

Spirit of St. Louis

ELECTRIC PARK FLYER *ARF*

INSTRUCTION MANUAL



Wingspan: 40.1 in [1020mm]
Wing Area: 253 sq in [16.3 dm²]
Weight: 12.4 oz [350g]
Wing Loading: 7.1 oz/sq ft [21.7 g/dm²]
Length: 25.5 in [650mm]
Radio: 3-channel with 2 micro servos
Motor: T-280-size with 3.5:1 gear box
Motor Battery: 9.6V, 150 – 350 mAh

WARRANTY

Great Planes® Model Manufacturing Co. guarantees this kit to be free from defects in both material and workmanship at the date of purchase. This warranty does not cover any component parts damaged by use or modification. **In no case shall Great Planes' liability exceed the original cost of the purchased kit.** Further, Great Planes reserves the right to change or modify this warranty without notice.

In that Great Planes has no control over the final assembly or material used for final assembly, no liability shall be assumed nor accepted for any damage resulting from the use by the user of the final user-assembled product. By the act of using the user-assembled product, the user accepts all resulting liability.

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

To make a warranty claim send the defective part or item to Hobby Services at the address below:

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

Include a letter stating your name, return shipping address, as much contact information as possible (daytime telephone number, fax number, e-mail address), a detailed description of the problem and a photocopy of the purchase receipt. Upon receipt of the package the problem will be evaluated as quickly as possible.

READ THROUGH THIS MANUAL BEFORE STARTING CONSTRUCTION. IT CONTAINS IMPORTANT INSTRUCTIONS AND WARNINGS CONCERNING THE ASSEMBLY AND USE OF THIS MODEL.



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

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INTRODUCTION

Thank you for purchasing the Great Planes Spirit of St. Louis ARF. The Spirit of St. Louis ARF is a lightweight, slow-flying *Park Flyer* that can be flown just about anywhere there is an open area clear of obstacles. Since the Spirit of St. Louis ARF is constructed mostly of molded plastic foam, it is durable and does not require the application of film coverings used on wood models. And, the Spirit of St. Louis landing gear makes ROG (rise off ground) takeoffs from smooth surfaces a snap.

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

1. Although the Spirit of St. Louis is a slow-flying electric powered model, just the same as any R/C plane, it should still be flown with care. Even while gliding with the motor off the Spirit of St. Louis could possibly cause injury to yourself or spectators and damage property.

2. You must assemble the Spirit of St. Louis **according to the instructions**. Modifications may reduce performance. In cases where the instructions differ from the photos, the written instructions are correct.

3. You must use an R/C radio system that is reliable and in good condition. You must properly install all components so that the model operates correctly on the ground and in the air.

4. 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.

Note: 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.

Before starting to build, compare the parts in this kit with the Kit Contents, and note any missing parts. Also inspect all parts to make sure they are of acceptable quality. If any parts are missing, broken or defective, or if you have any questions about building or flying this airplane, please call us at (217) 398-8970, or e-mail us at:

productsupport@greatplanes.com

If you are contacting us for replacement parts, please be sure to provide the full kit name (Great Planes Spirit of St. Louis ARF) and the part numbers as listed in the Kit Contents.

You can also check our web site for the latest Spirit of St. Louis ARF updates.

www.greatplanes.com

To make your R/C modeling experience totally enjoyable, if this is your first R/C model, we recommend that you get the assistance of an experienced pilot. If you're not currently a member of an R/C club, your local hobby shop has information about clubs in your area whose membership includes experienced pilots.

If you're not already an Academy of Model Aeronautics (AMA) member, we strongly urge you to join. There are over 2,500 AMA chartered clubs across the country. Among other benefits, the AMA provides insurance to its members who fly at sanctioned sites and events. Additionally, training programs and instructors are available at AMA club sites to

help you get started the right way. 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>



Additionally, an 8-cell (9.6 volt) 150 to 350 mAh battery pack (GPMP0050 – 150 mAh, shown in photo, GPMP0060 – 270 mAh, GPMP0070 – 350 mAh) is required. For charging the battery, the Great Planes ElectriFly Peak Charger (GPMM3000) is recommended.

Building Supplies

In addition to common household tools, here is the list of items used to build The Spirit of St. Louis ARF.

