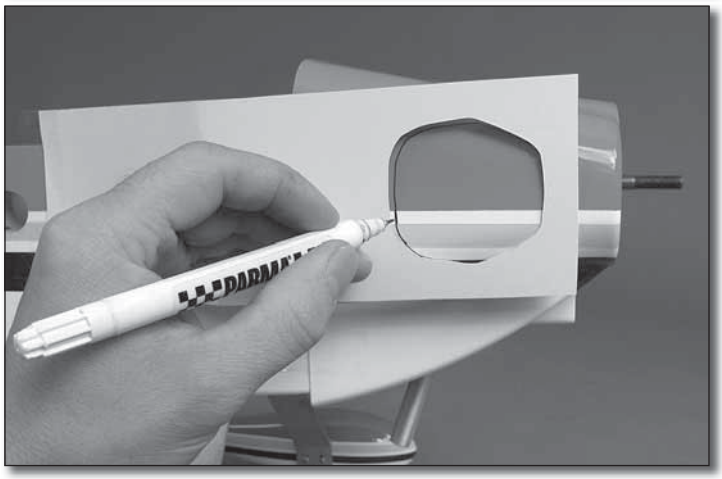
Mount the Cowl, Hatch and Spinner

❏ 1. If you are using the recommended engine and muffler, cut a section from the underside of the cowl using the dimensions shown. (Adjust the dimensions accordingly if using a different engine and/or muffler.)

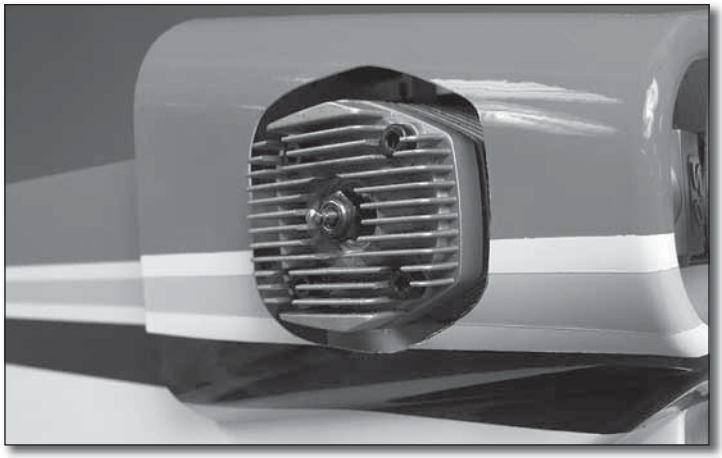


❏ 2. Make a template of your engine head onto thick paper or card stock. The cutout in the template should be approximately 1/4" [6mm] larger on all sides than the engine head. Tape the template to the fuselage side so the cutout in the template is aligned over the engine head.

