PIPER J-3 CUB

QUARTER SCALE A.R.F.

INSTRUCTION MANUAL

Almost Ready to Fly

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

READ THROUGH THIS INSTRUCTION MANUAL FIRST. IT CONTAINS IMPORTANT INSTRUCTIONS AND WARNINGS CONCERNING THE ASSEMBLY AND USE OF THIS MODEL.

GREAT PLANES® MODEL MANUFACTURING COMPANY

P.O. Box 788 Urbana, IL 61801 (217) 398-8970
productsupport@greatplanes.com

GPMZ0215 V1.0

Entire Contents © Copyright 1999

TABLE OF CONTENTS

PROTECT YOUR MODEL, YOURSELF & OTHERS...FOLLOW THIS IMPORTANT SAFETY PRECAUTION

Your Piper Cub ARF is not a toy, but rather a sophisticated, working model that functions very much like an actual airplane. Because of its realistic performance, the Piper Cub ARF, if not assembled and operated correctly, could possibly cause injury to yourself or spectators and damage property.

To make your R/C modeling experience totally enjoyable, we recommend that you get experienced, knowledgeable help from an instructor with assembly and during your first flights. You'll learn faster and avoid risking your model before you're truly ready to solo. Your local hobby shop has information about flying clubs in your area whose membership includes qualified instructors. You may also contact the national Academy of Model Aeronautics (AMA), which has more than 2,500 chartered clubs across the country. Contact the AMA at the address or toll-free phone number below.

AMA
SINCE 1936

Academy of Model Aeronautics
5151 East Memorial Drive
Muncie, IN 47302-9252
Tele. (800) 435-9262
Fax (765) 741-0057
or via the Internet at http://www.modelaircraft.org

PRECAUTIONS

1. Assemble the plane according to the instructions. Do not alter or modify the model, as doing so may result in an unsafe or unflyable model.

2. Take time to align the components straight and true.

3. Use an R/C radio system that is in first-class condition, and a correctly-sized engine and components (fuel tank, wheels, etc.) throughout your assembly process.

4. You must properly install all components so that the model operates properly on the ground and in the air.

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

NOTE: We, as the manufacturer, provide you with a top quality kit and great instructions, but ultimately the quality of your finished model depends on how **you** assemble 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 directions to end up with a well-built model that is straight and true.

Please inspect all parts carefully before starting to build! If any parts are missing, broken or defective, or if you have any questions about assembling or flying this airplane, please call us at (217) 398-8970 or e-mail us at productsupport@greatplanes.com. If you are calling for replacement parts, please reference the part name and number (See page 5) and have them ready when calling.

INTRODUCTION

The Great Planes Piper Cub ARF is an easy-to-fly sport-scale airplane that closely resembles the full size Piper Cub both in appearance and performance. The Piper Cub ARF is very stable and predictable, allowing even novice skill level pilots to enjoy it.

Because of its docile flight characteristics, this airplane could be used as a first airplane for learning to fly, but only with the assistance and close supervision of a competent instructor. This airplane lacks the self-recovery characteristics of a true "basic trainer" such as the Great Planes PT™ series, which is the model of choice for learning to fly.

DECISIONS YOU MUST MAKE

Engine Selection

There are several engines that will work well in your Piper Cub ARF. We recommend an O.S.® FS-70 4-stroke for the best scale appearance and sound for your Piper Cub. A hot 2-stroke such as an O.S. .46FX or SuperTigre® G45 would also be a good choice. Another option for a 2-stroke would be a mild .60, such as the O.S. .65 LA or O.S. .60 FP. Your choice of 2-stroke or 4-stroke will determine the location of the throttle servo and throttle pushrod exit on the firewall, so plan ahead.

PREPARATIONS

Required Accessories

Items in parentheses (OSMG2691) are suggested part numbers recognized by distributors and hobby shops and are listed for your ordering convenience. ***GPM*** *is the Great Planes® brand,* ***TOP*** *is the Top Flite® brand, and* ***HCA*** *is the Hobbico® brand.*

- ❏ 4 Channel Radio with 5 Servos
- ❏ "Y" Harness For Aileron Servos
- ❏ Two 6" Servo Extensions For Aileron Servos
- ❏ Engine – See Engine Selection
- ❏ Spare Glow Plugs (O.S. #8 For Most 2-Stroke Engines, OSMG2691) Type F for 4-stroke (OSMG2692)
- ❏ Propeller (Top Flite® Power Point®) (Refer To Your Engine's Instructions For Proper Size)
- ❏ 3' Medium 3/32" Fuel Tubing (GPMQ4131)
- ❏ 1/4" Latex Foam Rubber Padding (HCAQ1000)
- ❏ Fueling System (Great Planes Top Fueler™, GPMQ4160)
- ❏ 8-32 Tap & #29 Drill Bit (GPMR8103)

Building Supplies and Tools

These are the building tools that are required. We recommend Great Planes Pro™ CA and Epoxy glue.

- ❏ 2 oz. Pro CA (Thin, GPMR6003)
- ❏ 2 oz. Pro CA+ (Medium, GPMR6009)
- ❏ CA Accelerator (GPMR6035)
- ❏ 6-Minute Pro Epoxy (GPMR6045)
- ❏ 30-Minute Pro Epoxy (GPMR6047)
- ❏ Canopy Glue (JOZR5007)
- ❏ Hobby Knife (HCAR0105) & Blades (HCAR0311)
- ❏ Builders Triangle Set (HCAR0480)
- ❏ Masking Tape (TOPR8018)
- ❏ Slip-Joint & Needle Nose Pliers
- ❏ Monofilament String For Stabilizer Alignment
- ❏ Screwdrivers (Flat Blade & Phillips)
- ❏ Pro Thread Locking Compound (GPMR6060)
- ❏ Isopropyl Alcohol (70%)
- ❏ Drill & Drill Bits: 1/16" [1.6mm], 5/64" [2mm], 3/32" [2.4mm], 3/16" [4.8mm], 7/32" [5.6mm], 1/4" [6mm], #29
- ❏ Top Flite Trim Seal Tool™ (TOPR2200)
- ❏ Panel Line Pen (TOPQ2510)
- ❏ Sandpaper: 80, 220 & 320-grit
- ❏ Metal File
- ❏ 3/4 Oz. Fiberglass cloth (HCAR5000)
- ❏ Paper Towels
- ❏ T-Pins (HCAR5100)
- ❏ 1/4-20 x 1" Steel Bolt & 1/4" Washer
- ❏ Hobby Heat™ Micro Torch (HCAR0750)
- ❏ Silver Solder (GPMR8070)
- ❏ Razor Saw
- ❏ Petroleum Jelly

Optional Supplies and Tools

- ❏ CG Machine™ (GPMR2400)
- ❏ Dremel® MultiPro™ Or Similar W/Cut-Off Wheel
- ❏ Dead Center™ Engine Mount Hole Locator (GPMR8130)
- ❏ Groove Tube™ Grooving Tool (GPMR8140)
- ❏ Curved Tip Canopy Scissors (HCAR0667)
- ❏ Switch and Charge Jack (GPMM1000)
- ❏ 6 Oz. Segmented lead weight (GPMQ4485)

General Inspection

Eliminate any wrinkles you find in the covering by shrinking them away with a low temperature setting on a heat gun, then apply pressure to the area with a covering iron and a hot sock. This will securely bond the covering to the wood so the wrinkles will be less likely to reappear in the future.

Common Abbreviations

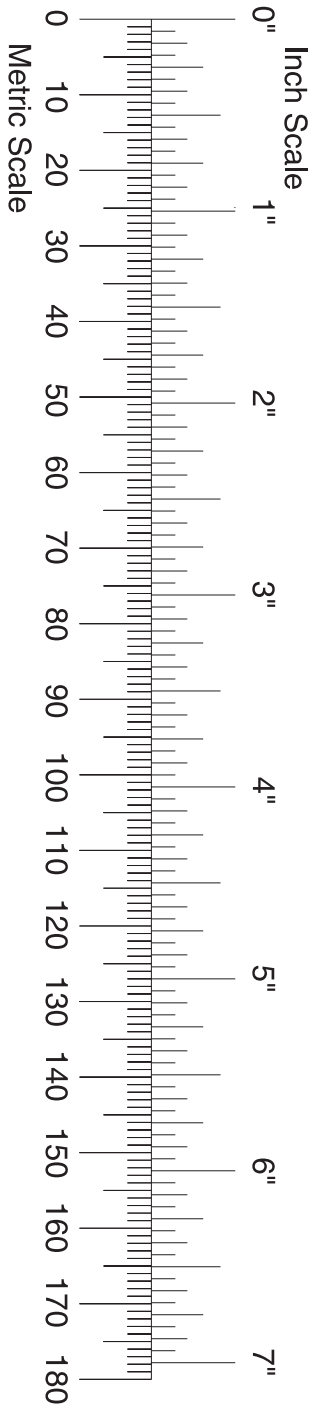
AMA = Academy of Model Aeronautics
ARF = almost ready to fly

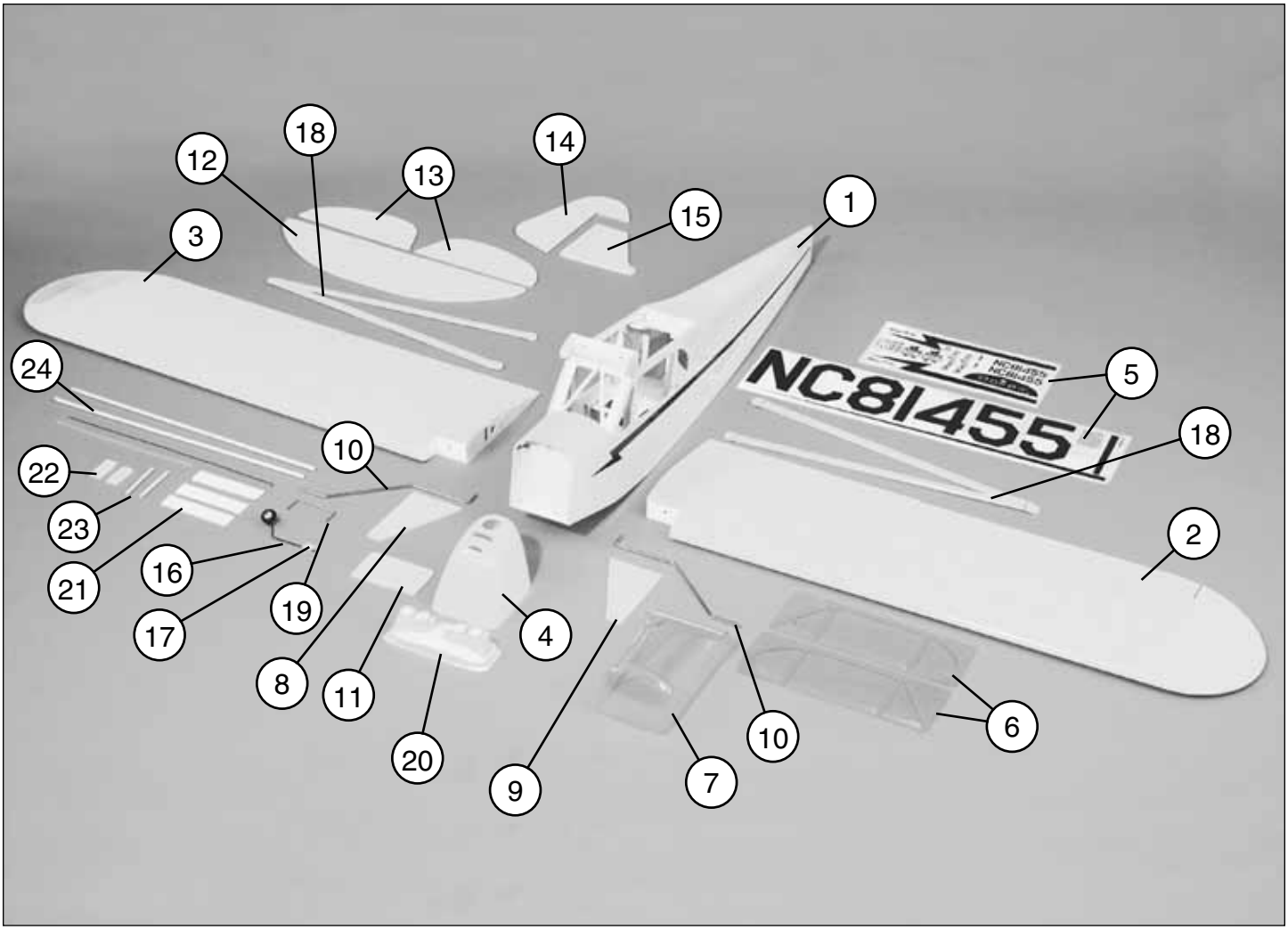
Deg = degrees	Elev = elevator
Fuse = fuselage	" = inches
LE = leading edge	Ply = plywood
Stab = stabilizer	TE = trailing edge
LG = landing gear	mm = millimeters

Metric Conversions

1" = 25.4mm (conversion factor)

1/64" = .4mm	1" = 25.4mm
1/32" = .8mm	2" = 50.8mm
1/16" = 1.6mm	3" = 76.2mm
3/32" = 2.4mm	6" = 152.4mm
1/8" = 3.2mm	12" = 304.8mm
5/32" = 4mm	15" = 381mm
3/16" = 4.8mm	18" = 457.2mm
1/4" = 6.4mm	21" = 533.4mm
3/8" = 9.5mm	24" = 609.6mm
1/2" = 12.7mm	30" = 762mm
5/8" = 15.9mm	36" = 914.4mm
3/4" = 19mm	





Key#	Description	Qty
1	Fuselage	1
2	Left Wing Panel w/Aileron	1
3	Right Wing Panel w/Aileron	1
4	Cowl	1
5	Decals	1 Set
6	Side Windows	2
7	Canopy	1
8	Right Landing Gear Cover	1
9	Left Landing Gear Cover	1
10	Landing Gear	1
11	Wing Bolt Plate	1
12	Stabilizer	1
13	Elevator Assembly	1
14	Rudder	1
15	Vertical Fin	1
16	Tail Wheel Assembly	1
17	Tail Wheel Bracket	1
18	Wing Struts	2
19	Elevator Joiner Wire	1
20	Dummy Engine	1
21	Wing Joiners	3
22	Landing Gear Fairing Mounts	2
23	Wing Dowels	2
24	Pushrods	1 Set

Parts Not Shown In Photo

Description	Qty
Adjustable Engine Mount	1
Main Wheels	2
Servo Tray	1
CA Hinge Strip (2" x 9")	1
Hardware Bag	1

Replacement Parts

If needed, replacement parts for Piper Cub ARF are available through your hobby supplier.

