SUPER Chipmunk

INSTRUCTION MANUAL

Wingspan: 81 in [2060mm]
Wing Area: 1000 sq in [64.5 dm^2]
Weight: 13-14 lb [5900–6350g]
Wing Loading: 29–32oz/sq ft [88–98g/dm^2]
Length: 62.5 in [1590mm]
Radio: 6-channel with seven servos
Engine: .91 – 1.08 cu in [15–17.5cc] two-stroke or
1.20 cu in [20cc] four-stroke engine

PENNZOIL®

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

TABLE OF CONTENTS

INTRODUCTION

Thank you for your purchase of this aerobatic classic, Art Scholl's "Super Chipmunk!" We are proud of its great looks and are sure that you will be proud to bring it to the field. The fiberglass fuselage allows us to create a strong, good-looking model that replicates the actual aircraft in great detail. This airplane is capable of recreating all of the classic air show maneuvers that Art performed for many years on the air show circuit. We hope you enjoy the model as much as we have enjoyed bringing it to you.

For the latest technical updates or manual corrections to the Super Chipmunk 1.20 ARF, visit the Great Planes web site at *www.greatplanes.com*. Open the "Airplanes" link, then select the Super Chipmunk 1.20 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.

IMAA

The Great Planes Super Chipmunk 1.20 ARF is an excellent sport-scale model and is eligible to fly in IMAA events. The IMAA (International Miniature Aircraft Association) is an organization that promotes non-competitive flying of giant-scale models. If you plan to attend an IMAA event, obtain a copy of the IMAA Safety Code by contacting the IMAA at the address or telephone number below, or by logging on to their web site.

IMAA
205 S. Hilldale Road
Salina, KS 67401
(913) 823-5569
www.fly-imaa.org/imaa/sanction.html.

SCALE COMPETITION

Though the Great Planes Super Chipmunk 1.20 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 Chipmunk 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 Chipmunk 1.20 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 Chipmunk 1.20 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 (fuel tank, wheels, etc.) throughout the building process.

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

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

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

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, the modeler is responsible for taking steps to reinforce the high stress points.

9. **WARNING:** The cowl, fuselage 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.

ITEMS REQUIRED

Hardware & Accessories

This is the list of hardware and accessories required to finish the Great Planes Super Chipmunk 1.20 ARF. Order numbers are provided in parentheses.

- ❏ .91 cu in [15cc] Two-stroke or 1.20 cu in [20cc] four-stroke engine
- ❏ Propeller and spare propellers suitable for your engine
- ❏ 6-Channel radio
- ❏ Servos: (1) 35 oz-in servo (throttle), (5) 50 oz-in servos (ailerons, flaps, elevator), (1) 80 oz-in servo (rudder)
- ❏ (2) – 2" [300mm] Servo extension (HCAM2711 for Futaba®)
- ❏ (2) – Y-harness (HCAM2751 for Futaba)

Adhesives & Building Supplies

In addition to common household tools and hobby tools, this is the "short list" of the most important items required to build the Super Chipmunk ARF. ***Great Planes Pro™*** *CA and Epoxy glue are recommended.*

- ❑ 1/2 oz. [15g] Thin Pro CA (GPMR6001)
- ❑ 1 oz. [30g] Medium Pro CA+ (GPMR6008)
- ❑ Pro 30-minute epoxy (GPMR6047)
- ❑ Pro 6-minute epoxy (GPMR6045)
- ❑ Drill bits: 1/16" [1.6mm], 3/32" [2.4mm], 9/64" [3.6mm], 3/16" [4.8mm] and 7/32" [5.6mm].
- ❑ 8-32 tap and drill set (GPMR8103)
- ❑ Stick-on segmented lead weights (GPMQ4485)
- ❑ Silver solder w/flux (GPMR8070)
- ❑ Microballoons (TOPR1090)
- ❑ 3' [900mm] standard silicone fuel tubing (GPMQ4131)
- ❑ R/C foam rubber (1/4" [6mm] – HCAQ1000, or 1/2" [13mm] – HCAQ1050)

Optional Supplies & Tools

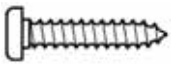
Here is a list of optional tools mentioned in the manual that will help you build the Super Chipmunk ARF.

- ❑ 4 oz. [113g] Aerosol CA activator (GPMR634)
- ❑ R/C-56 canopy glue (JOZR5007)
- ❑ CA applicator tips (HCAR3780)
- ❑ CA debonder (GPMR6039)
- ❑ Epoxy brushes (6, GPMR8060)
- ❑ Mixing sticks (50, GPMR8055)
- ❑ Mixing cups (GPMR8056)
- ❑ Curved-tip canopy scissors for trimming plastic parts (HCAR0667)
- ❑ Threadlocker™ thread locking cement (GPMR6060)
- ❑ Denatured alcohol (for epoxy clean up)
- ❑ Rotary tool such as Dremel®
- ❑ Rotary tool reinforced cut-off wheel (GPMR8200)
- ❑ Servo horn drill (HCAR0698)
- ❑ Dead Center™ Engine Mount Hole Locator (GPMR8130)
- ❑ AccuThrow™ Deflection Gauge (GPMR2405)
- ❑ CG Machine™ (GPMR2400)
- ❑ Precision Magnetic Prop Balancer™ (TOPQ5700)
- ❑ 21st Century® sealing iron (COVR2700)
- ❑ 21st Century iron cover (COVR2702)

IMPORTANT BUILDING NOTES

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

Sheet metal screws are designated by a number and a length. For example #6 x 3/4".



This is a number six screw that is 3/4" long.

Machine screws are designated by a number, **threads per inch**, and a length – for example, 4-40 x 3/4". **SHCS** is just an abbreviation for "socket head cap screw" and that is a machine screw with a socket head.

This is a number four screw that is 3/4" 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 Chipmunk 1.20 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.

White – TOPQ0204
Missile Red – TOPQ0201
Sapphire Blue – TOPQ0226

- 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.

ORDERING REPLACEMENT PARTS

Replacement parts for the Great Planes Super Chipmunk 1.20 ARF are available using the order numbers in the **Replacement Parts List** that follows. The fastest, most economical service can be provided by your hobby dealer or mail-order company.

To locate a hobby dealer, visit the Great Planes web site at *www.greatplanes.com*. Choose "Where to Buy" at the middle of the menu on the left side of the page. Follow the instructions provided on the page to locate a U.S., Canadian or International dealer. If a hobby shop is not available, replacement parts may also be ordered from Tower Hobbies at *www.towerhobbies.com*, or by calling toll free (800) 637-6050.

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

Mail parts orders and payments by personal check to:

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

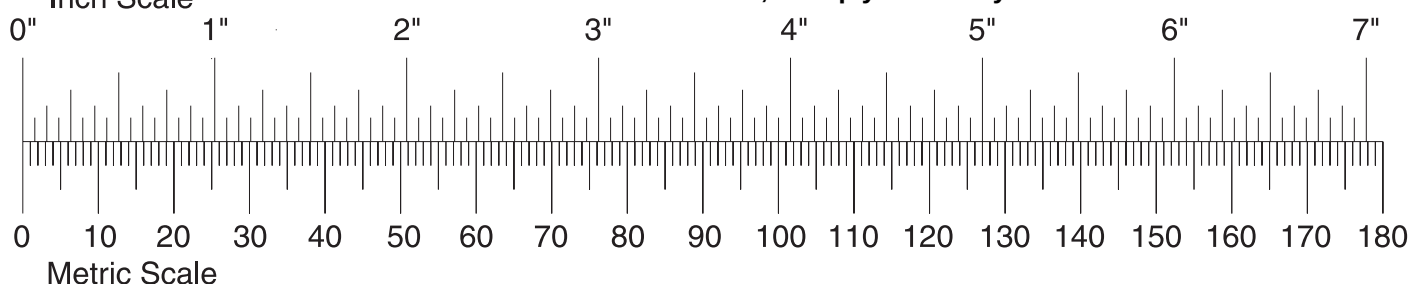
Be certain to specify the order number exactly as listed in the Replacement Parts List. Payment by credit card or personal check only; no C.O.D.

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
GPMA2480	Wing Kit	Contact Your Hobby Supplier to Purchase These Items
GPMA2481	Fuse Kit	
GPMA2483	Tail Set	
GPMA2482	Cowl	
GPMA2485	Canopy	
GPMA2486	Landing Gear	
GPMA2484	Wheel Pants	
GPMA2487	Tail Wheel	
GPMA2488	Decal Set	

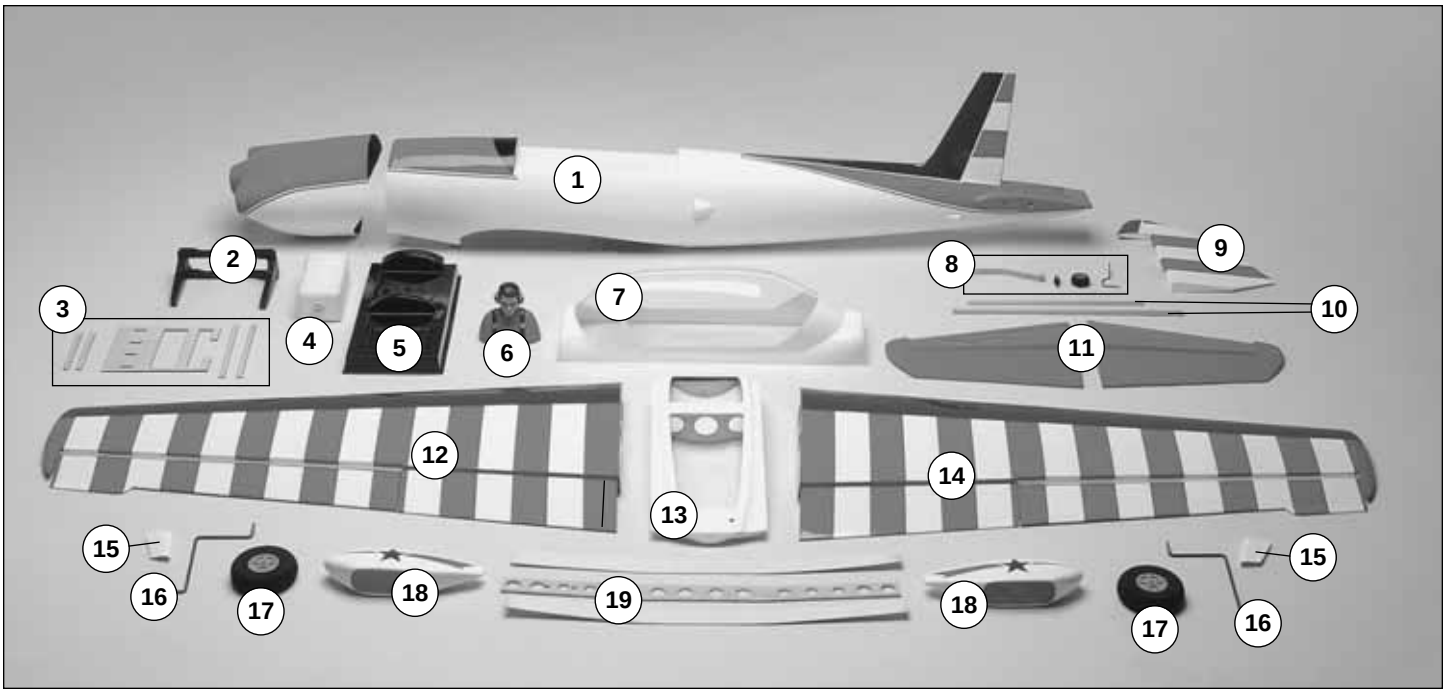
To convert inches to millimeters, multiply inches by 25.4



KIT CONTENTS

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

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



Kit Contents

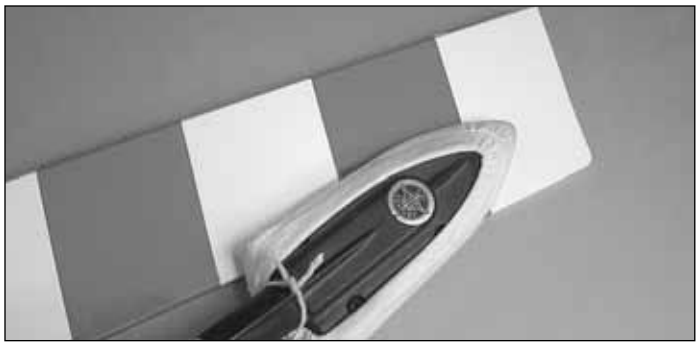
1. Fuselage
2. Engine Mount
3. Servo Tray Parts
4. Fuel Tank
5. Cockpit
6. Pilot
7. Canopy
8. Tail Wheel Assembly
9. Rudder
10. Stab Tubes
11. Stab & Elevators (L&R)
12. Left Wing Panel
13. Wing Center-Section
14. Right Wing Panel
15. Wire Covers
16. Landing Gear Wire
17. Wheels
18. Wheel Pants (L&R)
19. Wing Joiners (1-aluminum, 2-plywood)

Kit Contents (not photographed)

(6) 4-40 Threaded Metal Clevis
(5) 4-40 Solder Clevis
(2) Screw-Lock Pushrod Connector
(8) 2-56 Threaded Metal Clevis
(6) 4-40 Nut
(4) 8-32 Blind Nuts
(8) 2-56 Nut
(4) 1/4-20 Blind Nut
(8) Large Nylon Control Horn
(2) 1/4-20 Nylon Bolt
(2) Nylon Retainer
(2) 2" x 9" Hinge Material
(1) 11-3/4" Gray Plastic Outer Tube
(7) 36" Gray Plastic Outer Tube
(17) Clevis Retainer
(6) 6-32 x 1/4" SHCS
(2) 4-40 x 1/4" SHCS
(2) #2 x 3/8" Sheet Metal Screw
(2) #4 x 3/8" Sheet Metal Screw
(4) 8-32 x 1-1/4" SHCS
(4) 8-32 x 1" SHCS
(48) #2 x 1/2" Sheet Metal Screw
(2) 3/16" Wheel Collar
(1) .074 x 12" Wire Threaded One End
(4) .095 x 5-3/4" Wire
(2) .095 x 48" Wire Threaded One End
(16) #2 Flat Washer
(8) #8 Lock Washer
(8) #8 Flat Washer
(8) Nylon Landing Gear Straps
(5) Nylon Anti-Rotation Pins
(4) Pull-Pull Wire (1020mm in length)
(8) 2-56 Threaded Brass Pull-Pull Connector
(8) Wire Crimp Connectors
(2) 3mm Plywood Wheel Pant Mounting Plate
(1) 152mm Velcro®
(2) 6 x 13 x 36mm Hardwood Blocks
(4) 5mm Wheel Collar
(6) 3 x 5 x 5mm Plywood
(2) 1/4-20 Nylon Bolt (thumb screw type)
(4) Laser-Cut Plywood Parts (for the fiberglass wire covers)
(2) 3 x 25 x 25mm Plywood Plate

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 Contents"*** section on page 6.

