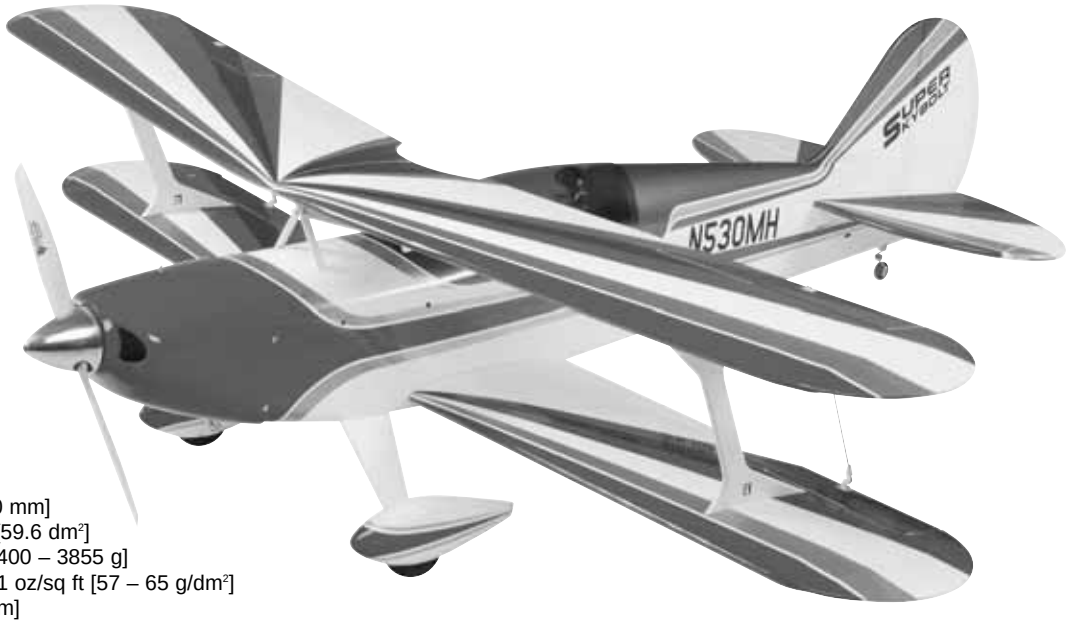
SUPER SKYBOLT ARF

INSTRUCTION MANUAL



Wingspan: 57 in [1450 mm]
Wing Area: 924 sq in [59.6 dm²]
Weight: 7.5 – 8.5 lb [3400 – 3855 g]
Wing Loading: 19 – 21 oz/sq ft [57 – 65 g/dm²]
Length: 53 in [1345 mm]
Radio: 4-channel with four 54 oz-in [3.9kg-cm] servos
Engine: .60 – .75 cu in [10 – 12.5 cc] two-stroke,
.70 – .91 cu in [11.5 – 15 cc] four-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.

GREAT PLANES® MODEL MANUFACTURING COMPANY
Champaign, Illinois
(217) 398-8970, Ext 5
airsupport@greatplanes.com

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INTRODUCTION

For the latest technical updates or manual corrections to the Super Skybolt ARF visit the Great Planes web site at **www.greatplanes.com**. Open the “Airplanes” link, then select the Super Skybolt 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

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
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.

SCALE COMPETITION

Though the Great Planes Super Skybolt is an ARF and may not have the same level of detail as an “all-out” scratch-built competition model, it is a scale model nonetheless and is therefore eligible to compete in the Fun Scale class in AMA competition (we receive many favorable reports of Great Planes ARFs in scale competition!). In Fun Scale, the “builder of the model” rule does not apply. To receive the five points for scale documentation, the only proof required that a full-size aircraft of this type in this paint/markings scheme did exist is a single sheet such as a kit box cover from a plastic model, a photo, or a profile painting, etc. If the photo is in black and white, other written documentation of color must be provided. Contact the AMA for a rule book with full details.

If you would like photos of the full-size Super Skybolt for scale documentation, or if you would like to study the photos to add more scale details, photo packs are available from:

Bob's Aircraft Documentation
3114 Yukon Ave
Costa Mesa, CA 92626

Telephone: (714) 979-8058
Fax: (714) 979-7279
E-mail: **www.bobsairdoc.com**

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

1. Your Super Skybolt 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 Super Skybolt ARF, 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 (servos, receiver battery, 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.

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 (wheel pant, cowl) 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 Super Skybolt ARF that may require planning or decision making before starting to build. Order numbers are provided in parentheses.

Radio Equipment

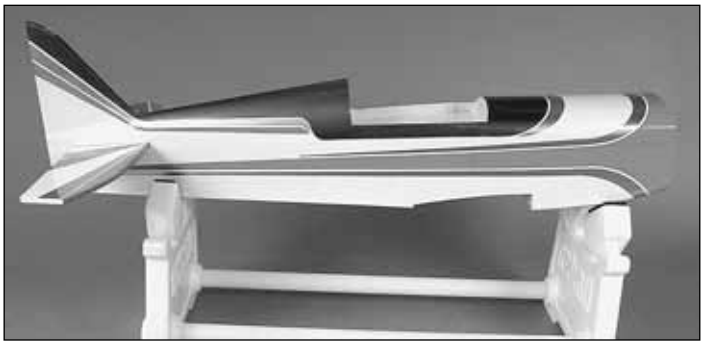
The Super Skybolt ARF requires a 4-channel radio system with four 54 oz.-in. [3.9 kg-cm] minimum servos and one standard torque servo for the throttle. In addition, two 9" [229 mm] servo extensions are required for the aileron servos. If you are using a radio system that does not have mixing functions, a Y-harness will also be required to connect the aileron servos to the receiver. Below is a list of radio equipment used to build the Super Skybolt ARF shown in the pictures in this manual:

- ❏ (4) Futaba® S9001 Servo Aircraft Coreless BB (FUTM0075)
- ❏ (1) Futaba S3003 Servo Standard (FUTM0031)
- ❏ (2) Futaba 9" Servo Extension J (FUTM3910)

Engine Recommendations

The recommended engine size range for the Super Skybolt ARF is .60 – .75 cu in [10-12.5 cc] two-stroke or .70 – .91 cu in [11.5-15 cc] four-stroke. If an engine in the upper end of the size range is used, remember that this is a scale model that is intended to fly at scale-like speeds, so throttle management should be practiced.

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.

Pilot

The Super Skybolt ARF does not include a pilot figure. If you plan to install one, the pilot can be attached during the build, or later on since the canopy is removable. We suggest using the Great Planes pilot figure (GPMA2475).

ADDITIONAL ITEMS REQUIRED

Required Hardware & Accessories

This is the list of hardware and accessories required to finish the Super Skybolt ARF. Order numbers are provided in parentheses.

- ❏ #64 Rubber bands (1/4 lb [113 g] box – HCAQ2020)
- ❏ 3' [900mm] Standard silicone fuel tubing (GPMQ4131)
- ❏ R/C foam rubber (1/4" [6 mm] – HCAQ1000, or 1/2" [13 mm] – HCAQ1050)

Adhesives & Building Supplies

This is the list of Adhesives and Building Supplies that are required to finish the Super Skybolt ARF.

- ❏ 1/2 oz. [15g] Thin Pro™ CA (GPMR6001)
- ❏ Pro 30-minute epoxy (GPMR6047)
- ❏ Drill bits: 1/16" [1.6 mm], 5/64" [2 mm], 3/32" [2.4 mm], 7/64" [2.8 mm] 11/64" [4.4 mm], 1/4" [6.4 mm]
- ❏ 8-32 Tap and drill set (GPMR8103)
- ❏ Tap handle (GPMR8120)
- ❏ Stick-on segmented lead weights (GPMQ4485)
- ❏ #1 Hobby knife (HCAR0105)
- ❏ #11 Blades (5-pack – HCAR0211)
- ❏ Small T-pins (100 – HCAR5100)
- ❏ Denatured alcohol (for epoxy clean up)
- ❏ Hayes Small Clamp 1-3/8" [26 mm] (HAYR1104)
- ❏ Petroleum jelly

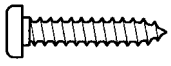
Optional Supplies & Tools

Here is a list of optional tools mentioned in the manual and other items that will help you build the Super Skybolt ARF.

- ❏ Great Planes Heat-Shrink Tubing Assortment (12 – GPMM1070)
- ❏ Top Flite® MonoKote® sealing iron (TOPR2100)
- ❏ Top Flite Hot Sock™ iron cover (TOPR2175)
- ❏ Top Flite MonoKote trim seal iron (TOPR2200)
- ❏ Top Flite MonoKote heat gun (TOPR2000)
- ❏ Hobbico® 60 watt soldering iron (HCAR0776)
- ❏ Pro 6-minute epoxy (GPMR6045)
- ❏ 2 oz. [57 g] Spray CA activator (GPMR6035)
- ❏ 4 oz. [113 g] Aerosol CA activator (GPMR634)
- ❏ CA applicator tips (HCAR3780)
- ❏ CA debonder (GPMR6039)
- ❏ Epoxy brushes (6 – GPMR8060)
- ❏ Mixing sticks (50 – GPMR8055)
- ❏ Mixing cups (GPMR8056)
- ❏ Builder's Triangle Set (HCAR0480)
- ❏ 36" Metal ruler (HCAR0475)
- ❏ Pliers with wire cutter (HCAR0630)
- ❏ Hobbico Duster™ can of compressed air (HCAR5500)
- ❏ Masking tape (TOPR8018)
- ❏ Threadlocker™ thread-locking compound (GPMR6060)
- ❏ Switch & Charge Jack Mounting Set (GPMM1000)
- ❏ Panel Line Pen (TOPQ2510)
- ❏ Rotary tool such as Dremel®
- ❏ Rotary tool reinforced cut-off wheel (GPMR8200)
- ❏ Servo horn drill (HCAR0698)
- ❏ Dead Center™ Engine Mount Hole Locator (GPMR8130)
- ❏ Precision Magnetic Prop Balancer (TOPQ5700)
- ❏ Prop Reamer (GPMQ5005)

IMPORTANT BUILDING NOTES

- There are two types of screws used in this kit:
- **Sheet Metal Screws (SMS)** are designated by a number and a length. For example #6 x 3/4" [19 mm]



This is a #6 screw that is 3/4" [19 mm] long.

- **Socket Head Cap Screws (SHCS)** are designated by a number, **threads per inch**, and a length. For example 4-40 x 1-1/2" [38 mm]

This is a number four screw that is 1-1/2" [38 mm] 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.

• 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 Super Skybolt ARF is factory-covered with Top Flite MonoKote film. Should repairs ever be required, MonoKote can be patched with additional MonoKote purchased separately. MonoKote is packaged in six-foot rolls, but some hobby shops also sell it by the foot. If only a small piece of MonoKote is needed for a minor patch, perhaps a fellow modeler would give you some. MonoKote is applied with a model airplane covering iron, but in an emergency a regular iron could be used. A roll of MonoKote includes full instructions for application. Following are the colors used on this model and order numbers for six foot rolls.

Metallic Blue – TOPQ0402
Metallic Gold – TOPQ0404
Metallic Red – TOPQ0405
White – TOPQ0204

• 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 **www.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.

COMMON ABBREVIATIONS

Fuse = Fuselage
Stab = Horizontal Stabilizer
Fin = Vertical Fin
LE = Leading Edge
TE = Trailing Edge
LG = Landing Gear
Ply = Plywood
" = Inches
mm = Millimeters
SHCS = Socket Head Cap Screw

ORDERING REPLACEMENT PARTS

Replacement parts for the Great Planes Super Skybolt 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 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.

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 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 e-mail at **productsupport@greatplanes.com**, or by telephone at (217) 398-8970.

Replacement Parts List

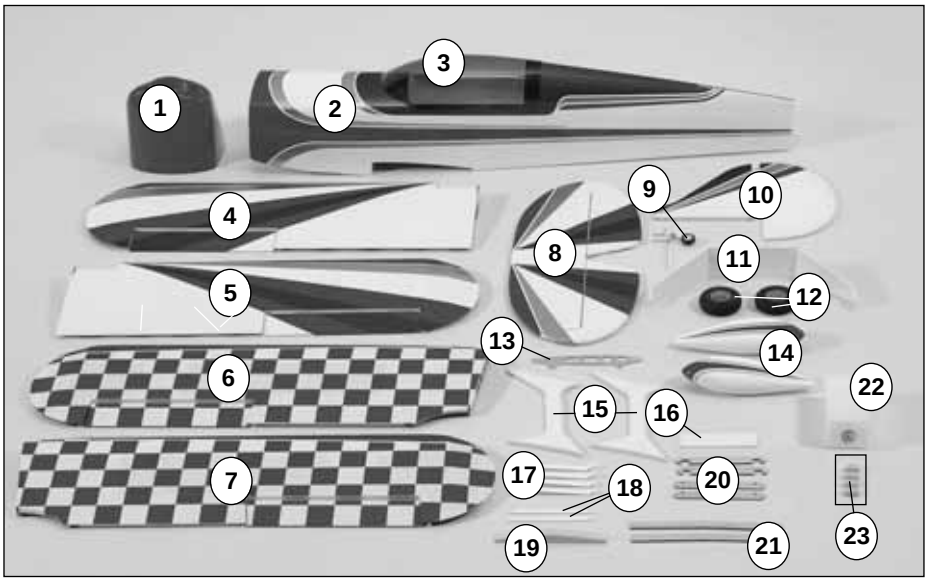
Order Number	Description	How to Purchase
	Missing pieces	Contact Product Support
	Instruction manual	Contact Product Support
	Full-size plans	Not available
GPMA2920	Top Wing Set	Contact Hobby Supplier
GPMA2921	Bottom Wing Set	Contact Hobby Supplier
GPMA2922	Fuse Set	Contact Hobby Supplier
GPMA2923	Tail Set	Contact Hobby Supplier
GPMA2924	Cabane Struts	Contact Hobby Supplier
GPMA2925	Interplane Struts	Contact Hobby Supplier
GPMA2926	Landing Gear	Contact Hobby Supplier
GPMA2927	Wheel Pants	Contact Hobby Supplier
GPMA2928	Cowl	Contact Hobby Supplier
GPMA2929	Canopy	Contact Hobby Supplier
GPMA2930	Decal Sheet	Contact Hobby Supplier

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



Kit Contents

1. Cowl
2. Fuselage
3. Canopy
4. Bottom Left Wing Panel w/Aileron
5. Bottom Right Wing Panel w/Aileron
6. Top Left Wing Panel w/Aileron
7. Top Right Wing Panel w/Aileron
8. Horizontal Stabilizer & Elevators
9. Tailwheel Assembly
10. Vertical Fin & Rudder
11. Landing Gear
12. Main Wheels (2)
13. Aluminum Joiner Plate
14. Wheel Pants (L&R)
15. Wing Struts (2)
16. Wing Bolt Plate
17. Cabane Struts (4)
18. Cabane Strut Braces (2)
19. Top Wing Joiner
20. Carry Handle Pieces (4)
21. Bottom Wing Joiner (2)
22. Fuel Tank
23. Servo Mounting Blocks (4)

Kit Contents (not photographed)

(1) 5/16"-24 Spinner Adapter
(4) Wing Strut Pegs
(1) 2-1/2" [64 mm] Aluminum Spinner
(1) Outer Pushrod Tube
(1) Anti-Rotation Pin
(1) Radio Tray
(1) Hook and Loop Material
(1) .60 – 1.20 Engine Mount
(2) 5/32" [4 mm] Axle Shafts
(1) Screw-Lock Pushrod Connector
(1) Nylon Retainer (for Screw-Lock Pushrod Connector)
(2) 5/16"-24 Nylon Lock Nuts
(6) 4-40 Nylon Lock Nuts
(5) Large Nylon Control Horns
(4) Small Nylon control Horns

(2) 1/4-20 Nylon Wing Bolts
(8) 2-56 Nylon Clevises
(12) CA Hinges
(2) #4 Flat Washers
(8) #2 Flat Washers
(8) #8 Flat Washers
(8) #8 Lock Washers
(4) 6-32 x 1-1/2" [38 mm] Threaded Studs
(4) 6-32 Knurled Nuts
(1) 4-40 x 1/8" [3 mm] SHCS
(6) Nylon FasLinks
(8) Silicone Clevis Retainers
(6) #4 x 1/2" [13 mm] SMS
(6) 6-32 x 1/4" [6 mm] SHCS
(14) #2 x 3/8" [9.5 mm] SMS
(12) 4-40 x 3/8" [9.5 mm] Phillips Screws

(2) 4-40 x 1/2" [13 mm] SHCS
(14) 2-56 x 1/2" [13 mm] Phillips Screws
(8) 8-32 x 1" [25 mm] SHCS
(8) #2 x 1/2" [13 mm] SMS
(4) 2-56 x 12" [305 mm] Threaded One-End Pushrods
(4) 2-56 x 36" [914 mm] Threaded One-End Pushrods
(6) 5/32" [4 mm] Wheel Collars

PREPARATIONS

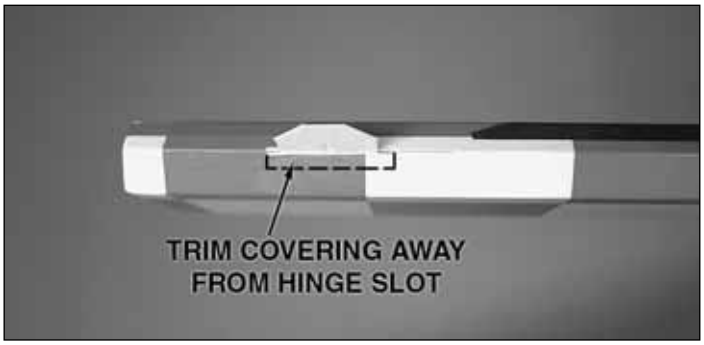
❏ 1. If you have not done so already, remove the major parts of the kit from the box and inspect for damage. If any parts are damaged or missing, contact Product Support at the address or telephone number listed in the ***"Kit Inspection"*** section on page 6.

