

CURTISS P-6E HAWK

INSTRUCTION MANUAL



SPECIFICATIONS

Wingspan: 43.5 in [1105mm]

Length: 34 in [865mm]

Weight: 3.75–4.5 lb [1700–2040 g]

Wing Area: 352 in² [22.7 dm²]

Wing Loading: 25–29 oz/ft²
[76–88 g/dm²]

Radio: 4 channel radio (minimum)

Electric: RimFire™ .32, (42-50-800)

Power: Outrunner Brushless

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.



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

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INTRODUCTION

The Curtiss P-6E Hawk is an iconic airplane loved by aviation enthusiasts everywhere. The attention to detail in this airplane, coupled with its great looks in the air and on the ground, will impress you and those who watch it fly!

For the latest technical updates or manual corrections to the "Curtiss P-6E Hawk" visit the Great Planes web site at www.greatplanes.com. Open the "Airplanes" link, and then select the "Curtiss P-6E Hawk EP." 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.

Academy of Model Aeronautics

We urge you to join the AMA (Academy of Model Aeronautics) and a local R/C club. The AMA is the governing body of model aviation and membership is required to fly at AMA clubs. Though joining the AMA provides many benefits, one of the primary reasons to join is liability protection. Coverage is not limited to flying at contests or on the club field. It even applies to flying at public demonstrations and air shows. Failure to comply with the Safety Code (excerpts printed in the back of the manual) may endanger insurance coverage. Additionally, training programs and instructors are available at AMA club sites to help you get started the right way. There are over 2,500

AMA chartered clubs across the country. Contact the AMA at the address or toll-free phone number below:

Academy of Model Aeronautics

5151 East Memorial Drive
Muncie, IN 47302-9252

Tele. (800) 435-9262

Fax (765) 741-0057



Or via the Internet at: <http://www.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.

SAFETY PRECAUTIONS

Protect Your Model, Yourself & Others... Follow These Important Safety Precautions

1. Your "Curtiss P-6E Hawk" 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 "Curtiss P-6E Hawk", 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 insure 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.

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 "Curtiss P-6E Hawk" that may require planning or decision making before starting to build.

Radio Equipment

- A 4-channel radio system with four micro servos and receiver are required for this plane.

The servos and receiver shown in the manual are Futaba® S3115 Servos (FUTM0415) and the Futaba R617FS FASST 2.4 GHz receiver (FUTL7627)

Transmitter

- 4-channel radio (minimum)

Receiver

- R617FS FASST 2.4 GHz receiver [FUTL7627]

Servos

- (4) Futaba® S3115 Servos [FUTM0415] [39 oz-in (2.8 kg-cm) @ 4.8V of torque]

Connectors

- (1) "Y" harness [FUTM4135]
- (2) 9" extensions [FUTM3910]

Motor Recommendations

The Curtiss P-6E Hawk EP ARF comes with a mounting box for the Great Planes RimFire brushless out-runner motor. The motor has been tested with this plane and works well.

- Great Planes RimFire .32 (42-50-800) Brushless Out-runner Motor [GPMG4700]

Electronic Speed Control

A brushless ESC (electronic speed control) is required for the recommended motor set-up. We recommend using the

- Great Planes Silver Series SS-45A Brushless ESC [GPMM1840].

Propeller

For our testing we used and recommend the

- APC 13 x 6.5 propeller. (APCQ3065)

Flight Battery

We recommend the

- Great Planes Power Series™ LiPo 2200mAh, 11.1V, 30C battery (GPMP0861)

OR

- Flight Power 2200mAh 11.1V (FPWP6198)

ADDITIONAL ITEMS REQUIRED

Required Adhesives & Building Supplies

This is the list of adhesives and building supplies required to finish the Curtiss P-6E Hawk EP ARF. Order numbers are provided in parentheses.

- 1/2 oz. [15g] Thin Pro CA (GPMR6001)
- 1/2 oz. [15g] Medium Pro CA+ (GPMR6007)
- Pro 30-minute epoxy (GPMR6047)
- Denatured alcohol (for epoxy clean up)
- Drill bits: 1/16" [1.6mm], 5/64" [2mm], 3/32" [2.5mm]
- #1 Hobby knife (HCAR0105)
- #11 blades (5-pack, HCAR0211)
- Small T-pins (100, HCAR5100)

Optional Supplies and Tools


Here is a list of optional tools mentioned in the manual that will help you build the Curtiss P-6E Hawk EP.

- 2 oz. [57g] spray CA activator (GPMR6035)
- CA applicator tips (HCAR3780)
- CA debonder (GPMR6039)
- Epoxy brushes (6, GPMR8060)
- Mixing sticks (50, GPMR8055)
- Mixing cups (GPMR8056)
- Threadlocker thread locking cement (GPMR6060)
- AccuThrow Deflection Gauge (GPMR2405)
- CG Machine™ (GPMR2400)
- 21st Century® sealing iron [COCR2700]
- 21st Century iron cover [COVR2702]
- Great Planes Pilot 1/7 Military Painted [GPMQ9117]
- GP Aluminum Safety Spinner Nut [GPMQ4631]

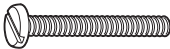
IMPORTANT BUILDING NOTES

- There are three types of screws used in this kit:

Sheet Metal Screws are designated by a number and a length. For example #6 × 3/4" [19mm].

This is a number six screw that is 3/4" [19mm] long. 

Machine Screws are designated by a number, **threads per inch**, and a length. For example 4-40 × 3/4" [19mm].

This is a number four screw that is 3/4" [19mm] long with forty threads per inch. 

- 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**, 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.
- **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.

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 Ph: (217) 398-8970, ext. 5
Champaign, IL 61822 Fax: (217) 398-7721

E-mail: airsupport@greatplanes.com

ORDERING REPLACEMENT PARTS

Replacement parts for the Great Planes Curtiss P-6E Hawk 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 Hobbico web site at www.hobbico.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. If a hobby shop is not available, replacement parts may also be ordered from Tower Hobbies at www.towerhobbies.com, or by calling toll free (800) 637-6050.

Parts may also be ordered directly from Hobby Services by calling (217) 398-0007, or via facsimile 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 **Hobby Services**
and payments by 3002 N Apollo Drive, Suite 1
personal check to: Champaign IL 61822

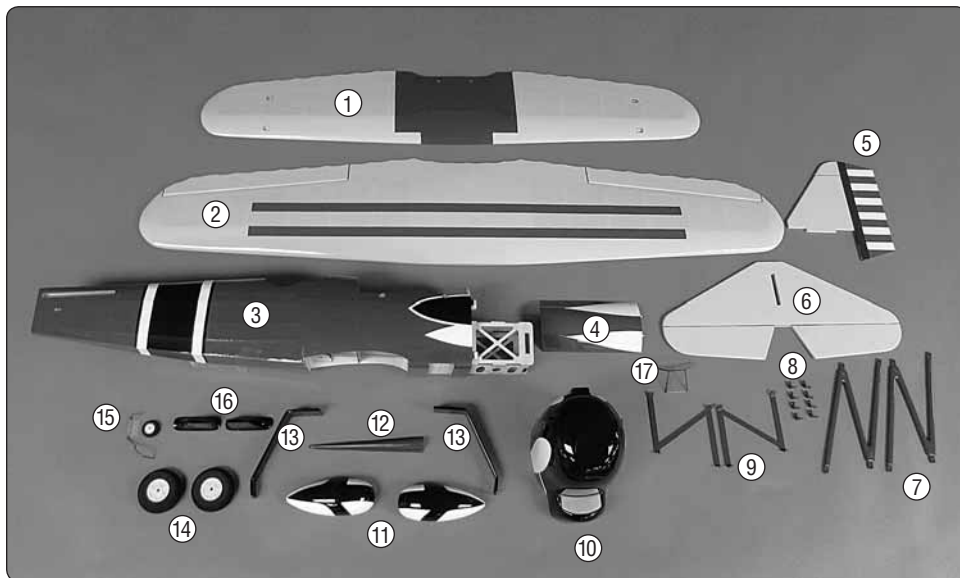
Be certain to specify the order number exactly as listed in the **Replacement Parts List**. Payment by credit card or personal check only; no C.O.D.

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

REPLACEMENT PARTS LIST

Order No.	Description
GPMA3425	Fuselage
GPMA3426	Top Wing
GPMA3427	Bottom Wing
GPMA3428	Tail Surface Set
GPMA3429	Cowl
GPMA3430	Landing Gear
GPMA3431	Wheel Pants
GPMA3432	Hatch
GPMA3433	Cabane Set
GPMA3434	Interplane Struts
GPMA3435	Bracket Set
GPMA3436	Windshield
GPMA3437	Decals
GPMA3438	Landing Gear Fairings

KIT CONTENTS



1. Lower Wing
2. Upper Wing
3. Fuselage
4. Hatch
5. Fin and Rudder
6. Stab and Elevator
7. "N" Struts
8. Brackets
9. Cabane Struts
10. Cowl
11. Wheel Pants
12. Turtle Deck Fairing
13. Landing Gear
14. Wheels
15. Tail Wheel Wire and Tail Wheel
16. Landing Gear Fairings
17. Windshield

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 4.
2. Use a covering iron with a covering sock on medium heat to tighten the covering on the wings, fuselage, etc. if necessary. Apply pressure over sheeted areas to **thoroughly** bond the covering to the wood.
3. Test pull all pre-hinged surfaces.

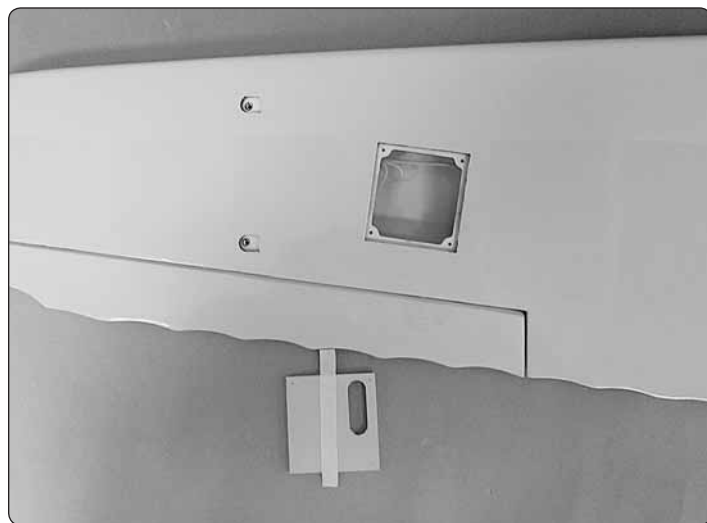
ASSEMBLE THE WINGS

When working on the ailerons, do the right half of the top wing first, so your work matches the photos the first time through.