Wing Set	GPMA2180
Fuselage Kit	GPMA2181
Tail Fin Set	GPMA2182
Canopy	GPMA2183
Cowl	GPMA2184
Landing Gear Set	GPMA2185

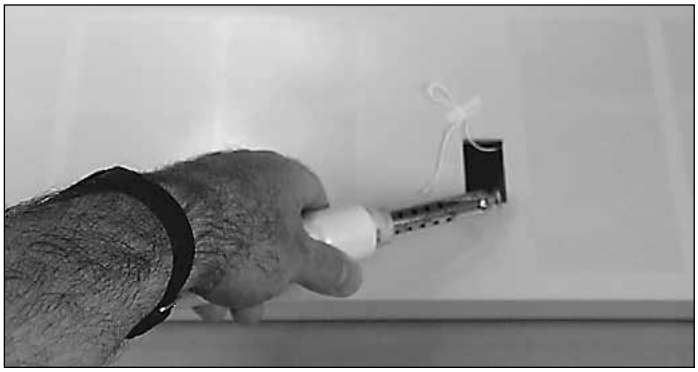
BEGIN CONSTRUCTION

Fuelproof the Fuselage

❏ 1. Coat the firewall and all other bare wood around the firewall with fuelproof paint or 30-minute epoxy thinned with alcohol. Fuelproof other areas of bare wood in the fuselage that may be exposed to fuel or engine exhaust, such as the fuel tank area and the front and back of the wing saddle.

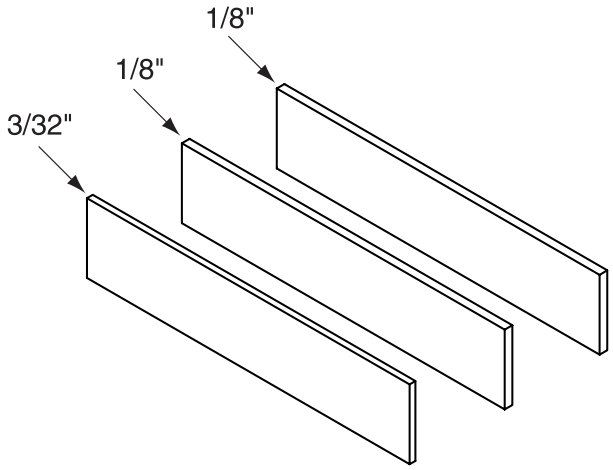
❏ 2. Set the fuselage aside while the paint or epoxy dries.

Join the Wing Halves

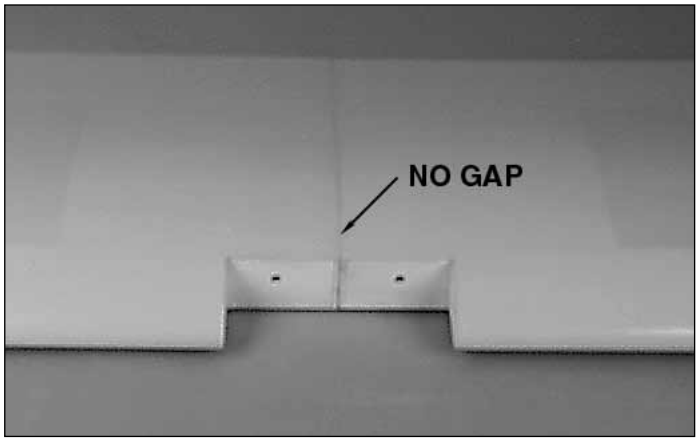


❏ 1. Cut the covering 1/8" inside the edges of the opening in the bottom of the **Right Wing Panel** for the aileron servo. Use your Top Flite MonoKote® Trim Seal Tool™ to seal the covering to the sides of the opening.

Note: You'll notice a piece of string that passes through the covering at the location of the aileron servo. Don't remove the string because you will use it to pull your aileron servo cord through the wing later.

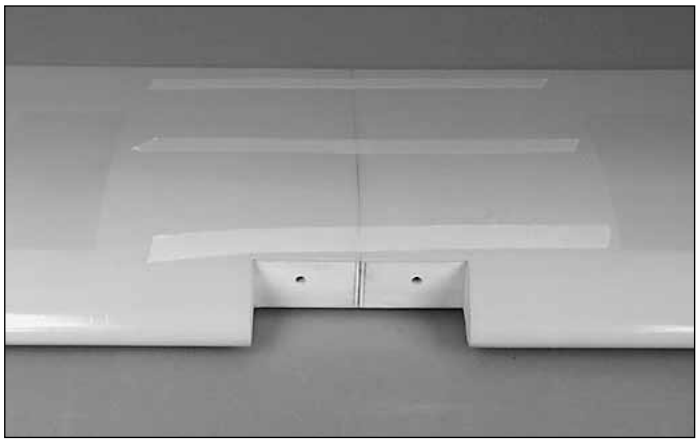


❏ 2. Use 30-minute epoxy to glue the two 1/8" x 1-1/8" x 5-1/4" [3mm x 28mm x 133mm] plywood **Wing Joiners** and the 3/32" x 1-1/8" x 5-1/4" [2.4mm x 28mm x 133mm] plywood wing joiner together. Wipe away any excess epoxy.



❏ 3. Test fit the wing halves with the wing joiner. If necessary, sand any high spots on the root end of the wing panels so there is no gap when you join them. Since the wing is built with no dihedral, it can be built flat on your work surface.

Make a *dry run* of the following step *without using any glue* so you will know how to clamp your wing together.

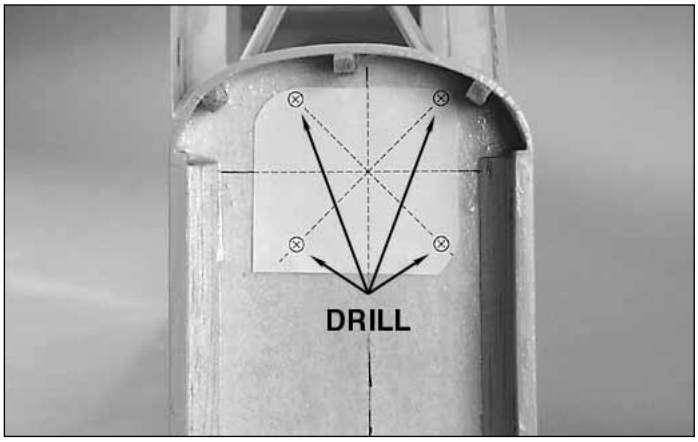


❏ 4. Tape a piece of wax paper or plan protector over your work surface. Thoroughly coat the joiner pockets and the mating ends of both wing halves with 30-minute epoxy. Set the wing halves aside and proceed quickly. Coat all surfaces of one half of the wing joiner with 30-minute epoxy and place it in one of the wing halves. Coat the other half of the joiner with 30-minute epoxy and join the other wing. Use a piece of balsa or cardboard to wipe away excess epoxy. Use masking tape to tightly tape the wing together. Use a tissue dampened with alcohol to wipe away any more epoxy that oozes out of the wing, then set the wing aside. Do not disturb the wing until the epoxy has fully cured.

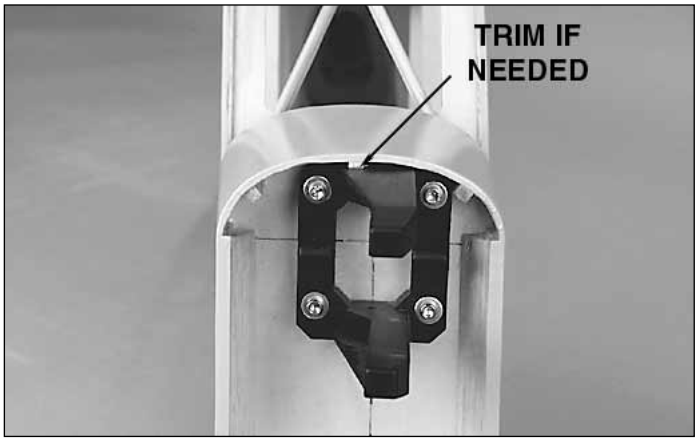
Mount the Engine

❏ 1. Cut or break the "spreader bar" from each **Engine Mount** half. Carefully trim any extra material left by the spreader bar from each mount half. The surfaces where the spreader bars were attached must be smooth to allow the mount halves to fit together. Trim the flashing off any rough edges if necessary.

❏ 2. Extend the marks on the firewall to locate the position for the engine mount on the firewall.

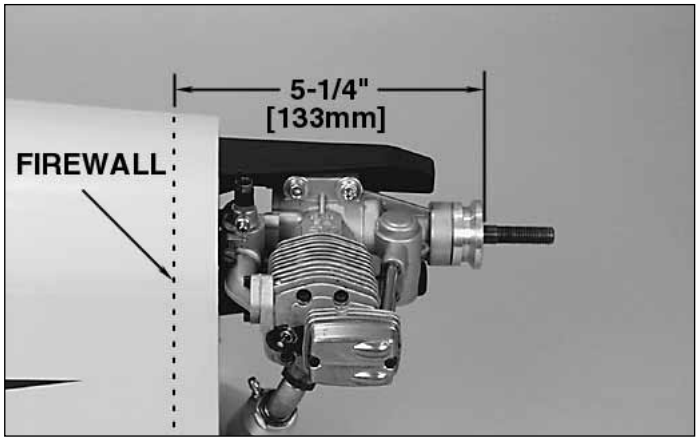


❏ 3. Cut the **Engine Mount Template** from the back cover of the manual and tape it to the firewall as shown. At the locations on the template, drill four 7/32" [5.6mm] holes in the firewall for the engine mount blind nuts.

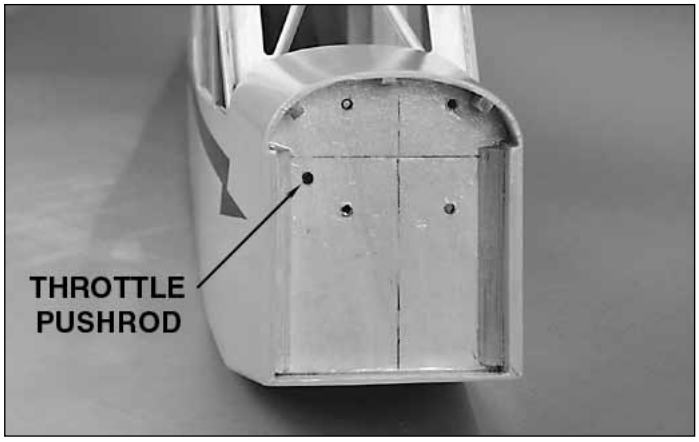


❏ 4. Install four 8-32 **Blind Nuts** to the inside of the firewall. Pull the blind nuts into the back side of the firewall using 8-32 **Socket Head Cap Screws** with a flat washer under the head of the screws. Fit the two halves of the Engine Mount together. Use four #8 **Flat Washers** and four 8-32 x 1" Socket Head Cap Screws to secure the engine mount to the firewall. Do not tighten the screws at this time, as the mount must be adjusted for the engine. Depending on your engine selection, it may be necessary to trim the top center stringer to allow for positioning the engine mount.

❏ 5. Test fit your engine into the mount. Adjust the width of the rails to fit the engine snugly. Tighten the mount screws to allow marking the engine mounting holes without moving the rails.



❏ 6. Position the engine on the engine mount rails so the propeller thrust washer is 5-1/4" [133mm] ahead of the firewall. Use a Great Planes Dead Center Hole Locator (GPMR8130) (not included) or a sharpened piece of wire to scribe the four engine mount holes onto the rails. Use a center punch at the marks to prevent the drill bit from wandering, then drill #29 pilot holes through the rails. Be sure to hold the drill perpendicular to the rails. If you have access to a drill press, this is a good tool for this purpose. Use an 8-32 tap to tap the holes for the 8-32 screws. Use four 8-32 x 1" socket head cap screws to secure the engine to the mount.

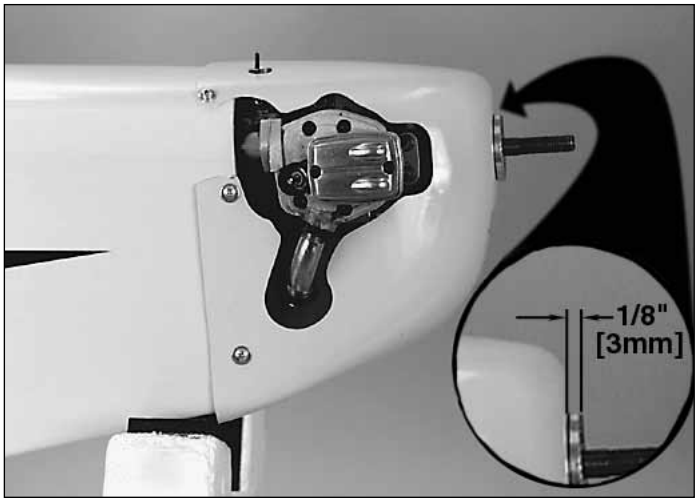


❏ 7. Drill a 3/16" [4.7mm] hole in the firewall for the throttle pushrod. The hole location will depend on whether you are installing a 2-stroke or 4-stroke engine.

❏ 8. Roughen the outside surface of the 11-3/4" [298mm] **Throttle Pushrod Tube** with coarse grit sandpaper. Insert the pushrod tube through the hole in the firewall. Push it in until it is flush with the front of the firewall. Use medium CA to glue the tube to the firewall, but leave it free inside the fuselage until the servos are installed.

Note: The engine has been removed from the above picture for clarity.

❏ 9. Slip the **Cowl** over the front of the fuse. Cut a hole in the cowl just large enough to accommodate the engine. After the cowl is mounted, you can enlarge the hole to allow some clearance for a more finished appearance.

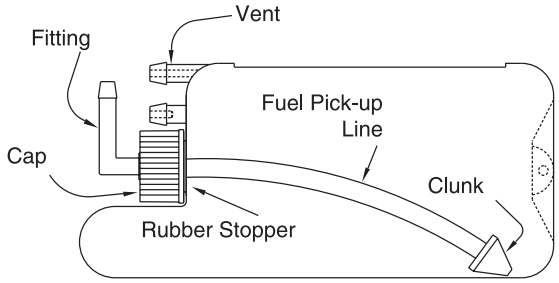


❏ 10. Align the front of the cowl 1/8" [3mm] behind the drive washer of the engine and tape it to the fuselage.