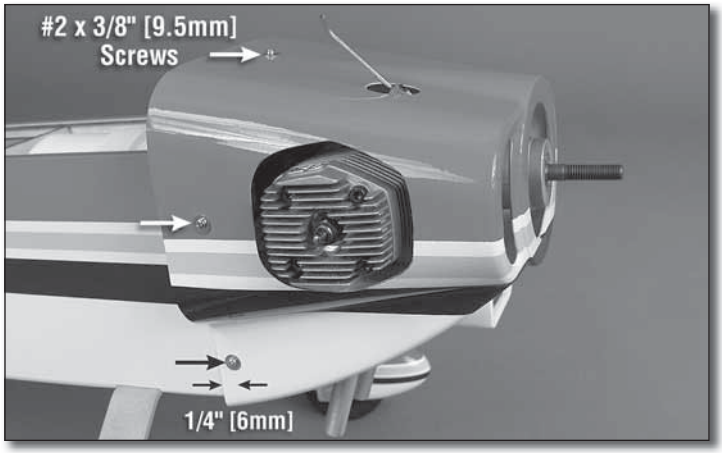




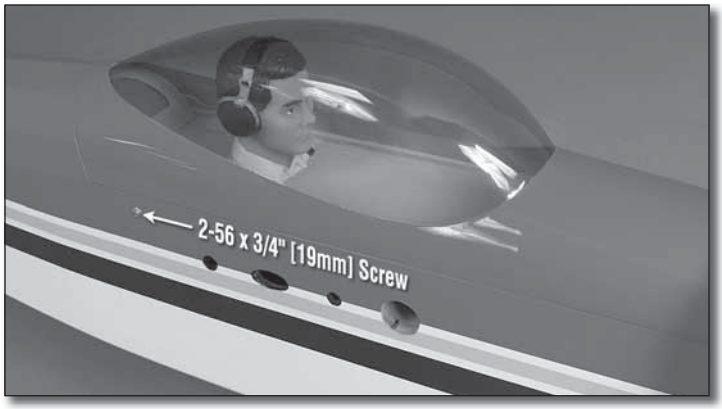
❏ 3. In order to fit the cowl onto the fuselage, the engine will need to be temporarily removed from the firewall so the head does not interfere. Just the cylinder head can also be temporarily removed if you are comfortable doing so. Now fit the cowl to the fuselage. Temporarily fit the spinner backplate onto the engine crankshaft. Align the front of the cowl with the backplate leaving a 3/32" [2.4mm] space between it and the backplate and tape the cowl in place (or have a helper give you a hand). Use a felt-tip pen and trace the outline of the engine head cutout onto the cowl.



❏ 4. Remove the cowl from the fuse. A rotary tool is recommended for cutting the cowl for the engine head. Make any other necessary cutouts in the cowl such as access for the needle valve. Replace the engine on the firewall (or cylinder head).



❏ 5. Return the cowl to the firewall and tape it in place again being sure to align the front of the cowl with the spinner backplate. The cowl should be spaced 3/32" [2.4mm] behind the backplate. Drill 1/16" [1.6mm] holes through the cowl and into the three cowl mounting blocks. Drill two additional holes near the bottom of the cowl on both sides 1/4" [6mm] from the aft edge of the cowl. Remove the cowl once more and thread a #2 x 3/8" [9.5mm] screw into each hole and back it out. Apply a drop of thin CA to each hole. Enlarge the holes in the cowl with a 3/32" [2.4mm] drill bit. Mount the cowl using five #2 x 3/8" [9.5mm] screws and five #2 flat washers.



❏ 6. Trim the covering from the canopy hatch screw holes in the fuselage. Fit the canopy hatch to the fuselage and secure it using two 2-56 x 3/4" [19mm] machine screws and two #2 flat washers.

❏ 7. Install the spinner back plate, propeller, prop washer and nut onto the engine crankshaft. Test fit the spinner cone onto the backplate. Enlarge the blade slots in the spinner cone if necessary using a rotary tool or hobby knife. Be sure that the prop blades do not touch the spinner cone. When satisfied, install the spinner cone onto the backplate using the included spinner screws.

❏ 8. That completes the assembly of the Stinger II .46 ARF!

Apply the Decals

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

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.

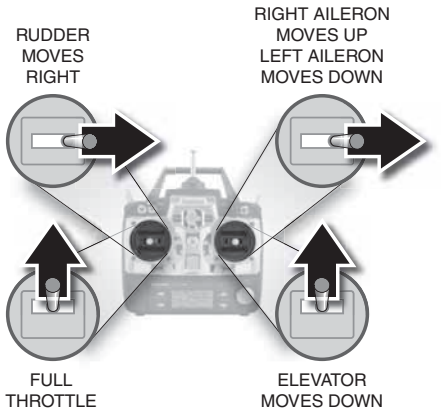
GET THE MODEL READY TO FLY

Check the Control Directions

❏ 1. Turn on the transmitter and receiver and center the trims. If necessary, remove the servo arms from the servos and reposition them so they are centered. Reinstall the screws that hold on the servo arms.