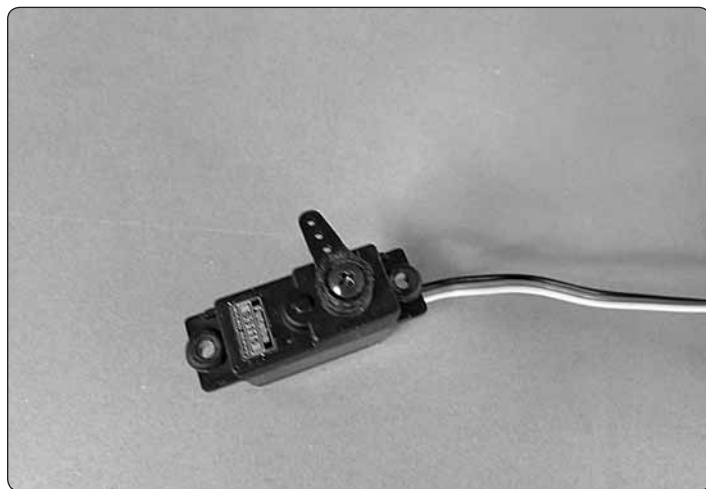
Install the Aileron Servos & Pushrods



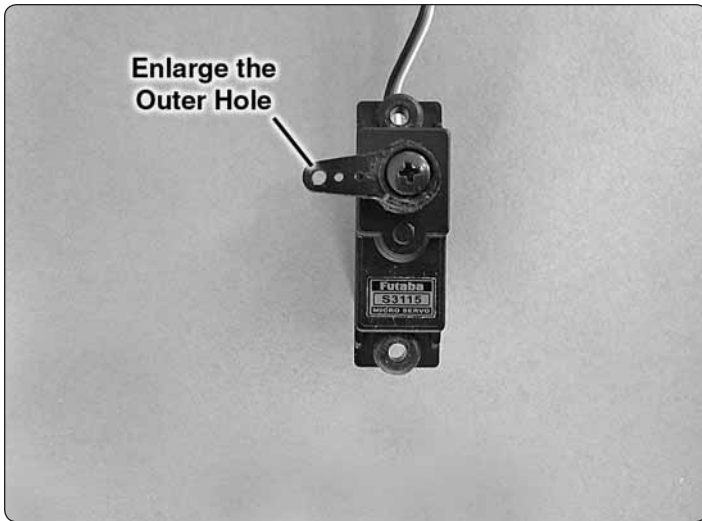
1. Remove the servo cover from the wing.



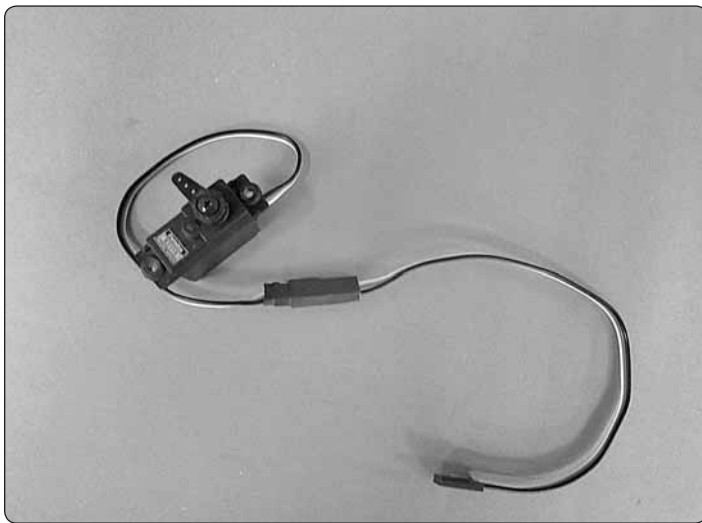
2. Inside the servo bay a string is taped. Carefully remove the tape and leave the loose end of the string in the servo bay.



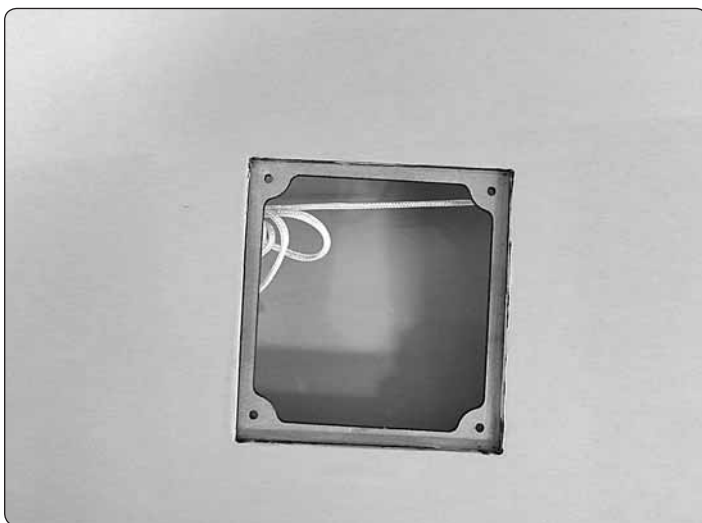
3. Remove three of the arms from a four arm servo. Center the servo and install the arm to the servo, securing it with the servo screw. Install the grommets and eyelets on the servo.



4. Enlarge the outer hole in the servo arm with a 5/64" [2mm] drill bit.

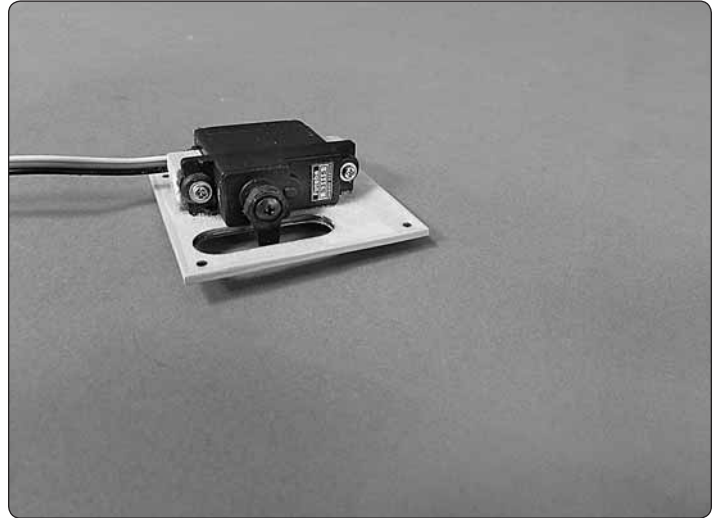


5. Install a 9" [229mm] servo extension onto the servo. Be sure to secure the leads together with a piece of heat shrink tubing, tape or some other method for securing the leads.



6. Tie the string from inside the servo bay to the end of the servo lead. Pull the lead through the wing, exiting out through the hole at the center section of the wing.

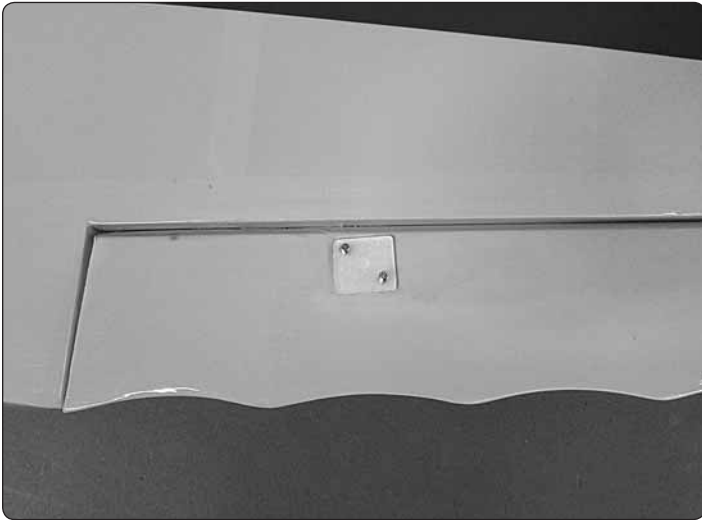
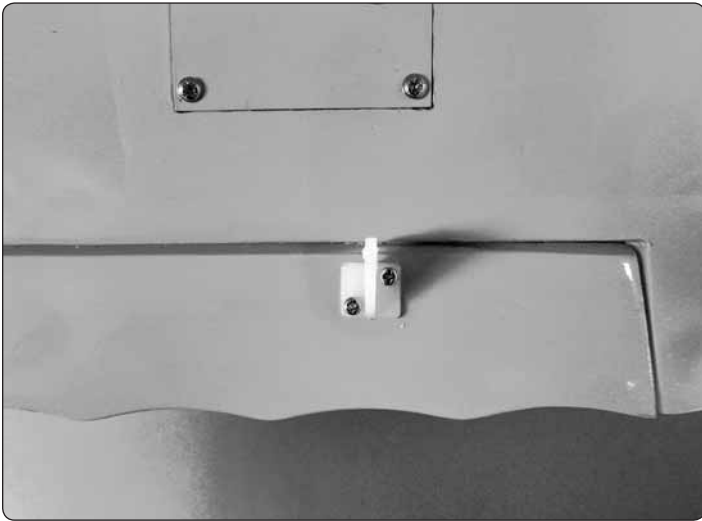
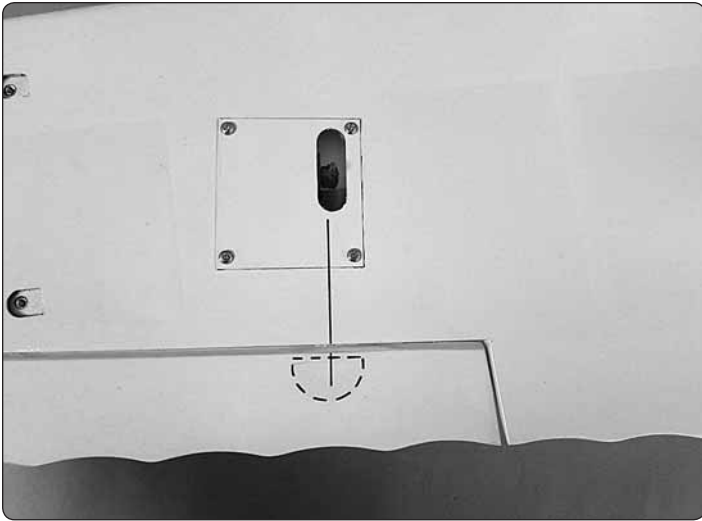
7. Place your servo onto the servo hatch, positioning it so that the control horn is centered in the opening in the hatch. Glue two 9/32" x 3/8" x 3/8" [7 x 10 x 10mm] wood blocks to the hatch, positioning the servo between the wood mounting blocks with 5 minute epoxy.