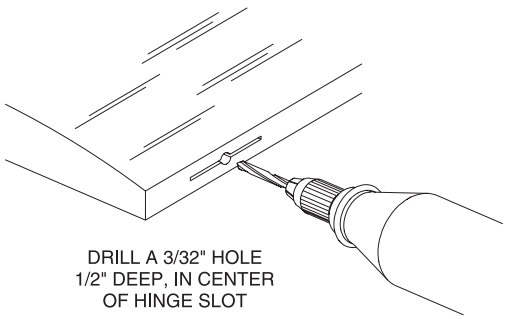


❏ 2. Remove the tape and separate the ailerons and flaps from the wing and the elevators from the stab. Use a covering iron with a covering sock on high heat to tighten the covering if necessary. Apply pressure over sheeted areas to thoroughly bond the covering to the wood.

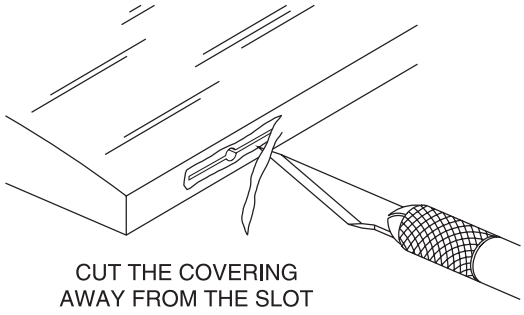
ASSEMBLE THE WING

Install the Ailerons

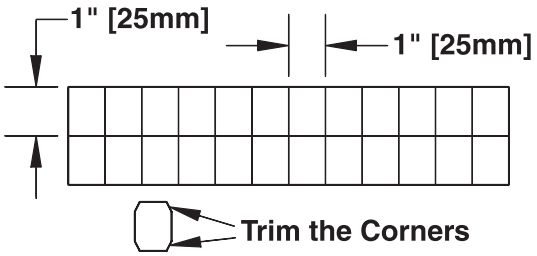
Do the right wing panel first so your work matches the photos the first time through



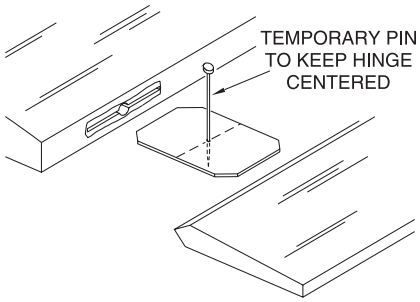
❏ ❏ 1. Drill a 3/32" hole, 1/2" [13mm] deep in the center of each hinge slot to allow the CA to "wick" in. Follow-up with a #11 blade to clean out the slots. **Hint:** If you have one, use a high-speed rotary tool to drill the holes.



❏ ❏ 2. Use a sharp #11 blade to cut a strip of covering from the hinge slots in the wing and aileron.

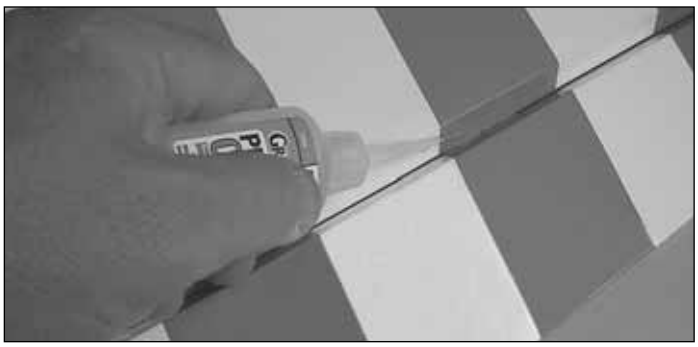


❏ ❏ 3. Cut fourteen 1" x 1" [25 x 25mm] hinges from the CA hinge strip. Snip off the corners so they go in easier.



❏ ❏ 4. Test fit the right aileron to the wing with four hinges. If the hinges don't remain centered, stick a pin through the middle of the hinge to hold it in position.

❏ ❏ 5. Remove any pins you may have inserted into the hinges. Adjust the aileron so there is a small gap between the LE of the aileron and the wing. The gap should be small, just enough to see light through or to slip a piece of paper through.



❏ ❏ 6. Apply six drops of thin CA to the top and bottom of each hinge. Do not use CA accelerator. After the CA has fully hardened, test the hinges by pulling on the aileron.

❏ ❏ 7. Test fit the right flap to the wing with three hinges. Using the same procedure used for the ailerons, join the flaps to the wing.

8. Repeat steps 1- 7 for the left wing panel.

Install the Aileron Servos & Pushrods

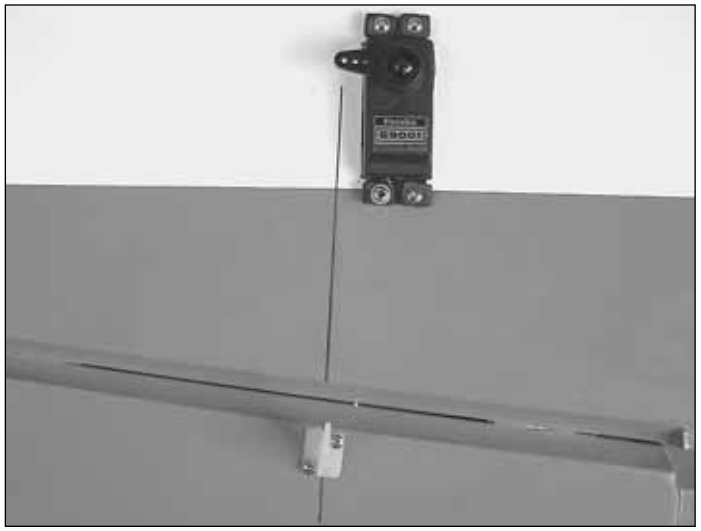
❏ ❏ 1. Install a 12" [305mm] servo extension onto the aileron servo lead. Secure the extension to the lead with tape, a piece of shrink tube or some other method to keep them from coming unplugged.

❏ ❏ 2. Cut the covering away from the aileron and flap servo openings in the bottom of the wing.

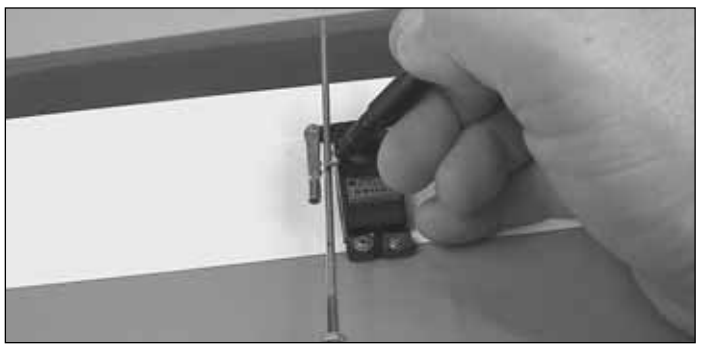
❏ ❏ 3. Taped inside the aileron servo opening is a string. Taped inside the flap opening is the other end of the string. Tie the aileron servo extension to the string in the aileron servo opening. Tie the flap servo lead to the string in the flap opening. Pull the two servo leads through the wing with the string that is taped to the root rib. Untie the string from the leads and tape the leads to the wing root to prevent them from falling back into the wing.

❏ ❏ 4. Install the aileron servo into the aileron servo opening. Drill through the servo mounting holes with a 1/16" [1.6mm] drill bit. Remove the servo from the servo opening. Install and then remove a servo mounting screw into each of the holes you have drilled. Apply a drop of thin CA into the holes to harden the threads. Once the glue has hardened install the servo into the servo opening using the hardware included with your servo. Center the servo, then install a servo arm as shown. The arm should be pointing towards the wing tip.

❏ ❏ 5. Install the flap servo into the flap servo opening, mounting it using the same procedure for the aileron servo. Install the servo arm onto the flap servo with the arm pointing towards the root rib. Important! When instructed to do the left wing, the arm on the flap servo must point towards the left wing tip, not the root rib as was done on the right wing panel.



❏ ❏ 6. Place a nylon control horn in line with the last hole in the servo arm. When positioned properly the control horn will rest on a hardwood plate in the aileron. Mark the location of the mounting holes onto the aileron. Drill a 1/16" [1.6mm] hole on the marks, drilling through the plywood plate but not through the top of the aileron. Insert and remove a #2 x3/8" [10mm] screw into each of the holes. Apply a couple drops of thin CA into the holes to harden the threads. Once the glue has hardened attach the control horn to the aileron with two #2 x 3/8" [10mm] screws.



❏ ❏ 7. Screw a 4-40 nut onto a 4-40 x 5-3/4" [146mm] threaded rod approximately twenty turns. Slide a silicone

clevis retainer onto a threaded 4-40 metal clevis and then screw the clevis onto the rod, tightening it against the nut. Install the clevis onto the nylon control horn. Install an unthreaded clevis onto the servo arm. Center the aileron. Then, mark the threaded rod where it should be cut to fit the clevis. Remove all of the pushrod components from the servo and control horn. Read the ***Expert Tip*** that follows. Then, silver solder the clevis to the pushrod.

❏ ❏ 8. After the rod has cooled, install a clevis retainer onto the clevis you have just soldered. Then, install the pushrod onto the aileron and servo.

❏ ❏ 9. Using the same method, install the pushrod linkage to the flap.

❏ ❏ 10. Using 6-minute epoxy, glue two nylon anti-rotation pins into the holes in the root of the wing. Each one should extend from the wing approximately 1/2" [13mm].

❏ 11. Repeat steps 1-9 for the left wing panel.

EXPERT TIP

HOW TO SOLDER

1. Use denatured alcohol or other solvent to thoroughly clean the pushrod. Use coarse sandpaper to roughen the end of the pushrod where it is to be soldered.

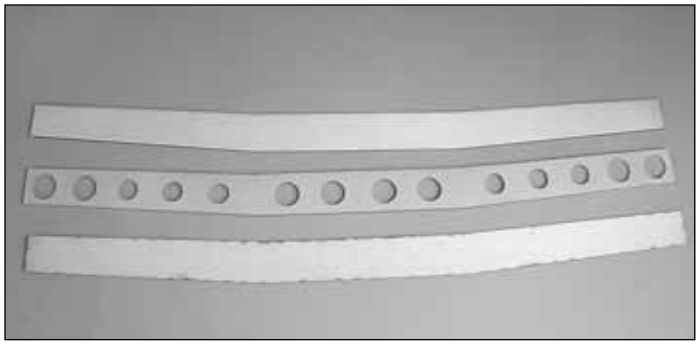
2. Apply a few drops of soldering flux to the end of the pushrod, then use a soldering iron or a torch to heat it. Tin the heated area with silver solder (GPMR8070) by applying the solder to the end. The heat of the pushrod should melt the solder-not the flame of the torch or soldering iron-thus allowing the solder to flow. The end of the wire should be coated with solder all the way around.

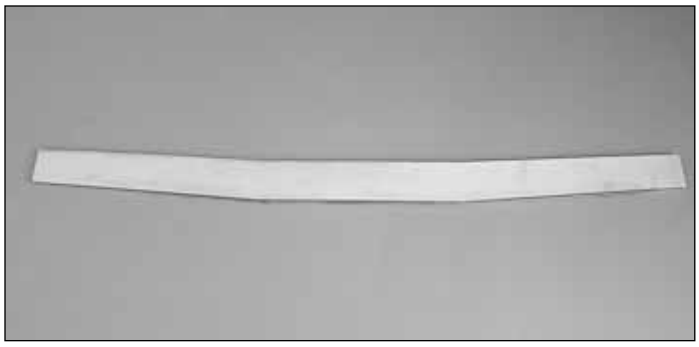
3. Place the clevis on the end of the pushrod. Add another drop of flux, then simultaneously heat the clevis and pushrod. Slide the clevis the rest of the way onto the pushrod as the solder melts. Apply another small amount of solder while the pushrod and clevis are still hot. The same as before, the heat of the parts being soldered should melt the solder, thus allowing it to flow. Allow the joint to cool naturally without disturbing. Avoid excess blobs, but make certain the joint is thoroughly soldered. The solder should be shiny, not rough. If necessary, reheat the joint and allow to cool.

4. Immediately after the solder has solidified, but while it is still hot, carefully use a cloth to quickly wipe off the flux before it hardens. Important: After the joint cools, coat with oil to prevent rust. **Note:** Do not use the acid flux that comes with silver solder for electrical soldering.