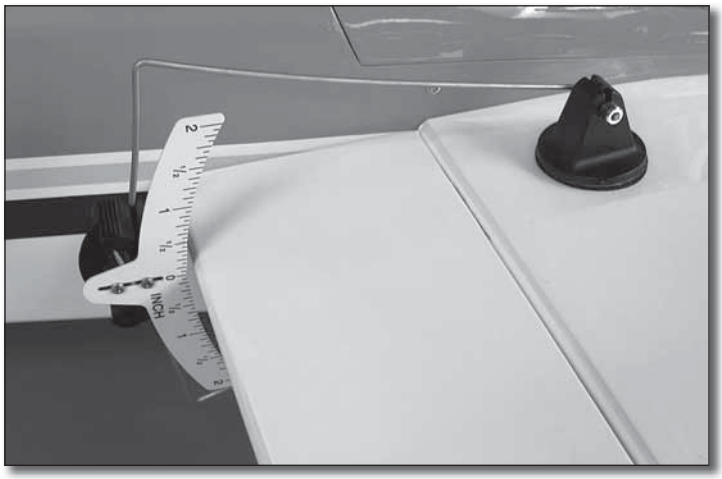
❏ 2. With the transmitter and receiver still on, check all the control surfaces to see if they are centered. If necessary, adjust the clevises on the pushrods to center the control surfaces.

4-CHANNEL RADIO SET UP
(STANDARD MODE 2)



❏ 3. Make certain that the control surfaces and the carburetor respond in the correct direction as shown in the diagram. If any of the controls respond in the wrong direction, use the servo reversing in the transmitter to reverse the servos connected to those controls. Be certain the control surfaces have remained centered. Adjust if necessary.

Set the Control Throws



Use a Great Planes AccuThrow (or a ruler) to accurately measure and set the control throw of each control surface as indicated in the chart that follows. If your radio does not have dual rates, we recommend setting the throws at the **low** rate setting. **NOTE**: The throws are measured at the **widest part** of the elevators, rudder and ailerons.

These are the recommended control surface throws:

	HIGH RATE		LOW RATE	
	Up	Down	Up	Down
ELEVATOR	3/4" [19mm] 15°	3/4" [19mm] 15°	5/8" [16mm] 12°	5/8" [16mm] 12°
	Right	Left	Right	Left
RUDDER	2-5/8" [67mm] 31°	2-5/8" [67mm] 31°	1" [25mm] 11°	1" [25mm] 11°
	Up	Down	Up	Down
AILERONS	15/16" [24mm] 15°	15/16" [24mm] 15°	5/8" [16mm] 10°	5/8" [16mm] 10°

IMPORTANT: The Stinger 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 Stinger 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."

Additional note about ailerons: We strongly suggest you fly with low rate ailerons for the first few flights to become accustom to the Stinger II. The high rate aileron has an aggressive roll rate at faster speeds. If you choose to fly with high rate ailerons, plan your first few maneuvers at altitude.

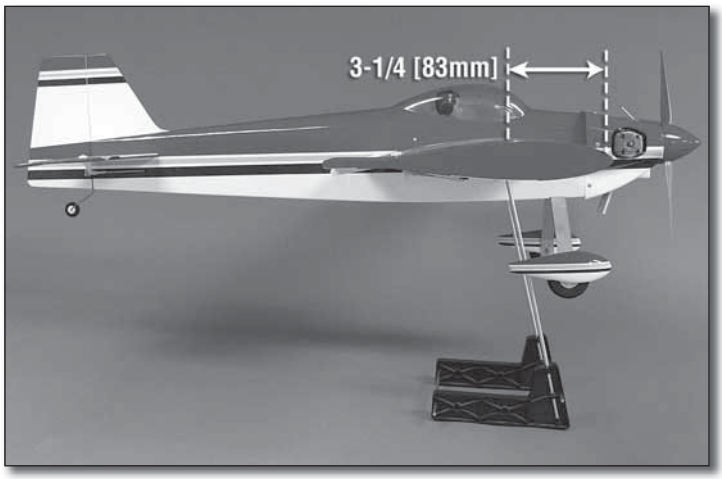
Balance the Model (C.G.)

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 in ready-to-fly condition with all of the systems in place including the engine or brushless motor, landing gear, and the radio system (and battery pack if applicable).