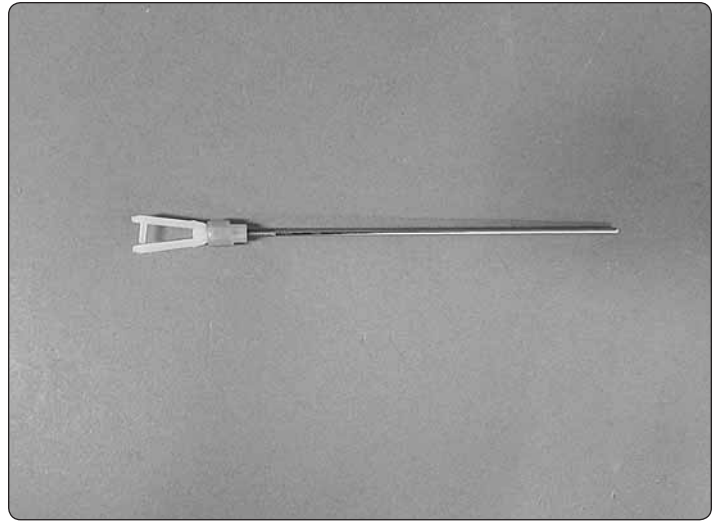
8. After the glue has hardened place the servo between the blocks. Drill a 1/16" [1.6mm] hole through the servo mounting tabs, into the wood blocks. Using the servo mounting screws that came with the servos, install and then remove the servo mounting screws. Apply a couple of drops of thin CA glue into the holes to harden the threads. When the glue has hardened, install the servo to the hatch with the servo mounting screws.



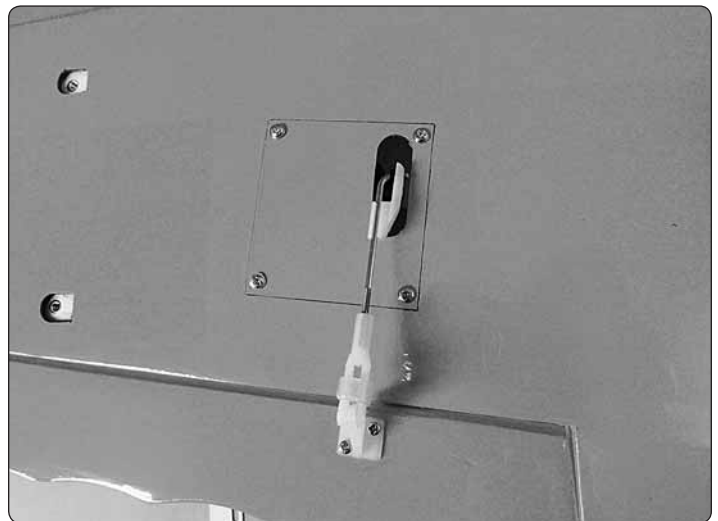
9. Install and then remove a #2 x 3/8" [2 x 10mm] washer head screw into the four laser cut holes in the flange around the servo hatch opening. Apply a drop of thin CA glue into each of the four holes to harden the threads. Once the glue has hardened, secure the hatch to the wing with four of the #2 x 3/8" [2 x 10mm] washer head screws.



□ □ 10. Locate a nylon control horn. Cut the nylon mounting plate from the horn. Place the control horn onto the aileron in line with the servo arm and positioned on the hardwood plate. Mark the location of the mounting holes in the servo horn onto the aileron. Drill a 5/64" [2mm] hole through the aileron on each of the marks you just made. Secure the horn to the aileron with two 1/16" x 1/2" machine screws and the nylon back plate.



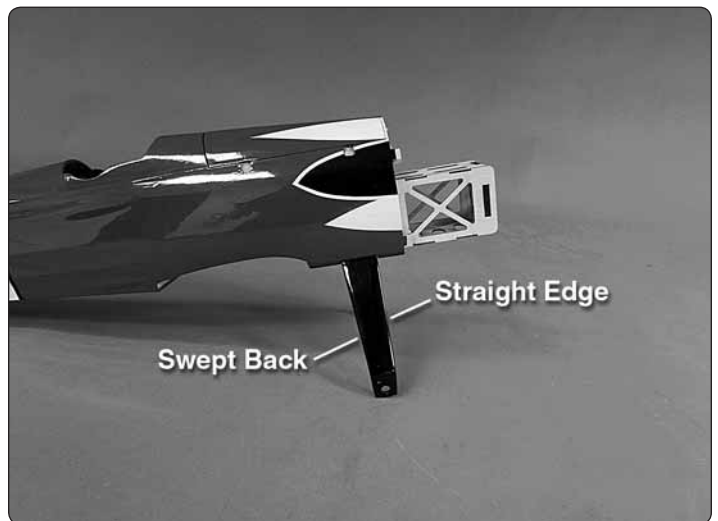
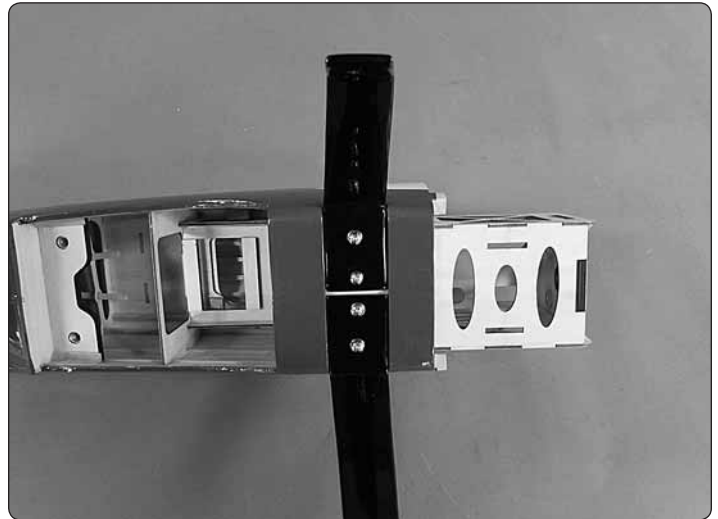
□ □ 11. Thread a nylon clevis, 20 turns, onto a 6" [152mm] wire pushrod.



□ □ 12. Slide a silicone clevis retainer over the clevis and install the clevis into the outer hole in the aileron control horn. With the aileron servo and the aileron centered, mark the aileron pushrod where it crosses the aileron servo arm. Make a 90° bend at the mark. Cut the pushrod 3/8" [9.5mm] past the bend. Attach the pushrod to the aileron servo arm with a nylon Faslink.

□ 13. Repeat steps 1-11 for the left wing panel.

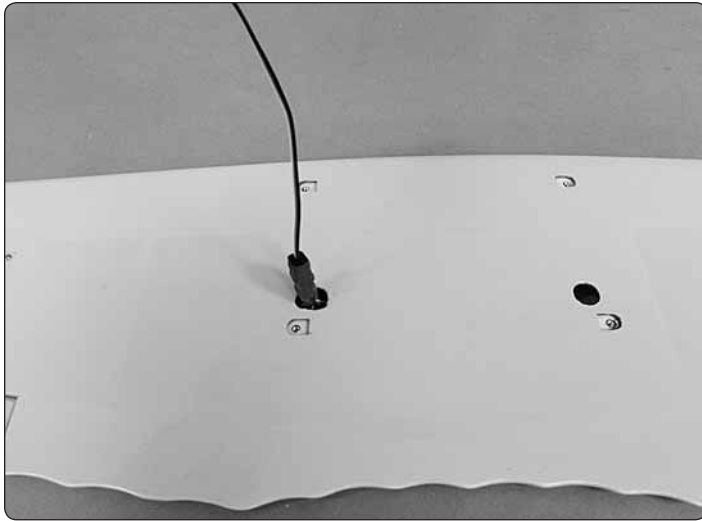
Install the Main Landing Gear



1. Attach the two main landing gear legs to the **fuselage** with four 4-40 x 5/8" [3.5 x 16mm] screws, #4 lock washers and #4 flat washers. Apply a drop of threadlocker to each screw.



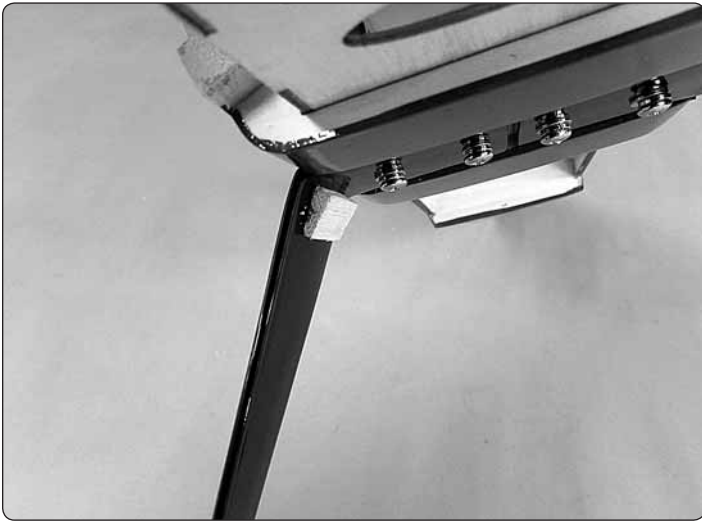
2. Locate the two landing cuffs and the two sets of shaped wood parts.



14. When installing the servo in the left half of the wing you may wish to have the extension exit the wing through the same hole as the right aileron. This may be helpful in hiding the leads as they extend into the fuselage. If you decide to have both leads exit the same hole, you may need to use a slightly longer servo lead and you will likely need to enlarge the hole to make room for the dual servo lead. Either way you choose to proceed, connect the two servos with a dual servo extension ("Y" harness). Secure the extension with tape, shrink tubing or some other method to secure the connection.

ASSEMBLE THE FUSELAGE

Before beginning the work on the fuselage you may wish to remove the fuselage hatch. The hatch is held in place with two magnets at the rear of the hatch. Lift the hatch from the rear and remove it from the fuselage.

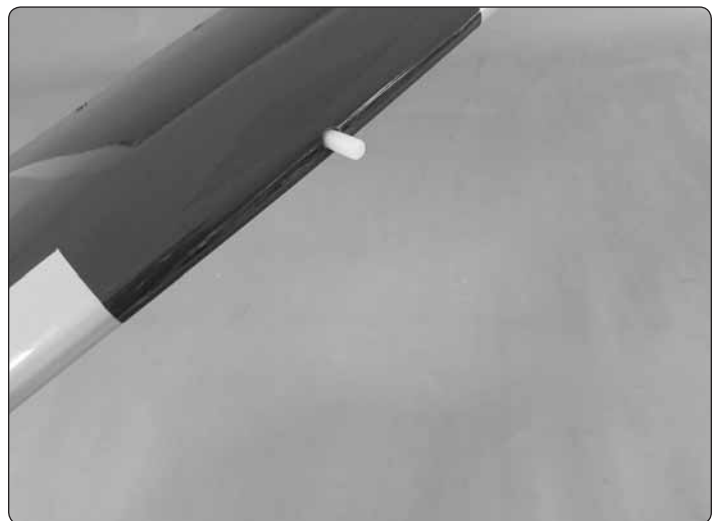
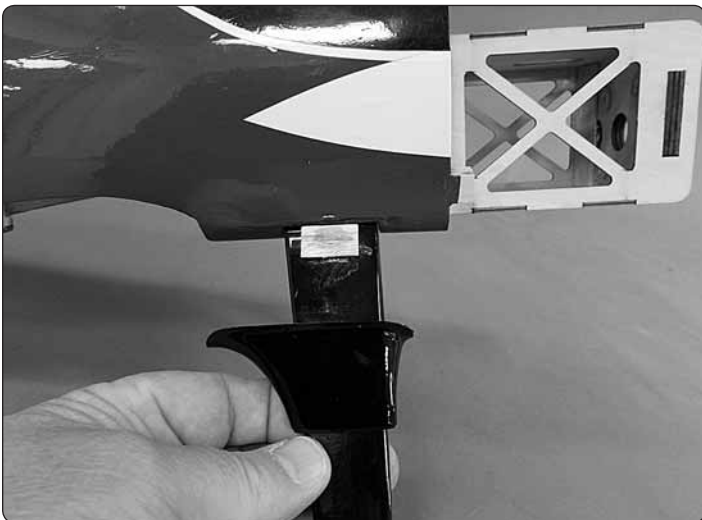


❑ 4. Test fit the landing gear cuff to the landing gear. When you are satisfied with the fit of the cuff over the landing gear, glue the cuff in place *to the wood parts*.