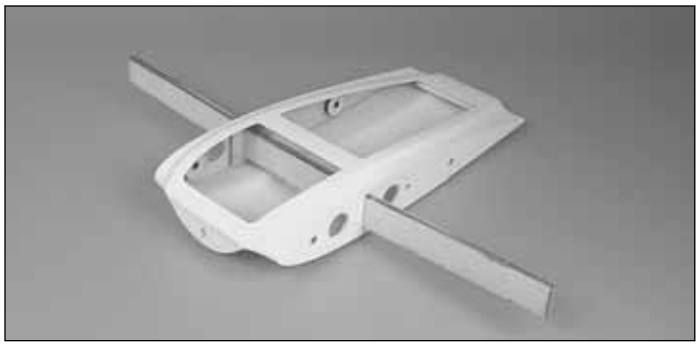
Assemble the Wing Center-Section

Did you know…Between 1969 and 1985 Art Scholl performed in a total of 1,345 airshows in the U.S.A., Canada and Japan!

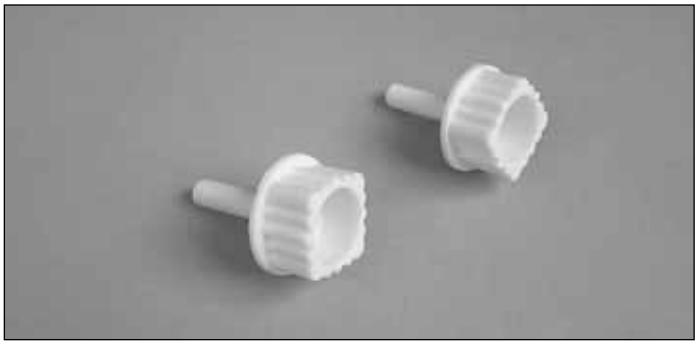




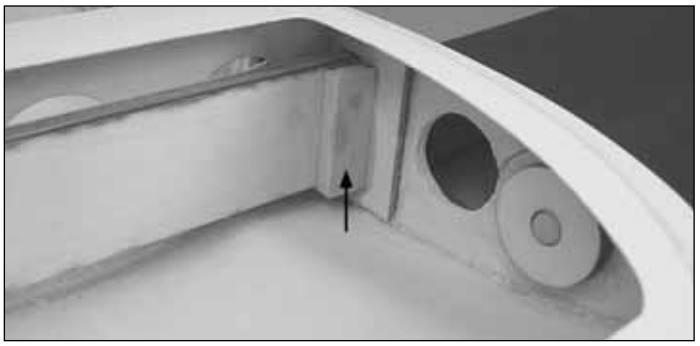
❏ 1. Before beginning this step be sure you have plenty of clamps to assure that the plywood is securely bonded to the aluminum. Locate the aluminum wing joiner and two 1/8" [3mm] plywood wing joiners. Using 30-minute epoxy, glue the plywood to both sides of the aluminum to form the wing joiner using denatured alcohol and a paper towel, clean any excess epoxy from the joiner before the glue hardens. After the glue fully hardens, test fit the joiner into each wing and the wing center-section. Sand the joiners as needed for a good fit between the wing halves and the joiner.



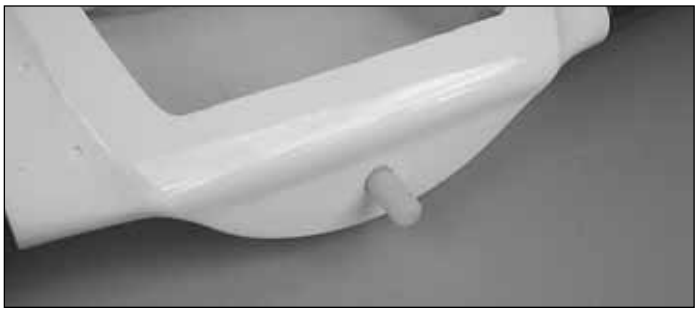
❏ 2. Center the joiner in the wing center-section.



❏ 3. Slide both wing halves onto the joiner, pushing the wings tight against the wing center-section. Locate two 1/4-20 wing bolts with the knurled head and screw them into the wing and the wing center-section. Do this for both wings.



❏ 4. Once you are satisfied with the fit of the wings to the wing center-section, glue a 1/4" x 1/2" x 1-1/2" [6 x 13 x 38mm] hardwood block to the joiner and the wing center-section at both sides of the center-section.



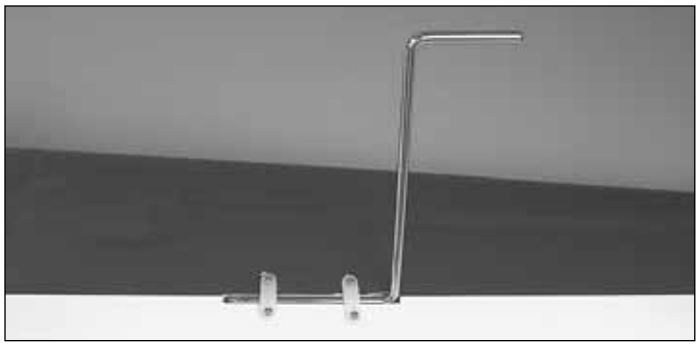
❏ 5. Using 6-minute epoxy, glue the remaining nylon wing dowel into the leading edge of the wing center-section. The dowel should extend approximately 1/2" [13mm] from the front of the wing center.

The method we have designed for the wing assembly gives you the flexibility of leaving the wing together as a one piece

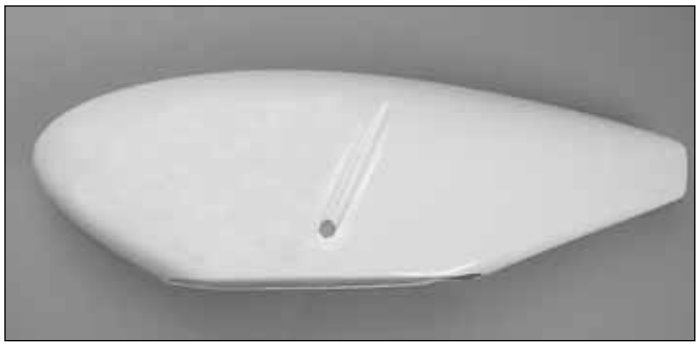
wing or you can disassemble it into two or even three pieces for easier transportation. If you choose to leave the wing together as a one piece wing, it is recommended that you regularly check the nylon screws to be sure they remain tight.

Install the Landing Gear, Wheels & Wheel Pants

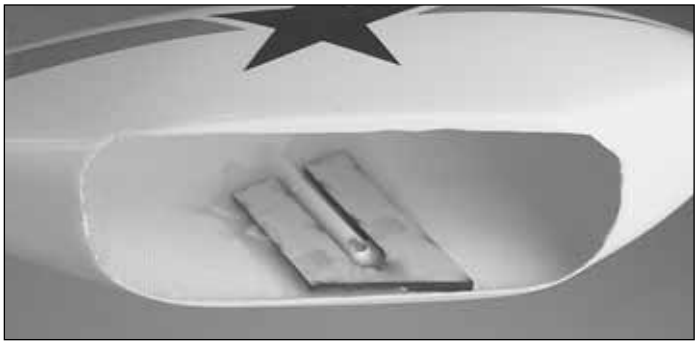
❏ 1. Cut the covering away from the landing gear wire slot in the bottom of each wing.



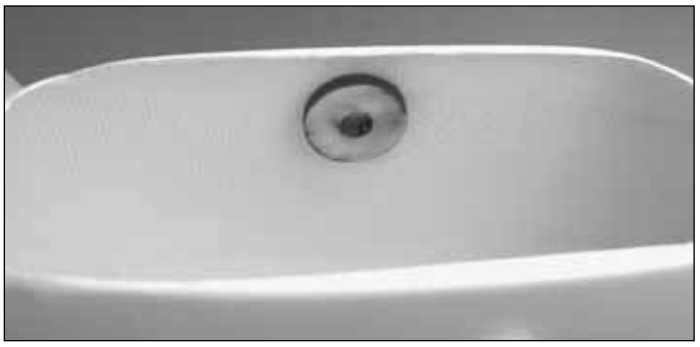
❏ 2. Install the landing gear wire in the wing as shown. Mount the wire to the wing with two nylon landing gear straps. Drill four 1/16" [1.6mm] holes into the hardwood landing gear blocks. Insert and remove a #2 x 1/2" [13mm] screw into each of the holes. Apply a couple drops of thin CA into the holes to harden the threads and allow the glue to harden. Install the landing gear wire to the wing with the screws and landing gear straps. Do this for both wings.



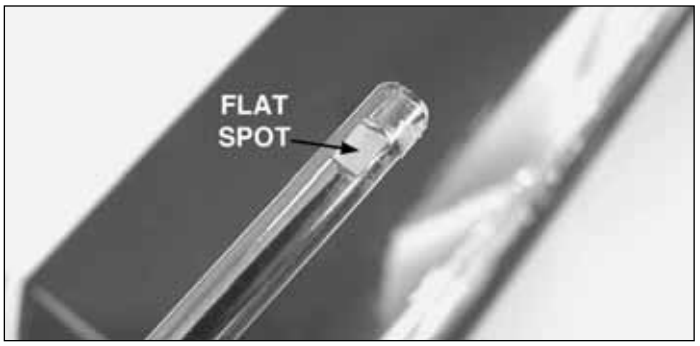
❏ 3. Drill a 3/16" [4.8mm] hole into each of the wheel pants as shown.



❏ 4. Inside the wheel pant, roughen the fiberglass along each side of the molded slot with 80-grit sandpaper. Clean the area well with denatured alcohol. Using 6-minute epoxy, glue the plywood wheel pant doubler inside the wheel pant as shown. Allow the glue to harden before proceeding. Do this for both wheel pants.



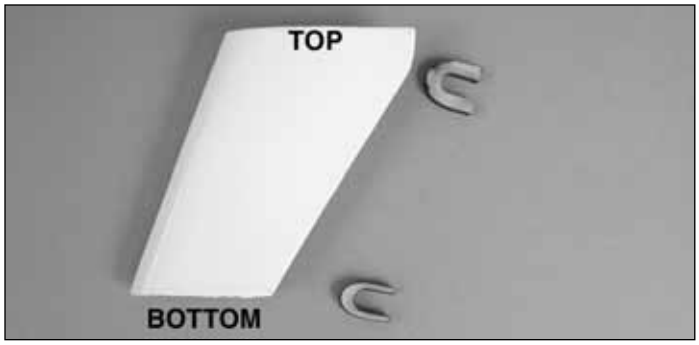
❏ 5. Apply 6-minute epoxy on one side of the plywood axle doubler. Slide the doubler onto the axle. Push the axle completely into the wheel pant, aligning the axle perpendicular to the side of the wheel opening. Use small clamps to hold the doubler in place to the wheel pant until the glue hardens.

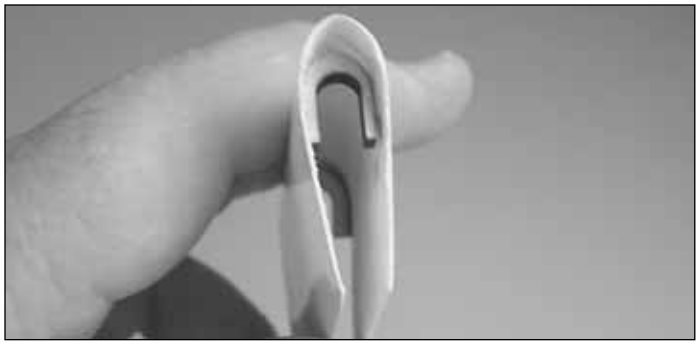


❏ 6. File a flat spot onto the end of each axle for the wheel collar set screw.

❏ 7. Install a 6-32 x 1/4" [6mm] socket head cap screw into each of the 3/16" [4.8mm] wheel collars. Install the wheel pant, a 3/16" wheel collar, the wheel and another 3/16" wheel collar onto the axle. Center the wheel in the wheel pant, apply thread locker to the set screw and then tighten the wheel collar set screws.

You will find the following steps easier if you remove the landing gear from the wing.



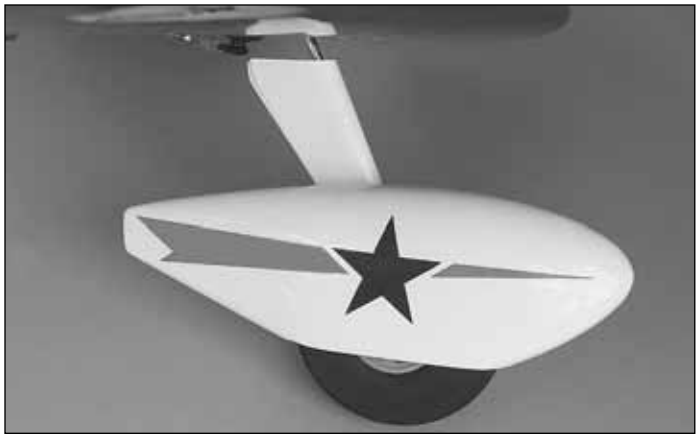


❏ 8. The landing gear fairing consists of two laser-cut plywood formers and the fiberglass fairing. Glue the large former to the wide end of the fairing and the small former to the narrow end of the fairing with CA.

❏ 9. Slide the fairing onto the landing gear wire, positioning the bottom of the fairing slightly below the top of the wheel pant. Mark the location of the fairing on the wire, then remove the fairing. Roughen the wire in the area of the fairing with 80-grit sandpaper. Re-install the fairing onto the wire, making sure it is properly positioned to the wheel pant and that the front of the fairing is aligned with the front of the pant. Apply CA to the formers to tack them to the wire.

❏ 10. Mix a small amount of 6-minute epoxy with microballoon filler. Liberally apply the mixture to the former and the landing gear wire. Do this for both the formers. Allow the glue to harden.