❏ 11. Drill a 5/64" [2mm] hole through the cowl into the fuselage. Screw a #4 x 1/2" **Sheet Metal Screw** through the cowl just far enough into the fuselage to temporarily hold that part of the cowl in place. One at a time, drill a hole and insert a screw into the cowl the same way. Depending on the engine, you may use either four or five screws to secure the cowl.

❏ 12. Remove the cowl. Roughen the inside of the cowl around the screw holes with 80-grit sandpaper. Cut four 1" square pieces of glass cloth and glue them to the inside of the cowl over the mounting holes with 30-minute epoxy as shown in the photo. Set the cowl aside while the epoxy cures. Use a small amount of epoxy to fuelproof the cowl mounting blocks.

Install the Fuel Tank

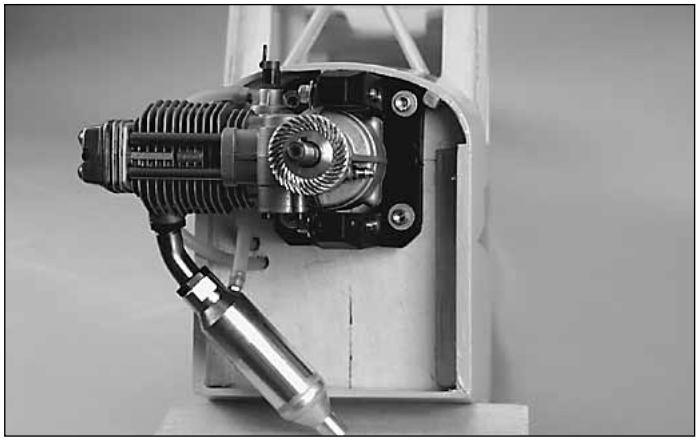


❏ 1. Cut the clear pick-up tube included with this kit to a length of 3-3/16" [81mm]. Assemble the fuel tank as shown in the sketch using the 90-degree nipple. After you assemble the tank hold it up to the light and make sure the clunk does not contact the rear of the tank. If necessary, disassemble the tank and shorten the pick-up tube.

❏ 2. Wrap the tank with 1/4" [6mm] foam rubber secured with a couple of rubber bands.

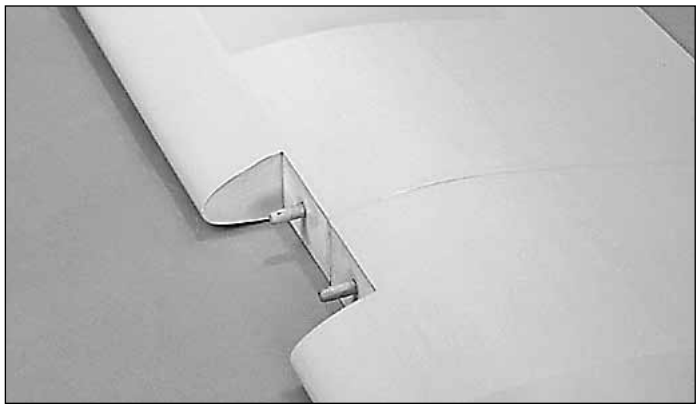
❏ 3. Remove the engine mount. Drill 1/4" [6mm] holes through the firewall for your fuel lines. Make sure to drill the holes where they will not interfere with the engine mount.

❏ 4. Fit approximately 12" to 14" [300mm to 360mm] of fuel line on the pick-up and vent nipples of your fuel tank. Pull the fuel lines through the holes you drilled in the firewall as you install your tank. Be certain you do not kink the fuel lines.



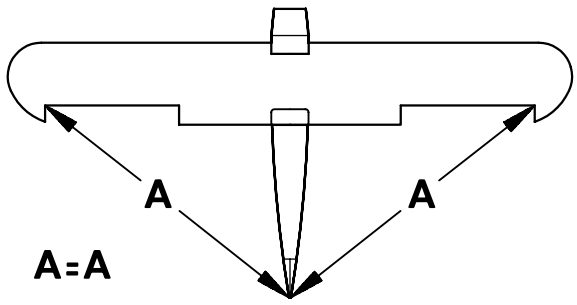
❏ 5. Mount the muffler to your engine. Trim the cowl where necessary so it does not interfere with the muffler, allowing an approximate 1/4" [6mm] clearance all the way around. Attach the fuel lines from the fuel tank to the engine, making sure the fuel and pressure lines are correctly attached.

Mount the Wing



❏ 1. Bevel the ends of the 1/4" [6mm] **Hardwood Wing Dowels**. Test fit the dowels into the wing, making sure they lock into the holes inside the wing. Use 30-minute epoxy to glue the dowels into the wing, leaving them protrude 5/8" [16mm].

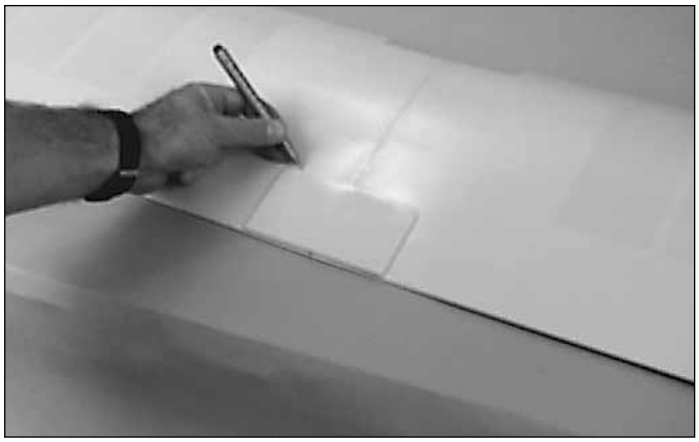
❏ 2. Install the 1/4-20 **Blind Nuts** by drawing them up into the wing nut plate with a 1/4-20 bolt and washer (not included). Apply 30-minute epoxy to the prongs of the blind nuts before drawing them up into the nut plate to secure their positions.

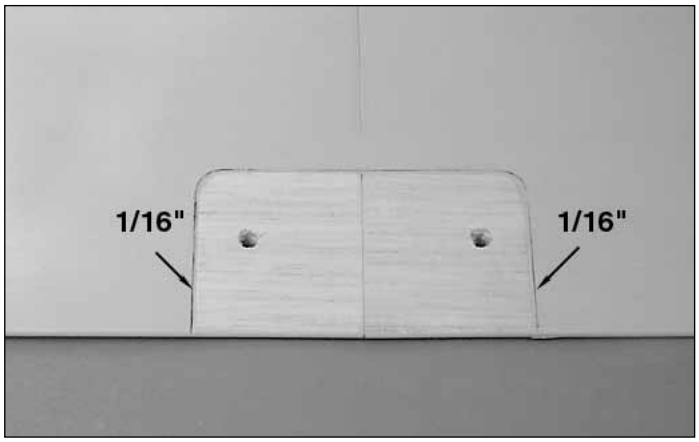


❏ 3. Place the wing on the fuselage. Measure from the aft center of the fuselage to one wing tip and record the distance. Measure from the same point to the opposite wing tip and compare it to the first measurement. If the measurements are not the same, adjust the wing and remeasure until they are equal. Place a mark on the wing and fuselage so it can be repositioned accurately for the following steps.

❏ 4. Remove the covering from the wing center section where the wing bolts will pass through the wing.

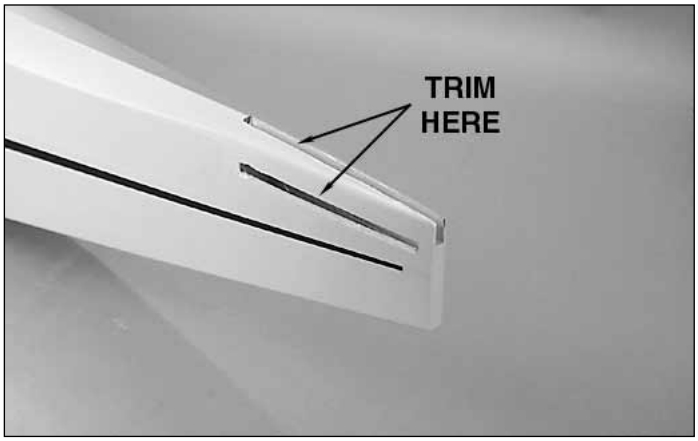
❏ 5. Bolt the wing to the fuselage using the 1/4-20 x 2" **Nylon Bolts**. Enlarge the holes if necessary to allow the bolts to pass through the wing. Check the alignment of the wing and enlarge the holes in the wing if necessary to allow the wing to be shifted to match the alignment marks.



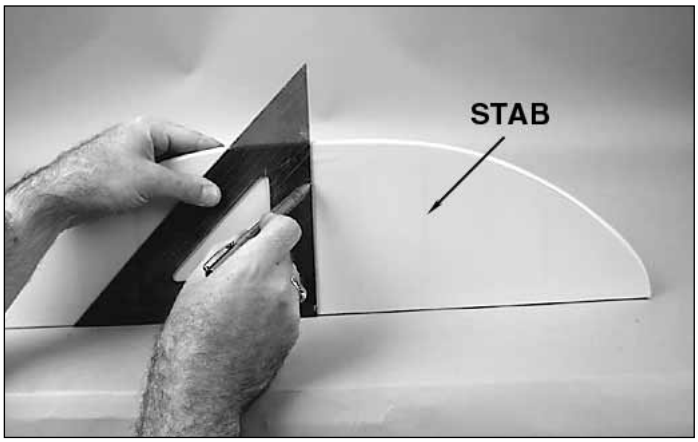


❏ 6. Remove the wing and center the **Wing Bolt Plate** on the trailing edge of the wing. Trace around the plate with a pencil. Use a fresh #11 blade to carefully cut through the covering 1/16" [1.6mm] inside the lines. **Do not cut the wood under the covering! This will weaken the structure and may cause failure in flight.** Remove the covering from the wing within the lines you cut. Use medium CA to glue the plate to the wing. Drill the holes for the bolts in the plate from the bottom of the wing.

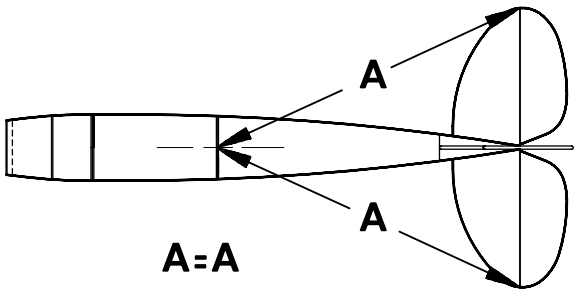
Mount the Stab & Fin



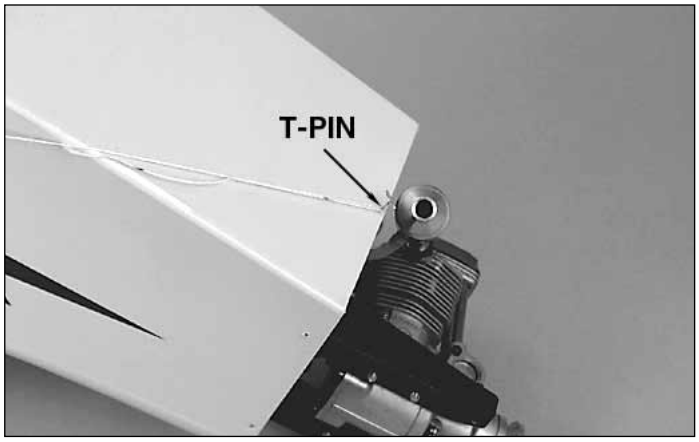
❏ 1. Use a fresh #11 blade to trim the covering from the slots in the aft end of the fuse for the stab and fin.



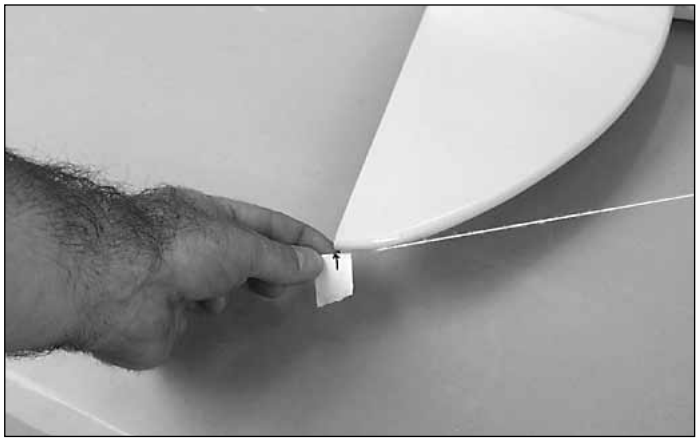
❏ 2. Measure the **Stabilizer** and accurately mark the center with a felt-tip pen. Use a 90-degree triangle to mark a vertical centerline across the mark you made.



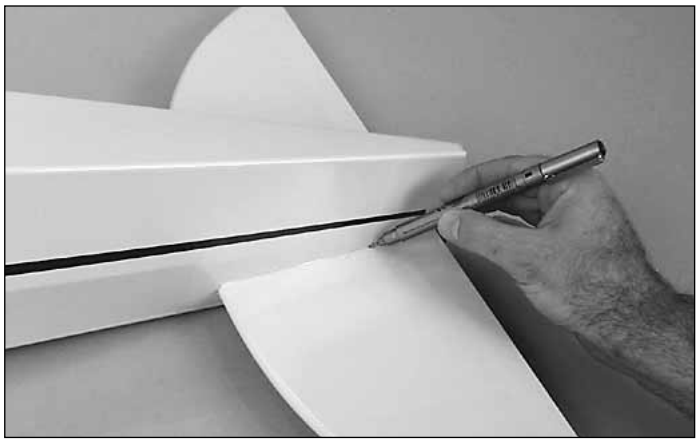
❏ 3. (Refer to this sketch while you align the stab.) Slide the stab into the fuse. Align the centerline you marked with the slot for the fin. Measure the stab on both sides of the fuse to make sure it is centered (A=A).



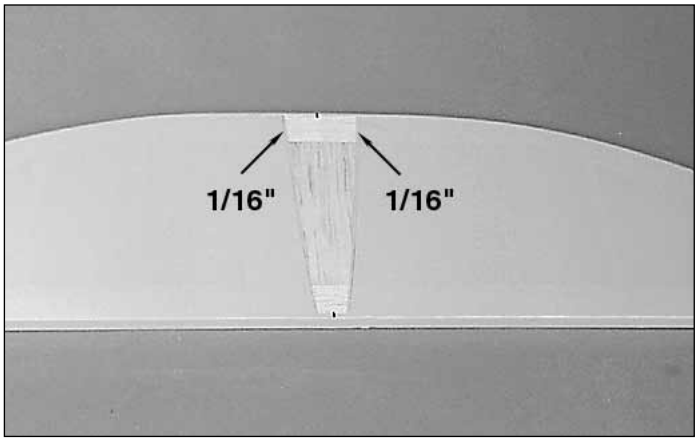
❏ 4. Remove your cowl if it's on the fuselage. Insert a T-pin into the bottom center of the firewall in the front of the fuselage. Tie a small loop at one end of a 42" [1070mm] piece of monofilament string and slip it over the T-pin.