- 6-minute Epoxy (GPMR6042)
- 1/2 oz. Medium CA+ (GPMR6007)
- Hobby knife (HCAR0105)
- #11 Blades (HCAR0211)
- Builder's triangle (HCAR0480)
- Drill and 1/16" drill bit
- Double-sided foam tape (GPMQ4440) for mounting receiver and speed control
- Sandpaper and sanding block
- Small Phillips screwdriver (#1)
- Small T-pins (HCAR5100) or craft pins

ADDITIONAL ITEMS REQUIRED

Flight Equipment



The Spirit of St. Louis ARF requires a three-channel radio with two micro servos, a mini/micro receiver and a speed control. Hobbico® CS-5 Nano™ servos (HCAM0090), the Great Planes ElectriFly™ receiver (GPML0040 Hi Band, GPML0041 Low Band) and the Great Planes C-5 (GPMM2000) or C-10 (GPMM2010) speed control are recommended. The receiver comes without a crystal, which must be purchased separately. The order number for the crystal is FUTL63** (Hi Band) or FUTL62** (Low Band). Substitute the “**” with the channel number you require. For example, if the transmitter you plan to fly The Spirit of St. Louis ARF with is on channel 44, order receiver crystal FUTL6344. Hi Band receivers are tuned for channels 36 – 60. Low Band receivers are tuned for channels 11 – 35.

IMPORTANT BUILDING NOTES

■ Since The Spirit of St. Louis ARF is made mostly of foam, and since CA adhesives commonly used to build R/C model airplanes dissolve foam, CA should not be used when gluing foam parts. Therefore, 6-minute epoxy, which is compatible with foam, is used for most of the construction. Unless otherwise specified in the instructions, 6-minute epoxy is to be used for gluing all parts of the model together. There are a few instances where CA may be used for gluing wood to wood. You can also use aliphatic resin glue instead of epoxy if desired.

■ For the strongest bond apply epoxy to **both** parts being joined.

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.

ORDERING REPLACEMENT PARTS

Replacement parts for the Great Planes Spirit of St. Louis 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. Parts may also be ordered directly from Hobby Services, but full retail prices and shipping and handling charges will apply. Illinois and Nevada residents will also be charged sales tax.

To locate a hobby dealer, visit the Hobbico web site at www.hobbico.com. Choose "Where to Buy" at the bottom of the menu on the left side of the page. Follow the instructions provided on the page to locate a U.S., Canadian or International dealer. If a hobby shop is not available, replacement parts may also be ordered from Tower Hobbies at www.towerhobbies.com, or by calling toll free (800) 637-6050, or from Hobby Services by calling (217) 398-0007, or via facsimile at (217) 398-7721. If ordering via fax, include a Visa® or MasterCard® number and expiration date for payment.

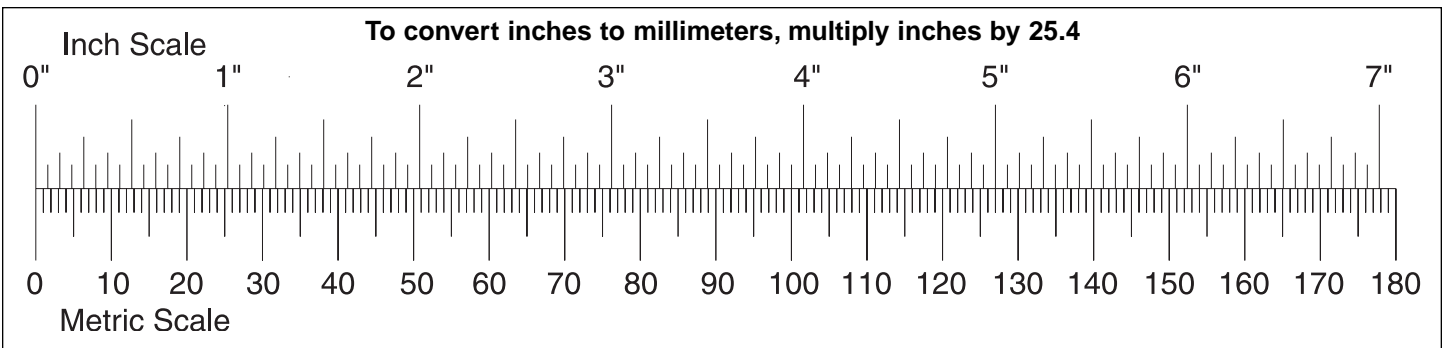
Mail parts orders and payments by personal check or money order to: Hobby Services, 3002 N. Apollo Drive, Suite 1, Champaign, IL, 61822