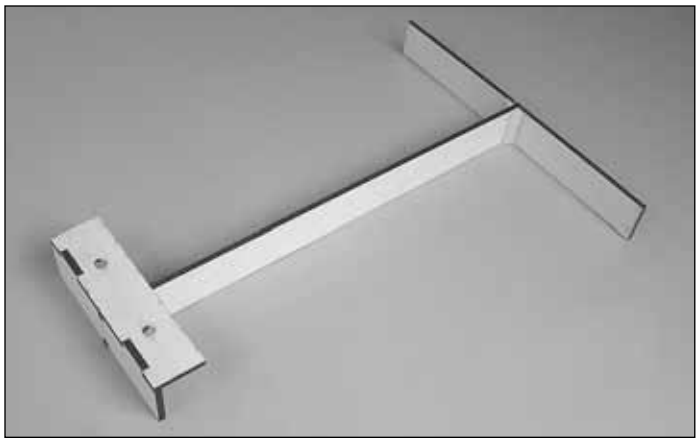
❏ 11. Apply a small amount of medium CA to the trailing edge of the fairing. Squeeze the trailing edge of the fairing together, holding it until the glue hardens. Once the glue has hardened apply a mixture of epoxy and microballoons to the inside of the trailing edge to give a more secure joint.

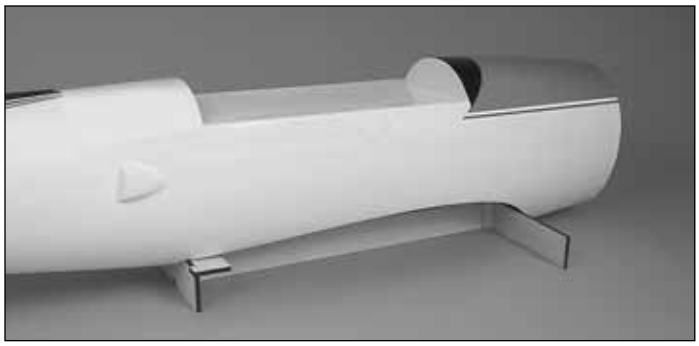


❏ 12. Re-install the landing gear to the wing. You should have been doing both of the landing gear but if you have only completed one, go back and do the remaining one.

Did you know…It was not uncommon for Art to fly with his dog named "Aileron!"

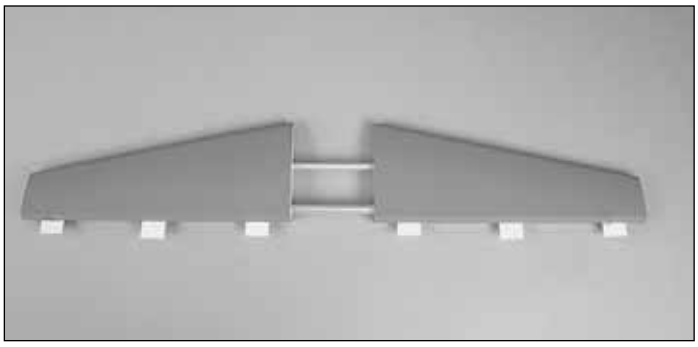
ASSEMBLE THE FUSELAGE

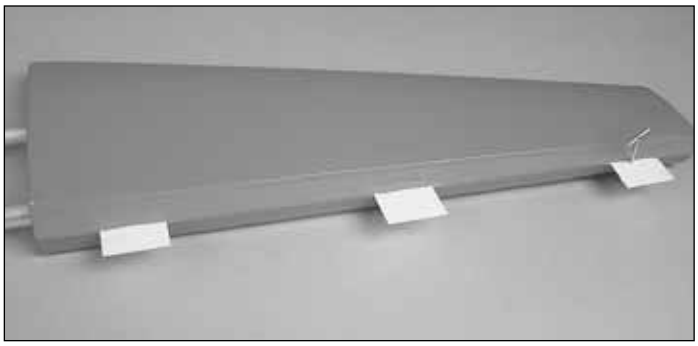




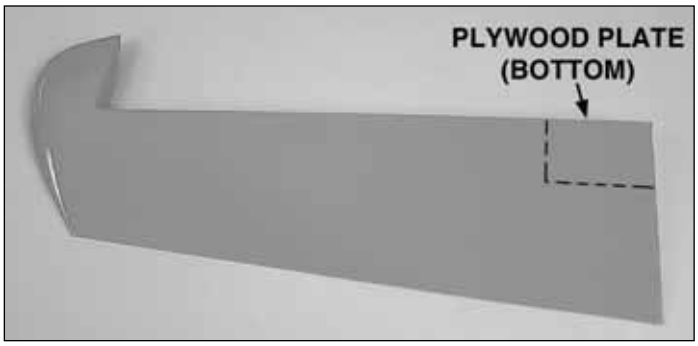
❏ We have included a handy fuselage stand that easily installs to the fuselage with two 1/4 -20 nylon wing bolts. You will find it useful when working with the model on your work bench as well as for transporting the model to the field. During the assembly of the fuselage it will be useful while installing the stab and elevators as well as the engine and the cowl. Feel free to use it throughout the remaining steps of the building process as needed.

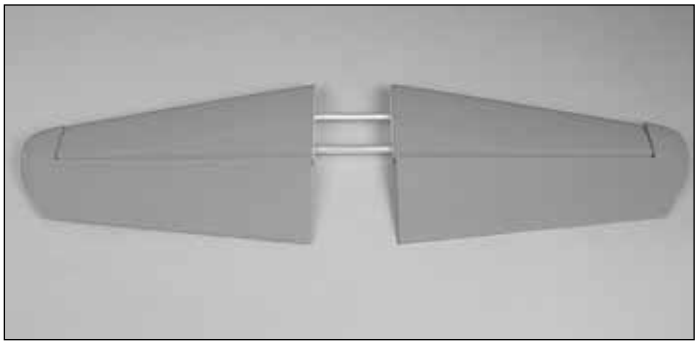
Install the Stab, Elevators & Rudder



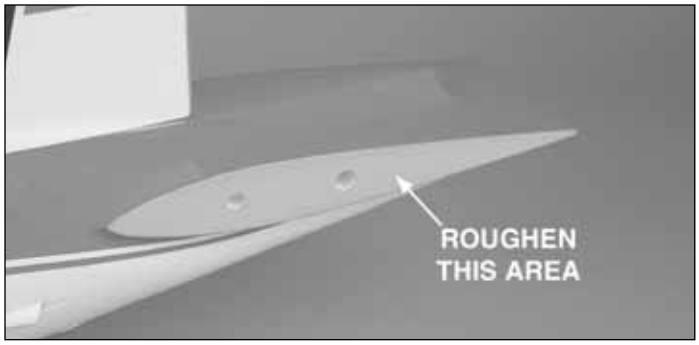


❏ 1. Temporarily install the stab halves onto the aluminum stab joiner tubes. Insert three hinges into the slots in each half of the stab. **Note:** The inboard hinges can only be inserted until they make contact with the stab joiner tube in the stab. The outboard hinge should be positioned with a T-pin to keep it centered.

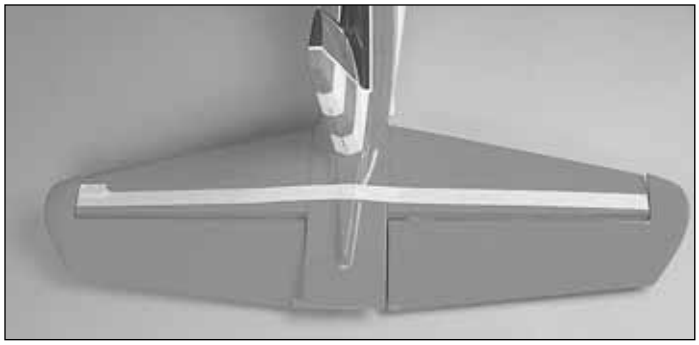




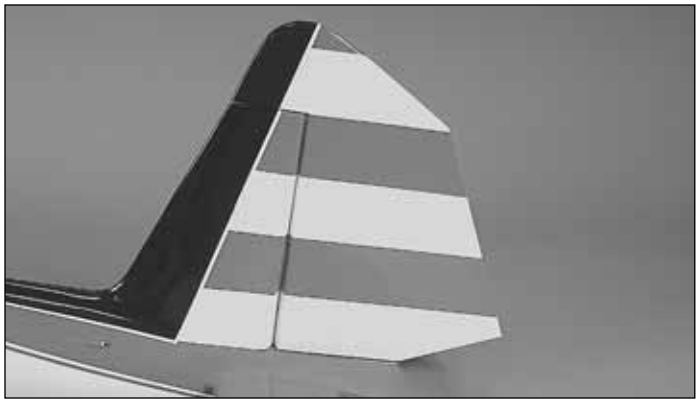
❏ 2. Examine the elevators. Notice that a hardwood plate is located on one side of both elevators. This is the bottom of the elevator. Install the elevators to the stab using the same procedure used for mounting the ailerons to the wing.



❏ 3. Roughen the stab fairing as shown with 80-grit sandpaper.

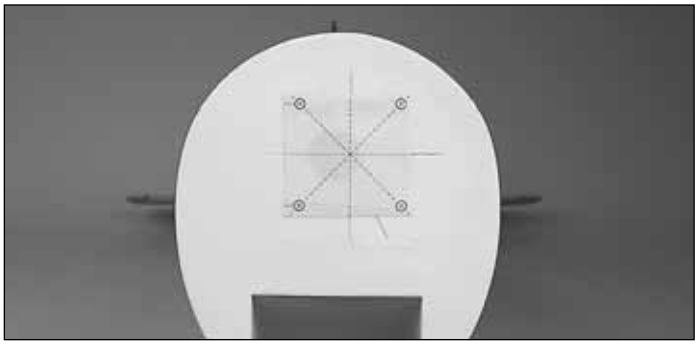


❏ 4. Apply 6-minute epoxy to the stab fairing where you have roughened the surface and to the root rib of the stab. Slide the stab and stab joiner tubes into the fuselage, pressing the stab firmly to the fuselage. Clean any excess epoxy with rubbing alcohol and a paper towel. Apply masking tape to hold the stab in place until the glue has hardened. **Important!** When installing the stab, be sure the plywood plates on the elevator are on the bottom of the plane.



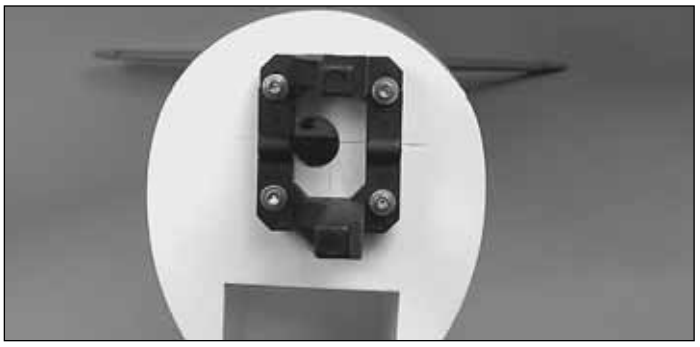
❏ 5. Hinge the rudder to the vertical fin using the same technique used on the ailerons and elevators.

Install the Engine, Fuel Tank & Throttle Servo

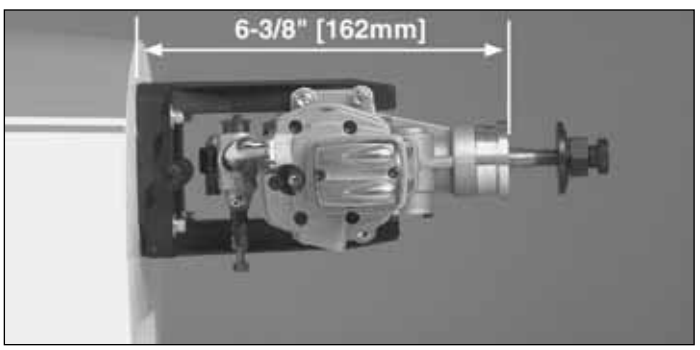


❏ 1. Cut the engine template from page 29 of the instruction manual. Tape the template onto the firewall aligning the dashed lines of the template with lines molded on the firewall.

❏ 2. Drill 7/32" [5.6mm] holes through the firewall at each of the drilling locations on the template. Install four 8-32 blind nuts into the backside of the firewall. This is easily done by reaching into the fuselage, holding the blind nut over the hole you drilled, and then using a 8-32 x1" [25mm] socket head cap screw and #8 washer from your hardware to pull the blind nut into the hole.



❏ 3. Cut the tabs from the engine mount. Attach it to the firewall with four 8-32 x 1-1/4" [32mm] socket head cap screws, #8 lock washers and #8 flat washers. Before tightening the bolts, set the engine on the mounting rails and adjust them to fit the engine. Then, tighten the bolts.



❏ 4. Position the engine on the mount so the distance from the firewall to the front of the thrust washer measures 6-3/8" [162mm]. Mark the location of the engine on the mount. The

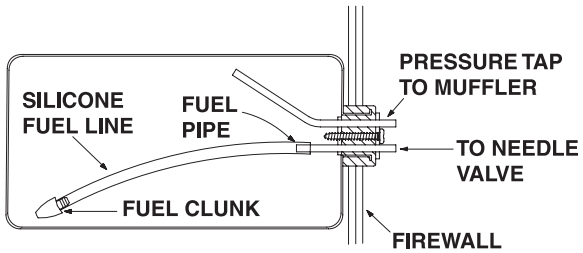
Great Planes “Dead Center™” Hole Locator (GPMR8130) works well for this. Drill through the marks you have made with a #29 or 9/64" [3.6mm] drill bit. Tap each hole with an 8-32 tap.

❏ 5. Install the engine to the mount with four each, 8-32 x 1" [25mm] socket head cap screws, #8 lock washers and #8 flat washers.

❏ 6. Drill a 3/16" [4.8mm] hole through the firewall in-line with the throttle arm on the carburetor.

❏ 7. Locate the 12" [305mm] gray plastic pushrod tube. Sand one end of the tube with 220-grit sandpaper. Insert the tube into the firewall and glue the roughened end of the tube flush to the firewall.