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

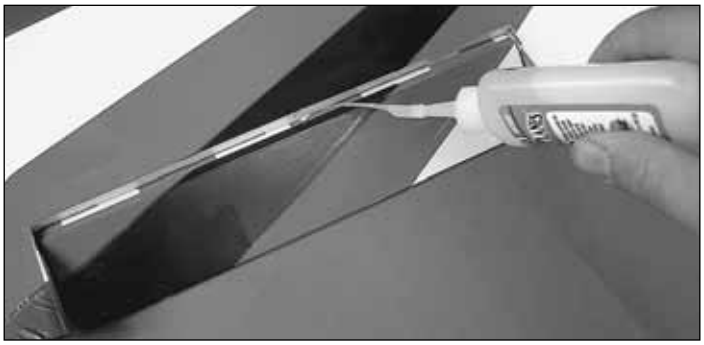
ASSEMBLE THE WINGS

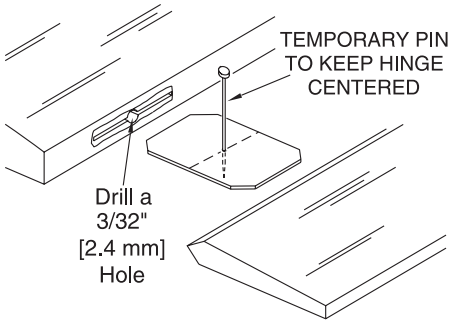
Install the Ailerons & Servos

Do the left top and bottom wing first so your work matches the photos the first time through. You can do one wing at a time, or work on them together.

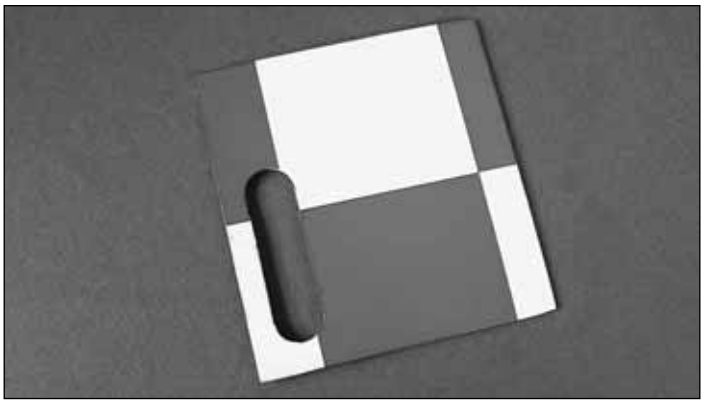


❏ ❏ 1. Locate six 3/4" x 1" [19 x 25 mm] CA hinges. Test fit the hinges into the pre-cut hinge slots in the **ailerons** and **wing panels** of both top and bottom wings. Enlarge the slots if necessary so that the hinges will fit half-way in. With a sharp blade in your hobby knife, trim the covering 1/16" [1.6 mm] away from the hinge slots as shown. Remove the hinges and drill a 3/32" [2.4 mm] hole 1/2" [13 mm] deep in the center of each hinge slot. This will allow the CA glue to wick across the entire hinge surface.

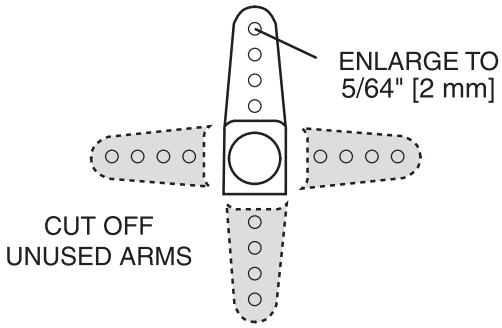




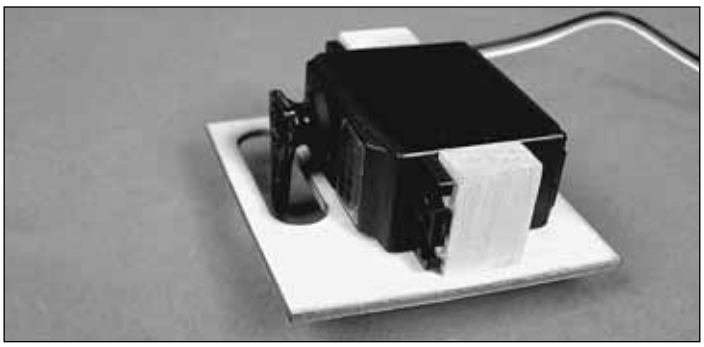
❏ ❏ 2. Insert the hinges half-way into the ailerons. Pins can be used to keep the hinges centered. Fit the ailerons to the wing panels by sliding the hinges into their mating slots at an angle. With the aileron pressed into position, deflect it downward and apply six drops of thin CA glue to the center of each hinge. Flip the wings over and apply CA to the other side of the hinges.



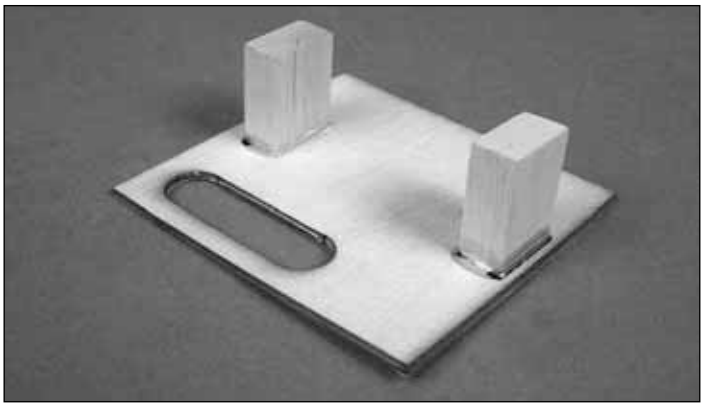
❏ ❏ 3. Remove the **servo hatch** from the bottom wing panel and trim the covering from the servo arm cutout.



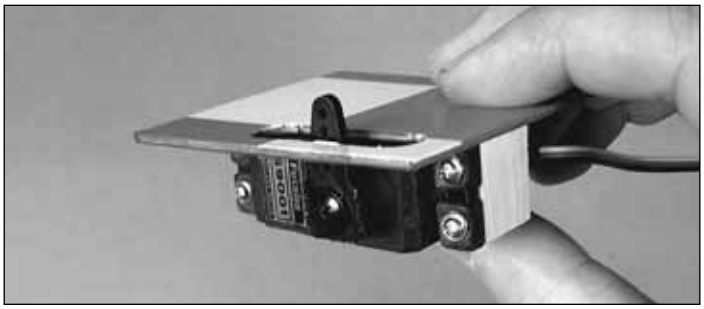
❏ ❏ 4. Cut three arms from a four-arm servo horn and install it onto the servo 90 degrees to the servo case. Enlarge the outer hole of the servo horn using a 5/64" [2 mm] drill bit.



❏ ❏ 5. Position the servo onto the underside of the servo hatch so that the servo horn is centered in the cutout and the servo is square to the hatch. Place a **servo mounting block** onto each side of the servo up against the mounting tabs and mark their locations on the hatch.

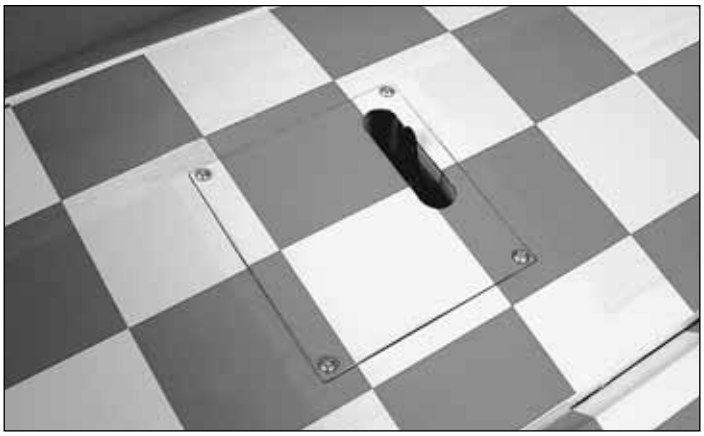


❏ ❏ 6. Mix up a small batch of epoxy to glue the servo mounting blocks to the servo hatch using the marks you made as a guide. Allow the epoxy to cure undisturbed.

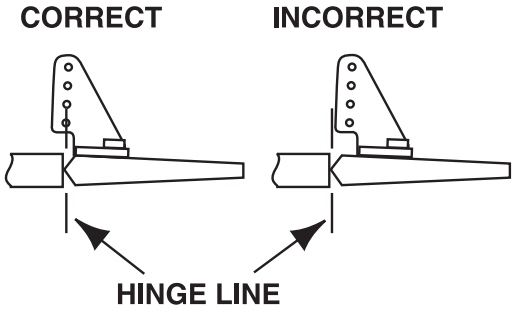


❏ ❏ 7. Drill 1/16" [1.6 mm] holes for the servo mounting screws. Thread a mounting screw into each hole and back it out. Add a couple drops of thin CA to each hole to harden the wood. Secure the servo to the hatch using the hardware that came with the servo.

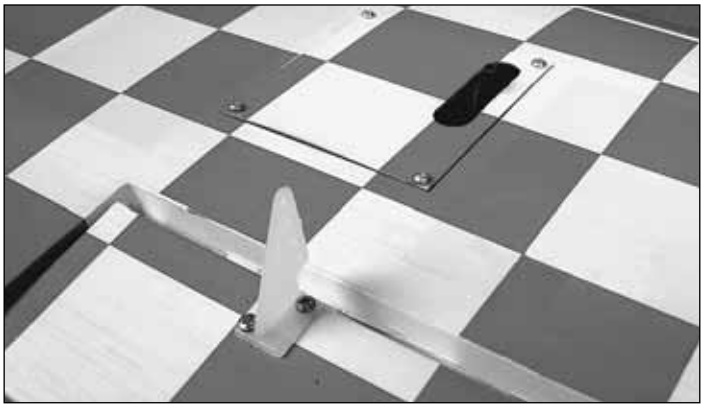
❏ ❏ 8. Attach a 9" [229 mm] servo extension to the aileron servo and secure it with a piece of heat-shrink tubing or tape. Tie the string from inside the opening for the aileron servo to the end of the servo extension. Remove the tape holding the other end of the string to the wing root rib and pull the servo wire and extension through the wing.



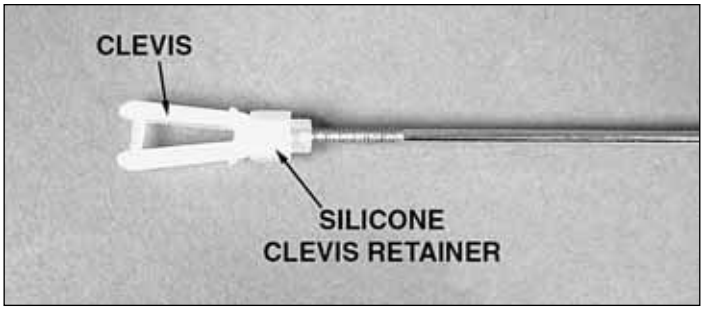
❏ ❏ 9. Put the servo hatch into position and drill 1/16" [1.6 mm] holes at each corner of the hatch. Be sure you are drilling through the plywood servo hatch frame in the wing. Thread a #2 x 3/8" [9.5 mm] SMS screw into each hole and back it out. Add a couple drops of thin CA glue to each hole. Secure the hatch with four #2 x 3/8" [9.5 mm] SMS screws. If the servo hatch does not fit completely flush with the wing sheeting, you may need to lightly sand down the servo mounting blocks.



❏ ❏ 10. Using a pushrod as a guide, place a large control horn onto the aileron offset 1/8" [3 mm] towards the wing tip and make a mark at each control horn mounting hole. Drill 1/16" [1.6 mm] holes at the mark.

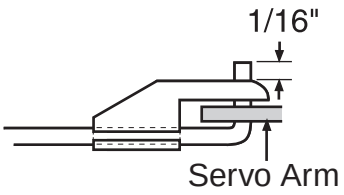


❏ ❏ 11. Thread a #2 x 1/2" [13 mm] SMS screw into each hole and back it out. Add a couple drops of thin CA to the holes to harden the wood. Secure the control horn with two #2 x 1/2" [13 mm] SMS screws.



❏ ❏ 12. Install a silicone clevis retainer and a nylon clevis onto a 12" [305 mm] pushrod. Thread the clevis 14 complete turns onto the pushrod.

❏ ❏ 13. Connect the clevis to the third hole of the aileron control horn. Line the pushrod up with the servo horn while holding the aileron in the neutral position. Make a mark on the pushrod where it intersects the outer hole of the servo horn.

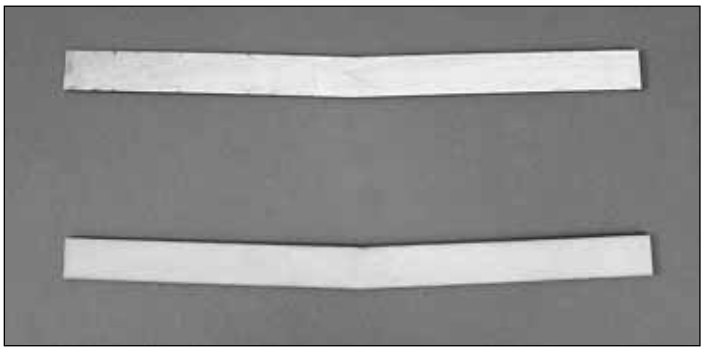


❏ ❏ 14. Make a 90° bend at the mark and cut off the excess pushrod 1/4" [6 mm] beyond the bend. Hook the bend in the wire to the outer hole of the servo horn and secure it with a nylon FasLink. Slide the silicone clevis retainer over the clevis up to the control horn.