You will complete the installation of the wheels and wheel pants in a later step. Installing the landing gear legs now will make handling the fuselage easier during the assembly of the wings.

Install the Wings, Cabanes & Struts

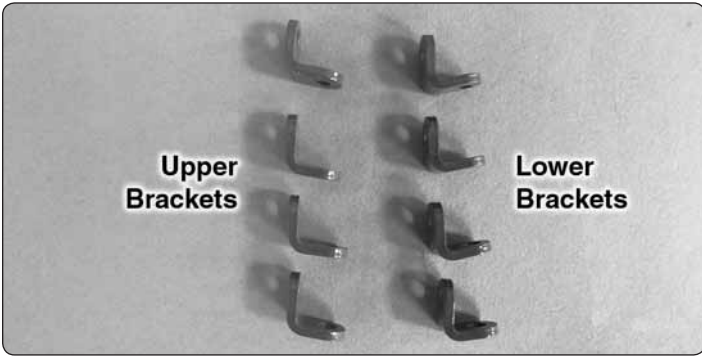
❑ 3. If you look closely at the wood parts you will see one part is thin and flat, and the other is shaped. Glue the flat wood part on the front side of the landing gear as shown. The shaped wood part should be glued to the back side of the landing gear with the thickest portion of the shaped piece towards the top of the landing gear.



❑ 1. Locate the nylon pin. Glue it into the hole in the leading edge of the bottom wing.



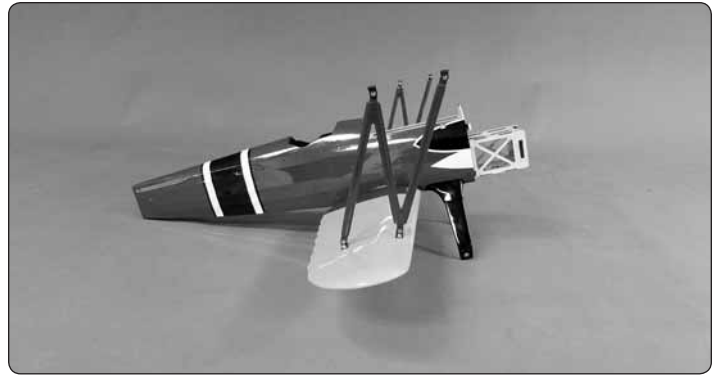
❑ 2. Install the lower wing to the fuselage with two ¼-20 x 2" [51mm] nylon wing bolts.



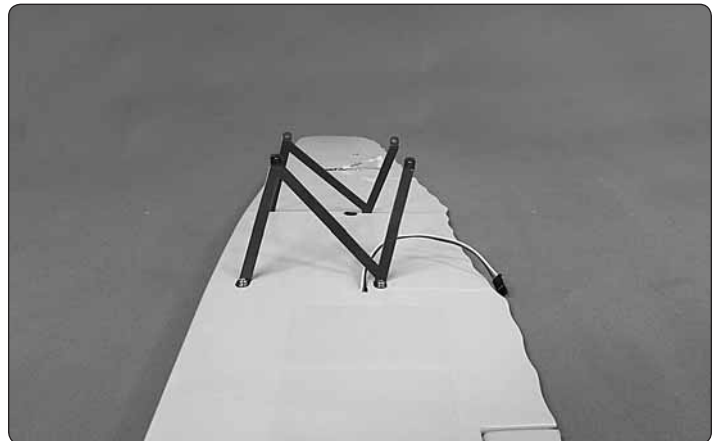
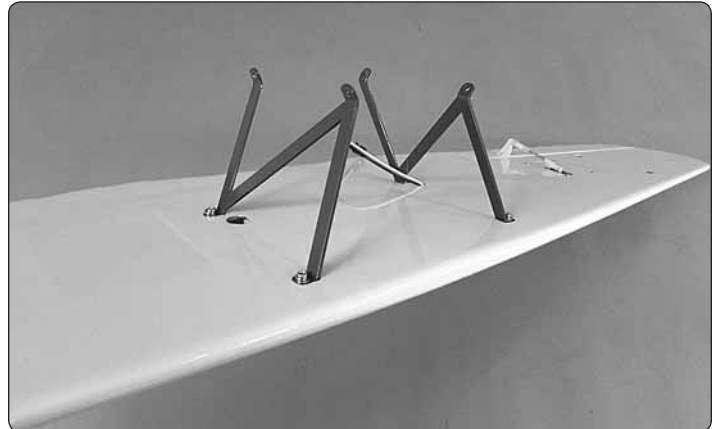
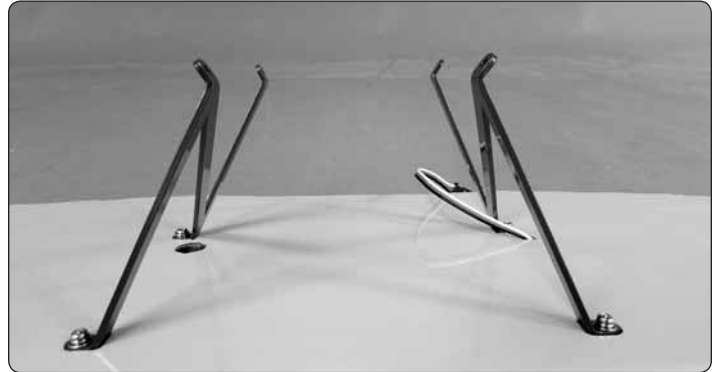
❑ 3. Locate the two "N" Struts and the eight strut brackets. Separate the brackets into two groups of four, making sure the angles of the brackets in each group match.



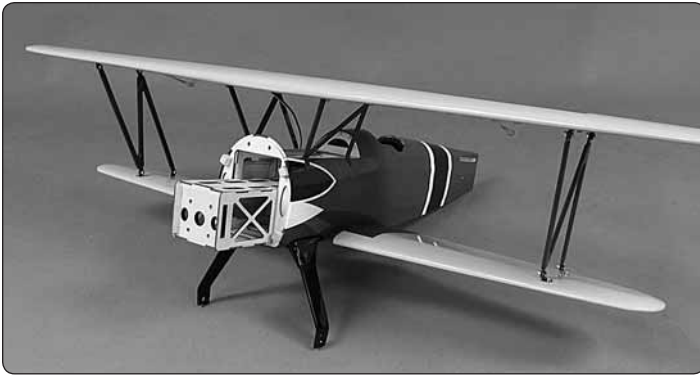
❑ 4. Install two of the lower brackets into the bottom of an "N" strut with a 4-40 x 5/16" [3 x 8mm] machine screw and a 4-40 lock nut. Look at the photo in step five to help determine the proper direction for the "N" strut. The top of the strut is slightly wider than the bottom of the strut. The narrower end of the strut fits the bottom wing. Repeat this for the *upper brackets*. Do this for both struts.



❑ 5. Install the struts to the bottom wing with 4-40 x 5/16" [3 x 8mm] machine screws, #4 lock washers and flat washers.



❑ 6. Install the center canopies to the bottom of the top wing. It is important that they are positioned properly or they will not mate correctly to the fuselage. Examine the photos to help you in placing them correctly onto the wing.



❑ 7. Secure the top wing to the “N” struts with 4-40 x 5/16" [3 x 8mm] machine screws, #4 lock washers and flat washers. After the struts are attached, work the center cabanes so that they are resting in the pockets in the fuselage sides.



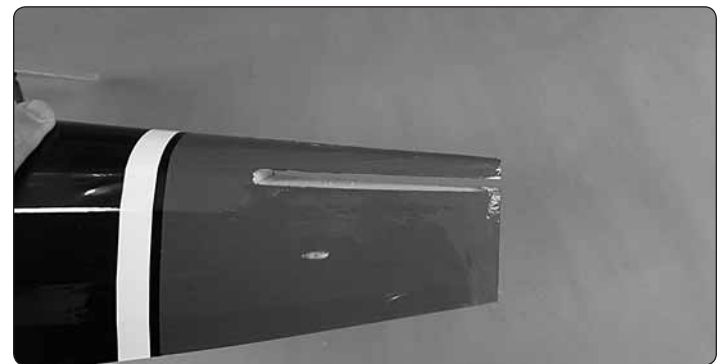
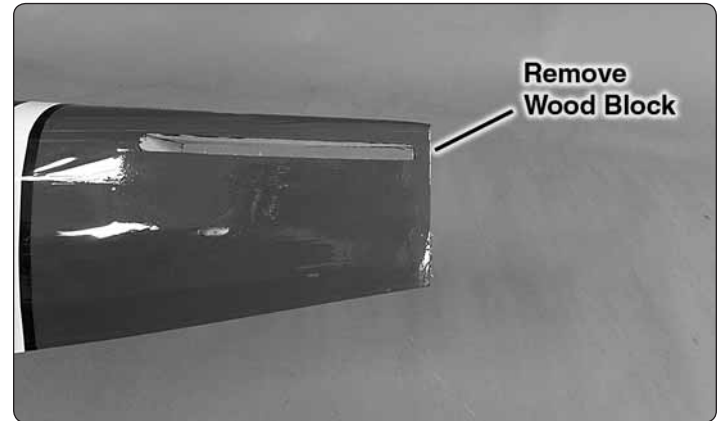
❑ 8. The next step is to mark the mounting holes in the fuselage for the cabane screws. With the “N” struts attached to the wings, the top and bottom wing should be properly positioned without any twists. The cabanes should now be resting properly in the fuselage. The cabanes may not be fully into the mounting pockets in the fuselage. That is acceptable. If needed you can press down on the wing a bit to get the cabanes in the pocket, but be careful not to distort the wings. Using a pen, mark where the mounting holes for the cabanes need to be drilled.



❑ 9. Remove the top wing from the struts and remove the center cabanes from the wing. Make sure to keep track of

which cabane goes on each side of the fuselage. On the marks you made in the fuselage, drill a 3/32" [2.5mm] hole through the fuselage sides. Insert and remove a 1/8" x 3/8" washer head screw into each of the four holes. Apply a drop of thin CA into each of the holes to harden the threads. After the glue has hardened, secure the cabanes to the fuselage and re-install the top wing.