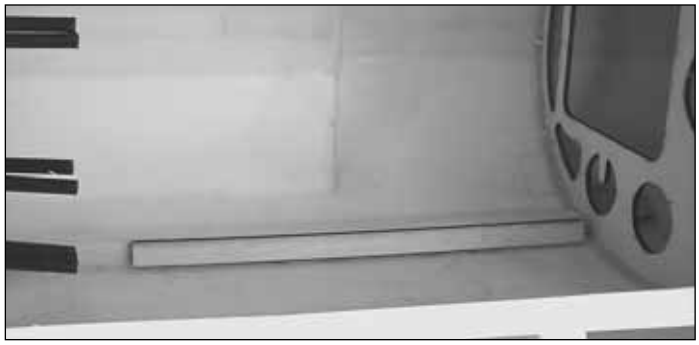
FUEL TANK



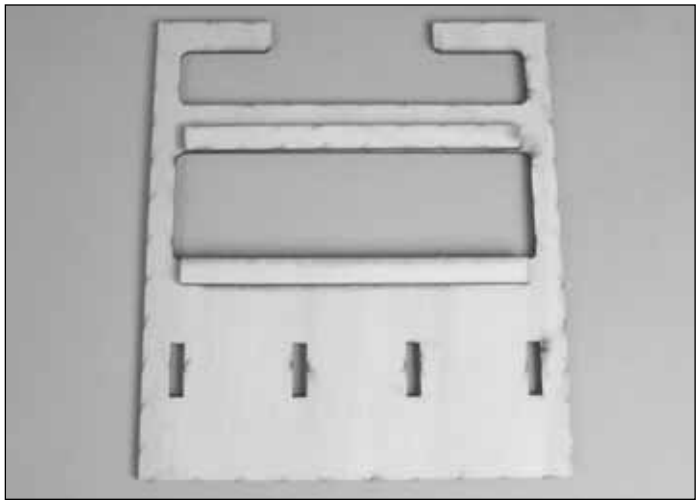
❏ 8. Assemble the fuel tank as shown in the sketch. When tightening the center screw be sure not to overtighten it. You just want it snug enough to pull the rubber stopper tight against the tank.

❏ 9. Install silicone fuel tubing (not supplied) onto the aluminum tubes from the fuel tank. The line with the fuel clunk will feed to the fuel inlet at the needle valve and the other will attach to the pressure tap on the muffler. If you choose to use some kind of an external fuel valve follow the instructions with your particular brand of fuel valve. You can also install a third line to the tank and use it for filling the tank. The method you use is your choice but make your decision before moving onto the installation of the fuel tank.

❏ 10. Install the tank into the fuselage with the neck of the tank through the firewall.



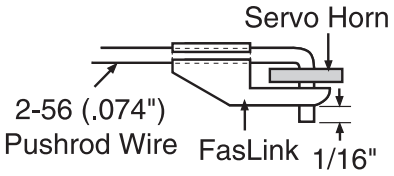
❏ 11. Locate and glue two 1/8" x 3/8" x 7-3/8" [3 x 9.5 x 187mm] plywood sticks and glue them to the balsa longerons inside the fuselage with 6-minute epoxy.

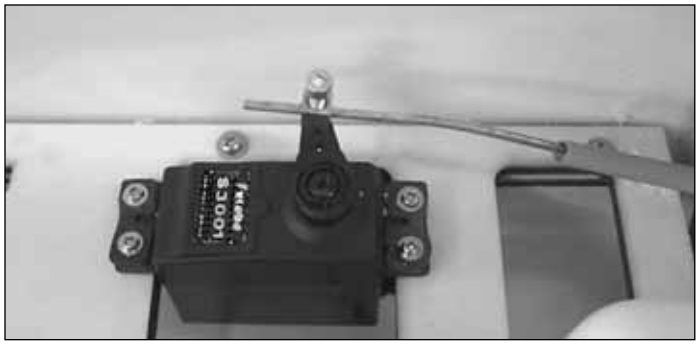


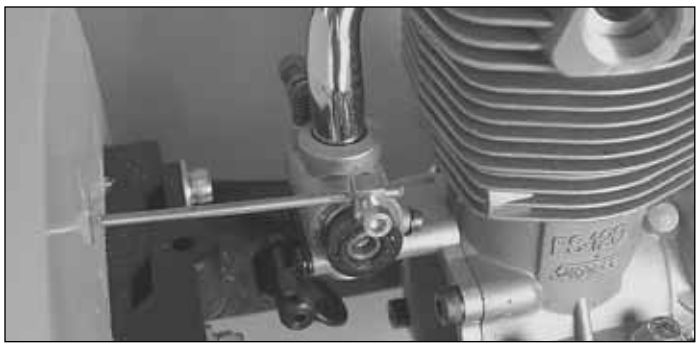
❏ 12. Glue two 1/8" x 3/8" 5-1/4" [3 x 9.5 x 133mm] plywood doublers to the plywood servo tray.

❏ 13. Install the 1/8" [3mm] plywood servo tray into the fuselage, making sure the doublers you glued in are facing the top of the fuselage. Position it on the longerons on the sides of the fuselage and far enough forward to hold the fuel tank securely in place. Drill six 1/16" [1.6mm] holes in the tray and longeron. Secure the tray in place with six #2 x 1/2" [13mm] screws and #2 washers.

❏ 14. Place your throttle servo into the servo tray as shown. Drill a 1/16" [1.6mm] hole through each of the mounting holes. Remove the servo, then install and remove a servo mounting screw into each hole. Apply a couple drops of thin CA into the holes to harden the threads. When the glue has hardened, permanently mount the servo to the servo tray. Cut the plastic throttle tube as shown.



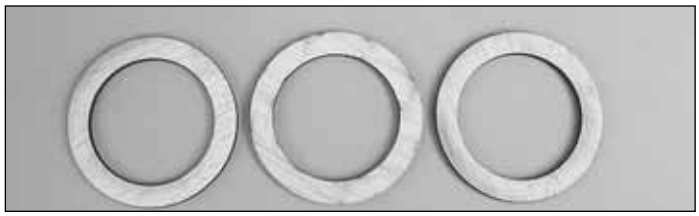




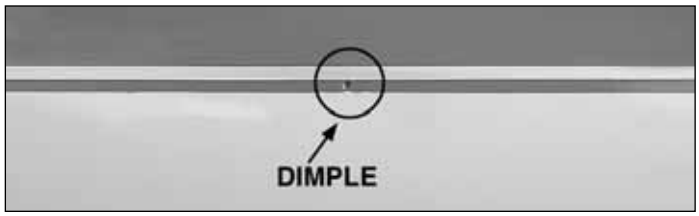
❏ 15. Cut the 1" [25mm] threaded end from the .074 x 12" [305mm] throttle pushrod wire. Install the wire into the tube and attach it to the servo horn and the throttle arm on the carburetor with two brass screw-lock connectors, the nylon retainer and a 4-40 x 1/4" [6mm] socket head cap screw.

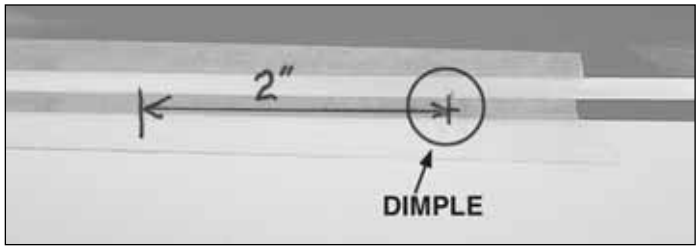
Mount the Cowl

❏ 1. Slide the cowl onto the fuselage and over the engine as far as you can. Mark the location where the engine begins to make contact with the cowl. Begin cutting the fiberglass cowl using a high-speed rotary tool. **Hint:** If you are using a four-stroke engine you can remove the valve cover, allowing more room when fitting the engine. Cut small amounts away from the cowl at a time, making adjustments as needed until the cowl fits over the engine.



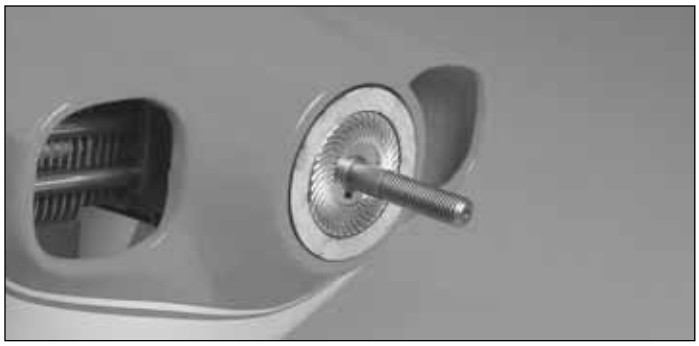
❏ 2. Locate three balsa cowl rings. Glue them together to form one 3/8" [9.5mm] cowl ring.



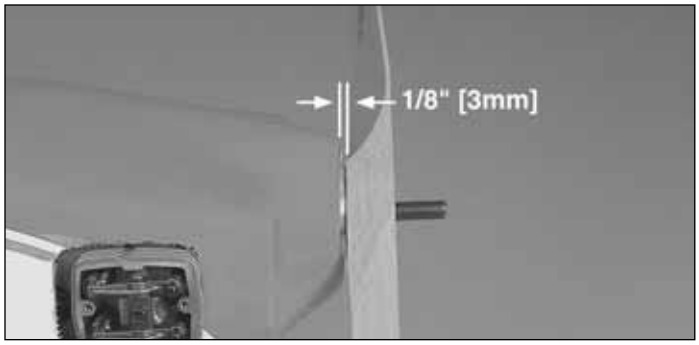


❏ 3. Located on both sides of the fuselage is a small dimple. This dimple is a reference for the plywood block inside of the fuselage for the cowl mounting screws. Apply a

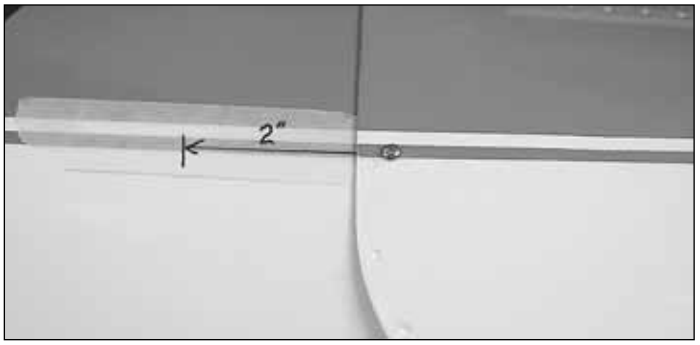
2-1/2" [64mm] piece of masking tape over the dimple and to the side of the fuselage as shown. Do this on both sides of the fuselage. Using a fine-tip felt pen, mark the dimple and draw a line back from the dimple 2" [51mm].



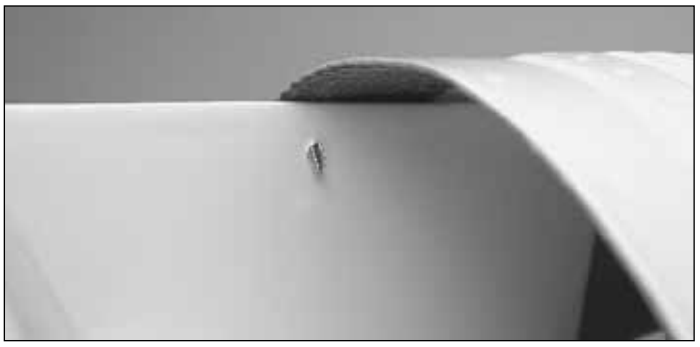
❑ 4. Install the cowl to the fuselage. Insert the cowl ring onto the engine and the front of the cowl. **Note:** The cowl ring is a useful tool for centering the engine to the opening in the front of the cowl. It has been made to fit the O.S.® 1.20. If you are using another engine it may or may not fit. You may choose to make a ring to fit your engine or you can center the engine without using the ring.



❑ 5. Place the propeller onto the engine. Position the cowl so that there is 1/8" [3mm] clearance between the cowl and the propeller. **Note:** If you are planning to use some form of a spinner, be sure you fit the cowl to the spinner backplate instead of the propeller.



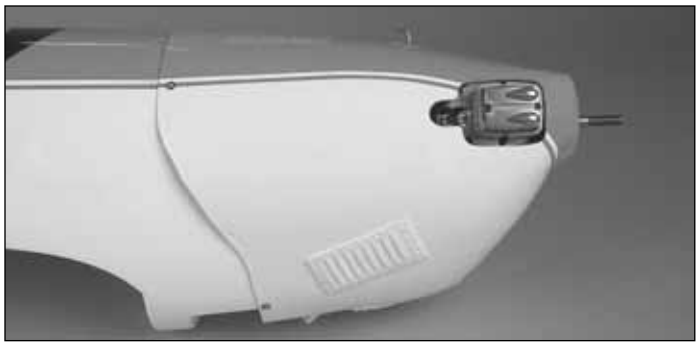
❑ 6. With the cowl aligned to the fuselage sides, measure forward 2" [51mm] from the reference mark you made on the masking tape. Drill a 1/16" [1.6mm] hole though the cowl and fuselage. Temporarily install a #2 x 1/2" [13mm] screw into the cowl to hold it in position on the fuselage. Repeat this step for the other side of the cowl.



❑ 7. Drill a 1/16" [1.6mm] hole through the bottom cowl and the fuselage as shown. Do this on both sides of the cowl. Install a #2 x 1/2" [13mm] screw into the cowl and fuselage. The screw exits out of the fuselage into the lower opening in the fuselage.