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

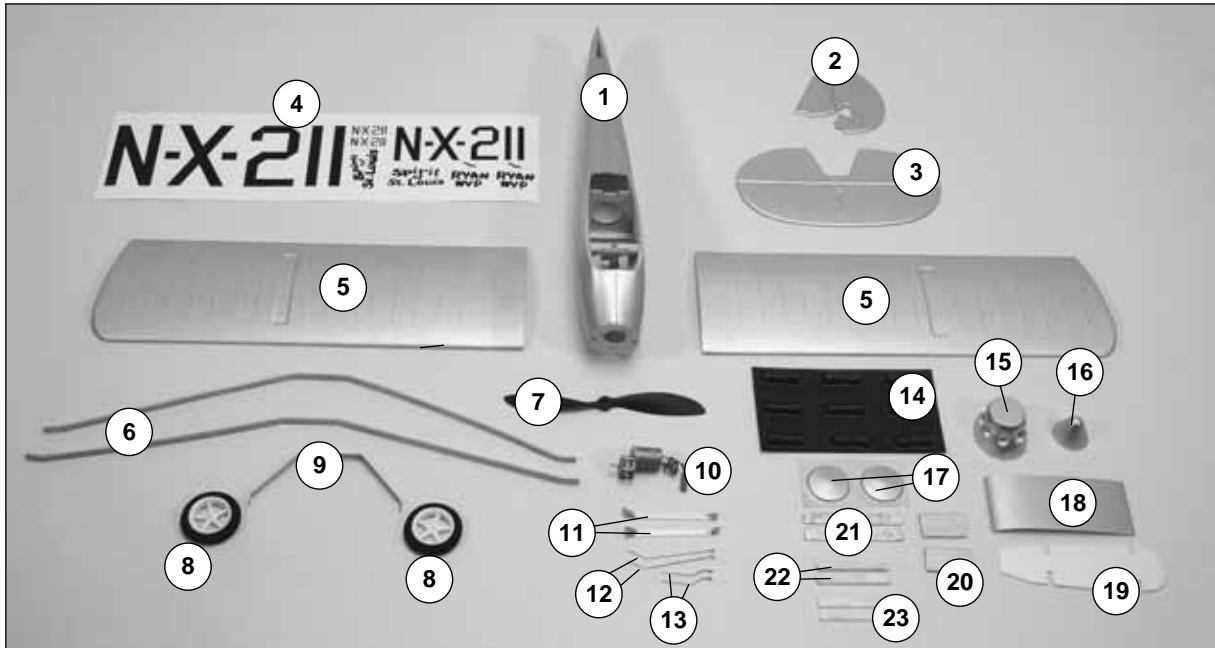
<u>Order Number</u>	<u>Description</u>	<u>How to Purchase</u>
	Missing pieces	Contact Product Support
	Instruction manual	Contact Product Support
	Full-size plans.....	Not available
GPMA2710	Wing Set	} Contact Your Hobby Supplier to Purchase These Items
GPMA2711	Fuselage	
GPMA2712	Tail Set	
GPMA2713	Cowl	
GPMA2714	Landing Gear	
GPMG0260	Gear Drive	
GPMM1981	Speed Control	
GPMA2715	Propeller	



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 **Great Planes Product Support**. When reporting defective or missing parts, use the part names exactly as they are written in the Kit Contents list on this page.

Great Planes Product Support:
Telephone: (217) 398-8970, ext. 5
Fax: (217) 398-7721
E-mail: airsupport@greatplanes.com



Kit Contents

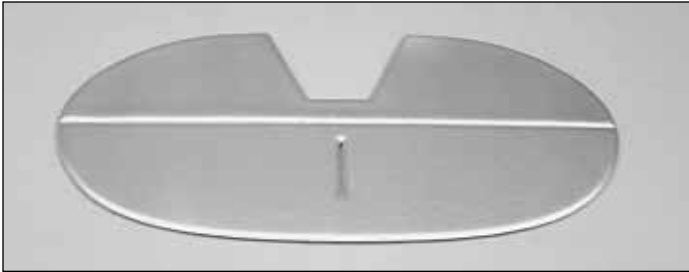
- | | | |
|---|---|---|
| <ul style="list-style-type: none"> 1. Fuselage 2. Vertical Fin 3. Horizontal Stabilizer 4. Decal Sheet 5. Wing Halves (2) 6. Wing Struts (2) 7. Propeller 8. Wheels (2) | <ul style="list-style-type: none"> 9. Main Landing Gear 10. Motor/Gear Box 11. Gear Braces (2) 12. Secondary Strut Wires (2) 13. Shock Support Wires (2) 14. Cylinders 15. Cowl 16. Spinner | <ul style="list-style-type: none"> 17. Wheel Covers 18. Top Wing Joiner 19. Bottom Wing Joiner 20. Landing Gear Strut Cover (2) 21. Wing Reinforcement Strip (2) 22. Secondary Strut (2) 23. Tail Struts (2) |
|---|---|---|

Kit Contents (not photographed)