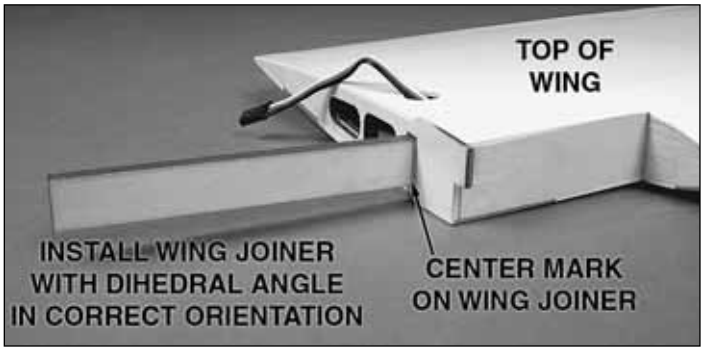
❏ 15. Repeat steps 1-14 for the right wing panels.

Join the Wing Panels

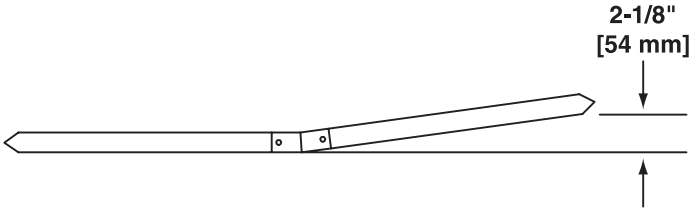
❏ 1. Trim the covering from the aileron servo lead holes located on top of the bottom wing panels near the root ribs. Feed the servo leads up through these holes.



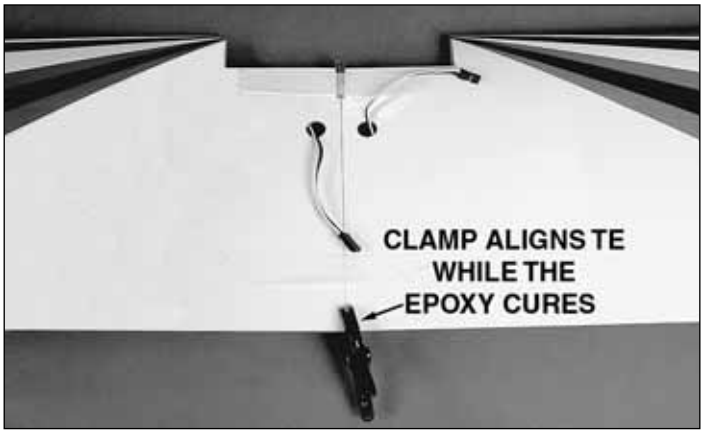
❏ 2. Mix up a small batch of epoxy and glue together the two bottom plywood **wing joiner pieces**. Wipe away excess epoxy with a paper towel and denatured alcohol.



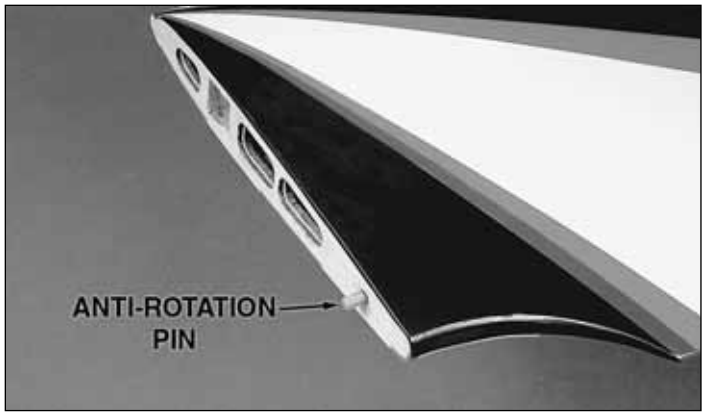
❏ 3. Make a center mark on the bottom wing joiner and test fit it into both joiner pockets in the bottom wing panels. Be sure that the joiner fits all the way into the center mark on both panels.



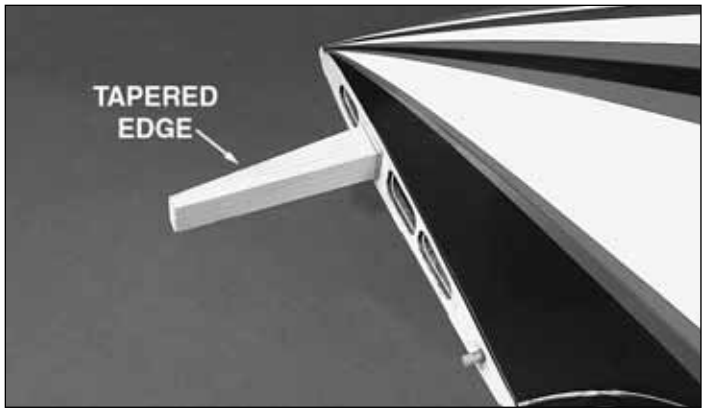
Use a bar sander with coarse sandpaper to true the edges and remove any excess hardened epoxy from the wing joiner prepared earlier. ***Without using any glue,*** *temporarily join the wings with the joiner. Make adjustments as necessary for a good fit.* ***Note:*** *The dihedral angle is factory-set and determined by the angle of the joiner and the joining ribs on the ends of the wing halves. However, you may confirm the dihedral by placing one wing panel flat on the workbench and measuring the distance between the bottom of the rib on the end of the other panel and the bench. The distance should be 2-1/8" [54 mm], but small variances are acceptable. If the wing doesn't fit well or if you can't get close enough to the dihedral specified, there may be excess glue inside the wing or irregularities on the joiner. Use coarse sandpaper to true the edges and bevel the corners of the joiner and/or use a hobby knife to remove any glue from the joiner openings in the ribs on the end of the wing halves.*



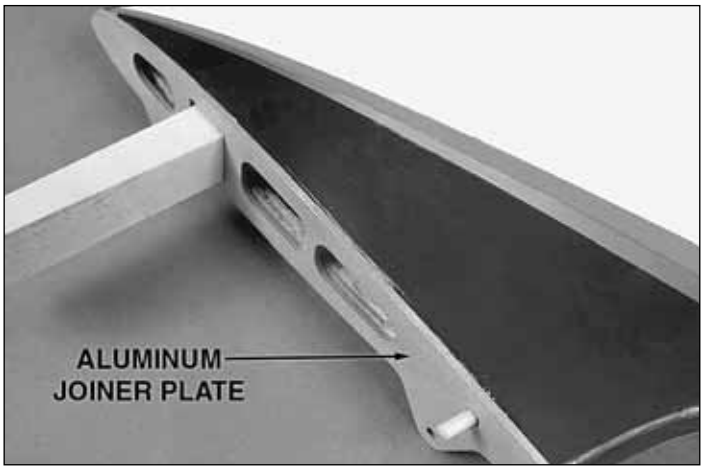
❏ 4. Use 30-minute epoxy to join the two bottom wing panels together. Apply epoxy to one half of the joiner and insert it into one of the panels. Coat the other half of the joiner as well as the two root ribs and slide the panels together. Wipe away excess epoxy with alcohol and use masking tape to hold the panels. We used a small clamp to align the trailing edge as shown in the picture.



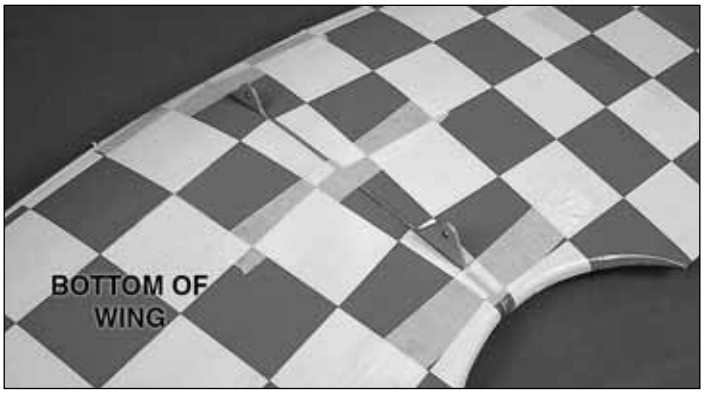
❏ 5. Set aside the bottom wing while the epoxy cures. Locate the 3/16" x 13/16" [5 x 21 mm] **anti-rotation pin** and glue it half way into the hole in the trailing edge of one of the top wing panels.



❏ 6. As you did with the bottom wing, make a center mark on the **top wing joiner** and test fit it into the joiner pockets of both top wing panels. The tapered edge of the joiner faces forward. Sand the joiner as necessary until a proper fit is achieved.



❏ 7. Coat one half of the joiner with 30-minute epoxy and insert it into the joiner pocket of the top wing panel with the anti-rotation pin installed. Coat the root rib of this panel with epoxy and press the aluminum **joiner plate** in place and hold it there with masking tape. The two holes in the joiner plate for mounting the cabane struts will face the checkered underside of the wing panel.

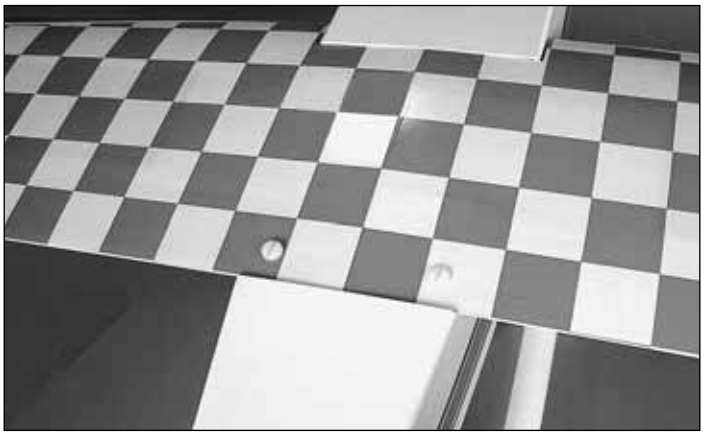


❏ 8. When the epoxy in the previous step has cured, coat the other half of the aluminum joiner plate and top wing joiner with 30-minute epoxy. Coat the root rib of the other top wing panel and slide the two together. Wipe away excess epoxy with denatured alcohol and use masking tape to hold the panels together while the epoxy cures. ***Note:*** *The top wing has no dihedral angle, so it will lay flat on the workbench.*

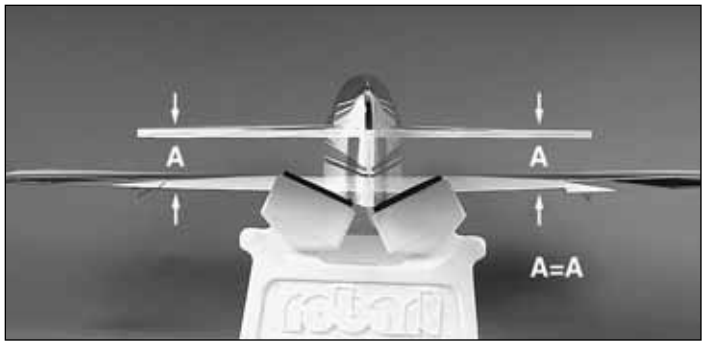
BUILD THE FUSELAGE

Assemble the Tail Section

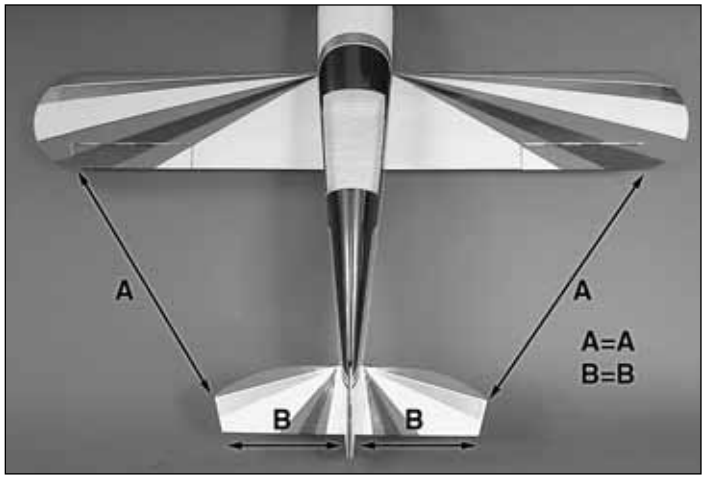
❏ 1. Trim the covering from the horizontal stabilizer slot at the aft end of the fuselage.



❏ 2. Trim the covering from the wing bolt holes in the bottom wing. Temporarily attach the bottom wing to the **fuselage** using the two 1/4-20 x 2" [51 mm] nylon wing bolts.



❏ 3. Test fit the **stabilizer** in the fuselage. Center the stab left and right in the fuselage. Stand back 15 to 20 ft [5 to 6 m] and check to be sure the stab is parallel to the wing. Adjust the stab saddle as needed until the stab and wing are parallel.



❏ 4. Measure the distance from each wing tip to the tips of the stab. Adjust the stab until the distance from the tip of the stab to the tip of the wing is equal on both sides.

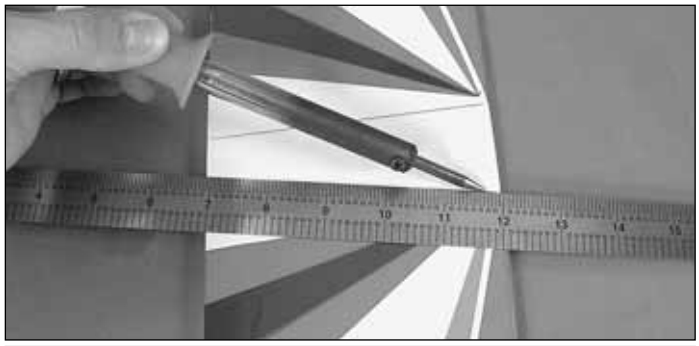
❏ 5. Use a fine-point felt-tip pen to mark the outline of the fuselage onto the top and bottom of the stabilizer.

❏ 6. Remove the stab from the fuse. Use a sharp #11 hobby knife or use the following ***Expert Tip*** to cut the covering 1/16" [1.6 mm] inside of the lines you marked. Use care to cut **only the covering and not into the wood**.

EXPERT 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.



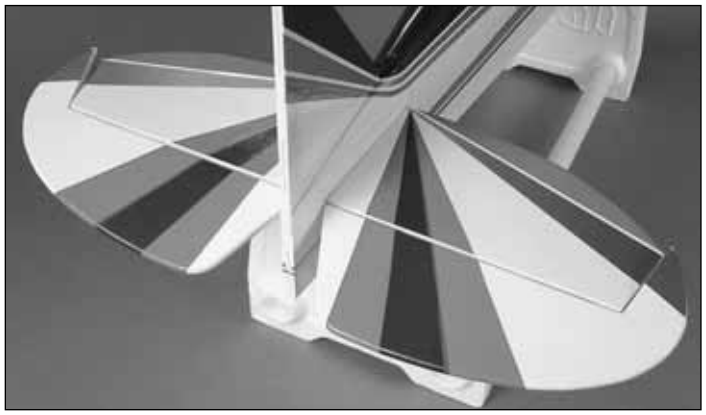
Use a straightedge to guide the soldering iron at a rate that will just melt the covering and not burn into the wood. The hotter the soldering iron, the faster it must travel to melt a fine-cut. Peel off the covering.