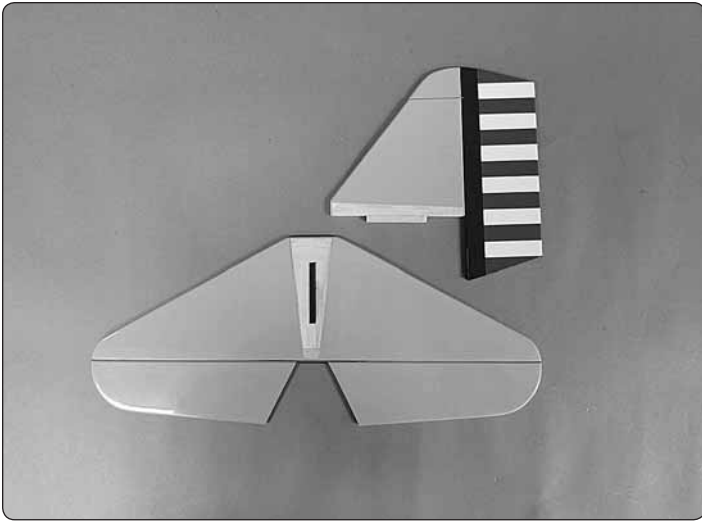
Install the Tail Assembly



❑ 1. Located at the back of the fuselage in the slot for the horizontal stabilizer, a small wood block has been temporarily installed to protect the fuselage during shipping. Remove the block with a hobby knife.



❑ 2. Slide the **stabilizer** and **fin** into the slots at the back of the fuselage. Using a felt tip pen, outline the shape of the fuselage on the stab and fin. Remove them from the fuselage.



❑ 3. Using a sharp hobby knife, cut the covering inside the lines you traced onto the parts. When cutting the covering you must **be careful to cut only through the covering, not into the wood**. The best way to do this is as shown in the following "Hot Tip".

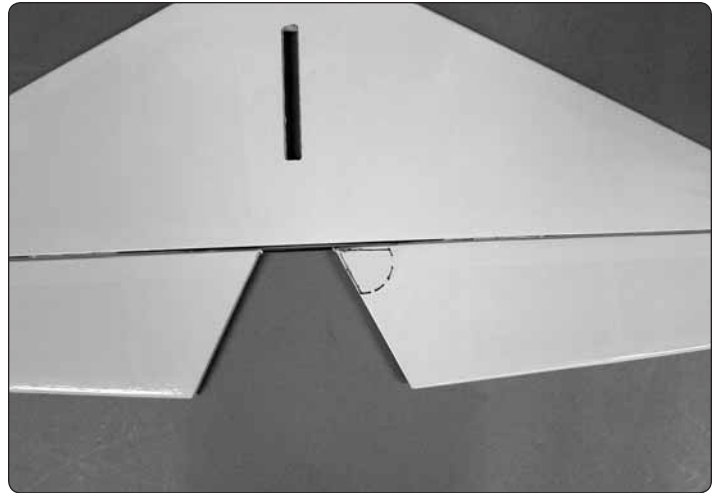


HOW TO CUT COVERING FROM BALSA

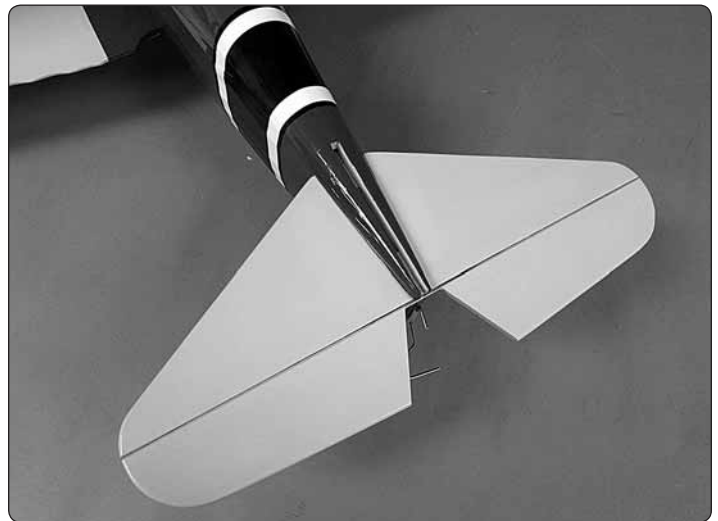
Use a soldering iron to cut the covering from the stab. The tip of the soldering iron doesn't have to be sharp, but a fine tip does work best. Allow the iron to heat fully.



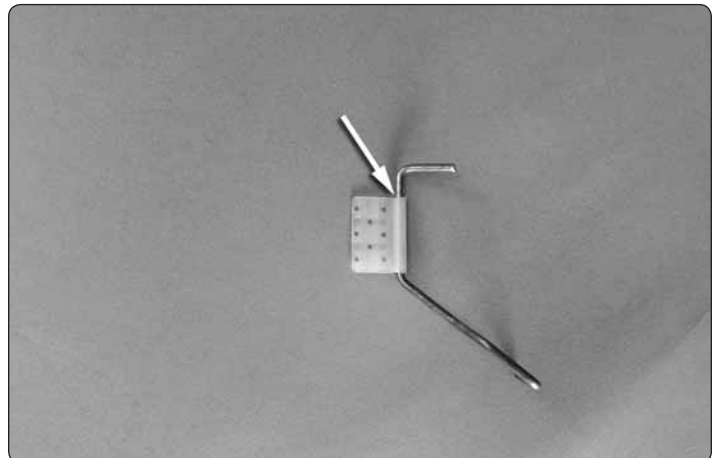
Use a straightedge to guide the soldering iron at a rate that will just melt the covering and not burn into the wood. The hotter the soldering iron, the faster it must travel to melt a fine cut. Peel off the covering.



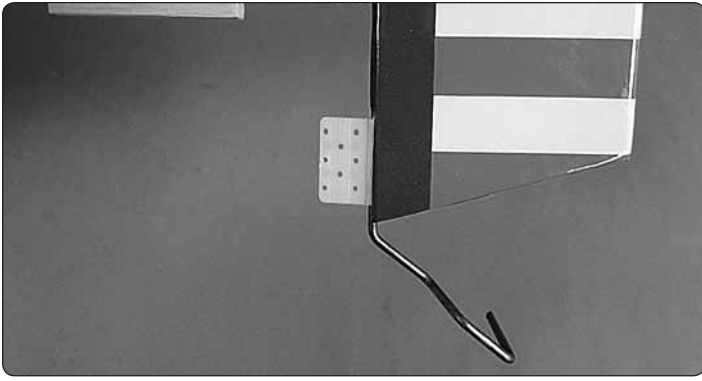
❑ 4. Look closely at the leading edge of the elevator. You will notice on one side there is a plywood plate. This is the *bottom* of the stabilizer and elevator. Be sure you position the stabilizer properly in the next couple of steps.



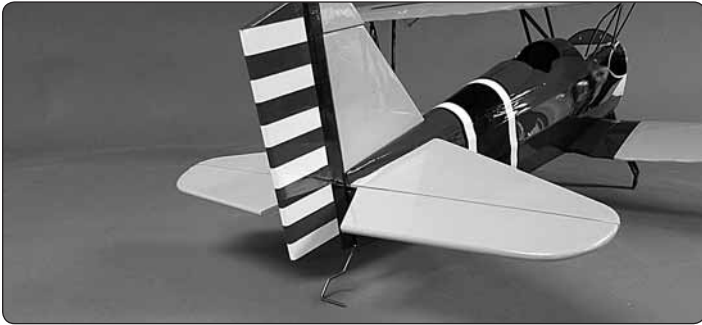
❑ 5. Apply 30 minute epoxy to both sides of the horizontal stabilizer and insert it into the slot in the back of the fuselage. Clean excess epoxy with a paper towel and rubbing alcohol. Work quickly and move onto the next few steps.



❑ 6. Locate the tail wheel wire. Apply a drop of oil onto the wire where it passes through the nylon bearing. This will prevent glue from getting into the bearing.



❑ 7. Apply a small amount of glue to the end of the tail wheel wire and then slide the wire into the hole in the leading edge of the rudder.

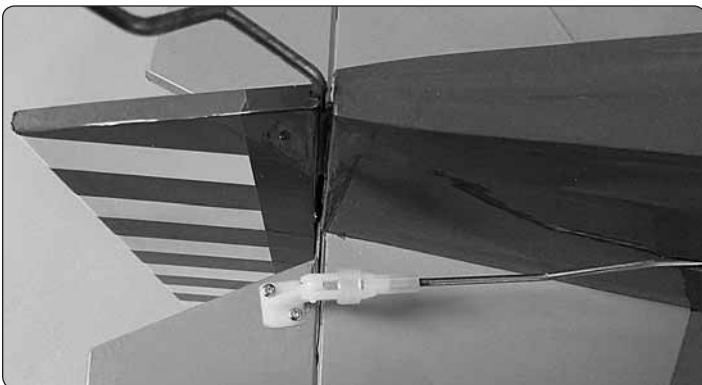


❑ 8. Apply epoxy to both sides of the fin where you removed the covering and apply a small amount of glue to the nylon bearing. Insert the fin into the slot in the fuselage, locking it into the slot in the horizontal stabilizer. Clean any excess glue with a paper towel moistened with rubbing alcohol. Make sure the stabilizer is aligned with the wings and then set the assembly aside until the glue has hardened.

Install the Elevator, Rudder Servos and Receiver

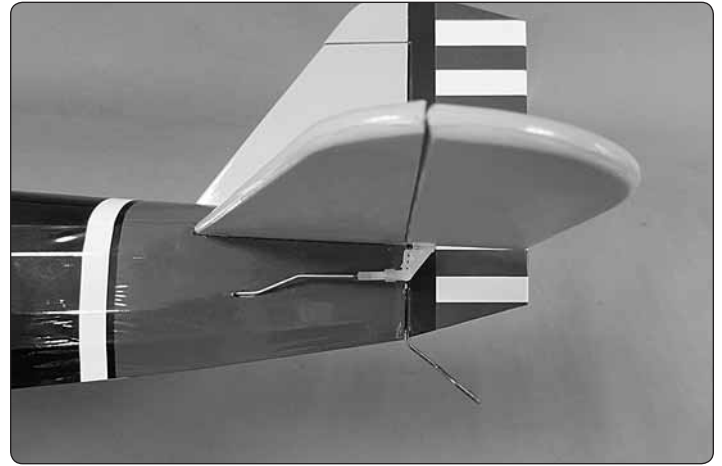
❑ 1. Remove the top wing. This will provide access to the servo compartment.

❑ 2. Install a clevis and clevis keeper onto the threaded end of the two 20" [508mm] pushrod wires the same as was done for the ailerons.