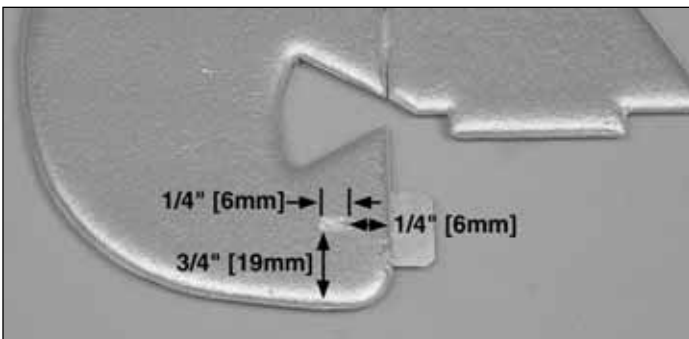
- | | |
|---|--|
| <ul style="list-style-type: none"> (2) Control Horn (2) Silicone Retainer (2) Pushrod Connector (2) Micro FasLinks (1) 3 x 20mm Wood Screw (3) 2 x 10mm Wood Screw (12) 2.4 x 15mm Machine Screw (2) Axle Screw (4) 2.4mm Knurled Nuts | <ul style="list-style-type: none"> (2) Pushrods (2) Pushrod Guide Tubes (1) Propeller Adapter (1) Propeller Spacer |
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ASSEMBLY

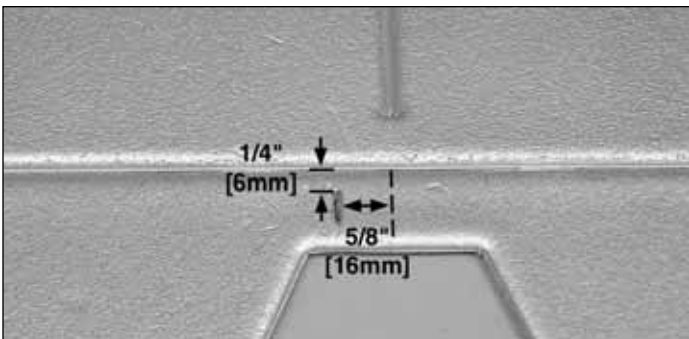
Assemble the Tail Surfaces



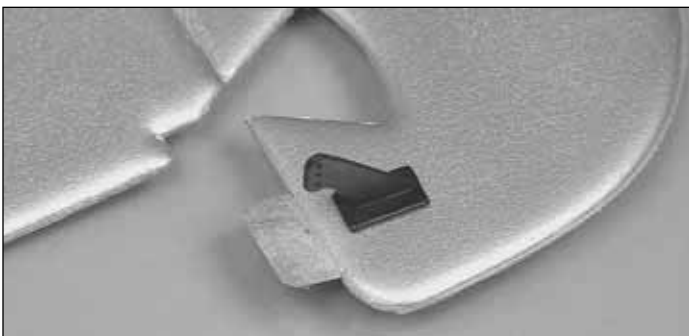
1. Cut a slot in the stabilizer, using the molded indentation as a guide.



2. Cut a 1/4" [6mm] long slot in the rudder in the location shown.

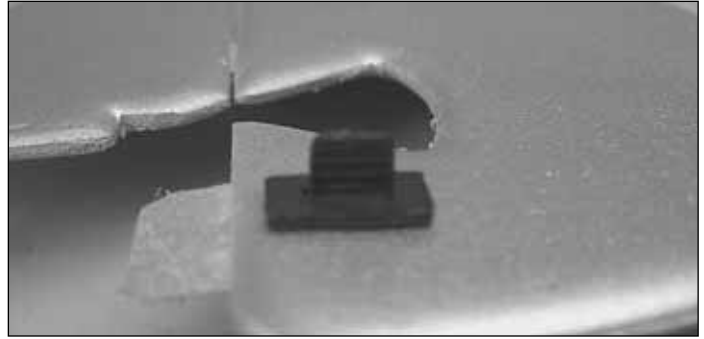


3. Cut a 1/4" [6mm] long slot in the elevator in the location shown.



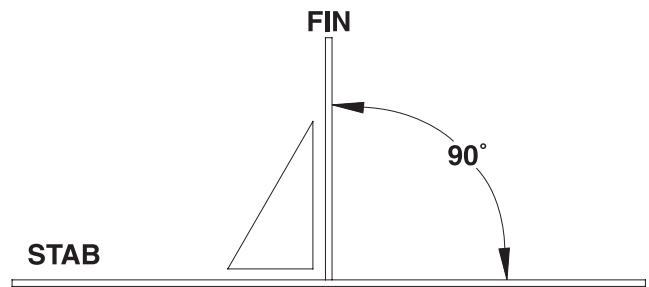
4. Glue a control horn into the slot you made in the fin with a small amount of 6-minute epoxy. When viewed from

the rear, the rudder control horn should be on the left side of the rudder.