❏ 7. Use 30-minute epoxy to glue the stab into the fuselage. For the most strength, apply epoxy to both sides of the stab and inside the fuse where the stab fits. Slide the stab into position. To wipe away any excess epoxy and the marks you drew, use a paper towel and denatured alcohol. Do not disturb the model until the epoxy has fully hardened.

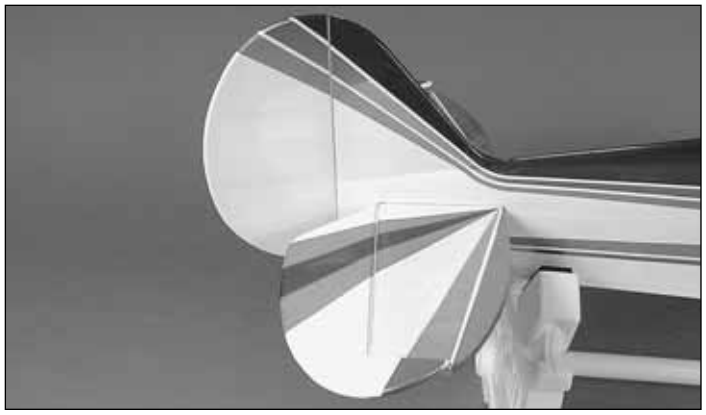
The bottom wing is no longer needed for alignment and can be unbolted from the fuselage.

❏ 8. Fit the **vertical fin** into the slot at the top trailing edge of the fuselage. As you did with the stabilizer, mark the location of the fuselage onto the fin. Remove the fin and trim away the covering 1/16" [1.6 mm] inside your lines. The covering on the trailing edge of the fin should not be removed.

❏ 9. Use 30-minute epoxy to glue the vertical fin into the fuselage. Be sure the fin is fully seated.

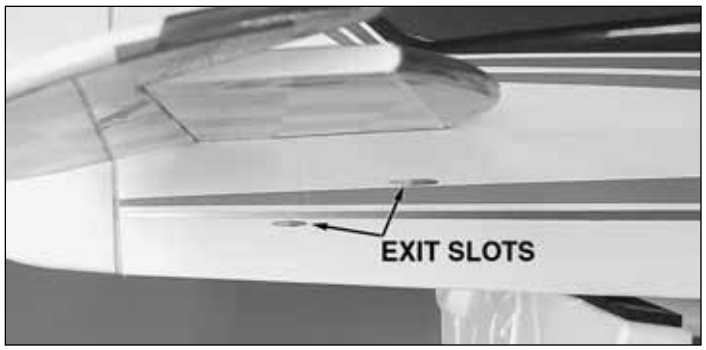


❏ 10. Attach the **elevator halves** to the horizontal stabilizer with CA hinges using the same technique as the ailerons.

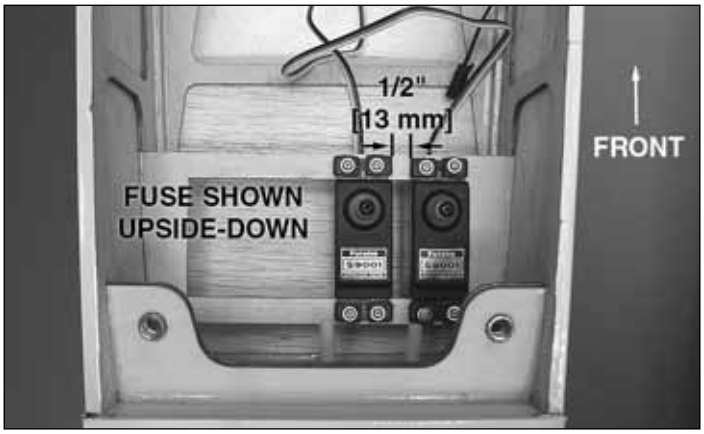


❏ 11. Attach the rudder to the vertical fin with CA hinges.

Install the Tail Linkages & Servos

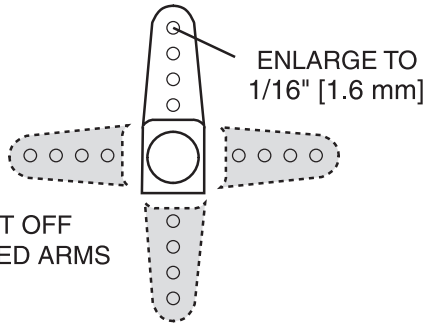


❏ 1. Trim the covering from the exit slots for the **elevator** and **rudder pushrods**. You will find an elevator and rudder exit slot on the right side of the fuselage, and an elevator exit slot on the left.

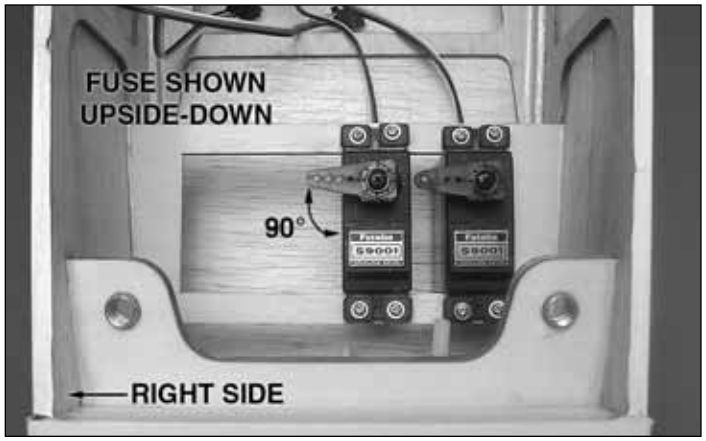


❏ 2. Position the elevator and rudder servo into the servo tray. The rudder servo should be pushed to the far left side of the fuselage, and the elevator servo should be spaced approximately 1/2" [13 mm] from the rudder servo. Both servo splines should face forward.

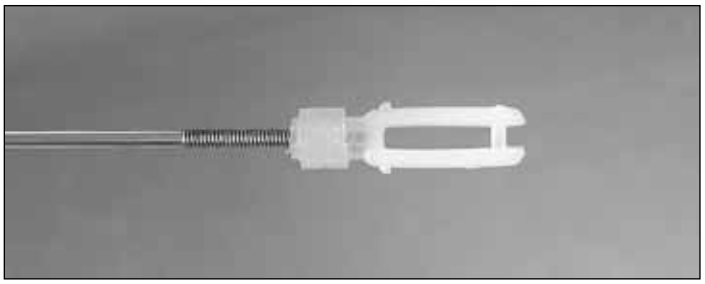
❏ 3. Drill 1/16" [1.6 mm] holes for the servo mounting screws. Thread a mounting screw into each hole and back it out. Add a couple drops of thin CA to each hole to harden the wood. Secure the servos to the servo tray using the hardware that came with the servos.



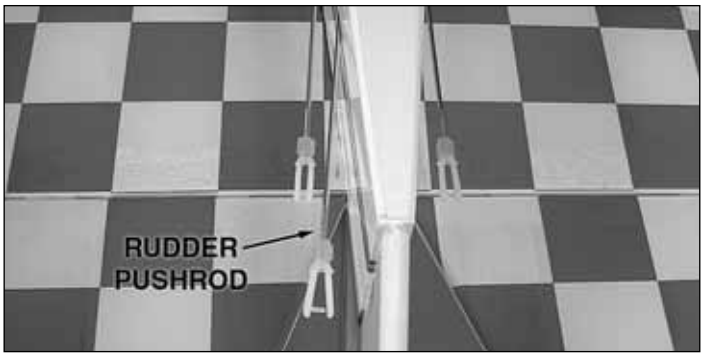
❑ 4. Cut three arms from two four-arm servo horns and enlarge the outer hole of each servo horn with a 1/16" [1.6 mm] drill bit.



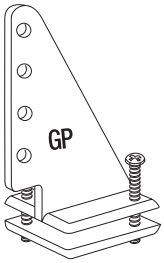
❑ 5. Connect the servo horns to the elevator and rudder servos 90 degrees to the servo cases and both pointing to the right side of the fuselage.

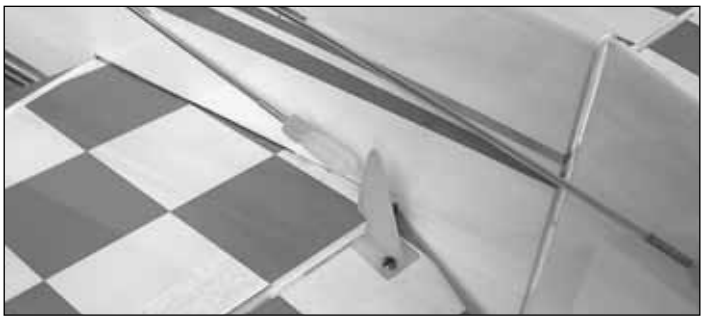


❑ 6. Slide a silicone clevis retainer and install a nylon clevis 14 turns onto three 2-56 x 36" [915 mm] pushrods.

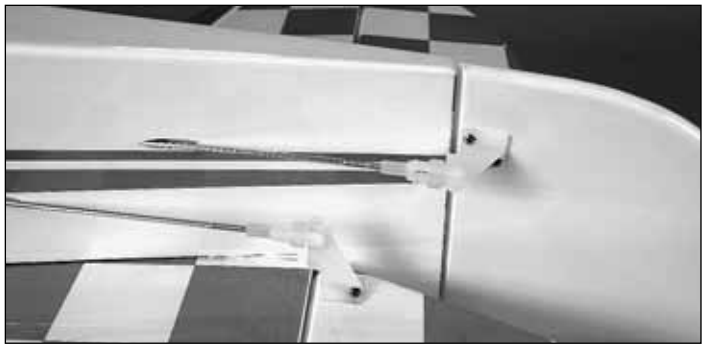


❑ 7. Insert the three pushrods into the slots in the tail of the fuselage as shown.



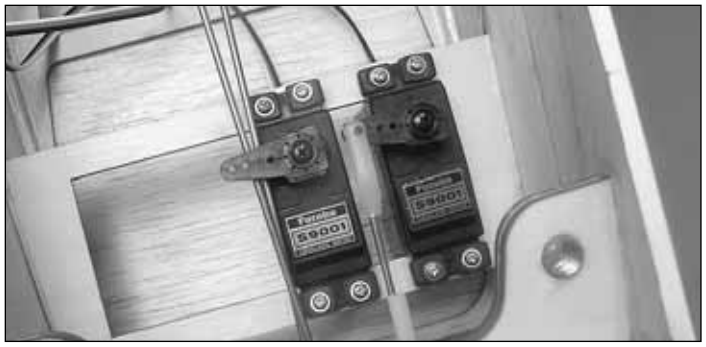


❑ 8. Using the pushrods as a guide, place a large control horn onto the underside of each elevator and mark the positions of the mounting holes. Drill through the holes with a 3/32" [2.4 mm] drill bit. Add a couple drops of thin CA to each hole to harden the wood around it, and install the control horns using the backing plates that come attached to each horn with two 2-56 x 1/2" [13 mm] screws.



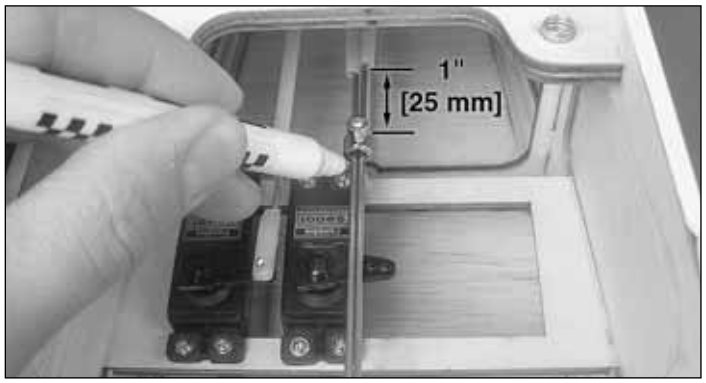
❑ 9. Repeat this procedure for the rudder control horn. Connect all three clevises to the third hole on the control horns. Slide the silicone clevis retainers to the end of the clevises.

❑ 10. While holding the rudder in the neutral position, place a mark on the pushrod where it crosses the outer hole in the rudder servo horn.

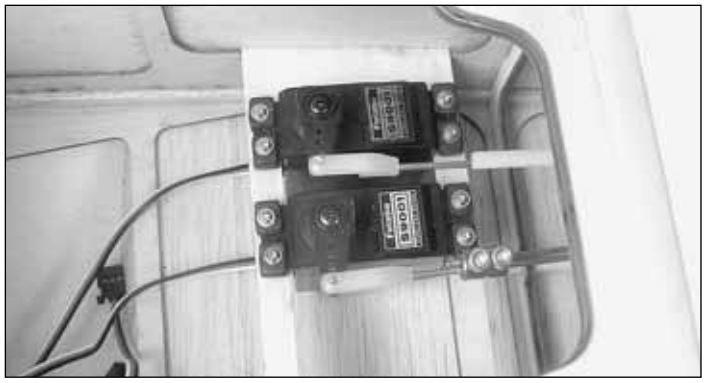


❏ 11. Make a 90° bend at the mark and cut off the excess pushrod 1/4" [6 mm] beyond the bend. Hook the bend in the pushrod to the outer hole of the servo horn and secure it with a nylon FasLink. Adjust the clevis as necessary to insure the rudder is still in the neutral position.

❏ 12. In order to join the two elevator pushrods together to operate as one, some of the outer elevator pushrod tubes must be cut away. As shown in the picture, cut away approximately 1" [25 mm] of outer pushrod tubes. The pushrods can remain in place and the tubes can be cut with a hobby knife, or the pushrods can be temporarily removed and the tubes can be trimmed with wire cutters.

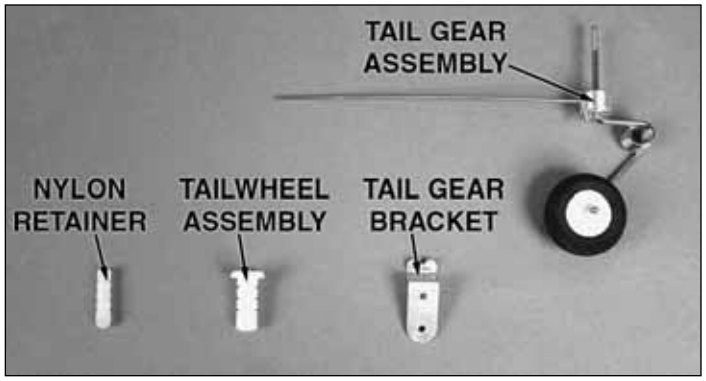


❏ 13. Loosely thread a 6-32 x 1/4" [6 mm] SHCS into a 5/32" [4 mm] wheel collar. Slide the wheel collar over both elevator pushrods and position it approximately 1" [25 mm] in front of the outer pushrod tubes. Make a mark 1/4" [6 mm] in front of the wheel collar on the right elevator pushrod.

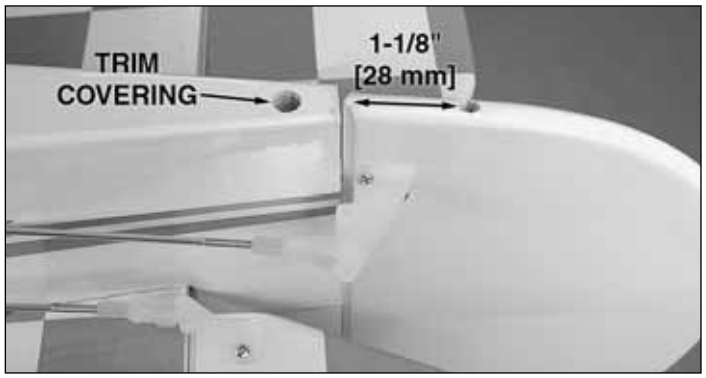


❏ 14. Remove the wheel collar and cut off the right elevator pushrod at the mark you made. Use clamps or tape to hold both elevators in the neutral position. Replace the wheel collar and tighten the 6-32 x 1/4" [6 mm] SHCS against the pushrods. Put another 5/32" [4 mm] wheel collar and 6-32 x 1/4" [6 mm] SHCS just in front of the first collar. Connect the left elevator pushrod to the elevator servo horn using a FasLink.