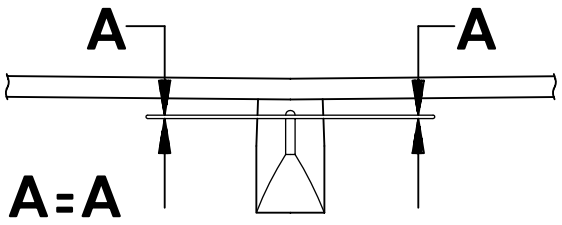
❏ 5. Fold a piece of masking tape over the other end of the string and draw an arrow on it. Slide the tape along the string and align the arrow with one end of the stab. Swing the string over to the other end of the stab, while keeping the stab centered in the fuselage. Shift the stab and slide the tape along the string until the distances between both ends of the stab and the front of the fuse are equal (B=B). Now your stab is centered and square with the fuse.



❏ 6. Use a felt-tip pen to mark the sides of the fuselage on the top and bottom of the stab. Remove the stab from the fuselage.

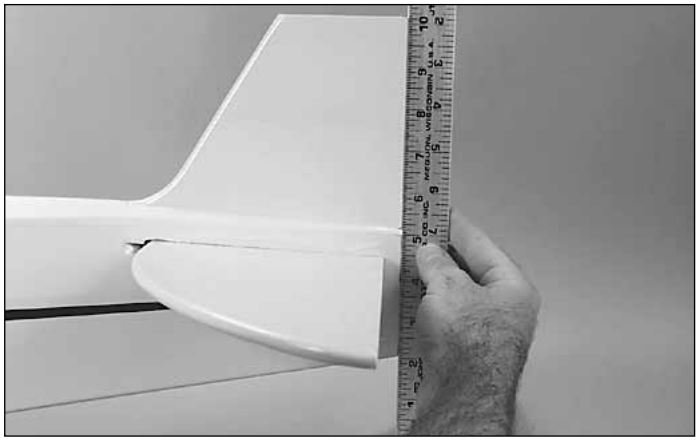


❏ 7. Use a **fresh** #11 blade to carefully cut through the covering 1/16" [1.6mm] inside the lines you marked on the top and bottom of the stab that indicate the fuse sides. **Do not cut the wood under the covering! This will weaken the structure and may cause the stab to fail in flight.** Remove the covering from the center of the stab within the lines you cut.

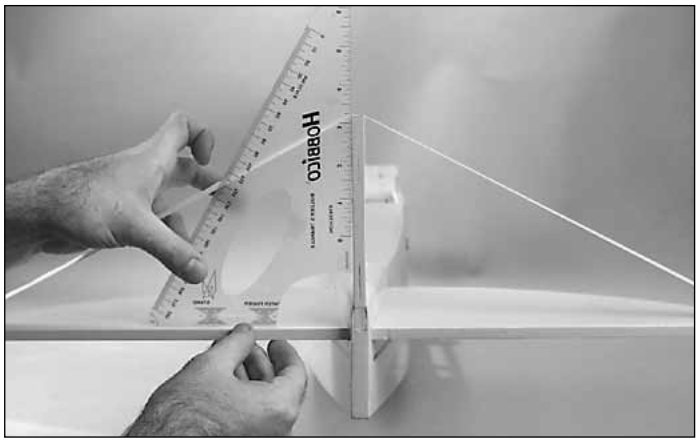


❏ 8. Reinstall the stab in the fuse. Bolt the wing to the fuse with two 1/4-20 x 2" bolts. View the fuselage from the rear and make sure the stab is parallel with the wing as shown in the sketch (A=A). If the stab is not parallel with the wing, remove the stab and carefully sand the fuse where it interferes with the stab. Reinstall the stab and recheck alignment from behind the fuse. Sand the fuse as necessary until the stab is aligned. Proceed carefully and remove only a small amount of material at a time.

❏ 9. Now it's time to glue the stab to the fuse. Position the stab in the fuse so the exposed balsa of the center section is visible. Apply a film of 30-minute epoxy to the bare balsa on both sides of the stab and slide it into position, making sure you distribute enough epoxy in the opening. Repeat this procedure once more to make sure you have distributed plenty of epoxy in the stab saddle. Recheck alignment using the pin-and-string technique shown earlier. Wipe away excess epoxy before it cures and use T-pins to hold the stab in position until the epoxy has fully cured.

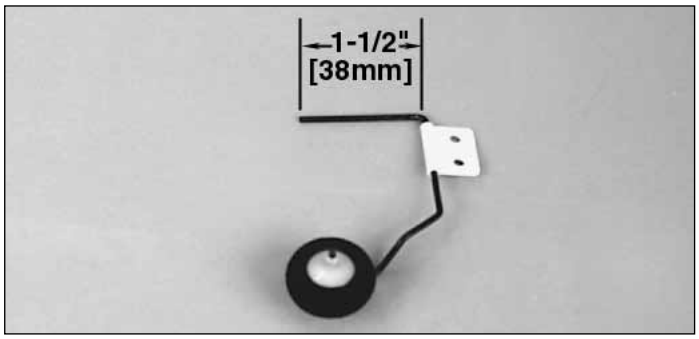


❏ 10. Test fit the **Fin** into the fuselage. Trim where necessary so the TE of the fin aligns with the end of the fuse.

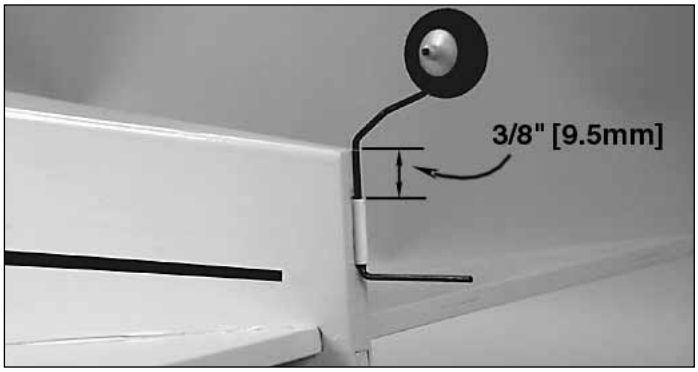


❏ 11. Use 30-minute epoxy to glue the fin to the fuse. If necessary, use masking tape to hold the fin perpendicular to the stab. Apply a thin coat of epoxy to the bare wood on the TE of the fin. Do not disturb the fuselage until the epoxy has fully cured.

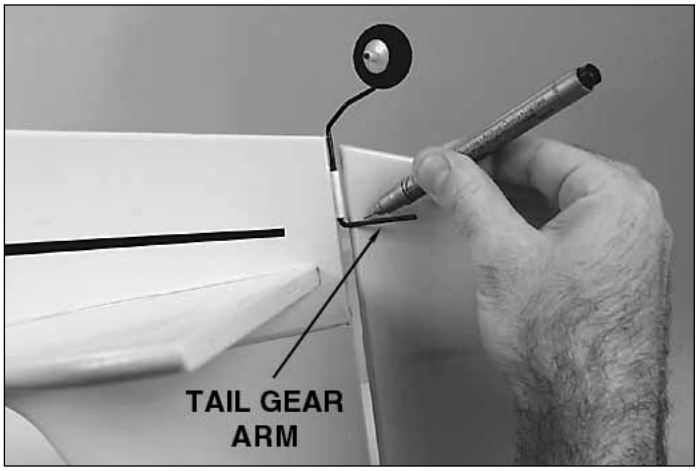
Install the Tail Landing Gear



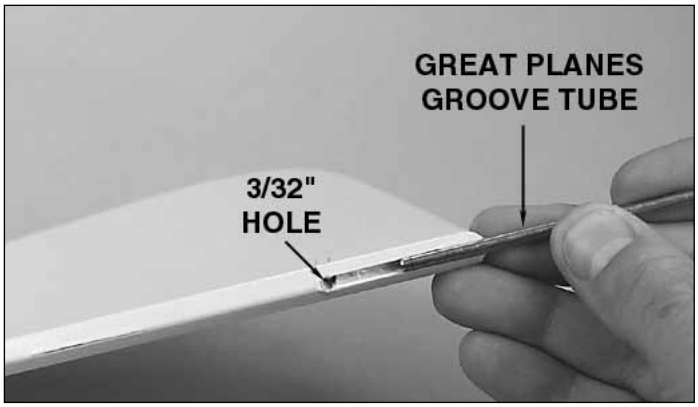
❏ 1. Slip the **Tail Gear Wire** into the plastic **Tail Gear Bracket**. Make a 90-degree bend in the wire 1-1/2" [38mm] from the end.



❏ 2. Cut a slot in the tail post of the fuselage 3/8" [9.5mm] up from the bottom of the fuse for the tail gear bracket. Coat the tail gear wire with petroleum jelly where it slides through the bracket. Glue the bracket into the slot using 30-minute epoxy.



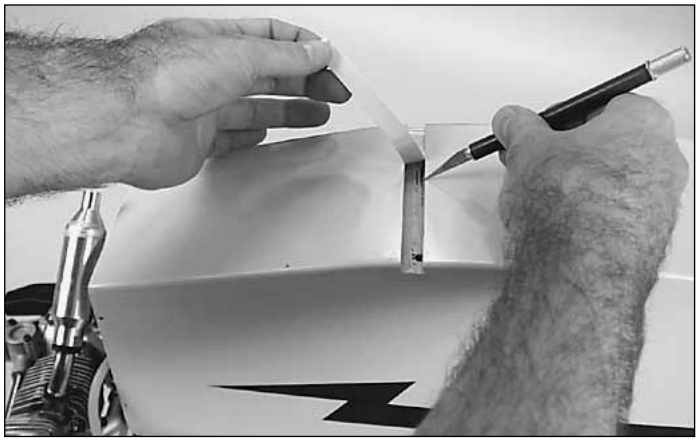
❏ 3. Hold the rudder to the fin next to the tail gear wire (or tape the rudder to the fin). Mark the rudder where the arm portion of the tail gear wire will enter.



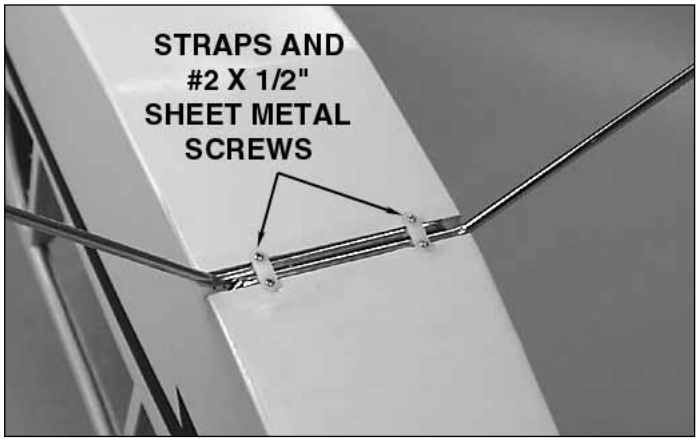
❏ 4. Cut a groove in the LE of the rudder and drill a 3/32" [2.4mm] hole where you made your mark to accommodate the tail gear wire. **Hint**: Use a 3/32" [2.4mm] brass tube sharpened at the end to cut the groove. (The Groove Tube™ Grooving Tool (GPMR8140) works great for this task.)

❏ 5. Test fit the rudder to the tail gear wire. View the rudder and the tail gear wire from above (when the fuselage is upside-down in your cradle). If necessary, bend the tail gear wire so your model will taxi straight when your rudder is centered.

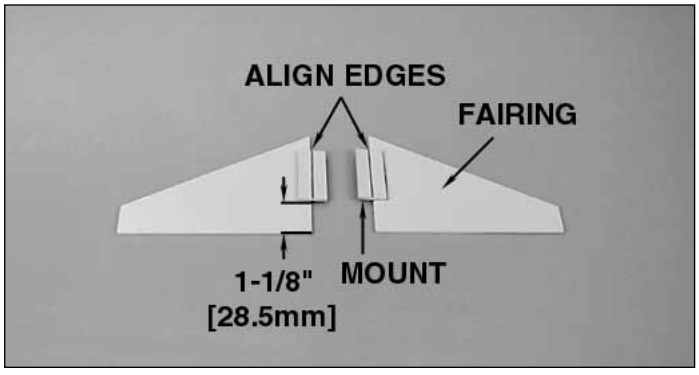
Install the Main Landing Gear



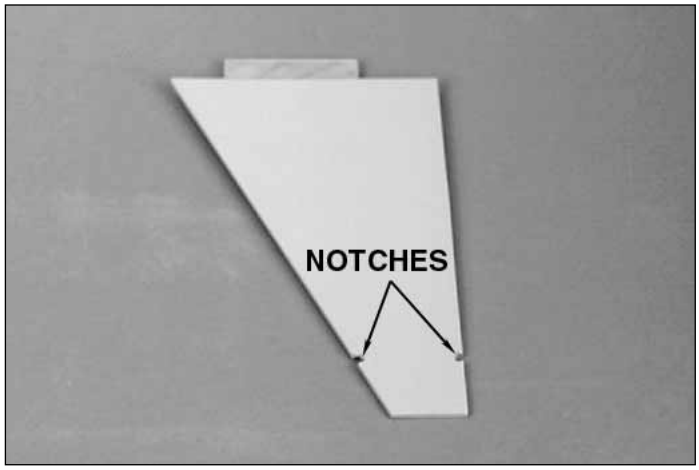
❏ 1. Use a **fresh** #11 blade to trim the covering from the slot in the fuselage for the main landing gear.