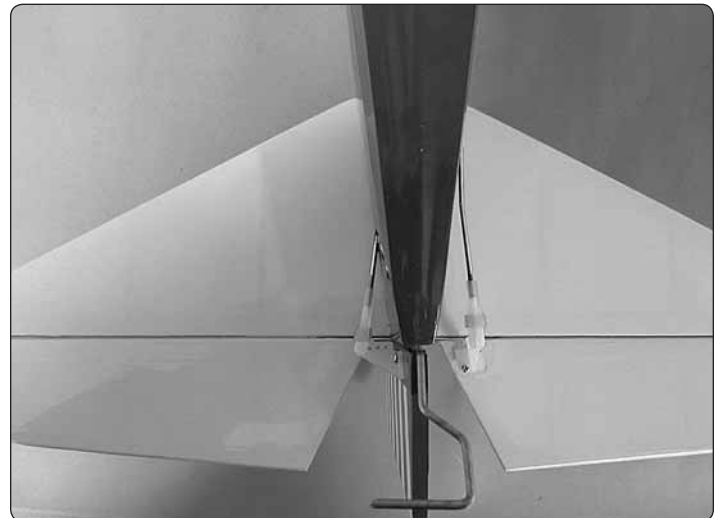
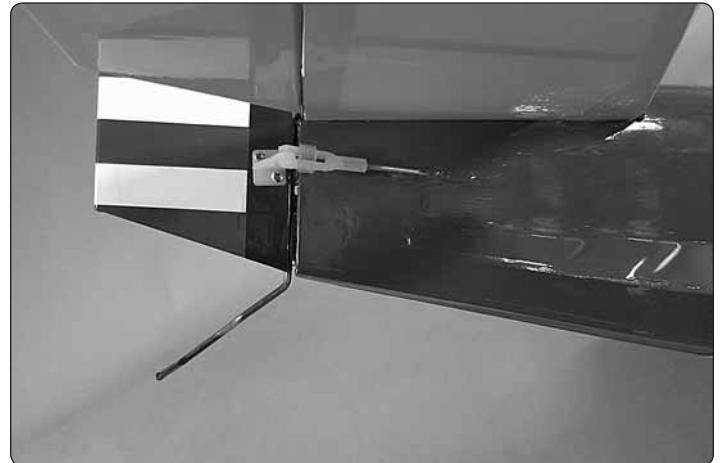


❑ 3. Slide the wire into the pushrod exit on the left side of the fuselage. Using the pushrod as a guide, position a control

horn onto the elevator with the holes centered over the hinge line. Mark the location of the screw holes. Drill a 3/32" [2.5mm] hole through the elevator on each of the marks. Secure the horn to the elevator with two 1/16" x 1/2" machine screws and the nylon back plate.

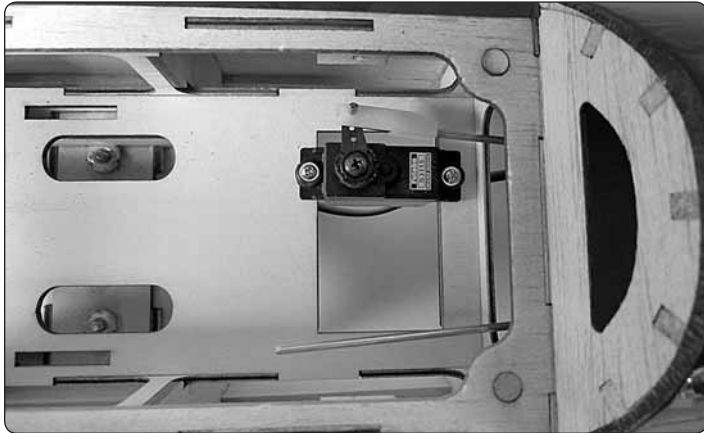


❑ 4. Remove the elevator pushrod from the fuselage. Bend the wire as shown to allow the wire to be aligned with the pushrod exit in the fuselage when the clevis is attached to the control horn.

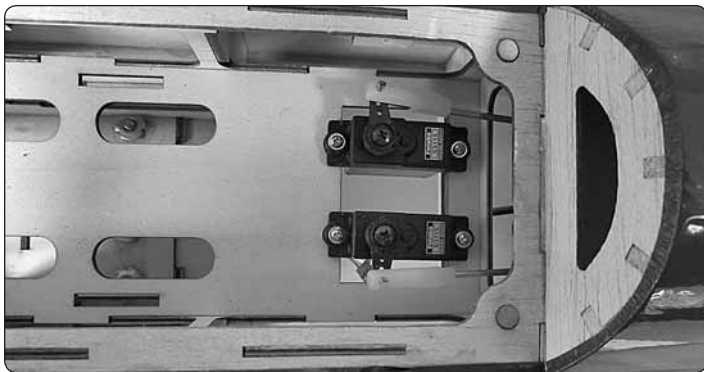


❑ 5. Repeat step 3 for the rudder pushrod wire. Note: the rudder pushrod will insert into the pushrod exit without bending the wire.

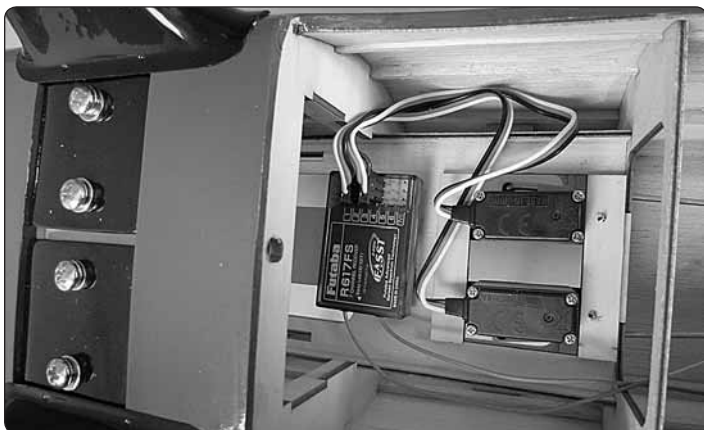
❑ 6. Remove three of the arms from a four arm servo horn. Drill the outer hole of the arm with a 5/64" [2mm] drill. Place the elevator servo arm outer hole in line with the pushrod wire. Drill a 1/16" [1.6mm] hole through the servo mounting tabs, into the plywood. Using the servo mounting screws that came with the servos, install and then remove the servo mounting screws. Apply a couple of drops of thin CA glue into the holes to harden the threads. When the glue has hardened install the servo into the servo tray.



❑ 7. With the elevator servo and the elevator centered, mark the elevator pushrod where it crosses the elevator servo arm. Make a 90° bend at the mark. Cut the pushrod 3/8" [9.5mm] past the bend. Attach the pushrod to the elevator servo arm with a nylon Faslink.



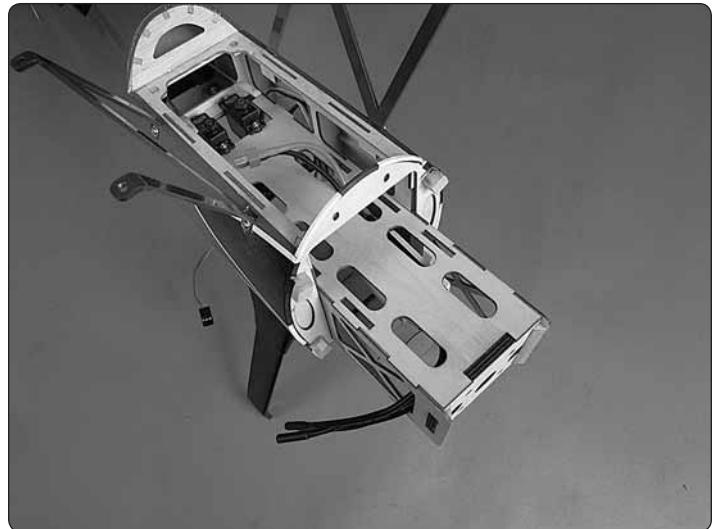
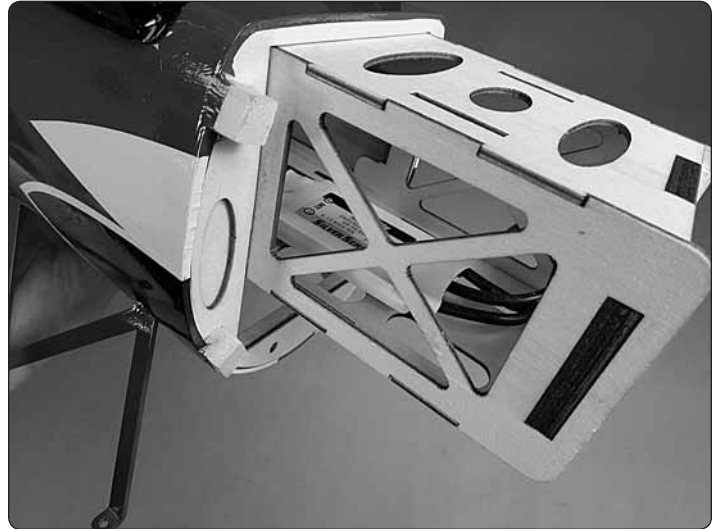
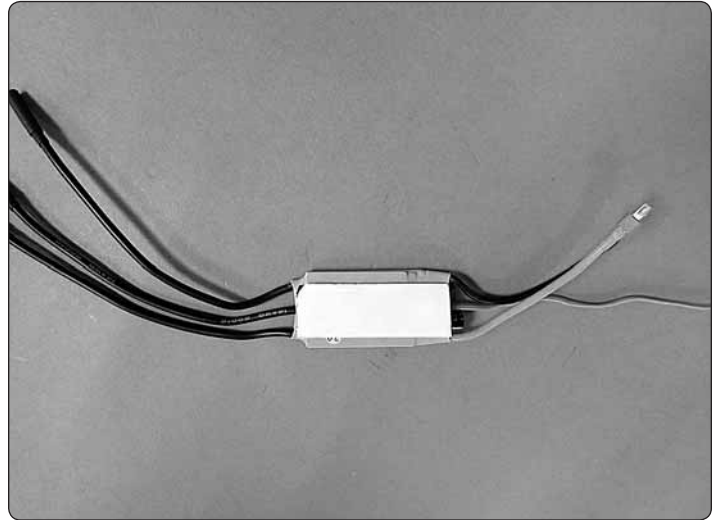
❑ 8. Repeat step 7 for the rudder servo.



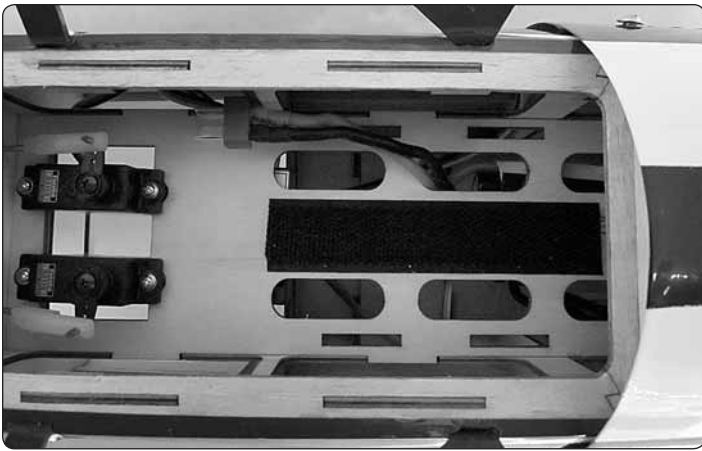
❑ 9. Apply a 1-1/4" [32mm] length of self-adhesive hook and loop material to the receiver and attach it to the servo

tray as shown. Plug the elevator and rudder servos into the appropriate channels on your receiver.