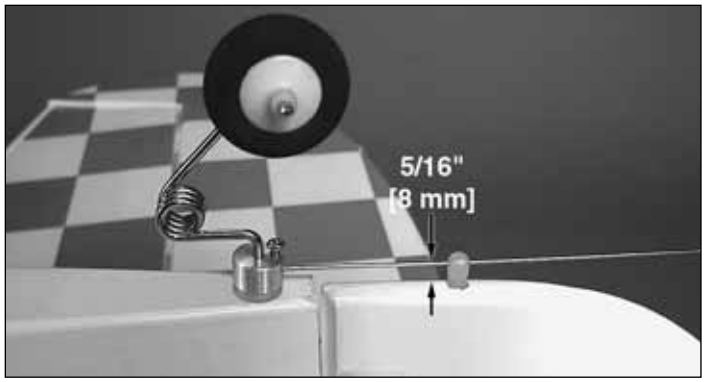
Install the Landing Gear



❏ 1. Locate the **tail gear assembly**, **tail gear bracket**, **tailwheel bushing**, and **nylon retainer**.

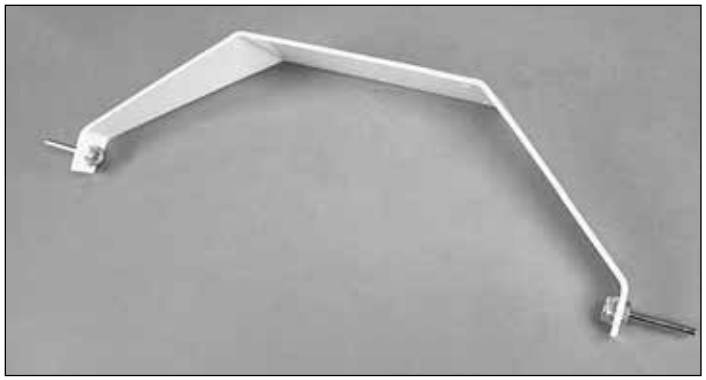


❏ 2. Trim the covering for the tailwheel bushing on the underside of the fuselage near the tail. Measure back 1-1/8" [28 mm] from the leading edge of the rudder and make a center mark on the underside of the rudder. Drill a 11/64" [4.4 mm] hole at the mark. In order to drill a hole accurately in the center of the rudder, we suggest starting out with a smaller diameter drill bit and enlarging the hole with increasingly bigger bits to the 11/64" [4.4 mm] required.

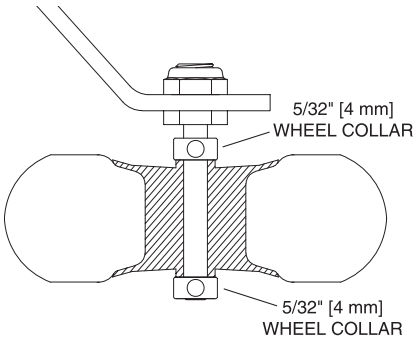


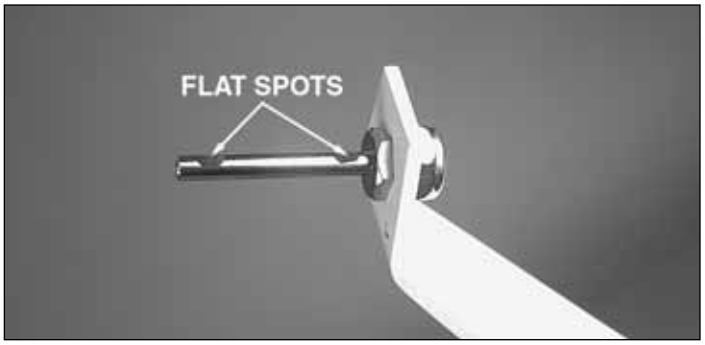
❏ 3. Insert the tailwheel bushing into the hole in the fuselage. Slide the nylon retainer onto the tailwheel assembly guide wire. Insert the assembly into the tailwheel bushing and press the nylon retainer into the hole drilled in the rudder, leaving 5/16" [8 mm] of the retainer exposed. Apply a few drops of thin CA to the bushing and retainer to secure them in place. Be sure not to get glue into the bushing or the hole in the retainer.

❏ 4. Position the tail gear bracket over the tailwheel assembly and mark the position of the mounting holes. Use a 1/16" [1.6 mm] drill bit at the marks. Thread a #2 x 3/8" [9.5 mm] SMS screw into both holes and back it out. Add a couple drops of thin CA to harden the holes. Then, install the bracket using two #2 x 3/8" [1.6 mm] screws. Cut off the excess guide wire that extends beyond the nylon retainer, leaving 1/4" [6 mm].

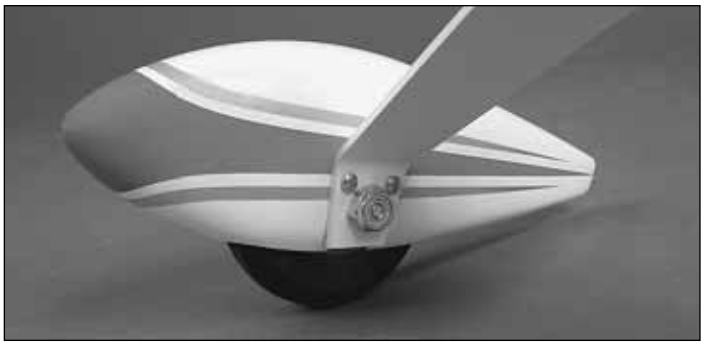


❏ 5. Install a 5/32" x 1-1/4" [4 x 32 mm] axle onto each leg of the **main landing gear** and secure them with 5/16-24 nylon lock nuts.

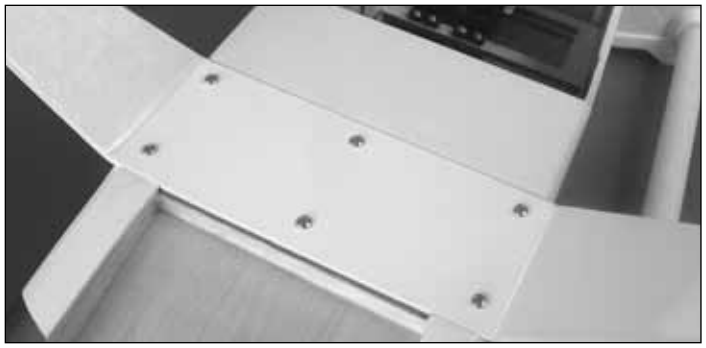




❏ 6. Slide a 5/32" [4 mm] wheel collar, followed by a 2-3/4" [70 mm] main wheel and another 5/32" [4 mm] wheel collar, onto each axle. In order for the wheels to be centered within the **wheel pants**, position the second wheel collar flush with the end of the axle. Mark the axle at the middle of each wheel collar. This can be done with a fine-tip felt-tip marker or by tightening a 6-32 x 1/4" [6 mm] SHCS into each collar against the axle. The 6-32 x 1/4" [6 mm] SHCS will scratch the axle where the collar needs to be installed. Remove the collars and file flat spots on the axles at the marks you made.

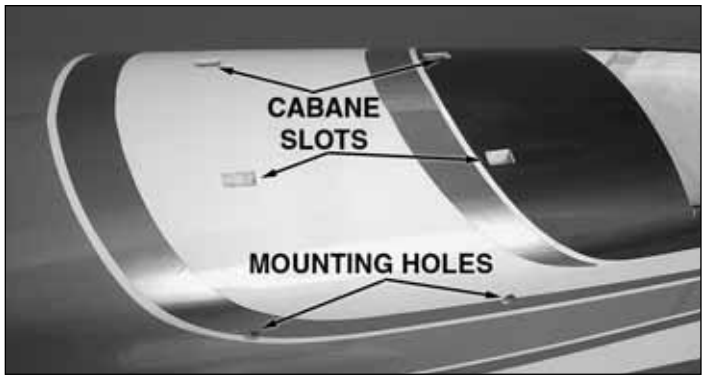


❏ 7. Secure the wheel collars to the flat spots on the axles using 6-32 x 1/4" [6 mm] SHCS. Install the wheel pants with four 4-40 x 3/8" [9.5 mm] Phillips machine screws. Use thread-locking compound on all of these screws.

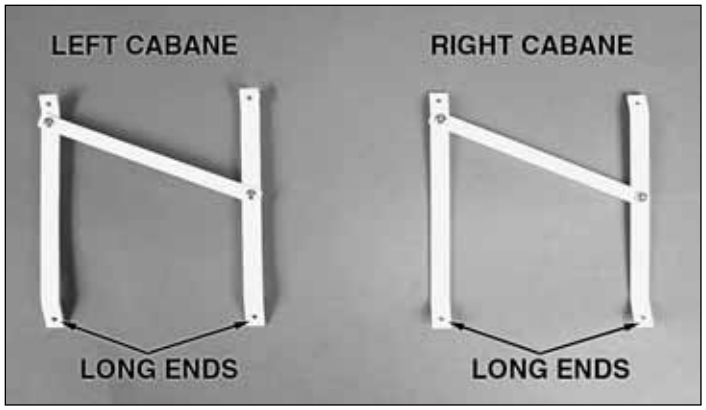


❏ 8. Position the landing gear in place on the bottom of the fuselage. Thread a #4 x 1/2" [13 mm] SMS screw into each of the six landing gear mounting holes and back it out. Add a couple drops of thin CA glue to each hole. Then, install the main landing gear to the fuselage using six #4 x 1/2" [13 mm] SMS screws.

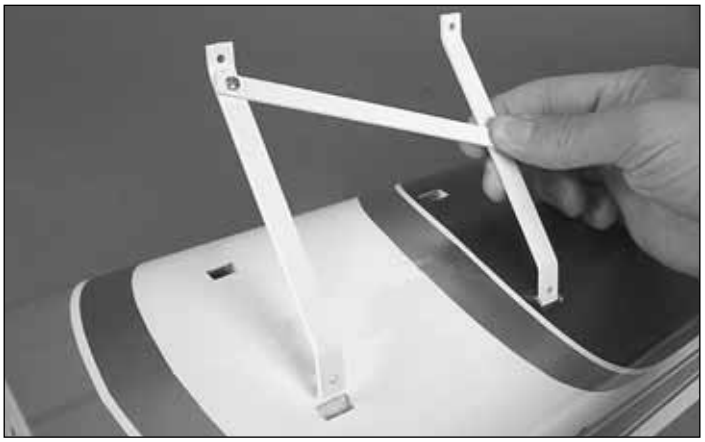
Install the Cabane Struts

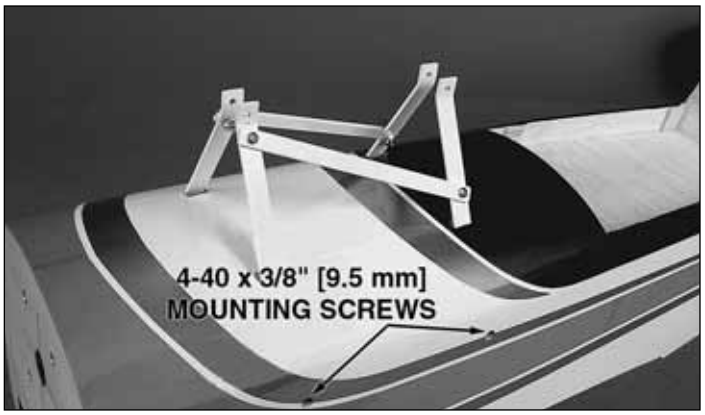


❏ 1. Locate the four slots in the fuselage for the **cabane struts** and trim the covering away. Below the slots are four holes to mount the cabane struts to the fuselage. Trim the covering from these holes.



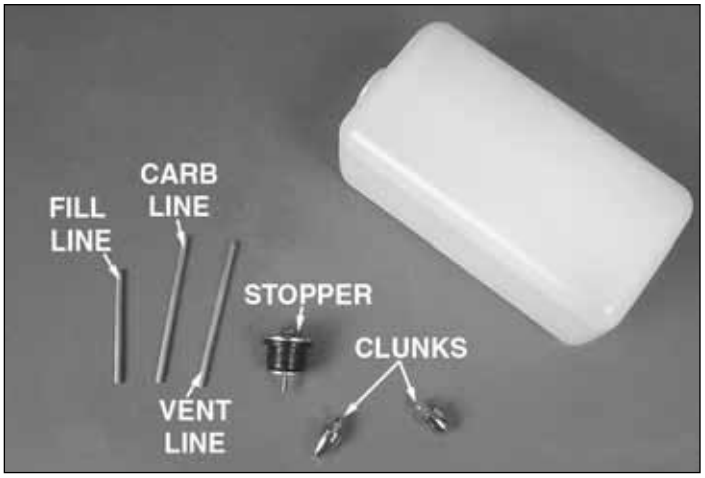
❏ 2. Assemble the cabane struts as shown using four 4-40 x 3/8" [9.5 mm] Phillips screws and four 4-40 nylon lock nuts. Note that each cabane strut has a long and a short end. The longer ends will be at the bottom. Make a left and a right cabane strut.





❏ 3. Looking inside the slots at the top of the fuselage, you will see rectangular cutouts for the long ends of the cabanes to fit into. Insert the left and right cabane struts into the fuselage and secure them using four 4-40 x 3/8" [9.5 mm] Phillips screws and thread-locking compound.

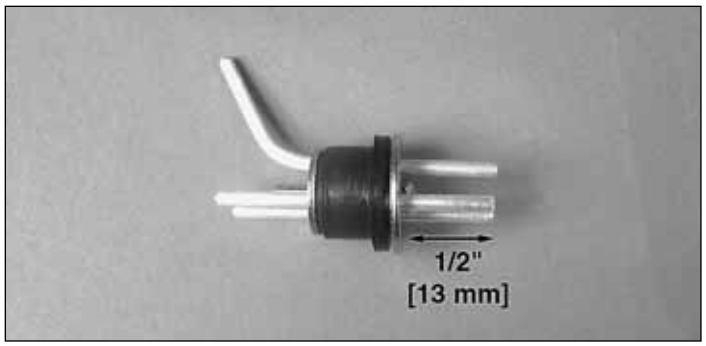
Install the Engine & Fuel Tank



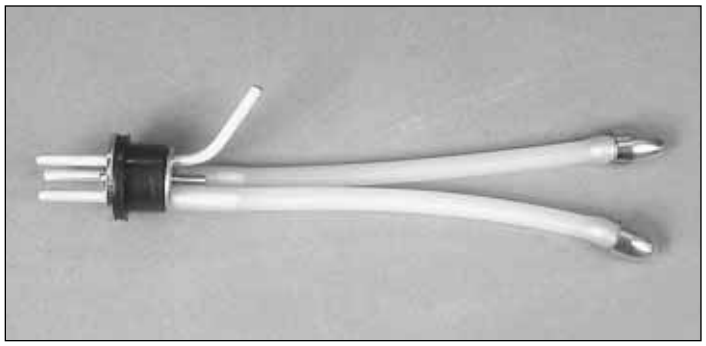
❏ 1. Locate the **fuel tank**. The hardware needed for the fuel tank assembly is inside of the tank. Remove the stopper and shake out the contents.