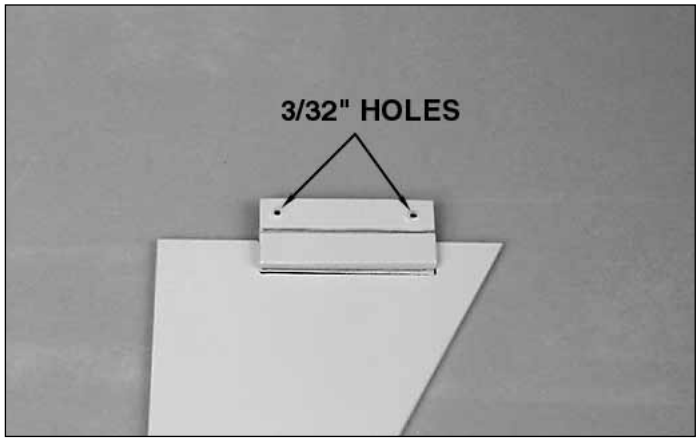
❏ 2. Test fit the **Main Landing Gear**. It's helpful if you use a file to remove any burrs or sharp edges from the ends of the wire. Seat the landing gear wire in the landing gear rail on the fuselage. Use a **Nylon Landing Gear Strap** as a guide to drill 1/16" [1.6mm] pilot holes for the screws. Secure the landing gear with two nylon straps and four **#2 x 1/2" Sheet Metal Screws**.



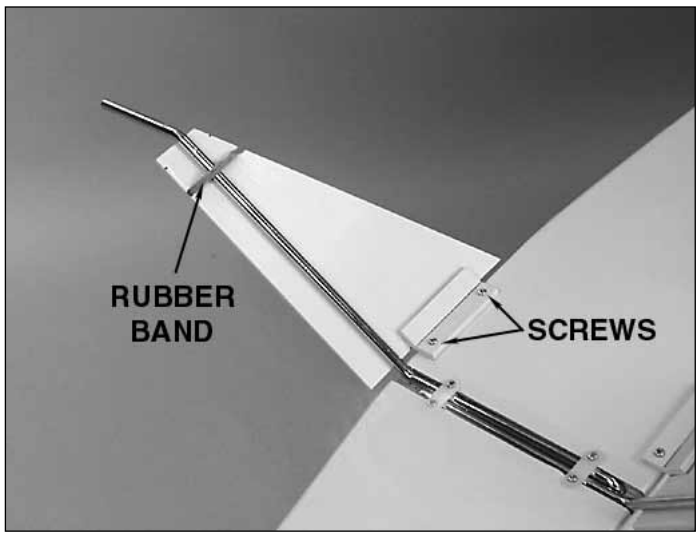
❏ ❏ 3. Position the landing gear fairing mounts on the landing gear fairings as shown in the photo. The hinge line of the mount must align with the edge of the fairing. Mark the location of the mount and remove the underlying covering from the fairing. Use 6-minute epoxy to glue the mount to the fairing. Make both a right and left gear fairing assembly.



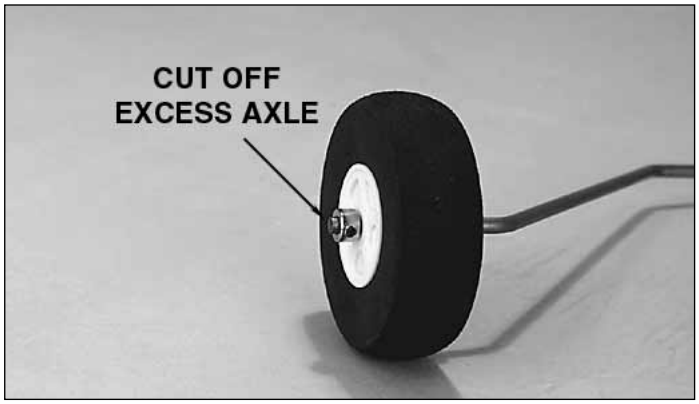
❏ ❏ 4. Locate and remove the covering from the notches of the landing gear fairing. Fuelproof the exposed wood with epoxy.



❏ ❏ 5. Drill two 3/32" [2.4mm] holes in the landing gear fairing mounts as shown. The exact spacing of these holes is not important.

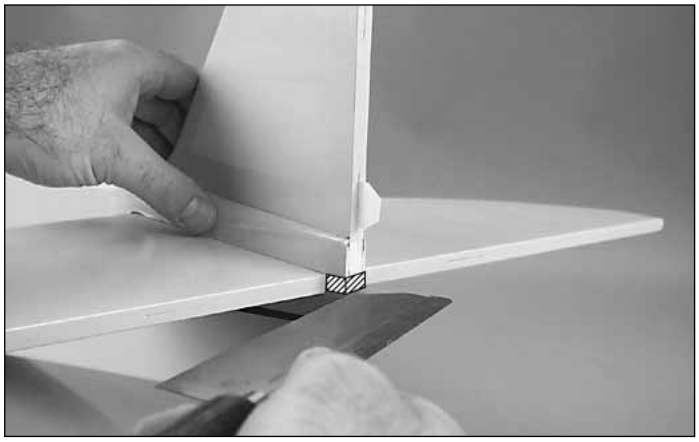


❏ ❏ 6. Drill 1/16" [1.6mm] pilot holes into the fuselage and mount the landing gear fairing assembly using two #2 x 1/2" sheet metal screws. Use a small rubber band to hold the bottom of the fairing to the landing gear strut.

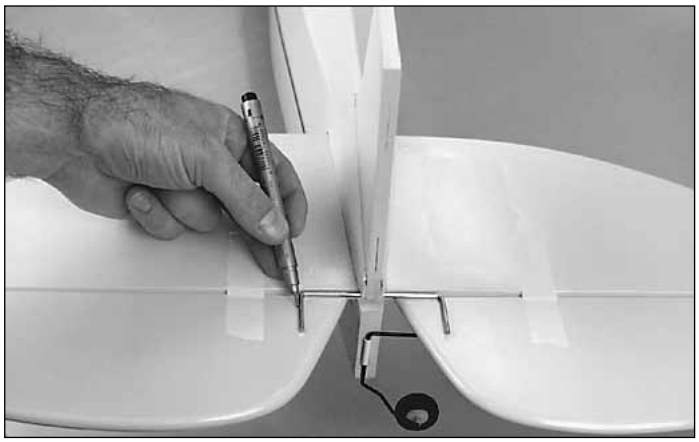


❏ ❏ 7. Install the main wheels using four 7/32" **Wheel Collars** and four 8-32 **Set Screws**. Drill the hub of the wheels using a 7/32" [5.6mm] drill bit if necessary so they fit onto the axle. Grind or file a flat spot at the point of set screw contact. This provides a better area for the set screw to bite and helps keep the wheel in place. Trim off any excess axle wire after installing the wheel collar. Use threadlock on the set screws to prevent loosening.

Install the Elevator Joiner Wire



❏ 1. Use a razor saw to remove the aft fuselage tail post behind the stabilizer.

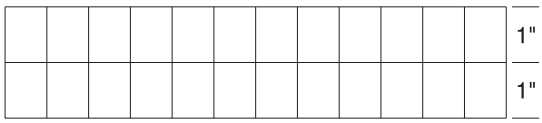


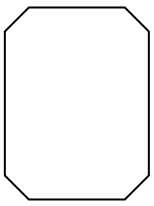
❏ ❏ 2. Tape the **Elevator** halves to the stabilizer. Position the **Elevator Joiner Wire** on the halves and mark the location of the joiner onto the elevators.

❏ ❏ 3. Cut a groove in the LE of the elevators and drill 3/32" [2.4mm] holes where you made your marks to accommodate the elevator joiner wire. **Hint**: Use a 3/32" [2.4mm] brass tube sharpened at the end to cut the groove. (The Groove Tube™ Grooving Tool (GPMR8140) works great for this task.)

❏ ❏ 4. Use 30-minute epoxy to glue the elevator joiner wire into the elevators. Use a straightedge as shown in the photo to align the leading edge of the elevators. Use weights to hold the elevators in position until the epoxy cures.

Join the Control Surfaces

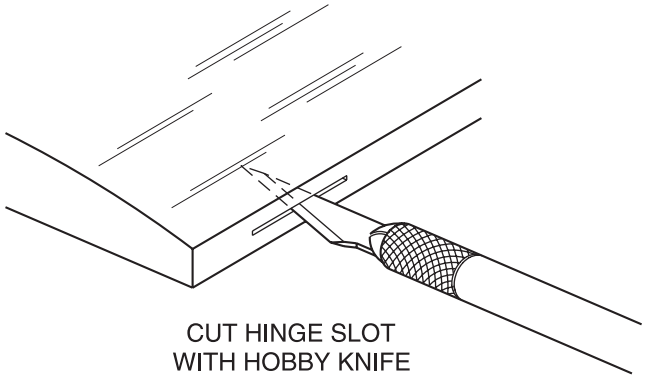




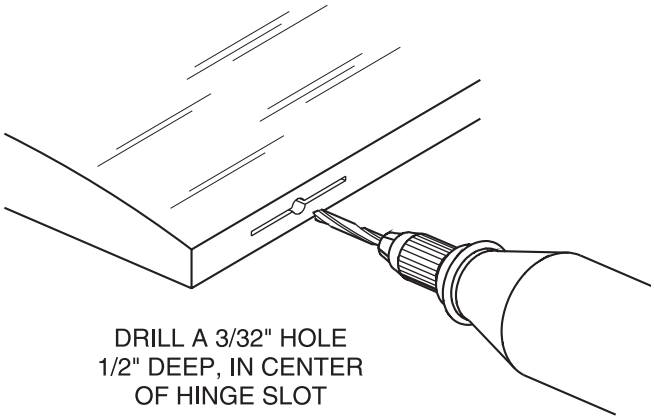
❏ 1. Cut twelve 3/4" x 1" [19mm x 25mm] hinges from the CA hinge strip supplied with this kit. Snip the corners off so they go into the slots easier. You may cut all the hinges now, or cut them as you need them.

EXPERT TIP

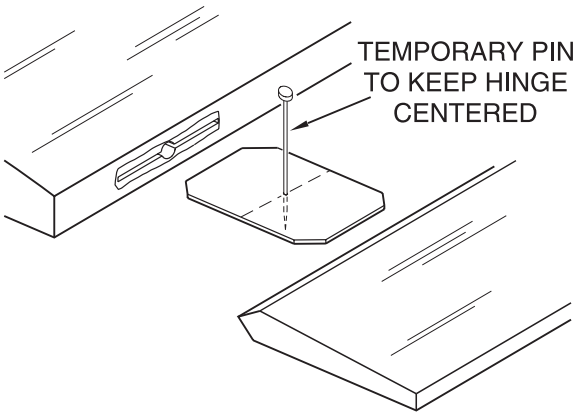
Before you glue in the hinges, apply a few drops of household oil to a tissue. Wipe the tissue over the trailing edge of the stabilizer and the leading edge of the elevators, coating them with a fine film of oil. This will prevent excess CA from sticking to the stab and elevator at the hinge gap while you are gluing in the hinges.



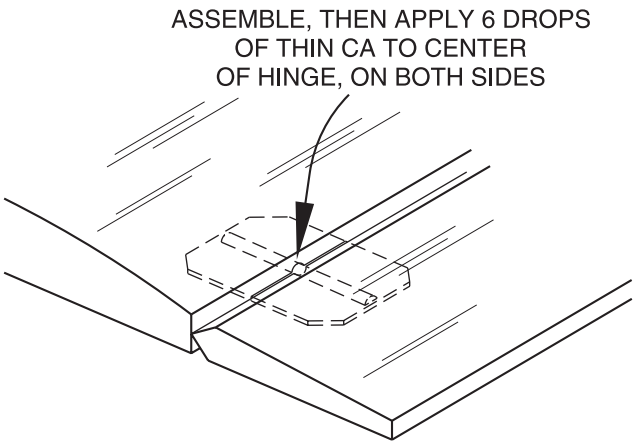
❏ 2. Test fit the elevators to the stab. If the hinges are difficult to install or don't go in far enough, carefully enlarge the hinge slots with a hobby knife and a #11 blade.

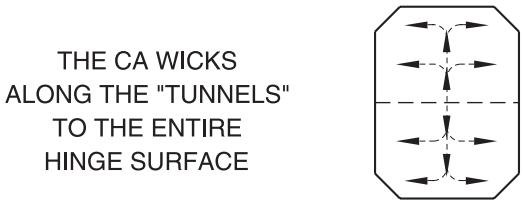


❏ 3. Drill a 3/32" [2.4mm] hole, 1/2" [13mm] deep, in the center of the hinge slot. If you use a Dremel® MultiPro™ for this task, it will result in a cleaner hole than if you use a slower speed drill. Drilling the hole will twist some of the wood fibers into the slot, making it difficult to insert the hinge, so you should reinsert the knife blade, working it back and forth a few times to clean out the slot.



❏ 4. If the hinges don't remain centered, remove the elevator and insert a pin in the center of the hinges.

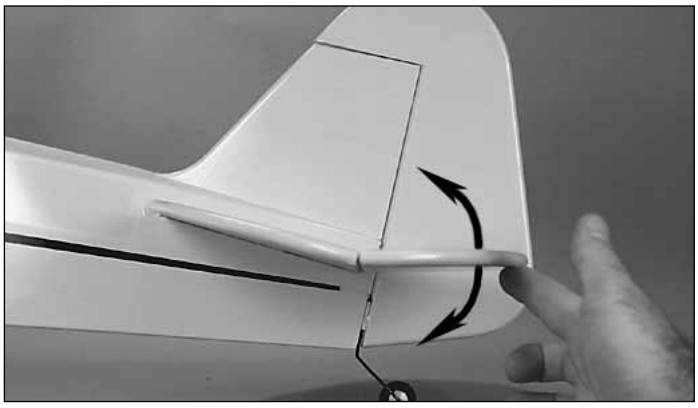




❏ 5. Cut a paper towel into approximately 2" [50mm] squares. Add six drops of thin CA to the center of the hinges on both sides. Use the paper towel squares to absorb excess CA from the hinge gap before it cures. Do not use CA accelerator; allow the CA to cure slowly.

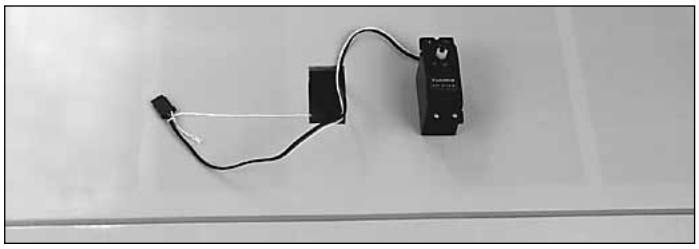
❏ 6. Pack the tail gear wire hole and the groove in the LE of the **Rudder** with epoxy. If you work quickly, you may use 5-minute epoxy, but we recommend 30-minute epoxy. Join the rudder to the fin using two hinges. Use a tissue dampened with alcohol to wipe away excess epoxy before it cures. Make sure there is approximately a 1/32" [.8mm] gap between the rudder and the fin. Place the fuselage on its side so the fin and rudder are horizontal. Add six drops of thin CA to the center of the hinges on both sides. Use the paper towel squares to absorb excess CA from the hinge gap before it cures. Do not use CA accelerator; allow the CA to cure slowly.