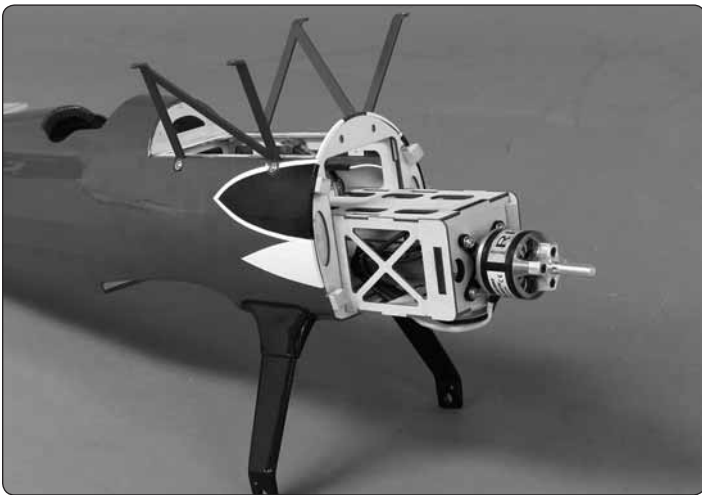
Install the Motor, ESC and Cowl



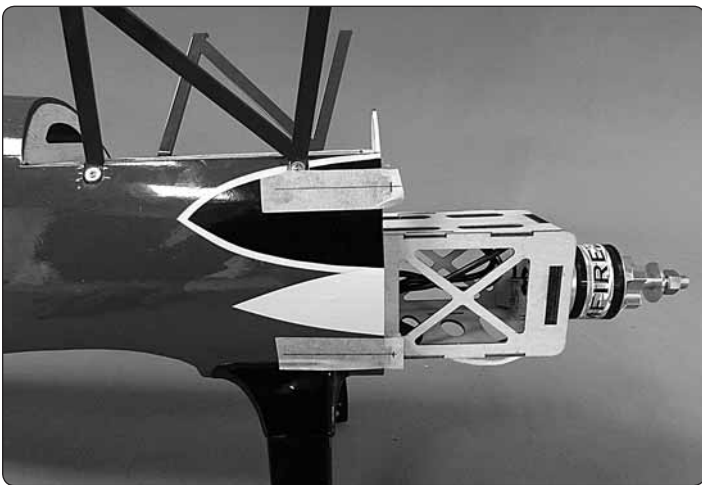
❑ 1. Cut a piece of the adhesive backed Velcro to fit the speed control and apply one side of it to one side of the speed control and the other half to the bottom of the battery tray in the fuselage.



❑ 2. Install a 4" [102mm] adhesive backed strip of Velcro in the battery compartment in the top of the fuselage.

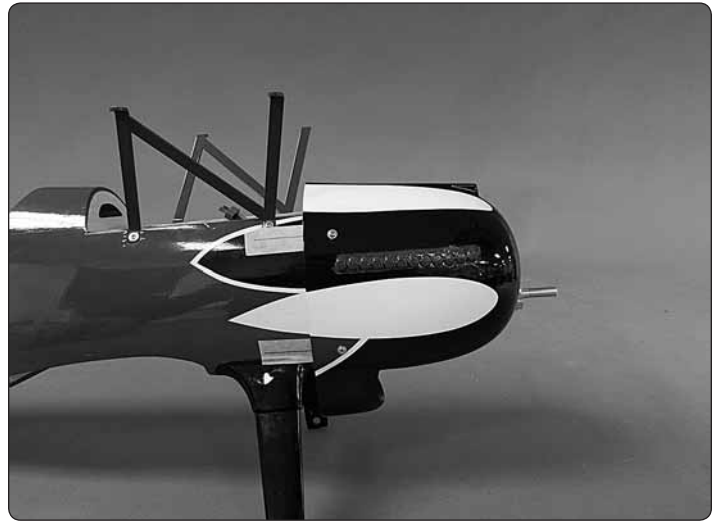


❑ 3. Assemble your motor following the instructions that came with it. Install the motor to the firewall with four 4-40 x 3/8" [3 x 10mm] machine screws, #4 [3mm] lock washers and #4 [3mm] flat washers. Be sure to apply a drop of thread locker to the threads on each screw. Plug the leads from the motor into the speed control. Follow the instructions with your motor for determining the proper rotation for the motor.



❑ 4. Apply a 2-1/2" [64mm] piece of masking tape on the fuselage in line with each of the four cowl mounting blocks. Draw a line from the center of each block back 2" [51mm].

❑ 5. Position the cowl over the motor, centering the motor with the hole in the front of the cowl. Be sure the motor prop flange extends beyond the front of the cowl to allow for clearance for the propeller.



❑ 6. When you are satisfied with the position of the cowl, on the lines you drew measure 2" [51mm] and make a mark on the cowl. Drill a 5/64" [2mm] hole through one of the marks and into the cowl mounting block. Install one of the 3/32" x 3/8" [2.5 x 10mm] washer head screws in the hole you drilled. Re-check the cowl position and then drill on another mark and install a screw. Repeat this for all four holes. After you have drilled and inserted the screws, remove the cowl and the masking tape from the fuselage. Apply a couple of drops of thin CA into each of the holes you drilled to harden the threads. Once the glue has hardened re-install the cowl.

❑ 7. Install the prop to the motor shaft. Once you are satisfied everything fits, remove the prop. (*When you set up the electronics it is safer to do so without the prop in place.*)

Install the Wheels and Wheel Pants



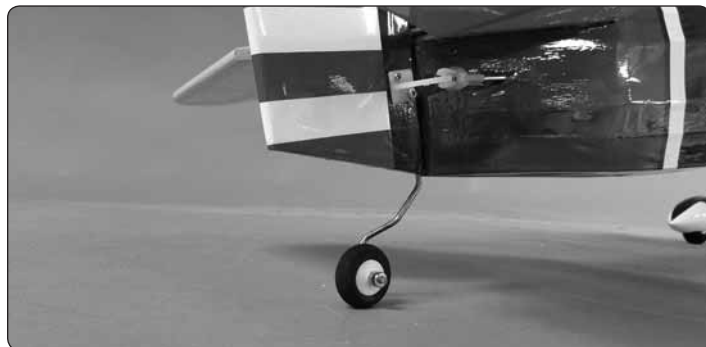
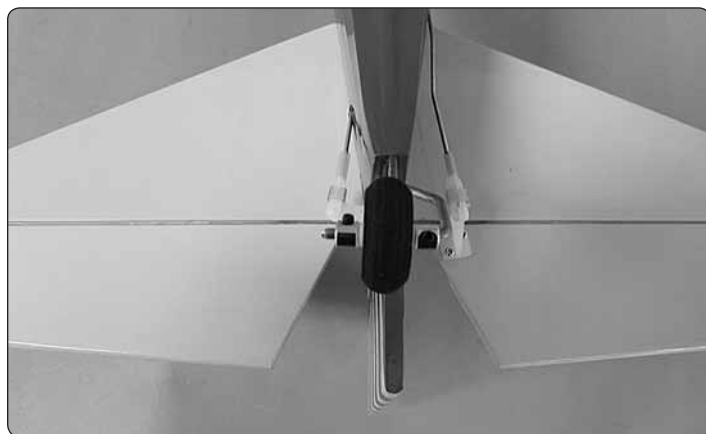
□ □ 1. Install an axle to each of the landing gear legs with the axle nut. When installing the axle be sure the flat spot on the axle is towards the ground.



□ □ 2. Install a 4-40 set screw into two 3/16" [4.8mm] wheel collars. Apply a drop of thread locker onto the set screws before installing them into the wheel collar. Slide one wheel collar onto the axle followed by the wheel and the second wheel collar. Center the wheel on the axle and then tighten the set screws against the axle. The outer wheel collar set screw should be tightened against the flat spot on the axle. Do this for both landing gear legs.

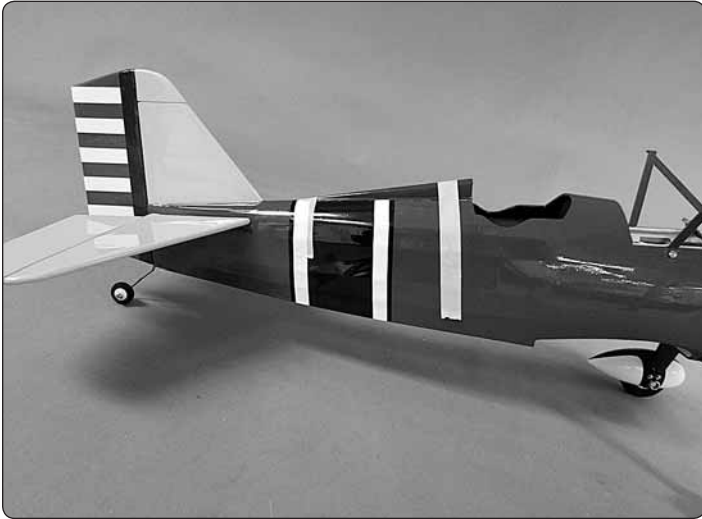
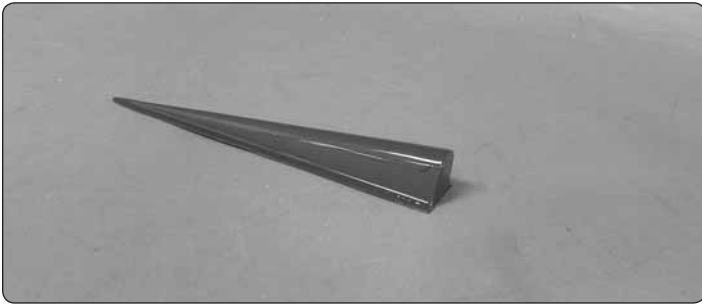


□ □ 3. Slide the right side wheel pant over the wheel. Secure the wheel pant to the landing gear with two 2-56 x 1/2" [13mm] screws, #2 lock washers and #2 flat washers. Repeat this for the remaining wheel pant.

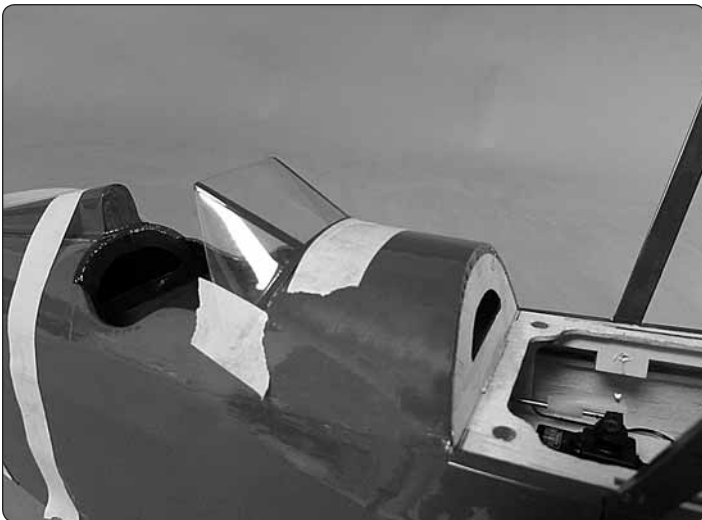


□ □ 4. Install a 4-40 set screw into two 1/8" [3mm] wheel collars. Apply a drop of thread locker onto the set screws before installing them into the wheel collar. Slide one wheel collar onto the tail wheel wire followed by the wheel and the second wheel collar. Center the wheel on the wire and then tighten the set screws against the wire.