❏ 2. The fuel system for the Super Skybolt ARF utilizes a three line system. There is a **fill line**, **carb line**, and **vent line (to muffler)**. The fill line will allow fueling and defueling without removing the cowl. The fill line is optional and may be omitted if desired.

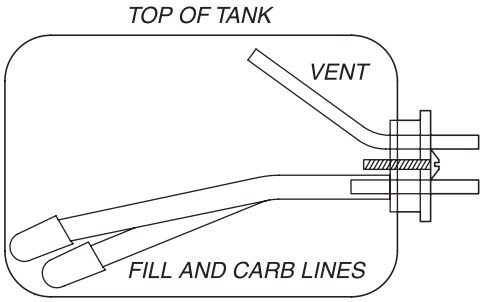
❏ 3. Slide the three aluminum **fuel tubes** into the **rubber stopper**.



❏ 4. Cut the fill line and carb line tubes such that the tubes extend 1/2" [13 mm] out from both ends of the stopper. The vent line should be bent upwards and left uncut.

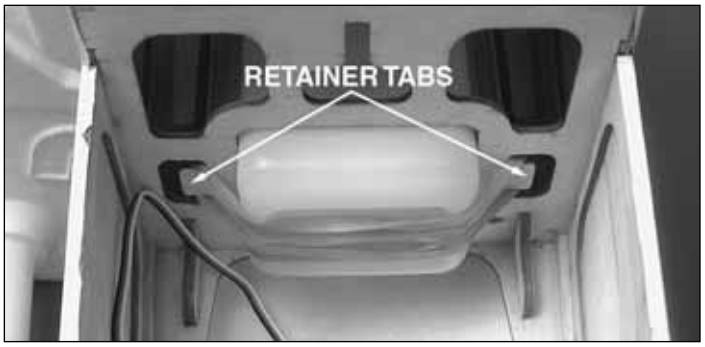


❏ 5. Attach silicone **fuel tubing** 4-1/2" [115 mm] in length to the carb line and fill line in the stopper. Install the included fuel clunks onto these lines.



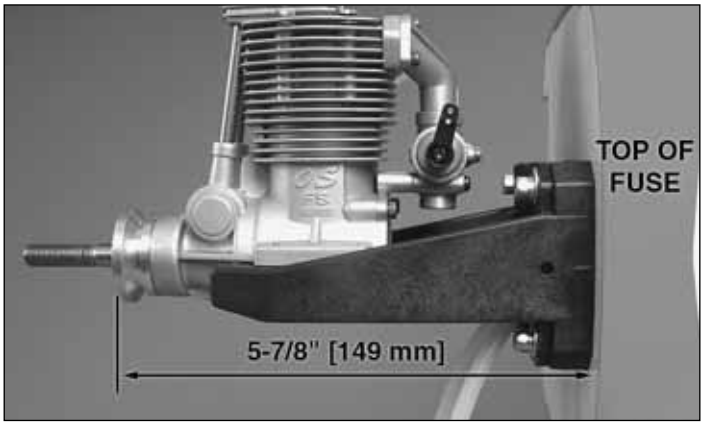
❏ 6. Insert the stopper into the tank and check the length of the carb line and fill lines. The clunks should almost rest against the back of the tank when the stopper is in place but move freely. Adjust the length of the fuel line until the proper length has been reached. Once you are satisfied with the fit, secure the stopper using the Phillips head screw in the stopper assembly. Be careful not to overtighten the screw as the fuel tank could split.

❏ 7. Connect a piece of 10" [254 mm] long fuel tubing onto each of the three lines on the tank. Mark the vent line, and temporarily tape the ends of the tubing together in order to feed them through the hole in the firewall.



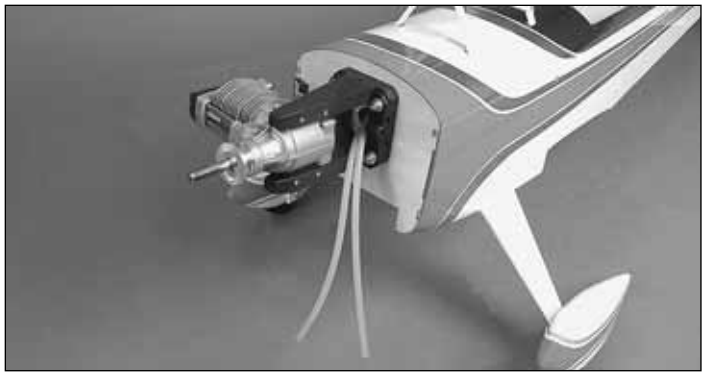
❏ 8. Slide the tank into the fuselage, being sure the fuel tubing exits out of the front of the firewall. Secure the tank by hooking two rubber bands around the fuel tank retainer tabs as shown.

❏ 9. Install the **engine mount** onto the firewall on its side using four 8-32 x 1" [25 mm] SHCS, four #8 flat washers, and four #8 lock washers.

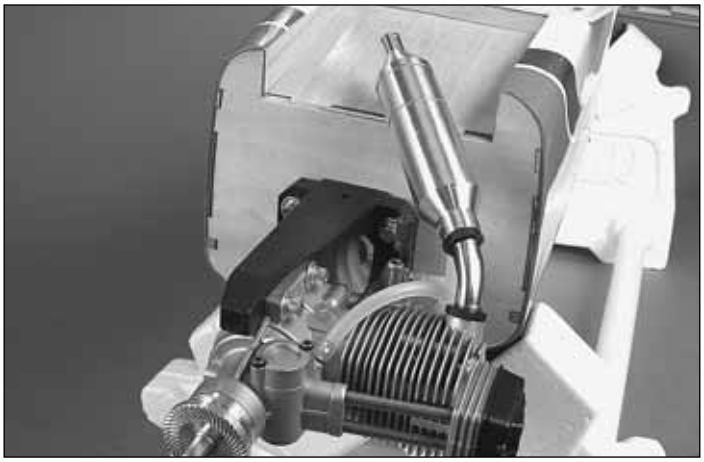


❏ 10. Position the engine onto the mount so the front of the drive washer is 5-7/8" [149 mm] from the firewall. Use a Great Planes Engine Hole Locator or a small drill bit to mark the engine mounting holes onto the engine mounts.

❏ 11. Take the engine off the mount, and then drill 9/64" [3.6 mm] holes at the marks. Use an 8-32 tap to cut threads into the holes.

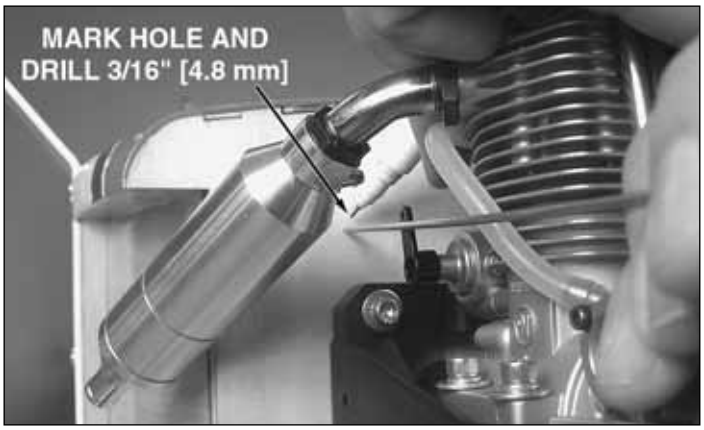


❏ 12. Secure the engine to the mount with four 8-32 x 1" [25 mm] SHCS, four #8 flat washers, and four #8 lock washers.

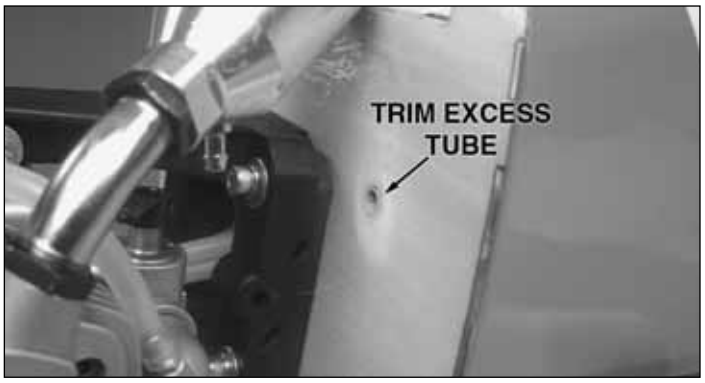


❏ 13. Attach the muffler to the engine so that it rests in the cutout on the underside of the fuselage. Some model engines may not allow this muffler configuration. If so, the **cowl** may need to be cut to accommodate the muffler.

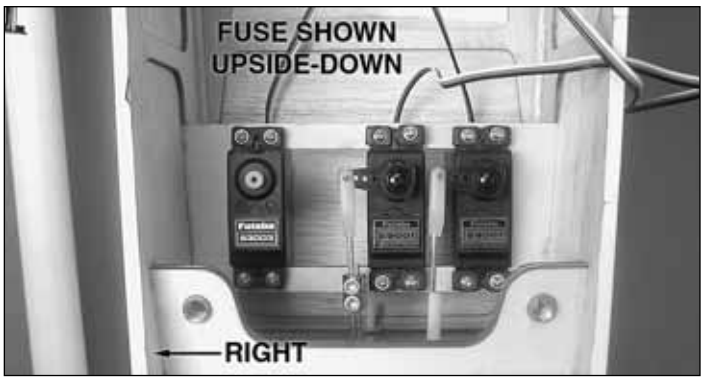
Install the Throttle Servo



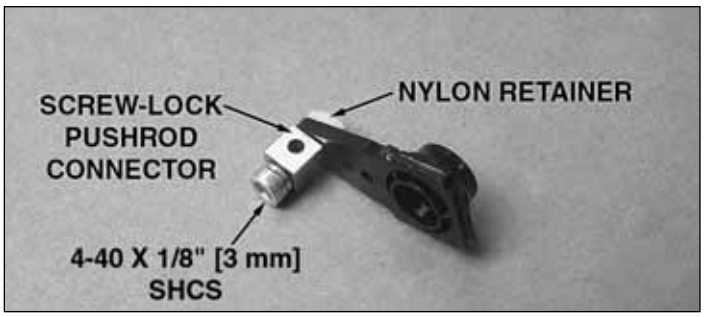
❏ 1. Use the 2-56 x 36" [914 mm] **throttle pushrod** as a guide to mark the position for a hole to be drilled in the firewall in line with carburetor arm. Drill a 3/16" [4.8 mm] hole at the mark.



❏ 2. Insert the white outer pushrod tube through the hole in the firewall and through the cutout in the former below the fuel tank retainer tab as shown. Glue the tube to that former as well as the firewall and cut off the excess tube that extends out beyond the firewall.

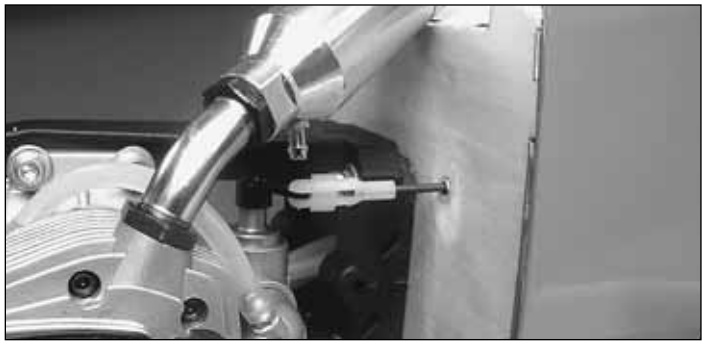


❏ 3. Install the throttle servo in the right side of the servo tray using the hardware that comes with the servo.

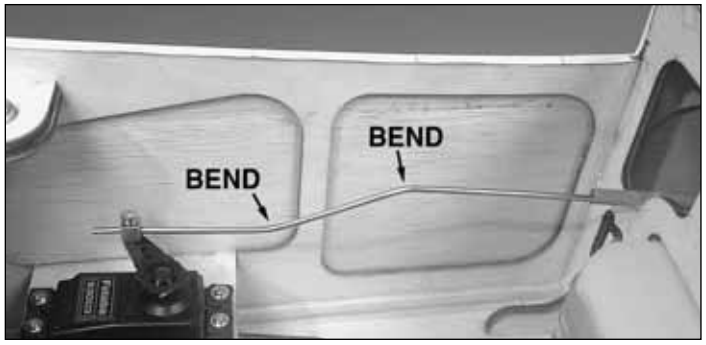


❏ 4. Cut three arms from a four-arm servo horn and install a brass screw-lock pushrod connector to the outer hole in the horn. Loosely thread a 4-40 x 1/8" [3 mm] SHCS into the screw-lock pushrod connector.

❏ 5. Install the horn onto the throttle servo as shown. Start with an angle approximately 30 degrees from being perpendicular to the fuselage. This may need to be adjusted as you set up your radio system.

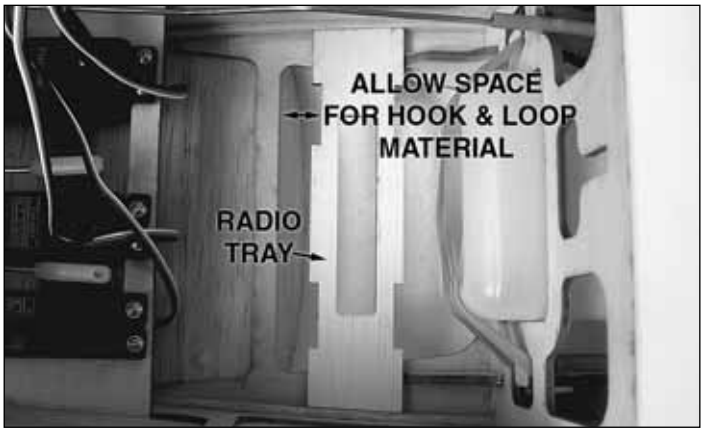


❏ 6. Insert the 2-56 x 36" [914 mm] pushrod into the outer pushrod tube with the threaded end near the engine. Install a 2-56 nylon clevis and silicone clevis retainer onto the pushrod and connect it to the carburetor arm.

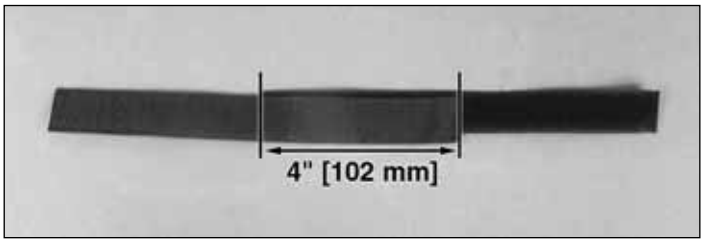


❏ 7. Make two bends in the throttle pushrod to align it level with the screw-lock pushrod connector. Insert the pushrod into the connector and tighten the 4-40 x 1/8" [3 mm] SHCS against it. Cut off any excess pushrod that extends behind the screw-lock pushrod connector.