❑ 8. Back the screw out until it is no longer visible in the opening of the fuselage. Glue a 1/8" x 1" x 1" [3 x 25 x 25mm] plywood plate over the hole. After the glue has hardened

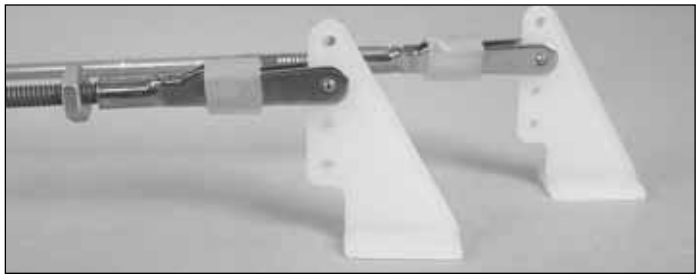
re-install the screw, screwing it into the hardwood. Be sure to fuelproof the wood plates with epoxy or a good fuelproof paint.



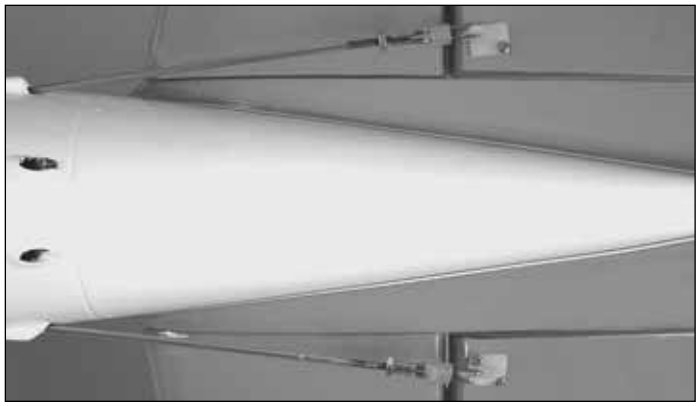
❑ 9. Cut out any other portions of the cowl as needed for the needle valve, glow driver, muffler, etc. When positioning the muffler it is important that the muffler exhaust not be pointing directly at the fiberglass fuselage. The heat from the muffler will discolor the fiberglass. For our model we installed a muffler header from O.S. that allows additional flexibility for positioning the muffler (O.S. Exhaust Header Pipe OSMG2623). You can use this, route the muffler directly out the side of the cowl or consider the silicone diverters available for many engines. When you are finished, put a couple of drops of thin CA into the cowl mounting holes you drilled in the fuselage to harden the threads. Install the cowl to the fuselage with #2 screws and #2 flat washers.

Did you know…Art flew airplanes for many well-known movies and T.V. shows. The Great Waldo Pepper, Baa Baa Black Sheep, Indiana Jones and the Temple of Doom and Top Gun just to name a few!

Install the Radio System, Pushrods, Control Horns & Tail Wheel

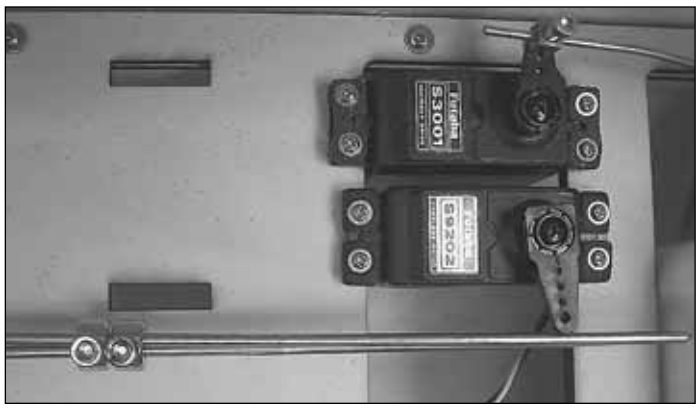


❑ 1. Locate two .095 x 48" [1220mm] pushrod wires. Install a 4-40 nut, 4-40 threaded metal clevis and silicone clevis retainer onto the threaded end of each wire. Install the clevis in the second hole from the end of a large nylon control horn. Cut 6-1/2" [165mm] from the unthreaded end of the wires.



❑ 2. Install the pushrod wires into the guide tubes on each side of the fuselage. Position the control horn as shown. Drill a 1/16" [1.6mm] hole into the plywood plate on each elevator for the control horns. Do not drill through the elevator, only the plywood plate! Install and then remove a #2 x 1/2" [13mm] screw into each of the holes you drilled. Apply a couple of drops of thin CA into the holes to harden the threads. Once the glue has hardened, install the control horns to the elevators with the screws.

Refer to this photo for the following two steps.

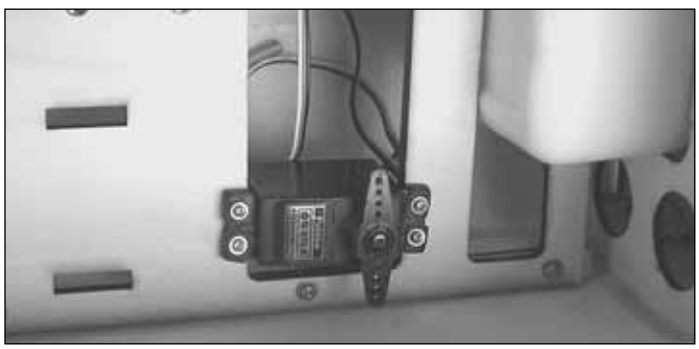


❑ 3. Install a 6-32 x 1/4" [6mm] socket head cap screw into two 3/16" [4.8mm] wheel collars, then slide the wheel collars over both elevator pushrod wires.

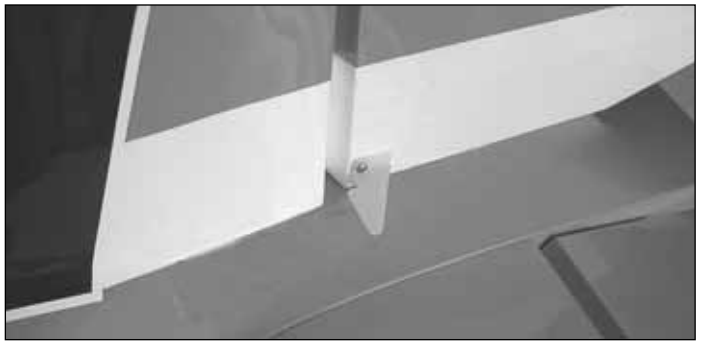
❏ 4. Place your elevator servo into the servo tray as shown, positioning the last hole of the servo arm over the pushrod wire. Drill a 1/16" [1.6mm] hole through each of the mounting holes. Remove the servo, then install and remove a servo mounting screw into each hole. Apply a couple drops of thin CA into the holes to harden the threads. When the glue has hardened, permanently mount the servo to the servo tray with the hardware provided with your servo.

❏ 5. Center the elevator servo. Install a 4-40 solder clevis onto the servo arm. Center both halves of the elevator. On the wire closest to the servo, mark the cut location for the wire to fit the clevis. Cut the wire on that mark. Cut the remaining wire 1" [25mm] shorter.

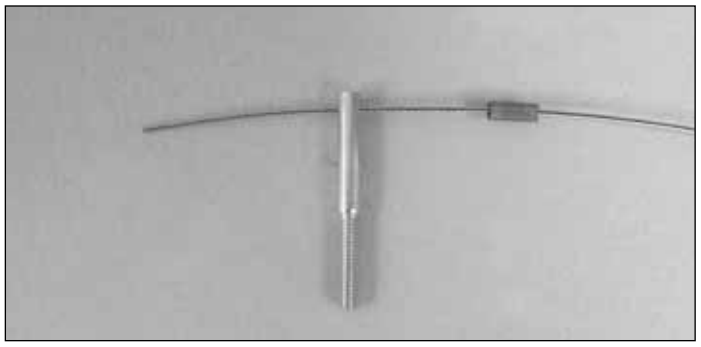
❏ 6. Solder the clevis to the wire closest to the servo. Slide a clevis retainer over the servo. Then, attach the clevis to the servo arm. With the elevator servo centered and both halves of the elevator centered, tighten the socket head cap screws securely to the pushrod wires.



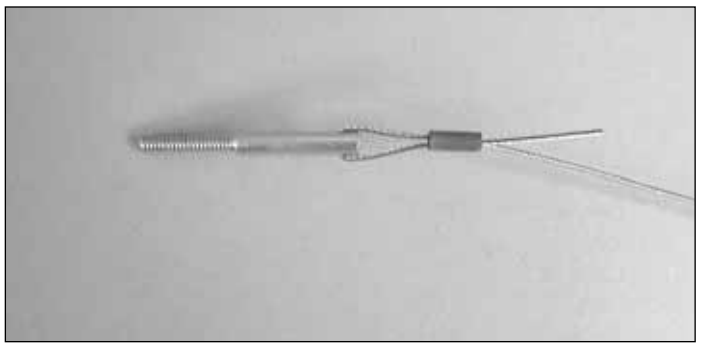
❏ 7. Install a two-arm servo arm onto the 80 oz-in rudder servo, then install the rudder servo as shown using the same technique used on other servos.



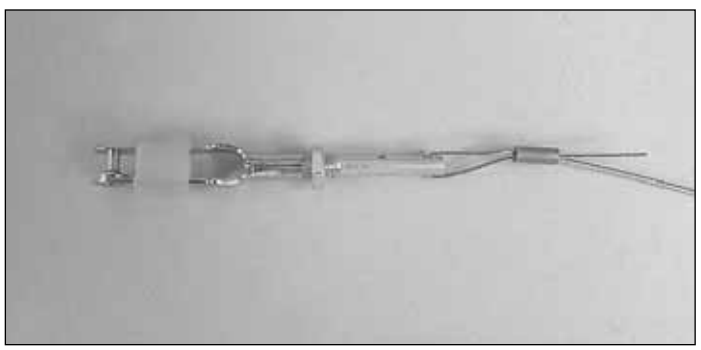
❏ 8. Install a nylon control horn on both sides of the rudder with #2 x 1/2" [13mm] screws in the same way you installed the elevator horns.



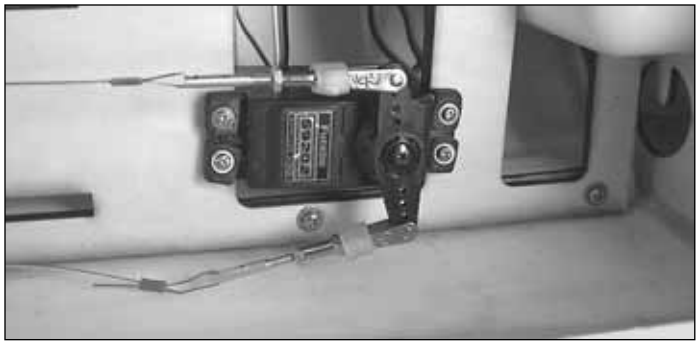
❏ 9. Slide a copper crimp connector onto one of the coils of pull-pull wire followed by a threaded brass pull-pull connector.



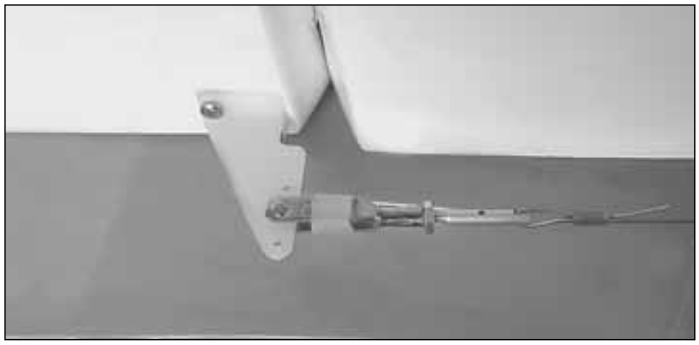
❏ 10. Loop the wire back through the crimp connector and crimp the connector onto the wire with pliers.



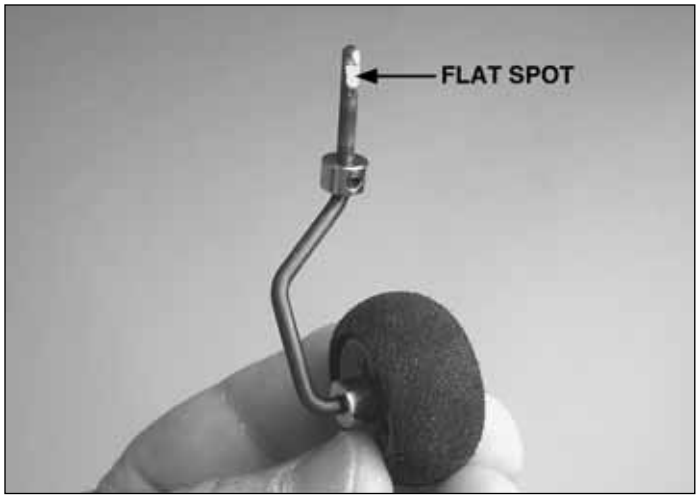
❏ 11. Screw a 2-56 nut onto the end of the threaded brass pull-pull connector followed by a 2-56 clevis and a silicone clevis retainer.

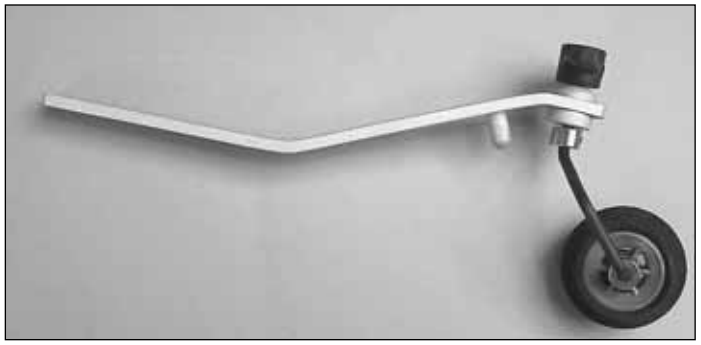


❏ 12. Install a wire to each end of the rudder servo arm. Feed the wire through the outer two tubes until they exit the fuselage near the rudder.