5. Glue a plastic control horn retainer onto the back side of the control horn with 6-minute epoxy.

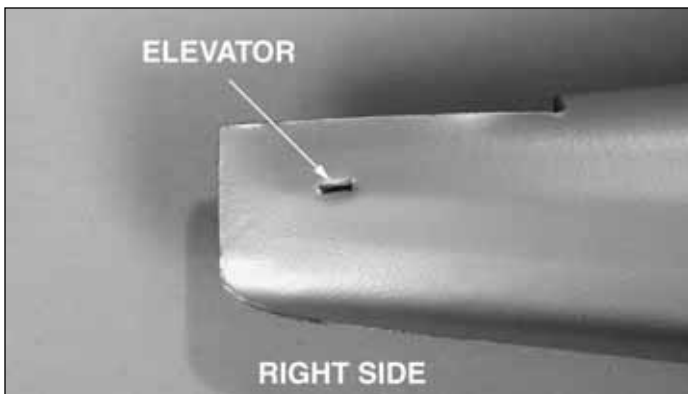
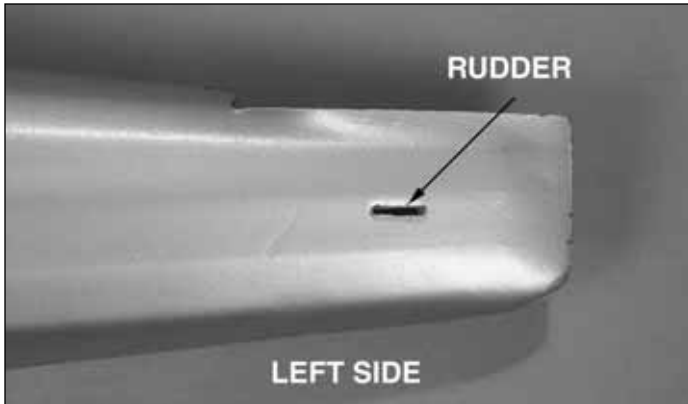
6. Repeat this process with the elevator control horn. When viewed from behind, the control horn should protrude down from the left side of the elevator joiner.



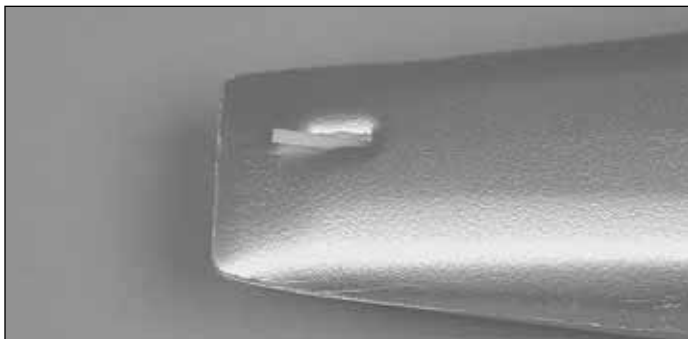
7. Use epoxy to glue the fin to the stab. Use a small builder's square to get the fin perpendicular to the stab, then use tape or small T-pins to hold them together until the epoxy hardens.

Assemble the Fuselage

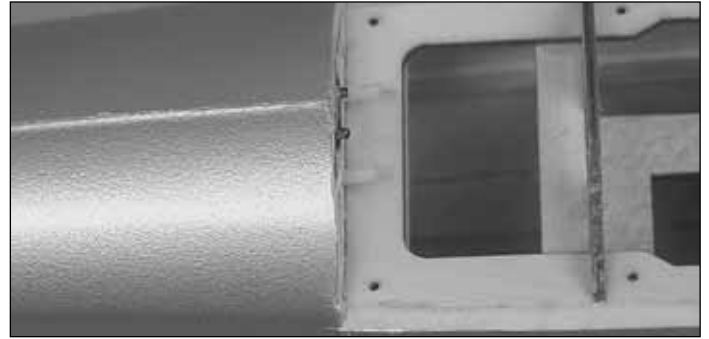
Due to the manufacturing process, there may be some small surface stress marks on the fuselage and wing. This is normal.



❑ 1. Using the indentations in the aft end of the fuselage as a guide, cut the slots for the elevator and rudder pushrods.