❏ ❏ 7. Use the same hinging method to join the ailerons to the wing.



❏ 8. After all control surfaces are securely hinged and the CA has thoroughly cured, move the control surfaces back and forth to loosen them up a little so it will be easier for your servos to move them.

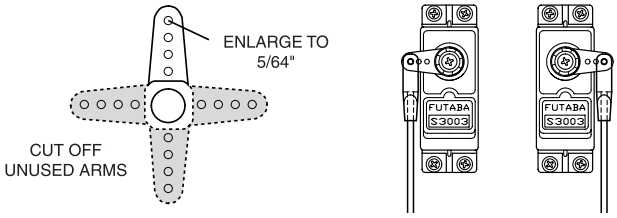
Hook Up the Ailerons



❏ ❏ 1. If you haven't already done so, install the rubber grommets and eyelets in your aileron servos. Attach a servo extension to the aileron servo. Use heat-shrink tubing or electrical tape to secure the servo cord to the extension so they don't unplug in flight. Pull the string part-way out of one of the aileron servo compartments in the wing. Tie the string to the servo cord on one of the aileron servos.

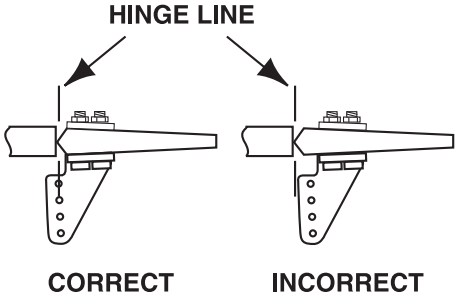
❏ ❏ 2. Fit one of the aileron servos in the wing. Hold the servo to the wing so the sides don't contact the wing and drill 1/16" [1.6mm] holes for the servo mounting screws. Mount the servo to the wing with the screws included with your servos.

❏ ❏ 3. Mount your other aileron servo in the opposite wing panel using the same procedures as above.

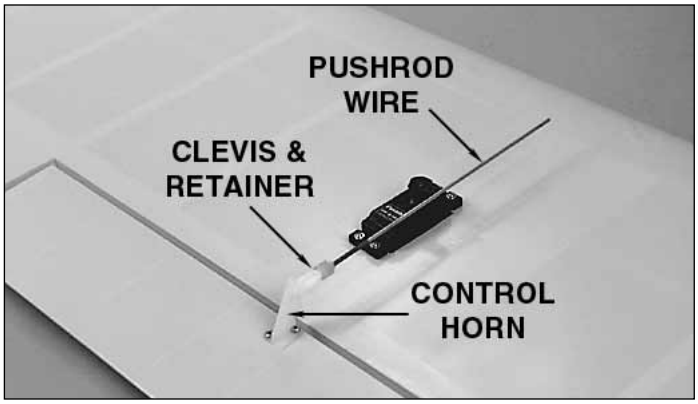


❏ ❏ 4. Cut the unused arms from one of the servo horns and mount it on one of the aileron servos in the wing. When installing the arms onto the servos, position the arms as shown in the sketch so the ailerons will move opposite each other when using a "Y" harness.

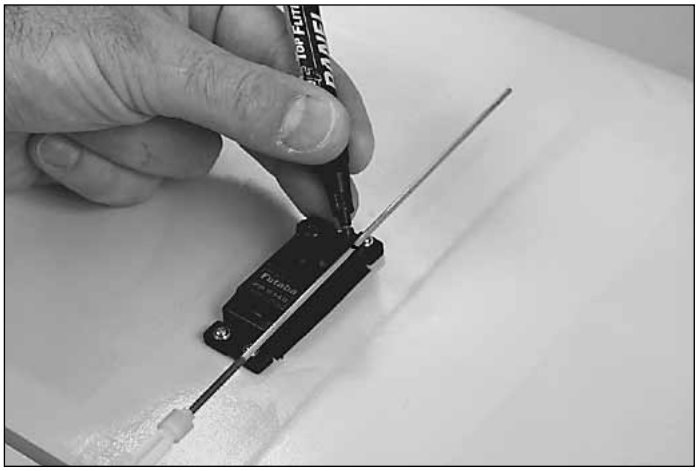
❏ ❏ 5. Refer to the following photo. Use alcohol or other solvent to clean the film of oil from the two 2-56 x 6" **Wire Pushrods**. Screw a **Nylon Clevis** about fourteen turns onto one of the pushrods. Connect the clevis to the outer hole of a nylon control horn.



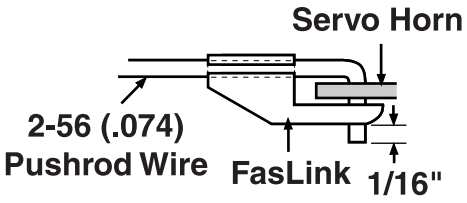
❏ ❏ 6. Hold the control horn on the aileron, making sure the holes align with the hinge line. Use the control horn as a template to drill 1/16" [1.6mm] holes through the aileron for the mounting screws.

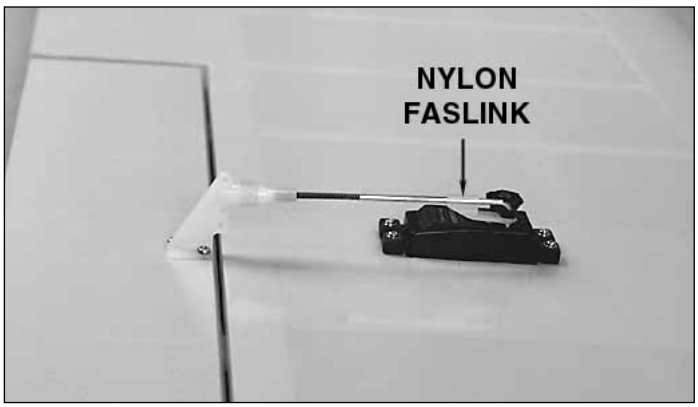


❏ ❏ 7. Screw the #2 x 1/2" self tapping screws into the holes. Remove the screws and apply three drops of thin CA to each hole to harden the underlying balsa. After the CA has fully cured, attach the control horns using the #2 x 1/2" self tapping screws.



❏ ❏ 8. Use a felt-tip pen to mark the pushrod wire where it crosses the holes in the aileron servo arm.



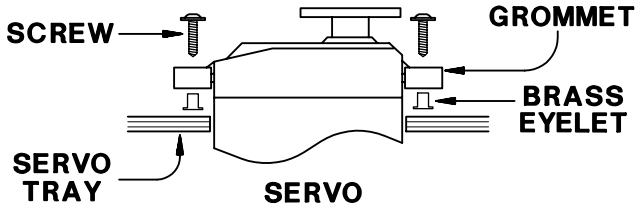


❏ 9. Bend the pushrod at the mark you made. Cut the excess wire as shown in the sketch and connect the pushrod to the servo arm with a nylon FasLink™.

❏ 10. Return to step 4 and connect the other aileron servo to the other aileron the same way.

❏ 11. Turn the wing over. Locate the hole in the bottom of the wing for the servo leads to exit. Remove the covering from the holes using a sharp hobby knife. Pull the string out of the 1/2" [13mm] holes in the bottom center section of the wing to retrieve your aileron servo cords. Connect both aileron servo cords to a "Y" harness.

Radio Installation



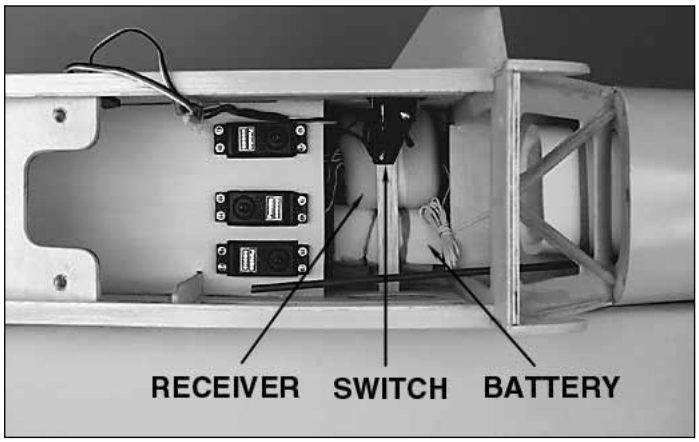
❏ 1. Use the following sequence for mounting the servos into the servo tray in the fuselage:

A. Install rubber grommets and brass eyelets in the servos as shown in the sketch above.

B. Test fit the servos in the tray. Enlarge the openings if needed to create a 1/32" [.8mm] gap around the servo.

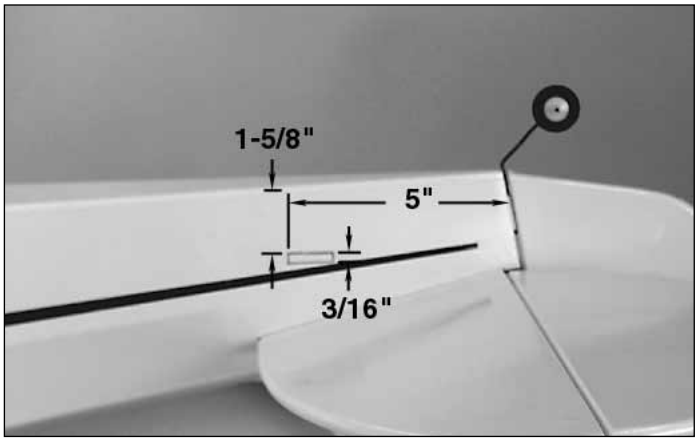
C. Mark servo mounting hole locations on the tray, then drill 1/16" [1.6mm] pilot holes through each mark.

D. Mount the servos with the screws provided with your radio system.

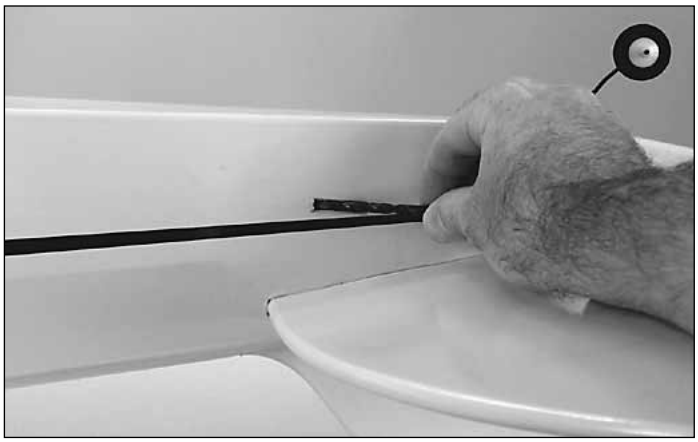


❏ 2. Install and hook up - following the manufacturer's recommendations - three servos, the receiver, switch and battery as shown in the photo. We added a Great Planes Switch Mount & Charge Jack (GPMM1000, not included) for convenience and ease of use at the field, installed on the side of the fuselage. Center the elevator, rudder and throttle trims on the transmitter.

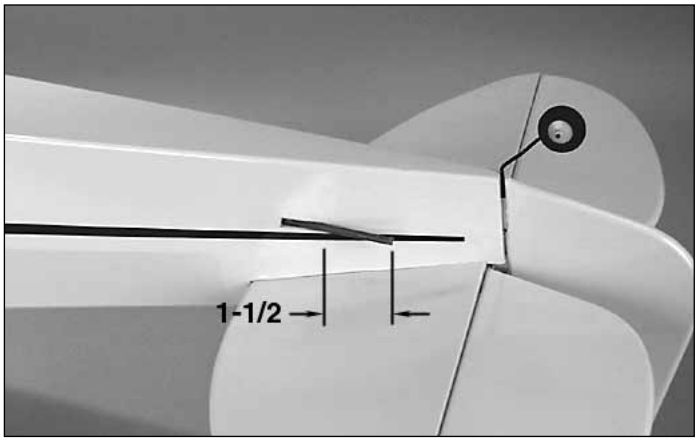
Pushrod Installation



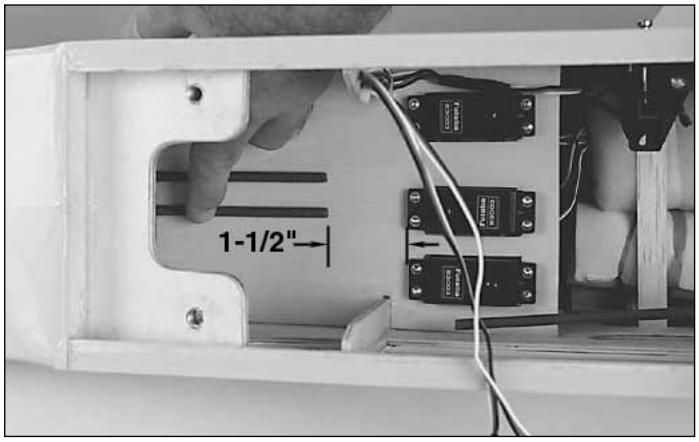
❏ 1. Cut 1" long slots in both sides of the fuselage for the elevator and rudder **Pushrod Tubes** to exit the fuselage. Use the measurements in the photo for locating the position of the exits.



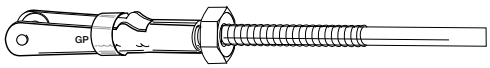
❏ 2. Use a 3/16" [4.8mm] drill bit to bevel the holes for easier installation of the pushrod tubes.



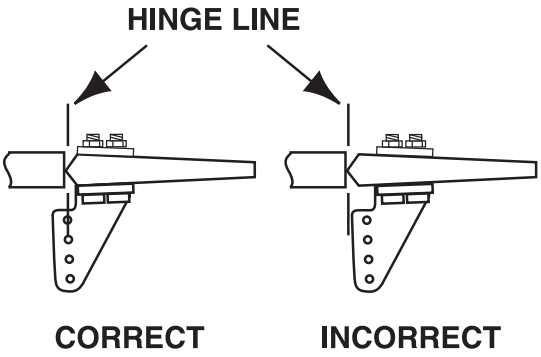
❏ 3. Locate the two 36" [910mm] **Outer Pushrod Guide Tubes** and scuff the outside with coarse grit sandpaper. Route the tubes through the fuselage and into the radio compartment. The tubes must protrude at least 1-1/2" [38mm] from the fuse side exits.