❏ 1. Use a felt-tip pen or 1/8" [3mm]-wide tape to accurately mark the C.G. on the bottom of the wing on both sides of the fuselage. The C.G. is located 3-1/4" [83mm] back from the leading edge of the wing.

This is where your model should balance for the first flights. Later, you may wish to experiment by shifting the C.G. up to 1/2" [13mm] forward or 1/2" [13mm] back to change the flying characteristics. Moving the C.G. forward may improve the smoothness and stability, but the model may then require more speed for takeoff and make it more difficult to slow for landing. Moving the C.G. aft makes the model more maneuverable, but could also cause it to become too difficult to control. In any case, **start at the recommended balance point** and do not at any time balance the model outside the specified range.



❏ 2. With the wing attached to the fuselage, all parts of the model installed (ready to fly) and an empty fuel tank, place the model on a Great Planes CG Machine, or lift it at the balance point you marked.

❏ 3. If the tail drops, the model is "tail heavy" and the battery pack and/or receiver must be shifted forward or weight must be added to the nose to balance. If the nose drops, the model is "nose heavy" and the battery pack and/or receiver must be shifted aft or weight must be added to the tail to balance. If possible, relocate the battery pack and receiver to minimize or eliminate any additional ballast required. If additional weight is required, nose weight may be easily added by using a "spinner weight" (GPMQ4645 for the 1 oz. [28g] weight, or GPMQ4646 for the 2 oz. [57g] weight). If spinner weight is not practical or is not enough, use Great Planes (GPMQ4485) "stick-on" lead. A good place to add stick-on nose weight is to the firewall (don't attach weight to the cowl—it is not intended to support weight). Begin by placing incrementally increasing amounts of weight on the bottom of the fuse over the firewall until the model balances. Once you have determined the amount of weight required, it can be permanently attached. If required, tail weight may be added by cutting open the bottom of the fuse and gluing it permanently inside.

Note: Do not rely upon the adhesive on the back of the lead weight to permanently hold it in place. Over time, fuel and exhaust residue may soften the adhesive and cause the weight to fall off. Use #2 sheet metal screws, RTV silicone or epoxy to permanently hold the weight in place.

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

Balance the Model Laterally

❏ 1. With the wing level, have an assistant help you lift the model by the engine propeller shaft and the bottom of the fuse under the TE of the fin. Do this several times.

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

PREFLIGHT

Identify Your Model

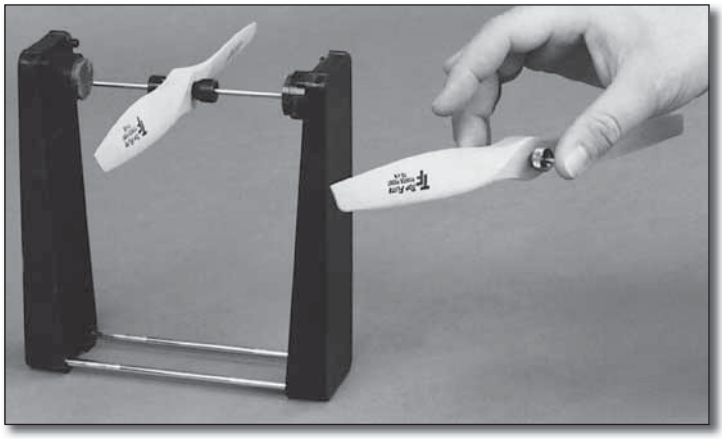
No matter if you fly at an AMA sanctioned R/C club site or if you fly somewhere on your own, you should always have your name, address, telephone number and AMA number on or inside your model. It is **required** at all AMA R/C club flying sites and AMA sanctioned flying events. Fill out the identification tag on page 23 (or on the decal sheet) and place it on or inside your model.

Charge the Batteries

Follow the battery charging instructions that came with your radio control system to charge the batteries. You should always charge your transmitter and receiver batteries the night before you go flying, and at other times as recommended by the radio manufacturer.