❑ 2. Use sandpaper to roughen one inch at both ends of the .094" x 13" [2.4 x 330mm] plastic pushrod guide tubes with sandpaper. Insert the pushrod guide tubes through the slots you just cut. Push them forward until they protrude 1/4" [6mm] beyond the end of the slots.

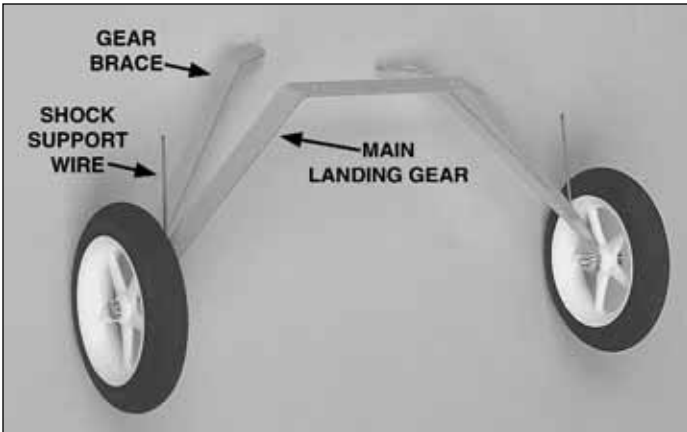
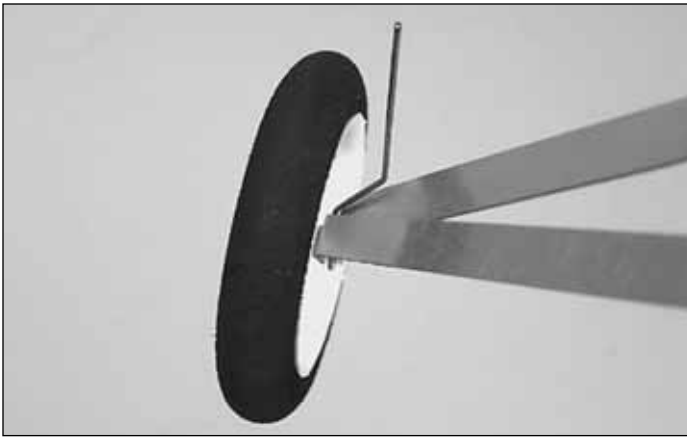


❑ 3. Insert the front of the pushrod through the two small holes in the rear former of the battery bay. Secure the pushrods on both ends with a small drop of epoxy.

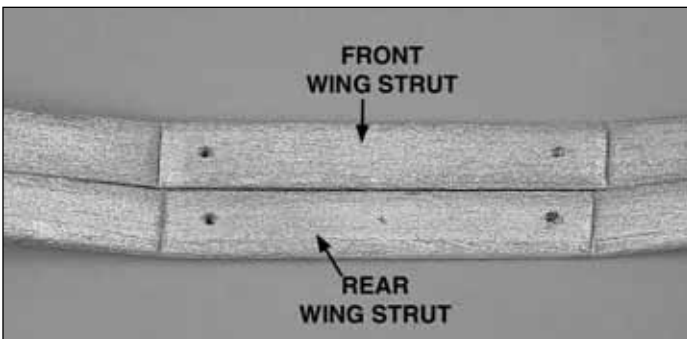
Landing Gear Assembly



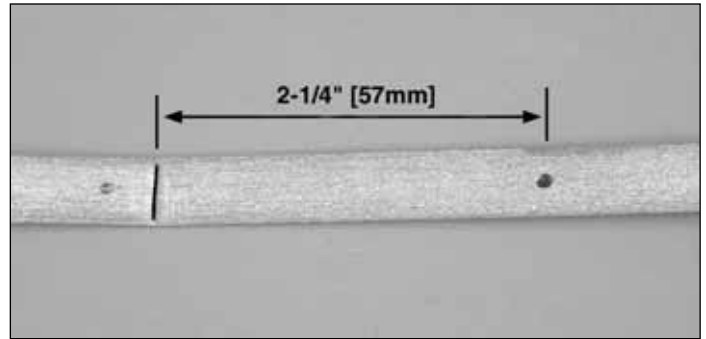
❑ 1. Install a wheel onto an axle screw. Tighten one knurled nut against the shoulder in the axle screw. Make sure the wheel turns freely on the axle. Do the same with the other wheel and axle.