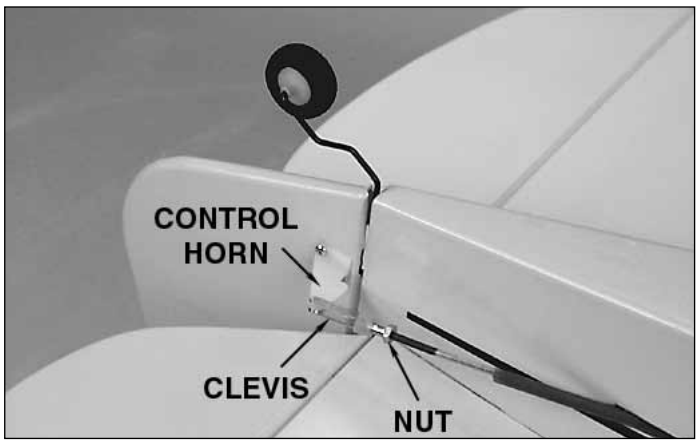


❏ 4. Cut the pushrod tubes 1-1/2" [38mm] behind the servo openings in the servo tray.



❏ ❏ 5. Insert one of the 4-40 x 36" [910mm] **Threaded End Rods** into the rudder tube in the fuselage. The pushrod should slide easily into the tube. Screw a 4-40 nut and a 4-40 steel clevis on the pushrod and add a silicone retainer to the clevis. The threaded rod should protrude slightly inside the forks of the clevis.





❏ ❏ 6. Install the nylon rudder control horn in line with the pushrod. Hold the horn in position and mark the location of

the mounting holes. Drill 3/32" [2.4mm] mounting holes through the marks. Wick two to three drops of Thin CA into the holes to harden the underlying balsa, then re-drill the holes. Attach the horns using 2-56 x 5/8" **Machine Screws** and **Nylon Nut Plates**. Do not over-tighten the screws, crushing the underlying balsa.

❏ ❏ 7. Center the rudder and rudder servo and mark the pushrod where it crosses the servo arm. Remove the pushrod from the aircraft. Cut the pushrod wire 3/4" [19mm] behind the mark.

Use the following sequence to solder the clevis to the pushrod wire:

A. Lightly sand the pushrod wire and clean it with alcohol.

B. Insert the pushrod into the non-threaded clevis. The wire should protrude 1/16" inside the forks of the clevis.

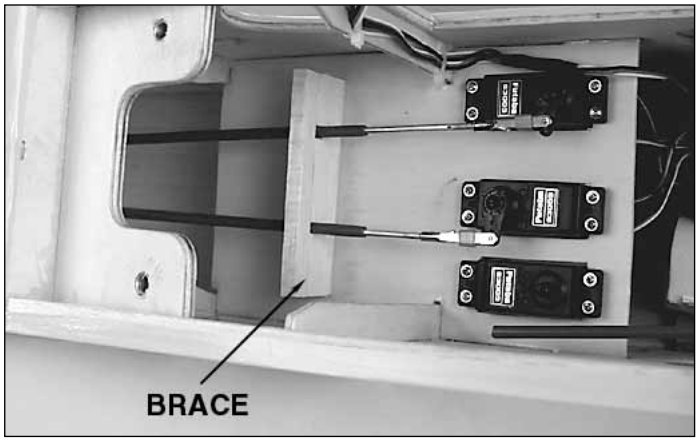
C. Apply a small amount of soldering flux to the joint.

D. Apply heat evenly to the pushrod wire and the clevis and then touch the solder to the joint and allow it to flow.

E. Allow the pushrod and clevis to cool before continuing.

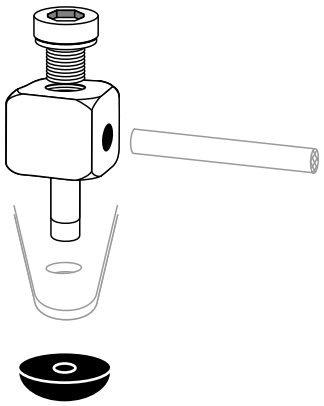
❏ ❏ 8. Remove the threaded clevis and nut from the pushrod. Slide a clevis retainer from the threaded end onto the clevis just soldered. Slide the pushrod, threaded end first, into the pushrod tube from the servo compartment. Attach the clevis to the outer hole of the servo arm. Thread the nut and clevis back onto the pushrod wire and attach the clevis to the rudder control horn.

❏ 9. Repeat steps 5 through 8 to assemble and install the elevator pushrod.



❏ 10. A pushrod brace must be installed to prevent the pushrods from flexing near the servos. We used 1/4" balsa to make the brace shown. This brace can be made using mixing sticks or any other woods you may have lying around. The brace must be positioned so it won't cause the pushrods to bind against the tubes when installed. Glue the pushrod tubes to the brace using medium CA.

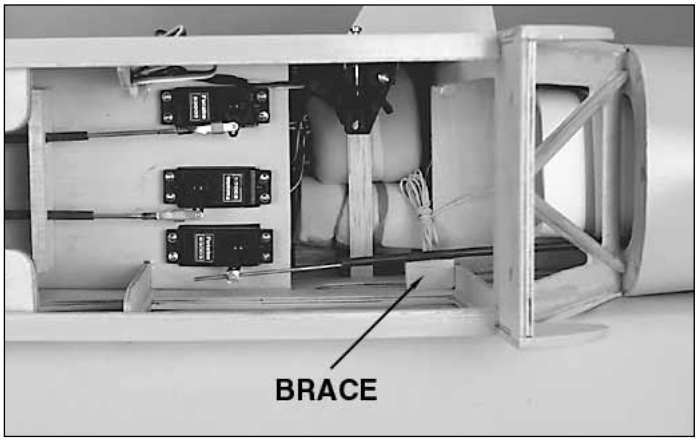
Throttle Pushrod Installation



❏ 1. Install a Brass **Screw-Lock Pushrod Connector** with the 4-40 x 1/8" **Cap Screw** on the throttle servo horn. Snap the **Nylon Retainer** onto the pushrod connector post beneath the servo horn.

❏ 2. Assemble the 17-1/2" [444mm] **Throttle Pushrod Wire** by installing a nylon clevis and silicone retainer onto the threaded end. Slide the throttle pushrod into its outer tube (from the firewall).

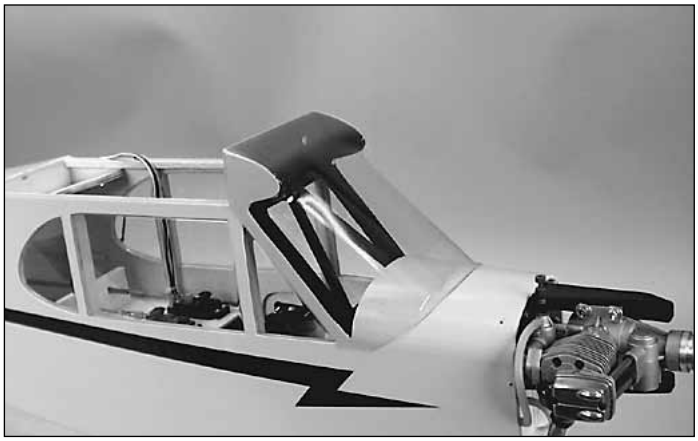
❏ 3. Bend the Throttle Pushrod as necessary to reach the throttle arm without binding. When satisfied with the fit, insert the pushrod through the Screw-Lock Pushrod Connector on the servo. Connect the clevis to the throttle on the engine, snap the clevis closed, then slide the retainer in place.



❏ 4. With the radio switched on, move the throttle trim and control stick to the fully closed position by pulling them back (or downward) all the way. Manually close the throttle on the carburetor completely. Tighten the Cap Screw on the screw-lock pushrod connector. Check throttle operation with the radio and make adjustments to the linkages as necessary for smooth operation. Use the appropriate holes in the servo and throttle arms to provide the correct amount of throttle movement and to prevent the servo from binding at its end points. Once everything is adjusted, install a brace near the servo for the outer pushrod tube.

FINAL ASSEMBLY

Windshield Installation



❏ 1. Carefully trim the **Windshield** along the cut lines with scissors or Lexan® shears. Test fit the windshield on the fuse as you proceed, making small adjustments as required for a good fit.

❏ 2. If you wish to paint the windshield, test the paint on a sample of the canopy material to make sure the paint is compatible. Straight out of the spray can, Top Flite LustreKote® is not recommended for painting the clear plastic your windshield is made from and will eventually curl it. But, if you have an airbrush, it **is** possible to paint your windshield with LustreKote; however, you **must** use the following procedure. Spray an ounce or two of LustreKote through a tube (such as a large drinking straw or a brass tube) into a container. Let it sit for about an hour or two to allow the damaging elements to "boil off." Using an air brush, you may now spray your windshield with your specially prepared LustreKote. For airbrushing, we recommend thinning LustreKote with lacquer thinner. If you prefer to spray your windshield frame directly from a spray can, we have had success with Pactra Formula-U and Chevron paint. Always **test your painting methods on leftover plastic** before you try it on your model!

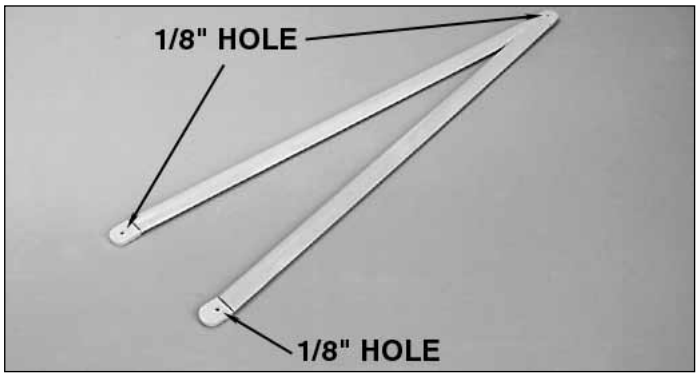
❏ 3. Paint the exposed wood behind the windshield with black paint. Install pilots if so desired. You can use Top Flite LustreKote without any special preparations to the paint or the model. Just make sure to mask off any areas you do not want painted.

❏ 4. Roughen the bottom 1/8" [3mm] of the inside windshield edge, being careful not to scratch any exposed areas. Glue the canopy into position with 6-minute epoxy or R/C-56 glue.

❏ 5. Trim the **Side Windows** so 1/32" [.8mm] remains for the windows to rest on the inside of the fuselage. Because the windows fit recessed into the fuselage from the inside, this lip must remain on the windows. Roughen the outside edges of the windows and glue them inside the fuselage with 6-minute epoxy or R/C-56 glue.

Strut Installation

❏ 1. Attach the wing to the fuse with two 1/4-20 x 2" nylon bolts. Place the **Struts** into position, taking note of the "airfoil" shape of the struts.

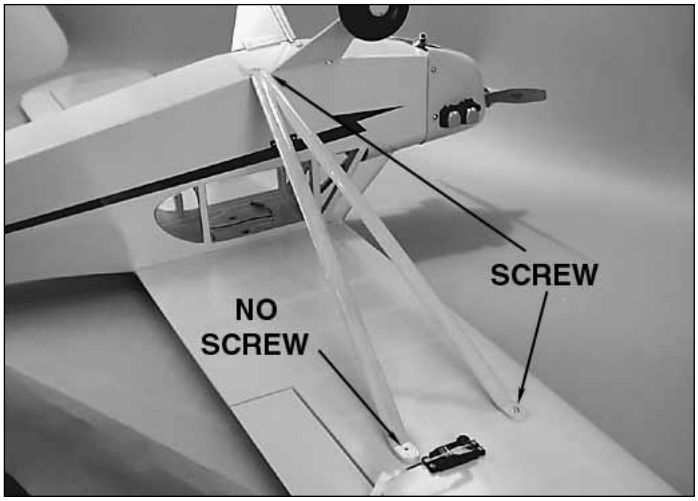


❏ ❏ 2. Drill a 1/8" [3mm] hole where the strut will attach to the fuselage and one in each of the ends attaching to the

wing. The holes in the wing ends of the struts should be positioned so they will align with the hardwood blocks in the wing. **Do not drill into the wing or fuselage at this time.**

❏ ❏ 3. Position the strut on the fuselage and wing. Drill a 3/32" [2.4mm] hole at the fuselage and the **front strut mount** only. **Do not drill the hole for the rear strut mount at this time.**

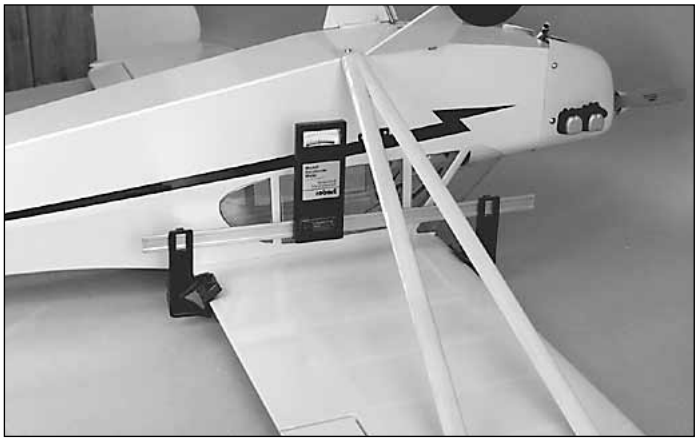
❏ ❏ 4. Thread a #4 x 1/2" sheet metal screw into the fuselage and front wing strut mount block. Remove the screws and place three drops of thin CA into the holes to harden the threads. Wait until the CA has cured before you continue.



❏ ❏ 5. Attach the strut using two #4 x 1/2" sheet metal screws and two #4 washers.

The following steps are necessary to install the struts so they do not twist the wing. Work slowly and carefully, checking the alignment until you are confident the strut will not twist the wing when attached.

IMPORTANT: The struts are necessary to safely fly your Cub. It must not be flown without them installed under any circumstance.



❏ ❏ 6. Place your Cub upside-down in an aircraft stand. Place a level (or incidence meter) on the wing near the fuselage. Adjust the position of the airplane until the root of the wing is perfectly level.

❏ ❏ 7. Move the level (or incidence meter) out to the tip of the wing without allowing the position of the main aircraft to change. Use the level to check the wing to make sure it is not twisted. If so, carefully twist the wing until it is level.

❏ ❏ 8. Once level, mark the location of the rear strut attachment through the hole in the strut. Remove the strut and drill the marked location using a 3/32" [2.4mm] drill bit. Follow the procedure in step 4 to harden the hole for the screw.

❏ 9. Repeat steps 2 through 8 to install the remaining strut.