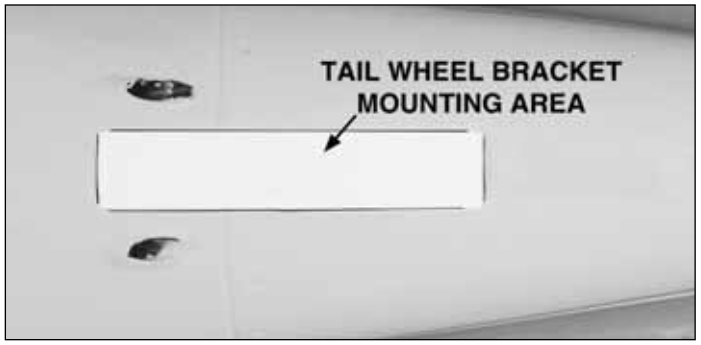


❏ 13. Put together two more sets of threaded brass pull-pull connectors, clevises and clevis retainers. Install them into the rudder control horns, one hole in from the end of the horn. Center the rudder servo and the rudder. Install the crimp connector onto the wire. Feed the wire through the connector and back into the crimp connector. Be sure you have equal tension on both wires, and then crimp the connector onto the wires with pliers. Adjustment to the wires can be made by threading the brass connector into or out of the clevis. Once adjusted, tighten the nut against the clevis.

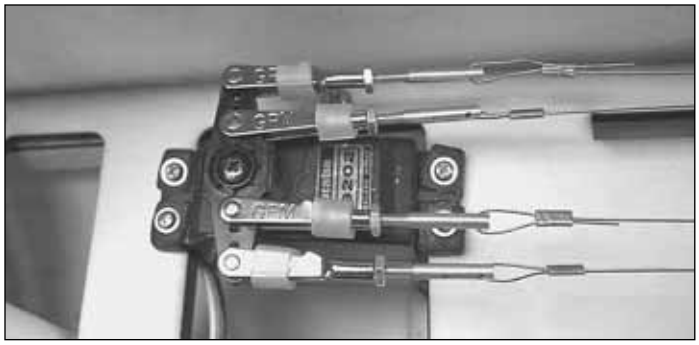


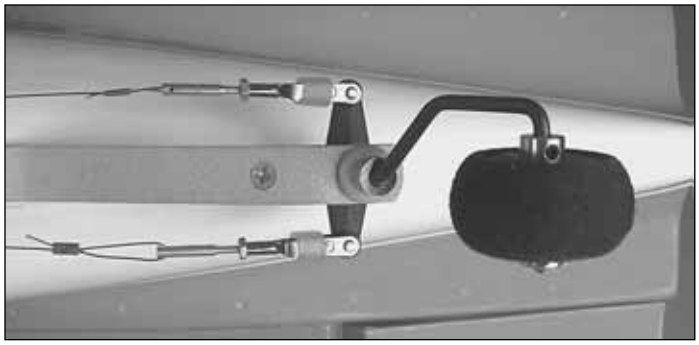


❏ 14. Install the tail wheel and wheel collars to the tail wheel wire as shown. File a flat spot on the wire for the set screw in the control arm.



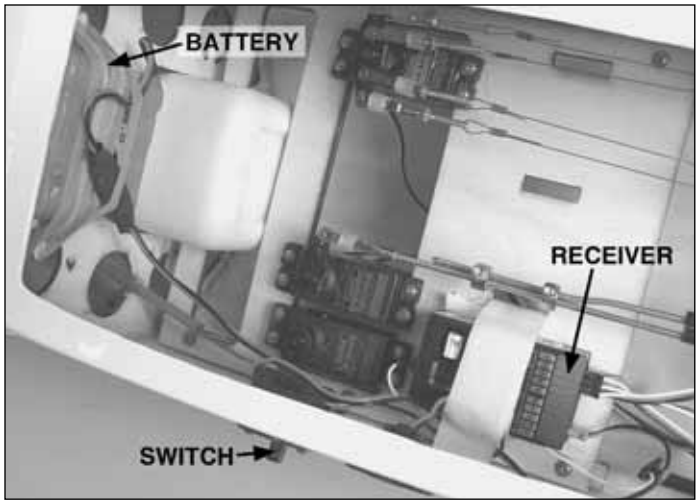
❏ 15. On the bottom of the fuselage is a flat area. Place the tail wheel assembly on this portion of the fuselage and mark the location of the mounting holes. Drill a 3/32 [2.4mm] hole through the fuselage on the marks. Insert and remove a #4 x 3/8" [9.5mm] screw. Apply a couple of drops of thin CA in the holes to harden the threads. After the glue has hardened mount the tail wheel bracket with two #4 x 3/8" [9.5mm] screws.



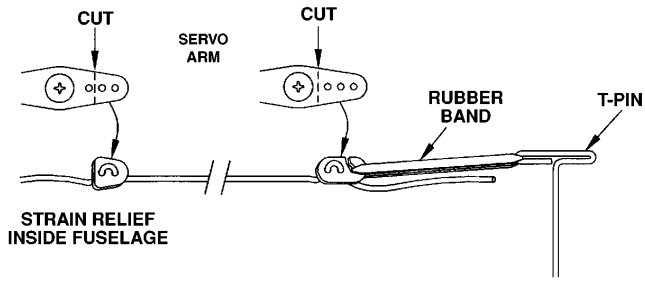


❑ 16. Assemble another pair of pull-pull wires for the tail wheel just as you did for the rudder. Install them on the inner holes of the rudder servo arm and into the outer holes on the tail wheel arm.

Install the Receiver & Battery



❑ 1. Install the strip of hook-and-loop material through the slots in the servo tray to hold the receiver in place. Place the receiver on 1/4" [6mm] foam. Then, tighten the hook-and-loop material around the receiver.



❑ 2. Use an arm cut from a servo horn to make an antenna strain relief as shown. Insert the receiver antenna into the antenna tube. Hold it in by placing a small rubber band around the tail wheel and the end of the antenna.

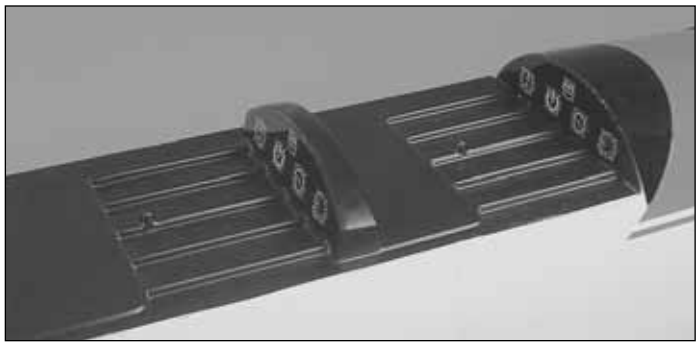
❑ 3. Place the battery on a piece of 1/4" [6mm] foam and strap it to the former above the fuel tank with a couple of #64 rubber bands.

❑ 4. Install a switch harness and charge jack to the fuselage. Connect the switch to the battery. Be sure to use heat shrink or tape to be sure the battery to switch connection is secure.

❑ 5. Plug the servos into the receiver. Make adjustments to the position of the servo arms as needed.

Did you know…Art Scholl had three different Chipmunks. The version that Great Planes has chosen was his third, which he purchased in May 1977. Originally, N1114V did not carry the color scheme replicated here. You can still see this Chipmunk at the EAA Museum in Oshkosh, Wisc.

FINISHING TOUCHES



❑ 1. Cut the cockpit on the cut lines and fit it to the top of the fuselage. Install the instrument panel decals.

❑ 2. Epoxy the cockpit to the top of the fuselage.

❑ 3. Cut the canopy on the cut lines. Test fit it to the fuselage.

❏ 4. Cut the pilot body as needed to fit under the canopy.

❏ 5. Epoxy the pilot into the rear seat of the cockpit.

❏ 6. Mount the canopy to the fuselage. You may either glue it in place with Z-56 canopy glue or you may screw it in place with six #2 x1/2" [13mm] screws. We have provided six 1/8" x 1/2" x1/2" [3 x 13 x 13mm] plywood plates to be glued into the fuselage where the mounting screws come through the fuselage.

Apply the Decals

1. The following photos as well as the photos on the box will aid in the placement of the decals.

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

3. 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.

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

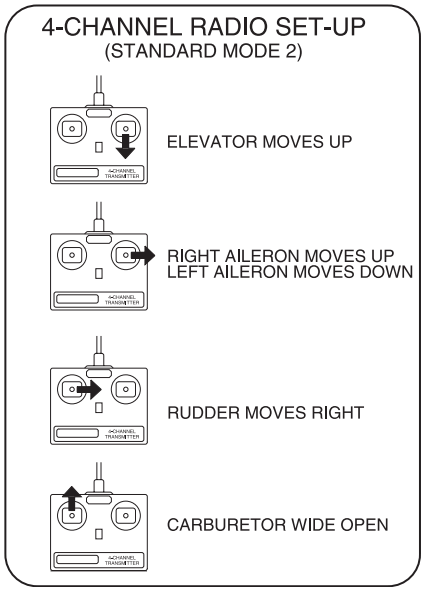
5. Use a piece of soft balsa or something similar to squeegee remaining water from under the decal. Apply the rest of the decals the same way.

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 Great Planes AccuThrow (or a ruler) to accurately measure and set the control throw of each control surface as indicated in the chart that follows. **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" [25mm] up 1-1/4" [32mm] down	5/8" [57mm] up 1" [25mm] down
RUDDER:	4" [102mm] right 4" [102mm] left	2-1/4" [57mm] right 2-1/4" [57mm] left
AILERONS:	1" [25mm] up 1" [25mm] down	3/4" [19mm] up 3/4" [19mm] down
FLAPS:	1-7/8" [48mm] down	

IMPORTANT: The Super Chipmunk 1.20 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 Chipmunk flies, you would like to change the throws to suit your taste, that is fine. However, too much control throw could make the model difficult to control, so remember, "more is not always better."

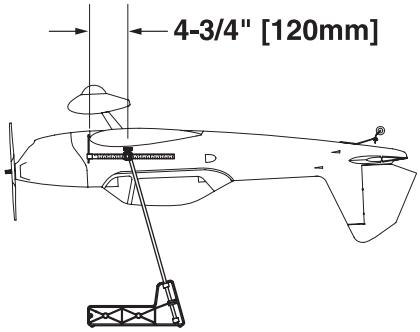
Balance the Model (C.G.)

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.

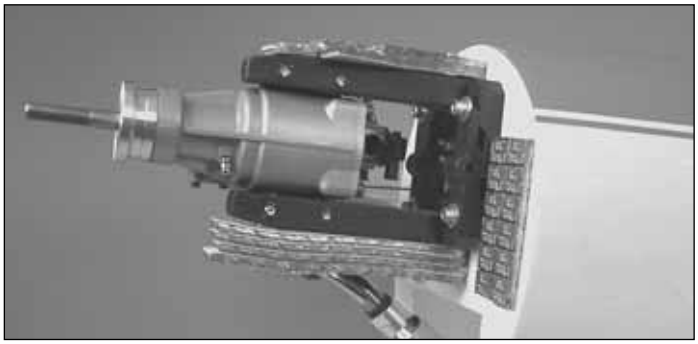
At this stage the model should be in ready-to-fly condition with all of the systems in place including the engine, landing gear, covering and paint, and the radio system.

❏ 1. Use a felt-tip pen or 1/8" [3mm]-wide tape to accurately mark the C.G. on the top of the wing on both sides of the fuselage. The C.G. is located 4-3/4" [120mm] back from the leading edge of the wing measured at the fuselage.

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



❏ 2. With the wing attached to the fuselage, all parts of the model installed (ready to fly) and an empty fuel tank, place the model upside-down on a Great Planes CG Machine, or lift it upside-down 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. Our prototype required 20 oz [567g] of lead on the nose. Additional nose weight may be easily added by using a "spinner weight" (GPMQ4645 for the 1 oz. [28g] weight, or GPMQ4646 for the 2 oz. [57g] weight). For additional weight

use Great Planes (GPMQ4485) “stick-on” lead. A good place to add stick-on nose weight is to the engine mounting rails (don’t attach weight to the cowl–it is not intended to support weight). Once you have determined the amount of weight required, it can be permanently attached by screwing it to the rails.

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

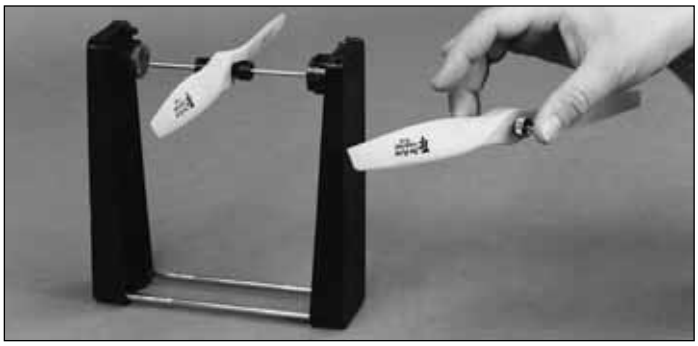
No matter if you fly at an AMA sanctioned R/C club site or if you fly somewhere on your own, you should always have your name, address, telephone number and AMA number on or inside your model. It is **required** at all AMA R/C club flying sites and AMA sanctioned flying events. Fill out the identification tag on page 29 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. To stop a gasoline powered engine an on/off switch should be connected to the engine coil. Do not throw anything into the propeller of a running engine.

AMA SAFETY CODE (excerpt)

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.**

IMAA SAFETY CODE (excerpt)

Since the Super Chipmunk 1.20 ARF qualifies as a "giant scale" model and is therefore eligible to fly in IMAA events, we've printed excerpts from the IMAA Safety Code which follows.

Definition: For the purpose of the following IMAA Safety Code, the term Giant Scale shall refer to radio controlled model aircraft, either scale or non-scale, which have a wingspan of 80 inches or more for monoplanes and 60 inches or more for multi-winged model aircraft and have a ramp weight (fueled and ready to fly) of 55 lbs. or less.