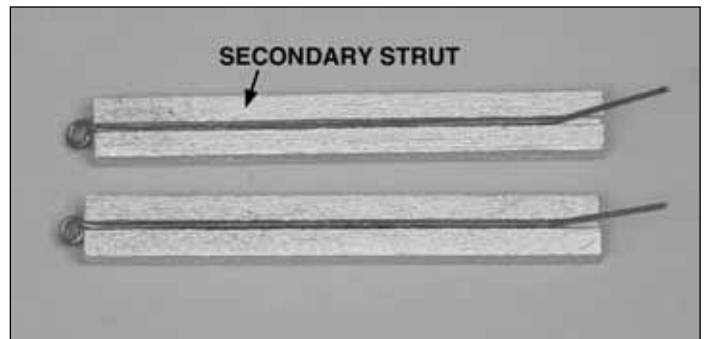
2. Assemble the aluminum landing gear, shock support wire, and one aluminum gear brace onto one of the axles. Secure the assembly with a knurled nut. Do the same for the other side.



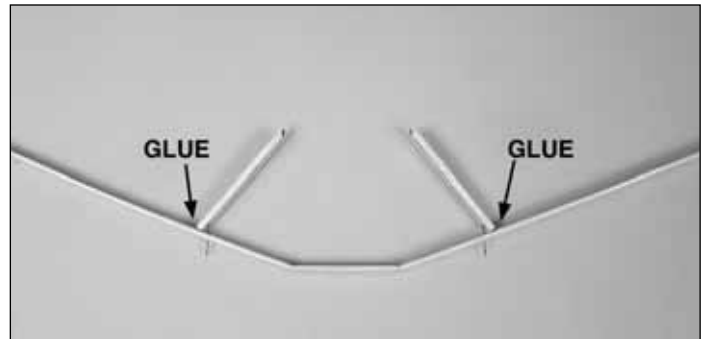
3. Drill 1/16" [1.6mm] holes in the bases of the balsa wing struts, using the punched indentations as a guide. Identify the front strut. This is the strut with the wider spacing between holes.



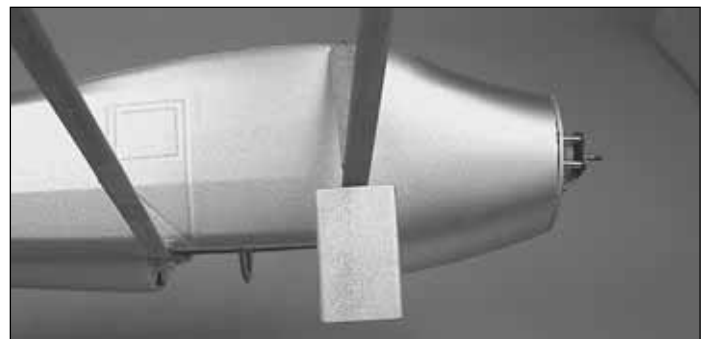
4. Drill a 1/16" [1.6mm] hole in the front wing strut, 2-1/4" [57mm] from the bend near the center, as shown. Do this on both the left and right sides of the strut.



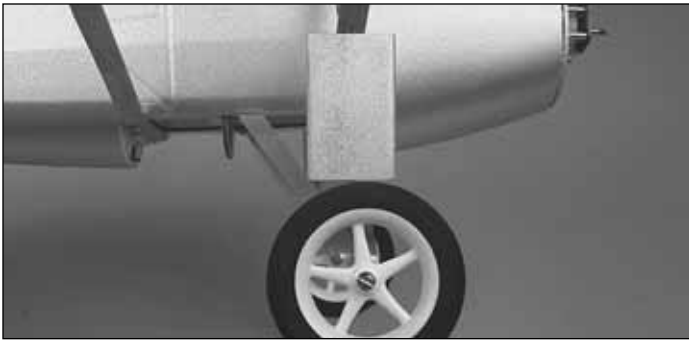
5. Glue the wire supports into the secondary struts with CA.



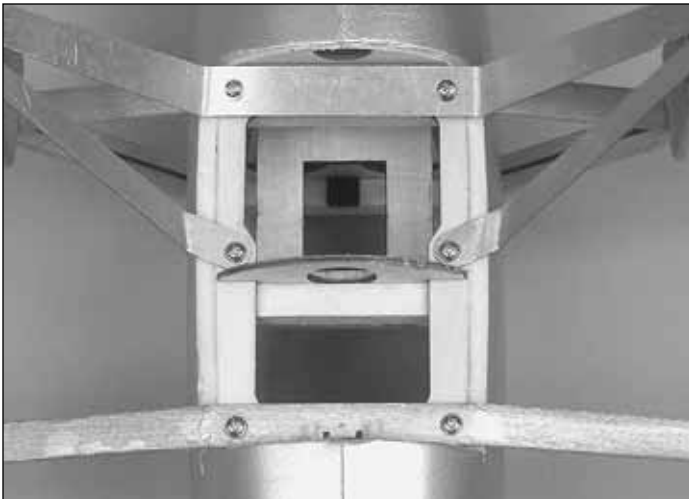
6. Insert the protruding wires on the secondary struts into the outer holes in the front strut, and glue them in place.