Final Details



❑ 1. Glue the turtle deck in place to the top of the fuselage. A white aliphatic glue such as Formula 500 canopy glue works well for this. Tape the turtle deck to the fuselage while the glue is drying.



❑ 2. To complete the details of this airplane a windshield has been included. The windshield does make it a bit more difficult to install the battery. Test fit the battery and canopy to determine if you want to install the windshield. The windshield can be glued to the fuselage with the technique used for the turtle deck.

❑ 3. Plug a 9" [229mm] servo lead into the appropriate channel on your receiver for the ailerons. Feed the lead into the battery compartment.



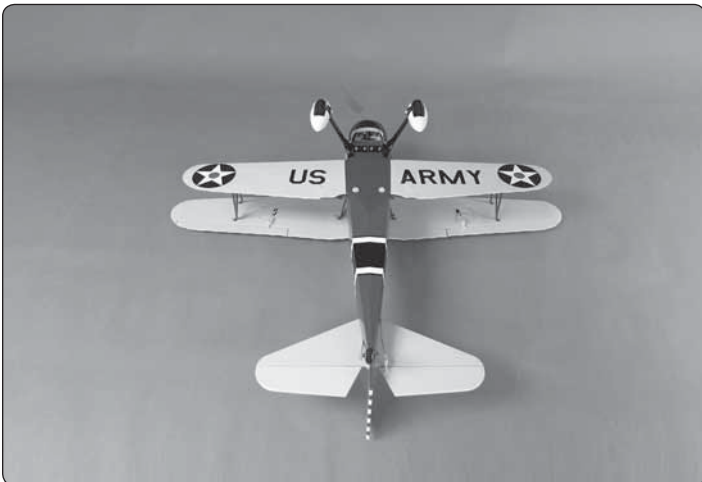
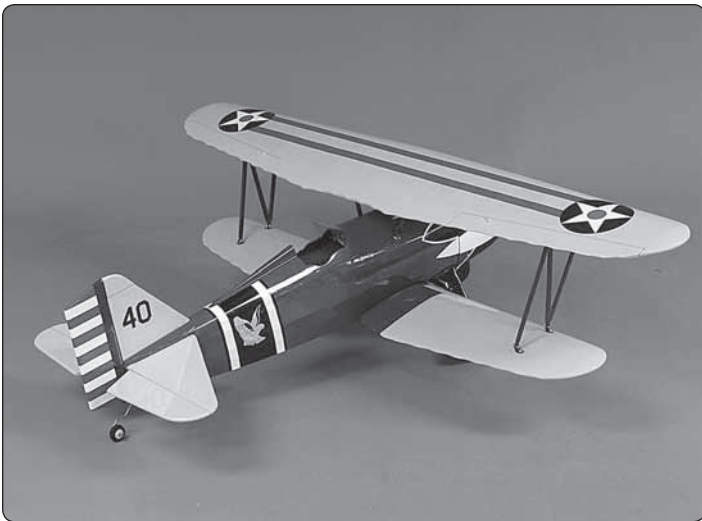
❑ 4. To hide the servo lead coming from the top wing we found it was best to make a slot the width of the servo lead in the fuselage as shown. You can attach the lead from the top wing to the cabane with tape or heat shrink tubing. Plug the aileron servo lead into the extension in the receiver.

❑ 5. Install a pilot figure if desired.

Apply the Decals

The following photographs and the box photographs show the location of the decals on the airplane. Refer to these for the exact placement of the decals. The following tips may be useful for applying them.





❑ 1. 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. Submerge 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, submerging them in soap & water allows accurate positioning and reduces air bubbles underneath.

❑ 2. Position decals on the model. Holding the decal down, use a paper towel to wipe most of the water away.

❑ 3. 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

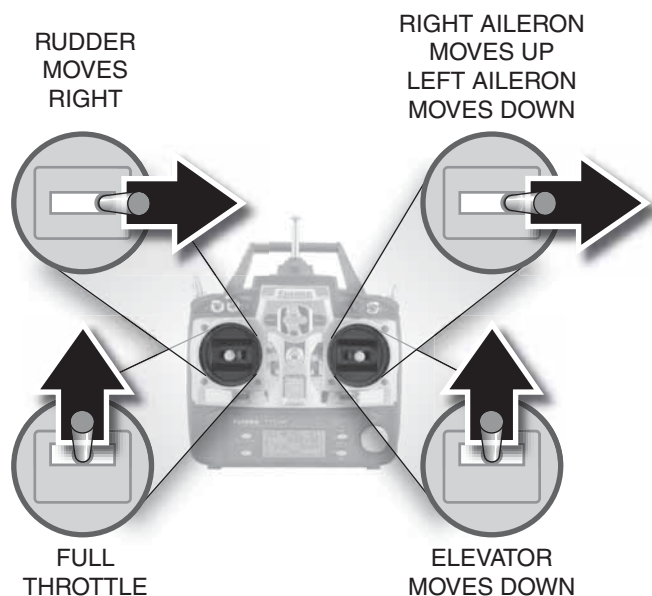
Note: If you have not re-installed the wings, install them now.

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 throttle 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 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:		
	LOW	HIGH
ELEVATOR Up & Down	3/8" [10mm] 10°	5/8" [16mm] 16°
RUDDER Right & Left	3/8" [10mm] 8°	5/8" [16mm] 14°
AILERONS Up & Down	7/16" [11mm] 20°	3/4" [19mm] 37°

IMPORTANT: The Curtiss P-6E Hawk EP 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 Curtiss P-6E Hawk EP 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."

Finish the Model



1. Insert a flight battery in the fuselage and use Velcro to hold the battery in position. Do not connect the battery to the ESC while balancing the model.

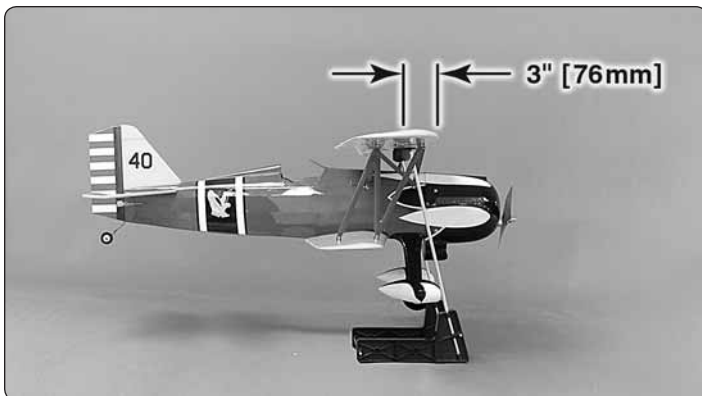
Balance the Model (C.G.)

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 motor and battery, landing gear, covering and paint, and the radio system.

1. Use a felt-tip pen or 1/8" [3mm]-wide tape to accurately mark the C.G. on the bottom of the top wing at the side of the fuselage. The C.G. is located 3" [76mm] back from the leading edge of the wing at the side of the fuselage.

This is where your model should balance for the first flights. Later, you may wish to experiment by shifting the C.G. up to 3/16" [5mm] forward or 1/8" [3mm] 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 the battery installed, 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 must be shifted aft or weight must be added to the tail to balance. If additional weight is required, use Great Planes (GPMQ4485) “stick-on” lead. A good place to add stick-on nose weight is to the motor box (don’t attach weight to the cowl—it is not intended to support weight). Begin by placing incrementally increasing amounts of weight on the fuse over the motor box until the model balances. Once you have determined the amount of weight required, it can be permanently attached.

NOTE: Do not rely upon the adhesive on the back of the lead weight to permanently hold it in place. Over time the adhesive may soften 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 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 batteries the night before you go flying, and at other times as recommended by the radio manufacturer.

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. 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 motor 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. The problem may be the location of the antenna. The antenna should be as far away from the ESC and battery as possible.

MOTOR SAFETY PRECAUTIONS

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

- Get help from an experienced pilot when learning to operate electric motors.
- Use safety glasses when running electric motors.
- Do not run the motor 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 run the motor.
- Keep these items away from the prop: loose clothing, shirt sleeves, ties, scarfs, long hair or loose objects such as pencils or screwdrivers that may fall out of shirt or jacket pockets into the prop.
- The motor gets hot! Do not touch it during or right after operation.
- When working on your plane, remove the propeller if the motor battery will be connected.
- Always remove the motor battery from the plane when charging.
- Follow the charging instructions included with your charger for charging LiPo batteries. LiPo batteries can cause serious damage if misused.
- Never leave a charging LiPo unattended!

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 (that's why it's called a *check list!*).

- 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 and make sure it has a strain relief inside the fuselage to keep tension off the solder joint inside the receiver.
- 4. Balance your model *laterally* as explained in the instructions.
- 5. Use threadlocking compound to secure critical fasteners such as the motor screws, wheel collar SHC screws and 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 before each flight.
- 8. Reinforce holes for wood screws with thin CA where appropriate (servo mounting screws, control horn 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 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. Balance your propeller (and spare propellers).
- 14. Tighten the propeller nut and spinner.
- 15. Place your name, address, AMA number and telephone number on or inside your model.
- 16. If you wish to photograph your model, do so before your first flight.
- 17. Range check your radio when you get to the flying field.

FLYING

The Curtiss P-6E Hawk is a great-flying model that flies smoothly and predictably. It does not, however, possess the self-recovery characteristics of a primary R/C trainer and should be flown only by experienced R/C pilots. We recommend the Curtiss P-6E Hawk be flown from hard surfaces or very short grass fields.

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 bring the model back into the pits, peak the battery and check all fasteners and control linkages for peace of mind.

Remember to takeoff directly 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 motor 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. The Curtiss P-6E Hawk with the recommended power system will only require full throttle in short bursts for some aerobatic maneuvers. Most aerobatic flight can be performed at around 1/3rd to 1/2 throttle. If you observe the flight of some of the best aerobatic pilots, they very seldom use full throttle.

Take it easy with the Curtiss P-6E Hawk for the first flight, 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 battery, 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 she 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 battery power level, but use this first flight to become familiar with your model before landing. With most electric planes it is best to have a timer set on your transmitter or a separate timer with an alarm to alert you when the battery may be getting low. This will require a few flights before determining the maximum flight time you can achieve with the batteries. This will prevent the downwind auto motor cutoff over the end of the flying field. With the plane properly trimmed you will want to get started with some aerobatics. This plane is capable many aerobatic maneuvers. Loops, rolls, inverted flight and spins are all within the capability of the Curtiss P-6E Hawk

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. We find that the airplane lands best using high elevator rates, though you may not need those rates for many of the maneuvers you perform in flight.

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	