Control Throw Adjustment

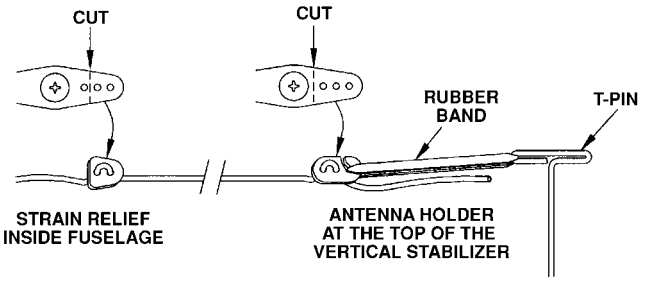
By moving the position of the clevis at the control horn toward the outermost hole, you will decrease the amount of throw of the control surface. Moving it toward the control surface will increase the amount of throw. If these adjustments don't accomplish the job, you may need to work with a combination of adjustments by also repositioning the pushrod at the servo end. Moving the pushrod towards the center of the servo horn will decrease the control surface throw – outward will increase it.

Note: Throws are measured at the widest part of the elevators, rudder and ailerons. If your radio does not have dual rates, set the control throws to halfway between the specified high and low rates. We recommend the following control surface throws as a starting point:

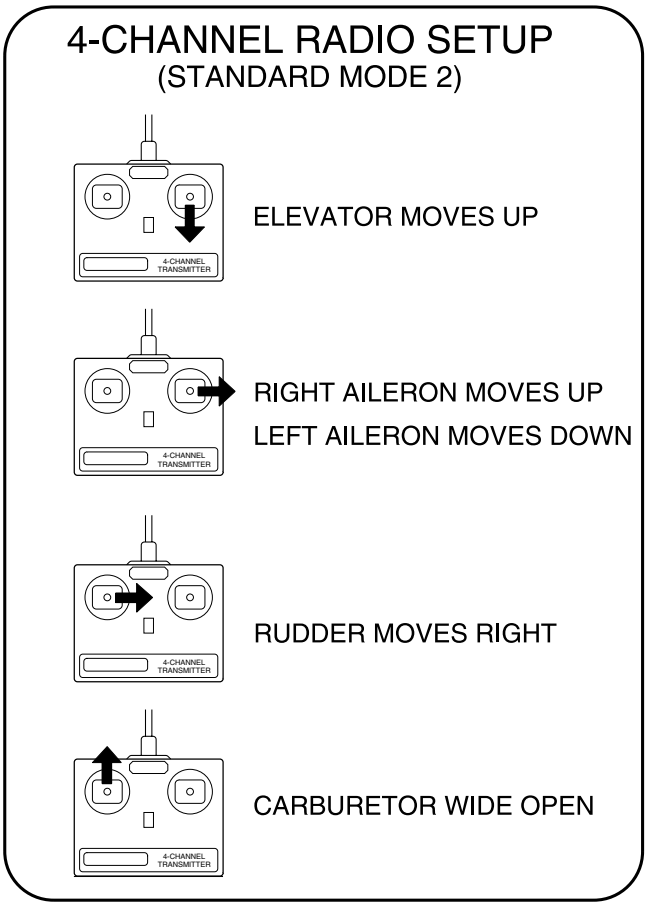
Control Surface Throws

	High Rates	Low Rates
Elevator	1-1/8" up [28mm] 1-1/8" down [28mm]	5/8" up [16mm] 5/8" down [16mm]
Ailerons	3/4" up [19mm] 3/4" down [19mm]	9/16" up [14mm] 9/16" down [14mm]
Rudder	1-1/2" right [38mm] 1-1/2" left [38mm]	1" right [25mm] 1" left [25mm]

One leading cause of crashes is flying an airplane with its control throws set differently from those recommended in the instructions. The Great Planes AccuThrow™ (GPMR2405) lets you quickly and easily measure actual throws first, so you can make necessary corrections before you fly. Large, no-slip rubber feet provide a firm grip on covered surfaces without denting or marring the finish. Spring tension holds AccuThrow's plastic ruler steady by each control surface. Curved to match control motions, the ruler provides exact readings in both standard or metric measurements. .



Route the antenna to the tail of the model. You may use your preferred method or the method we use in the Great Planes model shop. Drill a 1/4" [6mm] hole through the fuse side in the proximity of the receiver. Cut a 1/2" [13mm] long piece of fuel tubing and install it in the hole. Install a strain relief (as shown in the sketch), then route the antenna through the fuel tubing to the bottom of the fuse at the tail. Use a rubber band to attach the antenna to a T-pin. Do not cut or shorten the antenna wire. Leave any excess antenna wire hang free.



❏ Make sure the control surfaces move in the proper direction as illustrated in the sketch.

Balance the Model Laterally

IMPORTANT: Do not confuse this procedure with "checking the C.G." or "balancing the airplane fore and aft."

Now that you have the basic airplane nearly completed, this is a good time to balance the airplane laterally (side-to-side). Here is how to do it:

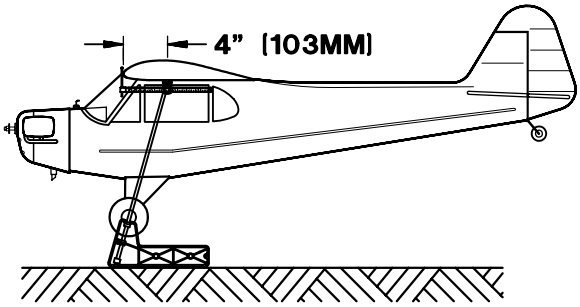
❏ 1. Assemble the model in as in preparation for flight. (No fuel is required for this procedure.)

❏ 2. With the wing level, lift the model by the engine propeller shaft and the bottom of the fin post (this may require two people). Do this several times.

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

Balancing your Model

Note: This section is VERY important and must NOT be omitted! A model that is not properly balanced will be unstable and possibly unflyable.



❏ 1. The balance point (C.G.) is located 4" [103mm] back from the leading edge of the wing against the fuselage. Balance your Piper Cub using a Great Planes C.G. Machine™ Airplane Balancer (GPMR2400) for the most accurate results. This is the balance point at which your model should balance for your first flights. After initial trim flights and when you become more acquainted with your Piper Cub, you may wish to experiment by shifting the balance up to 3/8" [9.5mm] forward or backward to change its flying characteristics. Moving the balance forward may improve the smoothness and stability, but the model may then require more speed for takeoff and may become more difficult to slow for landing. Moving the balance aft makes the model more agile with a lighter, snappier "feel." In any case, please start at the location we recommend. Do not at any time balance your model outside the recommended range.

❏ 2. With the airplane on the balance stand, the wing attached to the fuselage, all parts of the model installed (ready to fly), and an empty fuel tank, lift up the tail as necessary to level the stab. Release the model, and observe the tail of the aircraft. If the tail drops, the model is "tail heavy" and you must add weight* to the nose to balance the model. If the nose drops, it is "nose heavy" and you must add weight* to the tail to balance the model.

Note: Weight may be added by using Great Planes (GPMQ4485) "stick-on" lead weights.

* If possible, first attempt to balance the model by changing the position of the receiver battery. If you are unable to obtain good balance by doing so, then it will be necessary to add weight to the nose or tail to achieve the proper balance point.

PREFLIGHT

At this time check all connections including servo horn screws, clevises, servo cords and extensions. Make sure you have installed the nylon retainer on the Screw-Lock Pushrod Connector and the silicone retainers on all the clevises.

Charge the Batteries
Follow the battery charging procedures in your radio instruction manual. 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.

Balance the Propeller
Carefully balance your propellers before flying. An unbalanced prop is the single most significant cause of vibration. Not only may engine mounting screws vibrate out, possibly with disastrous effect, but vibration may also damage your radio receiver and battery. Vibration may cause your fuel to foam, which will, in turn, cause your engine to run lean or quit.

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

Find A Safe Place to Fly
We strongly suggest that the best place to fly is an AMA chartered club field. Ask the AMA or your local hobby shop dealer if there is a club in your area and join. Club fields are set up for R/C flying and that makes your outing safer and more enjoyable. The AMA address and telephone number are in the front of this manual. If a club and flying site are not available, find a large, grassy area at least 6 miles away from houses, buildings and streets and any other R/C radio operation like R/C boats and R/C cars. A schoolyard may look inviting but is too close to people, power lines and possible radio interference.

Ground Check the Model
Inspect your radio installation and confirm that all the control surfaces respond correctly to the transmitter inputs. The engine operation must also be checked by confirming that the engine idles reliably, transitions smoothly and rapidly to full power and maintains full power, indefinitely. The engine must be "broken-in" on the ground by running it for at least two tanks of fuel. Follow the engine manufacturer's recommendations for break-in. Make sure that all screws remain tight, that the hinges are secure and that the prop is on tight.

Range Check Your Radio
Whenever you go to the flying field, check the operational range of the radio before the first flight of the day. First, make sure no one else is on your frequency (channel). With your transmitter on, you should be able to walk at least 100 feet (30 meters) away from the model and still have control. While you work the controls, have a helper stand by your model and tell you what the control surfaces are doing.

Repeat this test with the engine running at various speeds with a helper holding the model. If the control surfaces are not always responding correctly, do not fly! Find and correct the problem first. Look for loose servo connections or corrosion, loose bolts that may cause vibration, a defective on/off switch, low battery voltage or a defective receiver battery, a damaged receiver antenna, or a receiver crystal that may have been damaged from a previous crash.

Engine Safety Precautions

Note: 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 the engine exhaust gives off a great deal of deadly carbon monoxide. Do not run the engine in a closed room or garage.

Get help from an experienced pilot when learning to operate gas 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 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 Academy of Model Aeronautics Official Safety Code:

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 to and avoid flying in the proximity of full-scale aircraft. Where necessary an observer shall be used to supervise flying to avoid having models fly in the proximity of full-scale aircraft.

3. Where established, I will abide by the safely 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.

7. I will not fly my model unless it is identified with my name and address or AMA number, on or in the model.

9. 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 airplane.

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. I will perform my initial turn after takeoff away from the pit or spectator areas and I will not thereafter fly over pit or spectator areas, unless beyond my control.

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

FLYING

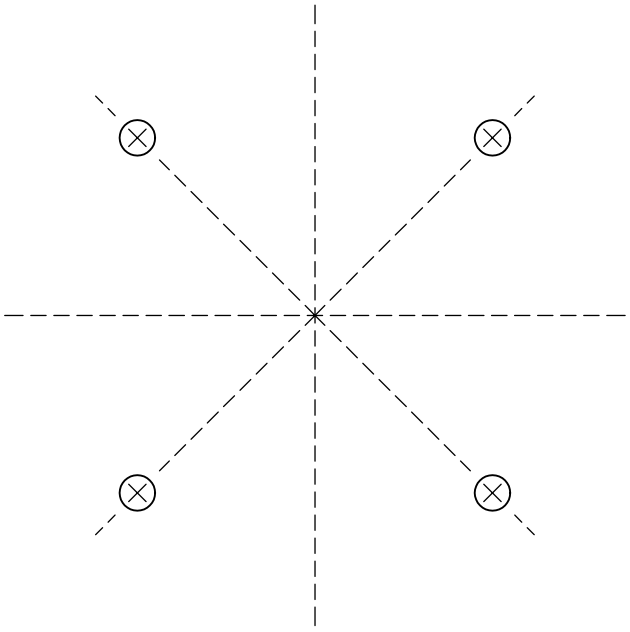
The J-3 CUB is a great-looking scale airplane and a great-flying sport airplane that, true to its full-size counterpart, is highly aerobatic. It does not have the self-recovery characteristics of a primary trainer, therefore you must either have mastered the basics of R/C flying or seek the assistance of a competent R/C pilot to help you with your first flights.

TAKEOFF

Do a low speed taxi test before your first takeoff. If the plane does not track straight when the rudder is in neutral, check the alignment of the main gear and the tailgear. If neccessary adjust the wires with pliers. Don't adjust the ground steering with the rudder trim or the rudder trim will be off in flight! Although the J-3 CUB has good low speed characteristics, you should always build up as much speed as your runway will permit before lifting off, as this will give you a safety margin in case of a "flame-out". The tail will come up off the ground very quickly, but allow the plane to remain on the ground until it gains plenty of airspeed. Climb out gradually and let it gain some airspeed before hunting for the clouds. For safety's sake, always remember to make your first turn away from the pit area.

FLIGHT

We recommend that you take it easy with your J-3 CUB for the first several flights and gradually "get acquainted" with its flying characteristics as your engine gets fully broken-in.



ENGINE MOUNT TEMPLATE

Work on trimming the airplane for straight and level flight with the transmitter trims at neutral, adjusting the nylon clevises after each flight, as necessary. Also, take note of the responsiveness of the elevator, ailerons and rudder, and adjust their throws to your preference. Add and practice one maneuver at a time, learning how it behaves in each one. You may notice some "sluggishness" in the way your J-3 Cub handles at low speeds with the regular wing. This is normal and should be taken into consideration when flying "low and slow". Your Cub is capable of performing most any manuever, however, you can expect some roll coupling with rudder when attempting knife edge maneuvers. Full-throttle snaps are not recommended, due to the extremely high stresses they place on the structure.

Sometime well before it's time to land, you should climb your Piper Cub to a safe altitude, cut the throttle to an idle and check out the model's low speed characteristics. Do this a few times so you know what to expect upon landing and how the Piper Cub handles stalls.

Caution: (THIS APPLIES TO ALL R/C AIRPLANES): If, while flying, you notice any unusual sounds, such as a low-pitched “buzz,” this may indicate control surface “flutter.” Because flutter can quickly destroy components or your airplane, any time you detect flutter you must immediately cut the throttle and land the airplane! Check all servo grommets for deterioration (this may indicate which surface fluttered) and make sure all pushrod linkages are slop-free. If it fluttered once, it will probably flutter again under similar circumstances unless you can eliminate the slop or flexing in the linkages. Here are some things which can result in flutter: Excessive hinge gap; Not mounting control horns solidly; Sloppy fit of clevis pin in horn; elasticity present in flexible plastic pushrods; Side-play of pushrod in guide tube caused by tight bends; Sloppy fit of control rods in servo horns; Insufficient glue used when gluing in torque rods; Excessive flexing of aileron, caused by using too soft balsa; Excessive “play” or “backlash” in servo gears; and insecure servo mounting.

LANDING

Because the J-3 Cub has a light wing loading and a high lift airfoil, it really floats when the throttle is reduced. You will usually find it hard to get the plane down on the ground without pulling the throttle to a complete idle. A little practice is all it takes to make 1 or 3-point landings look easy.

Have a ball! But always remember to think about your next move and plan each maneuver before you do it. Impulsively “jamming the sticks” without any thought is what gets most fliers in trouble rather than lack of flying skill.
Happy Landings!