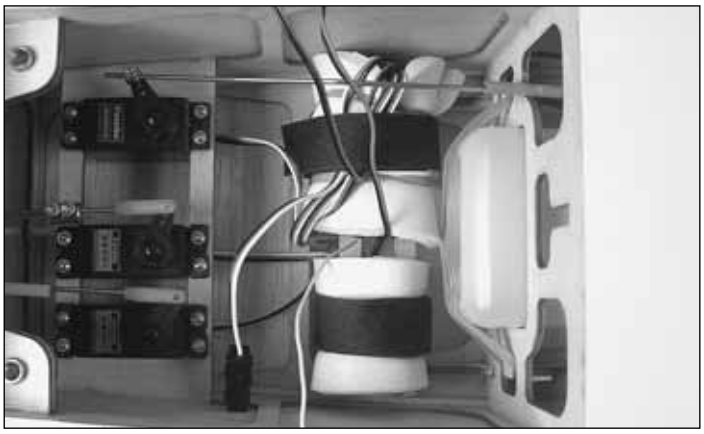
Install the Receiver & Battery



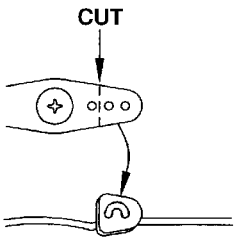
❏ 1. Locate the plywood **radio tray** and test fit it into the fuselage as shown. Be sure there is enough room at the aft end of the plate for **hook and loop material** to secure the receiver and battery. When satisfied with the fit, glue the plate into position.



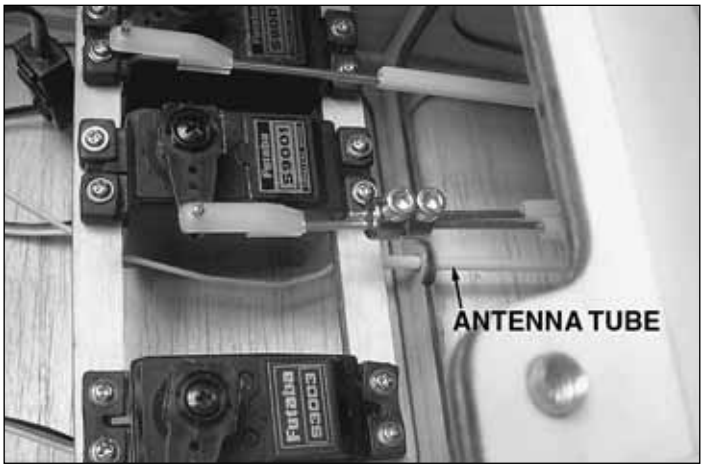
❏ 2. Cut the included 14" [356 mm] hook and loop material into two equal lengths. Create straps by overlapping the ends by approximately 4" [102 mm].



❏ 3. Wrap your receiver and receiver battery in foam rubber and connect the servos, aileron Y-harness, and receiver switch. Secure the receiver and battery to the mounting plate using the straps you created.



STRAIN RELIEF
INSIDE FUSELAGE

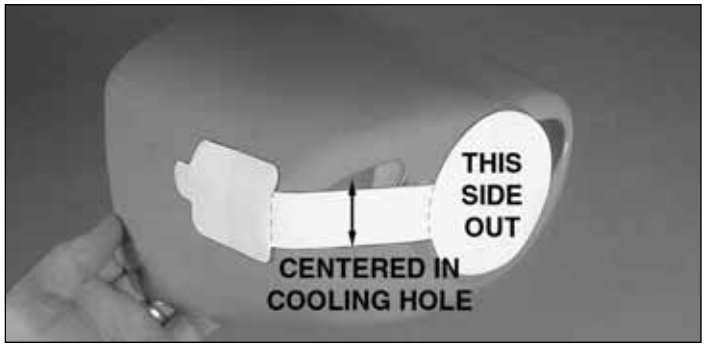


❏ 4. Install a **strain relief** on the receiver antenna and route it through the pre-installed antenna tube. Trim the covering from the end of the tube which is located on the right side of the fuselage just below the trailing edge of the horizontal stabilizer.

❏ 5. Install your receiver battery switch onto the side of the fuselage. We used a Great Planes Switch & Charge Jack Mounting Set (GPMM1000).

FINISH THE MODEL

Attach the Cowl & Canopy

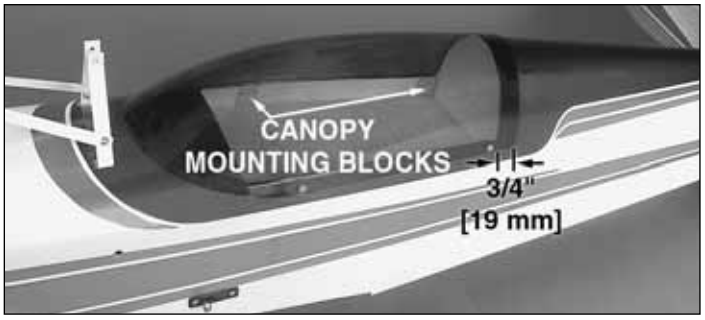


❏ 1. A template is provided on the back cover page of this manual for a convenient way to trim a hole in the cowl when using an O.S.® .91 four-stroke engine. Cut out the template and align the circular end over the spinner base on the cowl, taping it in place. Pull the other end tight around the cowl with the middle of the template centered over the right cooling hole. While holding the template tight, secure the other end in place with a small piece of tape.

❏ 2. Using a felt-tip pen, trace around the engine head-shaped portion of the template onto the cowl. Remove the template and finish up the lines with a straightedge.

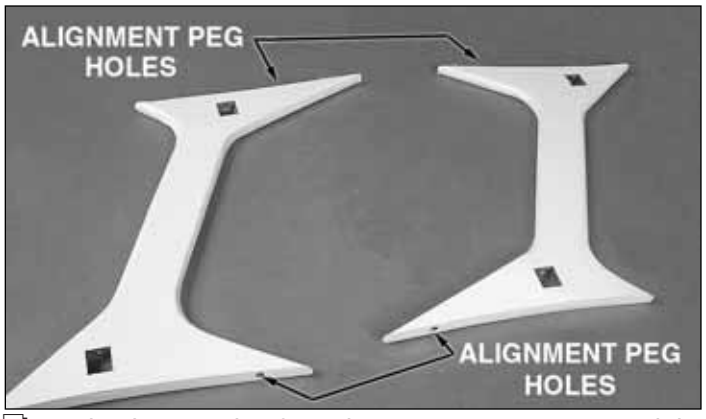
❏ 3. Use a rotary tool to cut out the shape. Slide the cowl onto the fuselage. Install the backplate from the 2-1/2" [64 mm] spinner onto the crankshaft. Align the cowl with the spinner backplate, allowing 1/8" [3 mm] space between them. Use tape to hold the cowl in place. Drill four evenly spaced 1/16"

[1.6 mm] holes 1/4" [6 mm] from the back edge of the cowl. Secure the cowl to the fuselage with four #2 x 1/2" [13 mm] SMS screws and four #2 washers. Be sure to use thin CA to harden the screw holes.

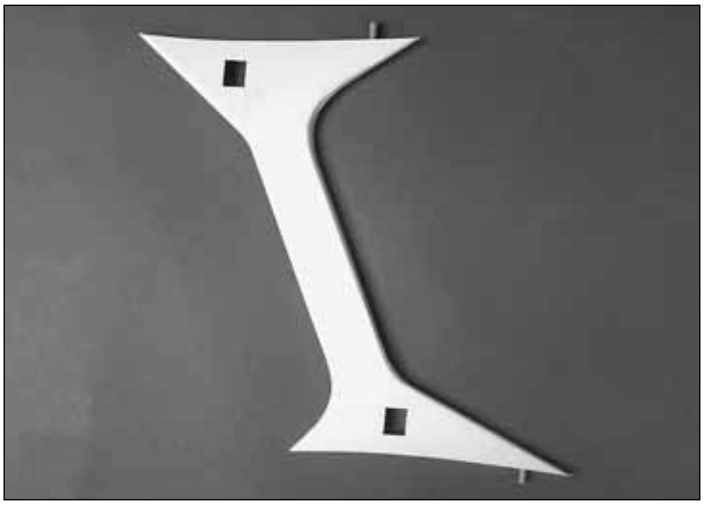


❏ 4. Align the **canopy** onto the fuselage so that it overlaps the back of the cockpit by 3/4" [19 mm] and tape in position. Drill a 1/16" [1.6 mm] hole through the canopy and into the fuselage at each of the four canopy mounting blocks (these can be seen in the cockpit). Secure the canopy with four #2 x 3/8" [9.5 mm] screws and four #2 washers. Use thin CA to harden the holes.

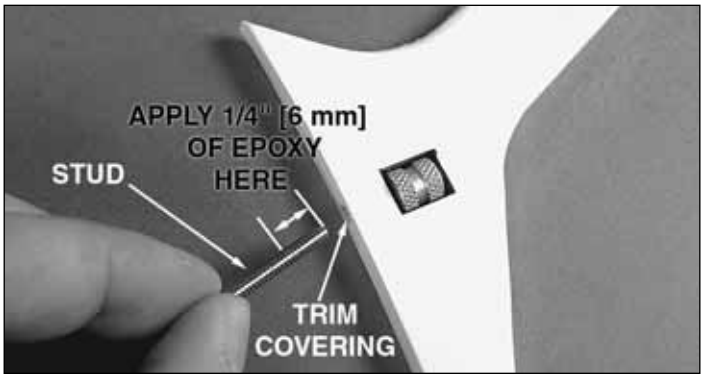
Attach the Wings

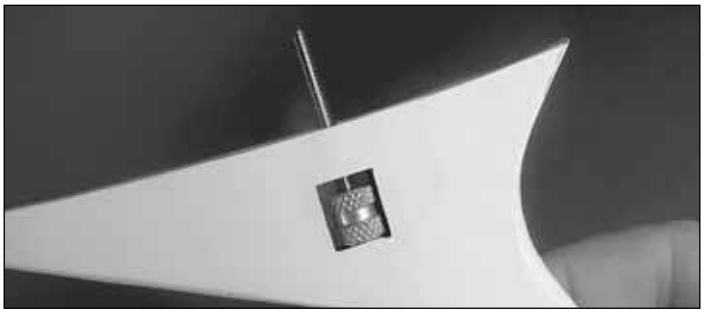


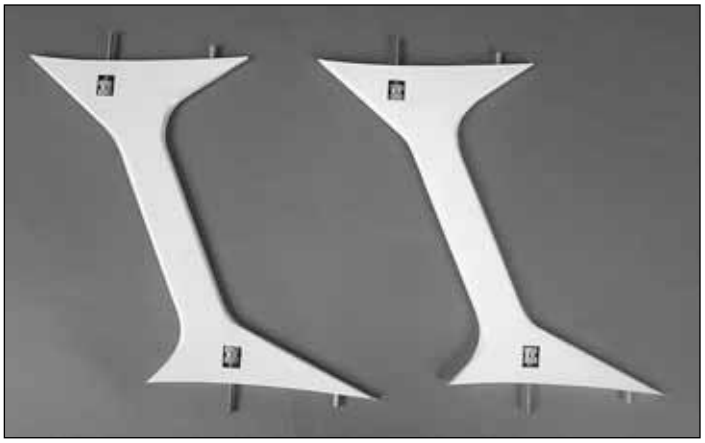
❏ 1. Trim the covering from the two square cutouts and the two alignment peg holes from each **wing strut**.



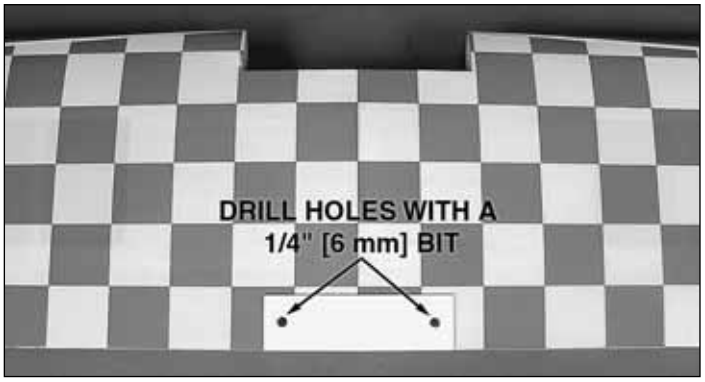
❏ 2. Insert the four 1/8" x 1/2" [3 x 13 mm] **wing strut pegs** into the struts and glue them in place.





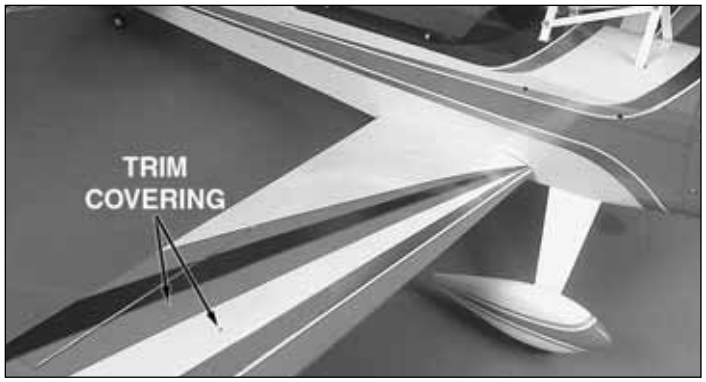


❏ 3. Trim the covering for the 6-32 x 1-1/2" [38 mm] threaded studs. Place the 6-32 knurled thumb nuts into the square cutouts in the struts. Apply a small amount of epoxy to the bottom 1/4" [6 mm] of each stud. Insert the glued ends into the holes in the struts and thread them into the knurled nuts. **Do not allow the studs or the nuts to be glued to the struts! They must be able to rotate freely.** Use petroleum jelly on the portion of the studs where epoxy should not be allowed to stick.



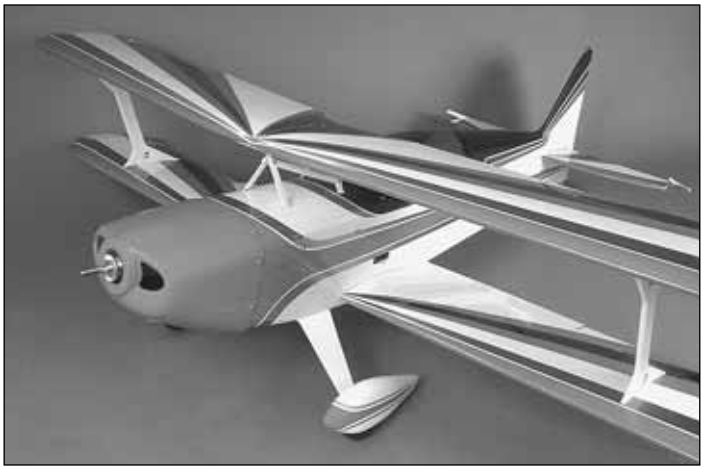
❏ 4. Trim the covering from the wing where the plate is to be installed. Center and glue the **wing bolt plate** to the

underside trailing edge of the bottom wing. Continue the holes through the plate for the wing bolts using a 1/4" [6 mm] drill bit.

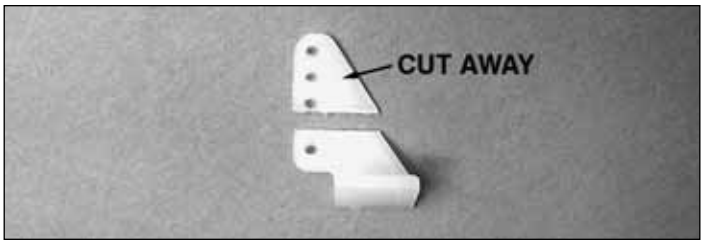


❏ 5. Attach the bottom wing to the fuselage and trim the covering from the wing strut peg holes and the threaded stud holes on the top of the bottom wing.