Section 1.0: SAFETY STANDARD

1.1 Adherence to Code: This safety code is to be strictly followed

1.2 The most current AMA Safety Code in effect is to be observed. However, the competition sections of the code may be disregarded.

Section 3.0: SAFETY CHECK

3.4 Flight Testing: All Giant Scale R/C aircraft are to have been flight tested and flight trimmed with a minimum of six flights before the model is allowed to fly at an IMAA Sanctioned event.

3.5 Proof of Flight: The completing and signing of the Declaration section of the Safety Inspection form by the pilot (or owner) shall document as fact that each aircraft has been successfully flight-tested and proven airworthy prior to an IMAA event.

Section 5.0: EMERGENCY ENGINE SHUT OFF (kill switch)

5.1 All magneto spark ignition engines must have a coil grounding switch on the aircraft to stop the engine. This will also prevent accidental starting of the engine. This switch shall be readily available to both pilot and helper. This switch is to be operated manually and without the use of the radio system.

5.2 Engines with battery power ignition systems must have a switch to turn off the power from the battery pack to disable the engine from firing. This will also prevent accidental starting of the engine. This switch shall be readily available to both pilot and helper. This switch shall be operated manually and without the use of the Radio System.

5.3 There must also be a means to stop the engine from the transmitter. The most common method is to close the carburetor throat completely using throttle trim; however, other methods are acceptable. This requirement applies to all glow/gas ignition engines regardless of size.

Section 6.0: RADIO REQUIREMENTS

6.1 All transmitters must be FCC type certified.

6.2 FCC Technician or higher-class license required for 6 meter band operation only.

Additional IMAA General Recommendations

The following recommendations are included in the Safety Code not to police such items, but rather to offer basic suggestions for enhanced safety.

Servos need to be of a rating capable to handle the loads that the control surfaces impose upon the servos. Standard servos are not recommended for control surfaces. Servos should be rated heavy-duty. For flight-critical control functions a minimum of 45 inch/ounces of torque should be considered. This should be considered a minimum for smaller aircraft and higher torque servos are strongly encouraged for larger aircraft. The use of one servo for each aileron and one for each elevator half is strongly recommended. Use of dual servos is also recommended for larger aircraft.

On-board batteries shall be 1000 mAh up to 20 lbs., 1200 mAh to 30 lbs., 1800 mAh to 40 lbs. And 2000 mAh over 40 lbs. flying weight. The number and size of servos, size and loads on control surfaces, and added features should be considered as an increase to these minimums. Batteries should be able to sustain power to the onboard radio components for a minimum of one hour total flying time before recharging.

Redundant and fail-safe battery systems are recommended.

The use of anti-glitch devices for long leads is recommended.

There is no maximum engine displacement limit, as it is the position of this body that an underpowered aircraft presents a greater danger than an overpowered aircraft. However, the selection of engine size relative to airframe strength and power loading mandates good discretionary judgment by the designer and builder. Current AMA maximums for engine displacement are 6.0 cu. in. for two-stroke and 9.6 cu. in. for four-stroke engines. These maximums apply only to AMA Sanctions concerning competition events (such as 511, 512, 515 and 520) and, as such, the maximums apply. All IMAA (non competition) events should be sanctioned as Class "C" events, in which these engine size maximums do not apply.

Generally, it is recommended that no attempt should be made to fly a radio controlled model aircraft with a gasoline engine in which the model aircraft weight would exceed twelve (12) pounds (underpowered) per cubic inch of engine displacement, or be less than five (5) pounds (overpowered) per cubic inch of engine displacement. Example: Using a 3 cu. in. engine, a model would likely be underpowered at an aircraft weight greater than 36 pounds. With the same

engine, an aircraft weighing less than 15 pounds would likely be overpowered.

Servo arms and wheels should be rated heavy duty. Glass-filled servo arms and control horns are highly recommended.

Control surfaces linkages are listed in order of preference:

1. Cable system (pull-pull). A tiller bar is highly recommended along with necessary bracing.

2. Arrow Shaft, fiberglass or aluminum, 1/4" or 5/16" O.D. bracing every six (6) to ten (10) inches is highly recommended.

3. Tube-in-tube (nyrod). Bracing every few inches is highly recommended. Inner tube should be totally enclosed in outer tube.

4. Hardwood dowel, 3/8" O.D. bracing every six (6) to ten (10) inches is highly recommended.

Hinges should be rated heavy duty and manufactured for Giant Scale use primarily. Homemade and original design hinges are acceptable if determined to be adequate for the intended use.

Clevis (steel, excluding heavy-duty ball links) and attachment hardware should be heavy duty 4-40 threaded rod type. 2-56 threaded size rod is acceptable for some applications (e.g. throttle). Clevis is to have lock nuts and sleeve or spring keepers.

Propeller tips should be painted or colored in a visible and contrasting manner so as to increase the visibility of the propeller tip arc.

CHECK LIST

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

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

FLYING

The Super Chipmunk 1.20 ARF is a great-flying model that flies smoothly and predictably. The Super Chipmunk does not, however, possess the self-recovery characteristics of a primary R/C trainer and should be flown only by experienced R/C pilots.

Fuel Mixture Adjustments

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

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

Takeoff

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

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

Flight

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

Take it easy with the Super Chipmunk for a few flights, gradually getting acquainted with it as you gain confidence. Adjust the trims to maintain straight and level flight. The airplane is capable of virtually all aerobatic maneuvers. Spins, loops, snap rolls, point rolls, lomcevaks and stall turns are all within the capability of this model. This plane is not a 3D capable airplane. The Super Chipmunk was a modified British military trainer; therefore, it had limits to what it could do. At the end of this flying section we have included a copy of the maneuvers Art flew when performing his air show.

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 and dropping the flaps 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.

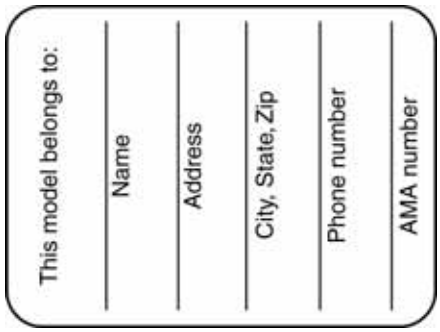
Landing

The flaps on this plane are very effective at slowing the plane. In fact, with flaps deployed you will find that this plane will land in a very short distance. Without flaps the plane will land at a faster, but very manageable speed. 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. On the crosswind leg, lower the flaps. Make your final turn toward the runway (into the wind) keeping the nose down to maintain airspeed and control. Level the attitude when the model reaches the runway threshold, modulating the throttle as necessary to maintain your glide path and airspeed. If you are going to overshoot, smoothly advance the throttle (always ready on the right rudder to counteract torque) and climb out to make another attempt. When you're ready to make your landing flare and the model is a foot or so off the deck, smoothly increase up elevator until it gently touches down. Once the model is on the runway and has lost flying speed, hold up elevator to place the tail on the ground, regaining tail wheel control.

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

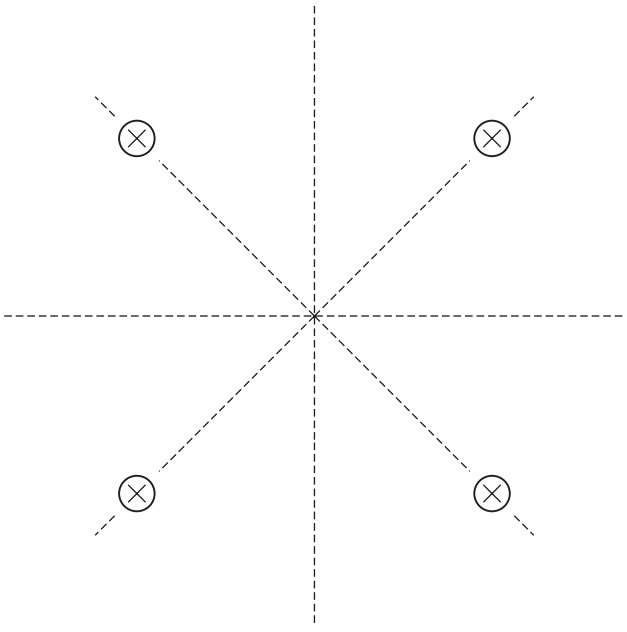
maintain heading), remember to throttle back at the top, and make certain you are on the desired rates (high/low rates). A flight plan greatly reduces the chances of crashing your model just because of poor planning and impulsive moves. **Remember to think.**

GOOD LUCK AND GREAT FLYING!



Use this tag or photocopy it and use the copy. Please fill in the indicated information and place the tag in or on your model.

ENGINE MOUNTING TEMPLATE



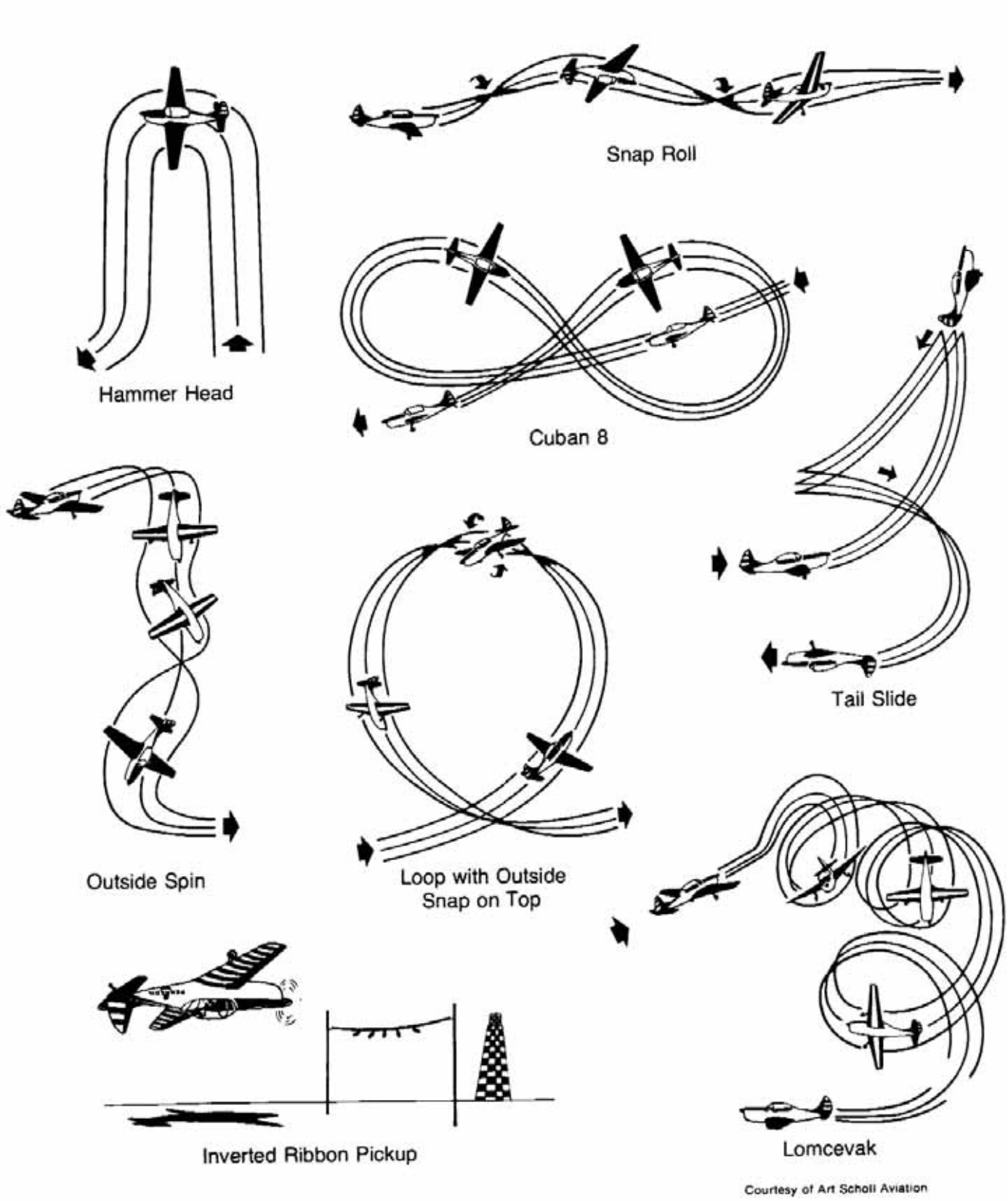
OTHER ITEMS AVAILABLE FROM GREAT PLANES

Futaba® 9CAP 9-Channel Radio Systems
Want to experiment with *triple* rates? Find, open, set and close functions with amazing ease? Be able to look at an LCD and see how far each servo will travel in operation – and reset the limits of any servo you choose? You can do it all and more, with the 9CAP. Easy Dial N' Key programming, eight-character naming, and a "full functionality" trainer system are just a few of its extraordinary features. Learn more on the Futaba website at *www.futaba-rc.com*. Includes R149DP receiver, four S3001 servos, 600mAh Tx and Rx NiCds. **FUTJ87****

O.S.® FS-120S-E Surpass™ Engine
For dependable power, fuel efficiency, and realistic sound, match your Super Chipmunk with the O.S. FS-120S-E Surpass 4-stroke engine! This ringed piston powerhouse features an aluminum crankcase; ball bearings to support the crankshaft and helix gear driven camshaft; plus a rear-mounted, updraft carburetor. O.S. includes exhaust header, muffler, and a #F glow plug. Fuel with 5-15% nitro content and 18% lubricant is recommended. **OSMG0930**

Art Scholl Program

For those of you who like to fly your planes in a scale manner, the following program from Art's 1980 Spectators Guide shows you the maneuvers he did. We hope you enjoy flying your plane through all of these maneuvers (yea, even the Inverted Ribbon Pickup!)



BUILDING NOTES

Kit Purchased Date: _____

Where Purchased:_____

Date Construction Started: _____

Date Construction Finished: _____

Finished Weight: _____

Date of First Flight: _____

FLIGHT LOG