CAUTION: Unless the instructions that came with your radio system state differently, the **initial** charge on **new** transmitter and receiver batteries should be done for 15 hours **using the slow-charger that came with the radio system**. This will "condition" the batteries so that the next charge may be done using the fast-charger of your choice. If the initial charge is done with a fast-charger the batteries may not reach their full capacity and you may be flying with batteries that are only partially charged.

Balance Propellers



Carefully balance your propeller and spare propellers before you fly. An unbalanced prop can be the single most significant cause of vibration that can damage your model. Not only will engine mounting screws and bolts loosen, possibly with disastrous effect, but vibration may also damage your radio receiver and battery. Vibration can also cause your fuel to foam, which will, in turn, cause your engine to run hot or quit.

We use a Top Flite Precision Magnetic Prop Balancer (TOPQ5700) in the workshop and keep a Great Planes Fingertip Prop Balancer (GPMQ5000) in our flight box.

Ground Check

If the engine is new, follow the engine manufacturer's instructions to break-in the engine. After break-in, confirm that the engine idles reliably, transitions smoothly and rapidly to full power and maintains full power—indefinitely. After you run the engine on the model, inspect the model closely to make sure all screws remained tight, the hinges are secure, the prop is secure and all pushrods and connectors are secure.

Range Check

Ground check the operational range of your radio before the first flight of the day. With the transmitter antenna collapsed and the receiver and transmitter on, you should be able to walk at least 100 feet away from the model and still have control (if using a 2.4GHz radio system, refer to the radio manual for the range checking procedure). Have an assistant stand by your model and, while you work the controls, tell you what the control surfaces are doing. Repeat this test **with the engine running** at various speeds with an assistant holding the model, using hand signals to show you what is happening. If the control surfaces do not respond correctly, **do not fly!** Find and correct the problem first. Look for loose servo connections or broken wires, corroded wires on old servo connectors, poor solder joints in your battery pack or a defective cell, or a damaged receiver crystal from a previous crash.

ENGINE SAFETY PRECAUTIONS

Failure to follow these safety precautions may result in severe injury to yourself and others.

- Keep all engine fuel in a safe place, away from high heat, sparks or flames, as fuel is very flammable. Do not smoke near the engine or fuel; and remember that engine exhaust gives off a great deal of deadly carbon monoxide. Therefore **do not run the engine in a closed room or garage**.
- Get help from an experienced pilot when learning to operate engines.
- Use safety glasses when starting or running engines.
- Do not run the engine in an area of loose gravel or sand; the propeller may throw such material in your face or eyes.
- Keep your face and body as well as all spectators away from the plane of rotation of the propeller as you start and run the engine.
- Keep these items away from the prop: loose clothing, shirt sleeves, ties, scarves, long hair or loose objects such as pencils or screwdrivers that may fall out of shirt or jacket pockets into the prop.
- Use a "chicken stick" or electric starter to start the engine. Do not use your fingers to flip the propeller. Make certain the glow plug clip or connector is secure so that it will not pop off or otherwise get into the running propeller.
- Make all engine adjustments from behind the rotating propeller.
- The engine gets hot! Do not touch it during or right after operation. Make sure fuel lines are in good condition so fuel will not leak onto a hot engine, causing a fire.
- To stop a glow engine, cut off the fuel supply by closing off the fuel line or following the engine manufacturer's recommendations. Do not use hands, fingers or any other body part to try to stop the engine. Do not throw anything into the propeller of a running engine.

AMA SAFETY CODE (EXCERPTS)

Read and abide by the following excerpts from the Academy of Model Aeronautics Safety Code. For the complete Safety Code refer to *Model Aviation* magazine, the AMA web site or the Code that came with your AMA license.

General

1) I will not fly my model aircraft in sanctioned events, air shows, or model flying demonstrations until it has been proven to be airworthy by having been previously, successfully flight tested.

2) I will not fly my model aircraft higher than approximately 400 feet within 3 miles of an airport without notifying the airport operator. I will give right-of-way and avoid flying in the proximity of full-scale aircraft. Where necessary, an observer shall be utilized to supervise flying to avoid having models fly in the proximity of full-scale aircraft.