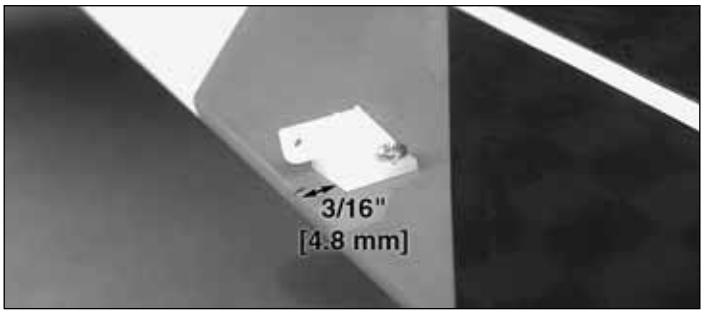
❏ 6. Bolt the wing struts to the bottom wing as shown, with the wing strut pegs fitting into the peg holes in the wing. The knurled nuts can be tightened by hand to draw the threaded studs into the 6-32 blind nuts that are pre-installed in the wing.



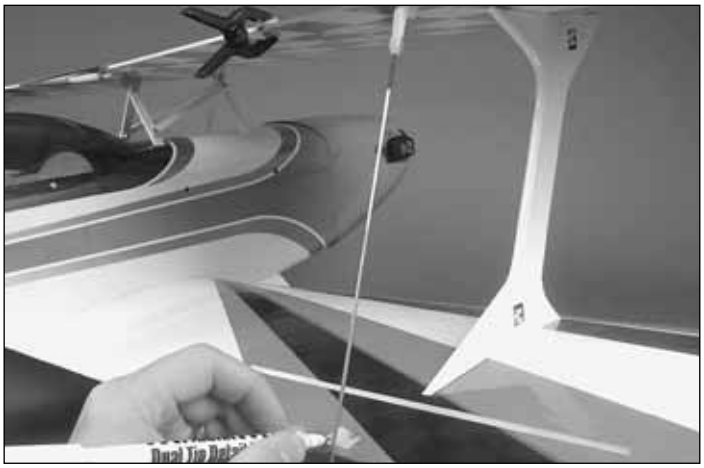
❏ 7. Using the same technique, attach the top wing to the wing struts. Bolt the top wing to the cabanes with two 4-40 x 1/2" [13 mm] SHCS, two #4 washers, and two 4-40 lock nuts.



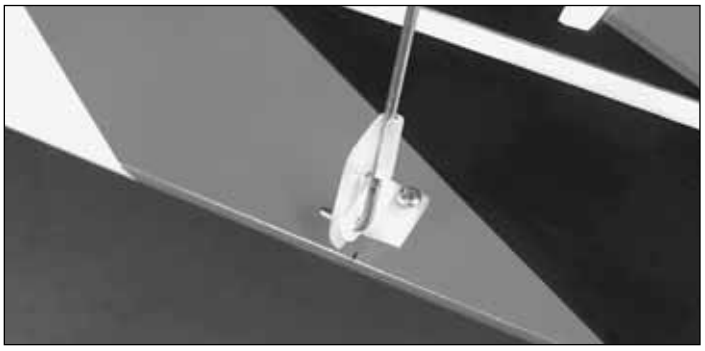
❏ 8. Cut the top three holes from four small nylon control horns. Enlarge the holes in two of the control horns for the bottom ailerons with a 3/32" [2.4 m] drill bit.



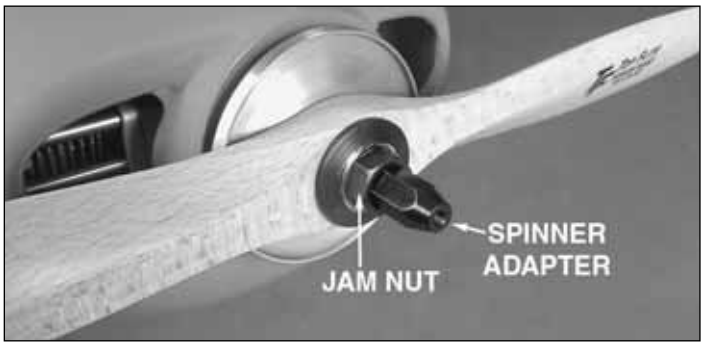
❏ 9. Locate and mark the middle of the top and bottom ailerons. Position the small nylon control horns at the marks 3/16" [4.8 mm] from the trailing edges of the ailerons and mark the mounting hole positions. Drill 3/32" [2.4 mm] holes at the marks and use thin CA to harden the wood around the holes. Attach the control horns using eight 2-56 x 1/2" [13 mm] Phillips screws. Be sure the control horns with the enlarged holes are installed on the bottom ailerons.



❏ 10. Attach a clevis and silicone clevis retainer to two 2-56 x 12" [305 mm] pushrods. Use clamps to hold the ailerons in the neutral positions. Hook the clevises to the top ailerons and make a mark where the pushrod crosses the holes in the bottom aileron control horns.

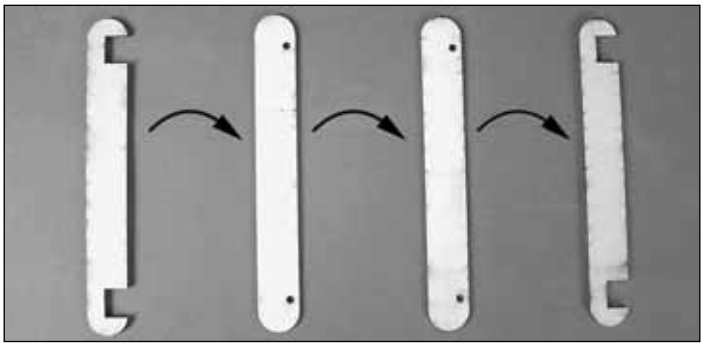


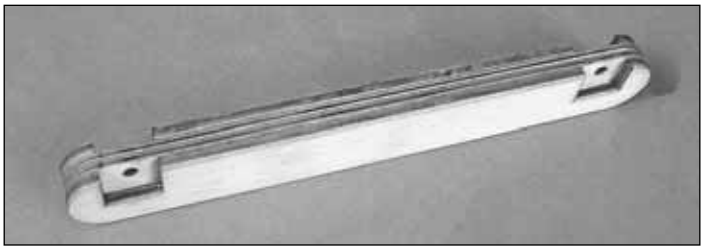
❏ 11. Make a 90° bend at the marks and cut the pushrods, leaving 1/4" [6 mm] beyond the bend. Hook the pushrods to the bottom aileron control horns and secure them with two FasLinks. Adjust the clevises as necessary so the top and bottom ailerons are parallel with each other.



❏ 12. Finish up the model by installing a propeller and the included 2-1/2" [64 mm] aluminum **spinner** onto the engine. We used a Top Flite® 15x6 wood prop (TOPQ5175) to fit onto our O.S.® .91 four-stroke engine. The included 5/16-24 spinner adapter fits into the jam nut for the O.S. four-stroke.

Optional: Assemble the Carrying Handle





*For ease of transport, the Super Skybolt ARF includes a **carrying handle** that hooks to the top of the cabane struts. To assemble the handle, glue the four pieces together as shown with the square cutouts on the outside of the stack. The middle pieces with the holes should be oriented so that the holes are exposed in the square cutouts.*

To use the handle, remove the top and bottom wings from the fuselage. Insert the handle into the cabane struts and use the 4-40 x 1/2" [13 mm] SHCS and 4-40 lock nuts to secure it.

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.

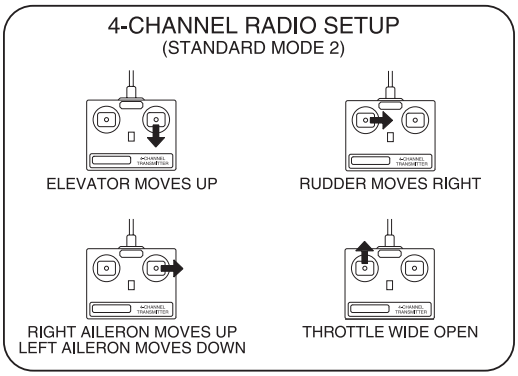
4. Use a piece of soft balsa or something similar to squeegee remaining water from under the decal. Apply the rest of the decals the same way.

GET THE MODEL READY TO FLY

Check the Control Directions

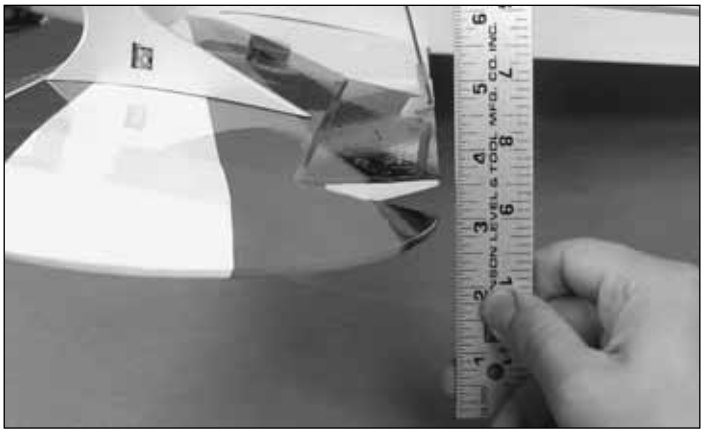
❑ 1. Turn on the transmitter and receiver and center the trims. If necessary, remove the servo arms from the servos and reposition them so they are centered. Reinstall the screws that hold on the servo arms.

❑ 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.



❑ 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 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
ELEVATOR:	1" [25 mm] up	5/8" [16 mm] up
	1" [25 mm] down	5/8" [16 mm] down
RUDDER:	3" [76 mm] right	1-1/2" [38 mm] right
	3" [76 mm] left	1-1/2" [38 mm] left
AILERONS:	5/8" [16 mm] up	3/8" [10 mm] up
	5/8" [16 mm] down	3/8" [10 mm] down

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

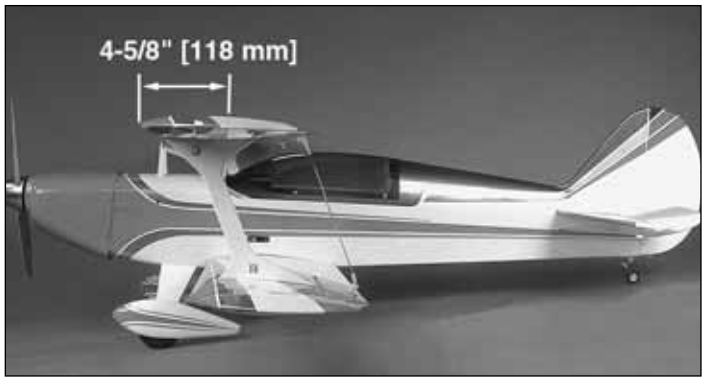
Balance the Model (C.G.)

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

❏ 1. Use a felt-tip pen or 1/8" [3 mm]-wide tape to accurately mark the C.G. on the bottom of the top wing on both sides of the fuselage. The C.G. is located 4-5/8" [118 mm] back from the leading edge of the top 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 3/8" [10 mm] forward or 3/8" [10 mm] 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, lift the model 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. [28 g] weight, or GPMQ4646 for the 2 oz. [57 g] 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 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

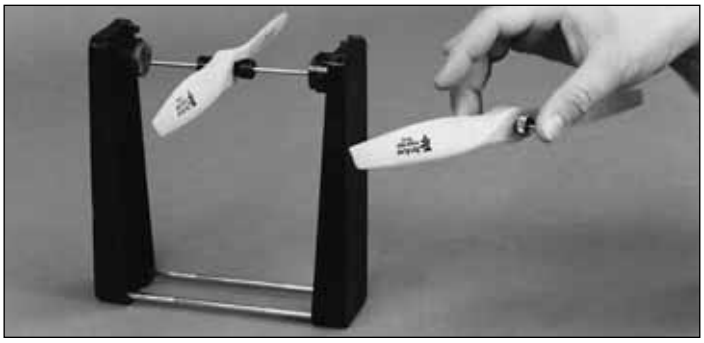
No matter if you fly at an AMA sanctioned R/C club site or if you fly somewhere on your own, you should always have your name, address, telephone number and AMA number on or inside your model. It is **required** at all AMA R/C club flying sites and AMA sanctioned flying events. Fill out the identification tag on page 30 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 the 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. 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, scarfs, 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 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 thread-locking 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 Super Skybolt ARF is a great-flying model that flies smoothly and predictably. The Super Skybolt ARF 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 take off, 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 tailwheel on the ground. If necessary, adjust the tailwheel 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, and then check all fasteners and control linkages for peace of mind.

Remember to take off 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 tailwheel steering, and 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 taildragger 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 Super Skybolt ARF 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 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 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 tailwheel 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

OTHER ITEMS AVAILABLE FROM GREAT PLANES

Futaba® S9001 Aircraft Coreless Ball Bearing Servo
Ideal for airplanes, sailplanes, helis, even nitro or electric boats, the S9001 features a coreless motor for smooth, fast response and a final gear with dual ball bearings for fast transit time. It comes with "J"-connector, one attached servo horn, three extra horns and mounting hardware. Length: 1.59 in. Width: 0.78 in. Height: 1.42 in. Weight: 1.69 oz. Torque: 54.1 oz-in (4.8V); 72.2 oz-in (6V). Transit time: 0.22 sec./60° (4.8V); 0.18 sec./60° (6V). One year warranty. **FUTM0075**

Futaba 6EXAS 6-Channel FM Computer Radio
The 6-channel 6EXAS keeps setup simple – programming requires just 2 buttons and a data input lever. It's all-digital, so you can lock in precise settings for everything. That includes the digital trims, which offer 241 discrete settings for super-fine tuning performance. Besides essentials such as servo reversing, EPA on all six channels, a trainer system, and easy-to-read LCD screen, the 6EXAS also boasts 6-model memory with reset, program mixing, throttle cut-off switch, retract switch, flap knob, audible battery power alarm, adjustable stick length, a dual-conversion, 7-channel R127DF receiver and four S3004 ball bearing servos. 72MHz. **FUTK56****

ElectriFly™ by Great Planes Triton™ Peak Charger
Imagine a charger so versatile it can be used with lithium-ion and lead-acid batteries as effectively as NiCd and NiMH cells. A unit that can peak charge tiny park flyer packs and 24V car batteries alike. A charger that can discharge as well as charge, cycle packs from 1 to 10 times automatically, memorize peak and average battery voltages for each cycle – and constantly display battery capacity, voltage, current and time as each cycle progresses. Then, imagine that the charger, which can do all this, is about the size of a thick paperback book, and weighs just over a pound. The advanced computer technology in the Triton Peak Charger makes it possible to accomplish all this and more, through controls and menus so simple that programming is a breeze. For more information, log on at **www.electrifly.com** – and be amazed. 1-year warranty. **GPMM3150**

Great Planes C.G. Precision Aircraft Balancer™
Accurate balancing makes trainers more stable, low-wings more agile, and pylon planes move at maximum speed. The innovative C.G. Machine helps you achieve optimum balance easily, without measuring or marking–and without the errors that fingertip balancing can cause. You'll quickly pinpoint your plane's exact center of gravity. Then you'll know at a glance whether weight should be added, removed or relocated. The C.G. Machine works with kits and ARF models of any size and wingspan. Its slanted wire balancing posts support models weighing up to 40 pounds. **GPMR2400**

Great Planes Pro™ Adhesives
"Best if used by" dates on the label provide visible proof of freshness on all Pro CAs. Available in formulas that range from thin, quick-bonding CA to Gel – a formula so thick that it won't run even on nearly vertical surfaces. Pro Epoxies are available in money-saving 4-ounce sizes. Also available: CA debonder; CA activator; Glue-B-Gone™ adhesive remover; Pro Wood Glues; Pro Threadlocker; and Milled Fiberglass Reinforcer. **GPMR6001 thru 6049**

BUILDING NOTES	
Kit Purchased Date: _____	Date Construction Finished: _____
Where Purchased:_____	Finished Weight: _____
Date Construction Started: _____	Date of First Flight: _____
FLIGHT LOG	

ENGINE HEAD TEMPLATE