3) Where established, I will abide by the safety rules for the flying site I use, and I will not willfully and deliberately fly my models in a careless, reckless and/or dangerous manner.

5) I will not fly my model unless it is identified with my name and address or AMA number, on or in the model. Note: This does not apply to models while being flown indoors.

7) I will not operate models with pyrotechnics (any device that explodes, burns, or propels a projectile of any kind).

Radio Control

1) I will have completed a successful radio equipment ground check before the first flight of a new or repaired model.

2) I will not fly my model aircraft in the presence of spectators until I become a qualified flier, unless assisted by an experienced helper.

3) At all flying sites a straight or curved line(s) must be established in front of which all flying takes place with the other side for spectators. Only personnel involved with flying the aircraft are allowed at or in the front of the flight line. Intentional flying behind the flight line is prohibited.

4) I will operate my model using only radio control frequencies currently allowed by the Federal Communications Commission.

5) **I will not knowingly operate my model within three miles of any pre-existing flying site except in accordance with the frequency sharing agreement listed** [in the complete AMA Safety Code].

9) Under no circumstances may a pilot or other person touch a powered model in flight; **nor should any part of the model other than the landing gear, intentionally touch the ground, except while landing.**

CHECK LIST

During the last few moments of preparation your mind may be elsewhere anticipating the excitement of the first flight. Because of this, you may be more likely to overlook certain checks and procedures that should be performed before the model is flown. To help avoid this, a check list is provided to make sure these important areas are not overlooked. Many are covered in the instruction manual, so where appropriate, refer to the manual for complete instructions. Be sure to check the items off as they are completed.

- ❏ 1. Check the C.G. according to the measurements provided in the manual.
- ❏ 2. Be certain the battery and receiver are securely mounted in the fuse. Simply stuffing them into place with foam rubber is not sufficient.
- ❏ 3. Extend your receiver antenna.
- ❏ 4. Balance your model laterally as explained in the instructions.
- ❏ 5. Use threadlocking compound to secure critical fasteners such as the set screws that hold the wheel axles to the struts, screws that hold the carburetor arm (if applicable), screw-lock pushrod connectors, etc.
- ❏ 6. Add a drop of oil to the axles so the wheels will turn freely.
- ❏ 7. Make sure all hinges are securely glued in place.
- ❏ 8. Reinforce holes for wood screws with thin CA where appropriate (servo mounting screws, cowl mounting screws, etc.).
- ❏ 9. Confirm that all controls operate in the correct direction and the throws are set up according to the manual.
- ❏ 10. Make sure there are silicone retainers on all the clevises and that all servo arms are secured to the servos with the screws included with your radio.
- ❏ 11. Secure connections between servo wires and Y-connectors or servo extensions, and the connection between your battery pack and the on/off switch with vinyl tape, heat shrink tubing or special clips suitable for that purpose.
- ❏ 12. Make sure any servo extension cords you may have used do not interfere with other systems (servo arms, pushrods, etc.).
- ❏ 13. Secure the pressure tap (if used) to the muffler with high temp RTV silicone, thread locking compound or J.B. Weld.
- ❏ 14. Make sure the fuel lines are connected and are not kinked.
- ❏ 15. Balance your propeller (and spare propellers).
- ❏ 16. Tighten the propeller nut and spinner.
- ❏ 17. Place your name, address, AMA number and telephone number on or inside your model.
- ❏ 18. Cycle your receiver battery pack (if necessary) and make sure it is fully charged.
- ❏ 19. If you wish to photograph your model, do so before your first flight.
- ❏ 20. Range check your radio when you get to the flying field.

FLYING

The Stinger II .46 ARF is a great-flying model that flies smoothly and predictably. The Stinger does not, however, possess the self-recovery characteristics of a primary R/C trainer and should be flown only by experienced R/C pilots.

Fuel Mixture Adjustments

A fully cowled engine may run at a higher temperature than an un-cowled engine. For this reason, the fuel mixture should be richened so the engine runs at about 200 rpm below peak speed. By running the engine slightly rich, you will help prevent dead-stick landings caused by overheating.

CAUTION (THIS APPLIES TO ALL R/C AIRPLANES): If, while flying, you notice an alarming or unusual sound such as a low-pitched "buzz," this may indicate control surface *flutter.* Flutter occurs when a control surface (such as an aileron or elevator) or a flying surface (such as a wing or stab) rapidly vibrates up and down (thus causing the noise). In extreme cases, if not detected immediately, flutter can actually cause the control surface to detach or the flying surface to fail, thus causing loss of control followed by an impending crash. The best thing to do when flutter is detected is to slow the model **immediately** by reducing power, then land as soon as safely possible. Identify which surface fluttered (so the problem may be resolved) by checking all the servo grommets for deterioration or signs of vibration. Make certain all pushrod linkages are secure and free of play. If it fluttered once, under similar circumstances it will probably flutter again unless the problem is fixed. Some things which can cause flutter are; Excessive hinge gap; Not mounting control horns solidly; Poor fit of clevis pin in horn; Side-play of wire pushrods caused by large bends; Excessive free play in servo gears; Insecure servo mounting; and one of the most prevalent causes of flutter; Flying an over-powered model at excessive speeds.

Takeoff

Before you get ready to takeoff, see how the model handles on the ground by doing a few practice runs at **low speeds** on the runway. Hold "up" elevator to keep the tail wheel on the ground. If necessary, adjust the tail wheel so the model will roll straight down the runway. If you need to calm your nerves before the maiden flight, shut the engine down and bring the model back into the pits. Top off the fuel, then check all fasteners and control linkages for peace of mind.

Remember to takeoff into the wind. When you're ready, point the model straight down the runway, hold a bit of up elevator to keep the tail on the ground to maintain tail wheel steering, then gradually advance the throttle. As the model gains speed decrease up elevator allowing the tail to come off the ground. One of the most important things to remember with a tail dragger is to always be ready to apply **right** rudder to counteract engine torque. Gain as much speed as your runway and flying site will practically allow before gently applying up elevator, lifting the model into the air. At this moment it is likely that you will need to apply more right rudder to counteract engine torque. Be smooth on the elevator stick, allowing the model to establish a **gentle** climb to a safe altitude before turning into the traffic pattern.

Flight

For reassurance and to keep an eye on other traffic, it is a good idea to have an assistant on the flight line with you. Tell him to remind you to throttle back once the plane gets to a comfortable altitude. While full throttle is usually desirable for takeoff, most models fly more smoothly at reduced speeds.

Take it easy with the Stinger for the first few flights, gradually getting acquainted with it as you gain confidence. Adjust the trims to maintain straight and level flight. After flying around for a while and while still at a safe altitude with plenty of fuel, practice slow flight and execute practice landing approaches by reducing the throttle to see how the model handles at slower speeds. Add power to see how the model climbs as well. Continue to fly around, executing various maneuvers and making mental notes (or having your assistant write them down) of what trim or C.G. changes may be required to fine tune the model so it flies the way you like. Mind your fuel level, but use this first flight to become familiar with your model before landing.

Landing

To initiate a landing approach, lower the throttle while on the downwind leg. Allow the nose of the model to pitch downward to gradually bleed off altitude. Continue to lose altitude, but maintain airspeed by keeping the nose down as you turn onto the crosswind leg. Make your final turn toward the runway (into the wind) keeping the nose down to maintain airspeed and control. Level the attitude when the model reaches the runway threshold, modulating the throttle as necessary to maintain your glide path and airspeed. If you are going to overshoot, smoothly advance the throttle (always ready on the right rudder to counteract torque) and climb out to make another attempt. When you're ready to make your landing flare and the model is a foot or so off the deck, smoothly increase up elevator until it gently touches down. Once the model is on the runway and has lost flying speed, hold up elevator to place the tail on the ground, regaining tail wheel control.

One final note about flying your model. 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. **Remember to think.**

Have a ball!
But always stay in control and fly in a safe manner.

GOOD LUCK AND GREAT FLYING!

This model belongs to:

Name

Address

City, State, Zip

Phone Number

AMA Number


GREAT PLANES®
MODEL MANUFACTURING COMPANY