7. Screw the rear strut into place on the fuselage, using the two precut holes at the rear of the hatch. Slip the landing gear strut cover onto the wires protruding below the front strut. Do not screw the front strut into place yet.



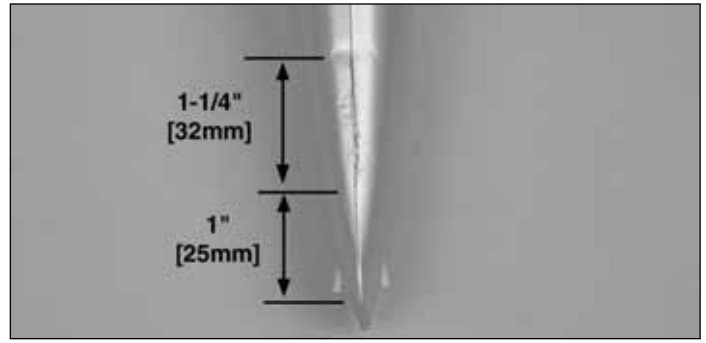
❑ 8. Insert the landing gear support wires into the landing gear strut cover and, using two 2 x 12mm wood screws, secure the landing gear and front strut into the precut holes at the front of the hatch.



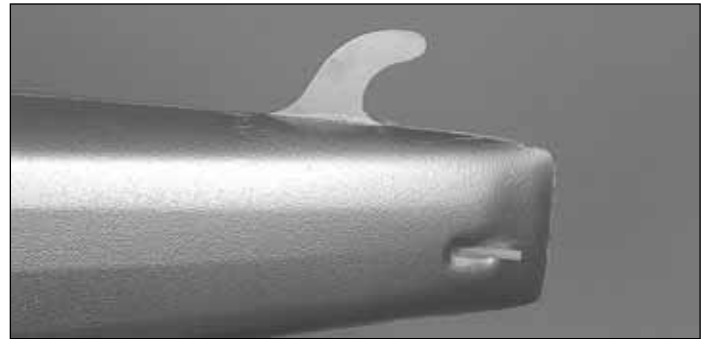
❑ 9. Secure the landing gear braces with 2 x 10mm wood screws.



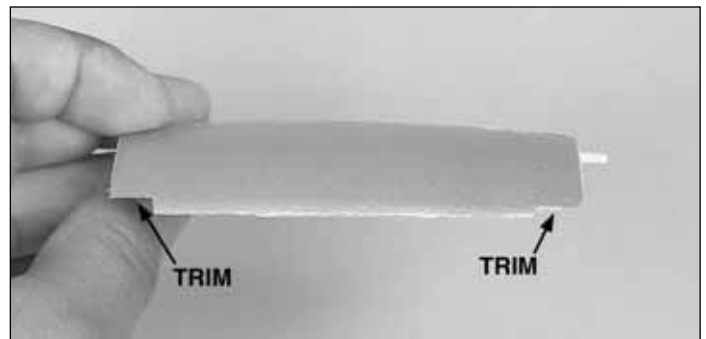
❑ 10. Using 2 x 10mm wood screws, secure the secondary struts to the fuselage. The front of the strut should be even with the front of the former.



❑ 11. Cut a 1-1/4" [32mm] long slot along the centerline of the bottom of the fuselage, starting 1" [25mm] from the tail end.



❑ 12. Using 6-minute epoxy, glue the tail skid into the slot you just cut.

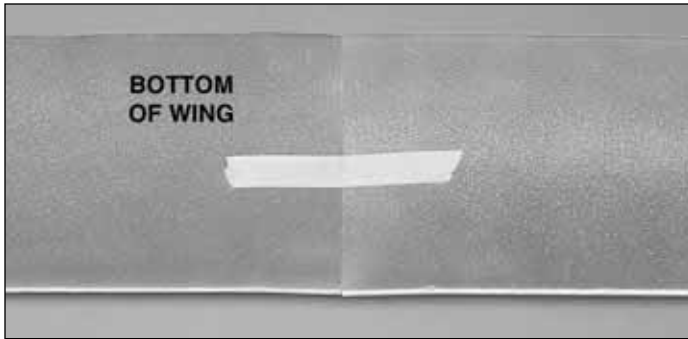


❑ 13. Trim the corners of the battery hatch to clear the wing struts. Use a sharp #11 blade, and remove a little bit of material at a time until you have a good fit.

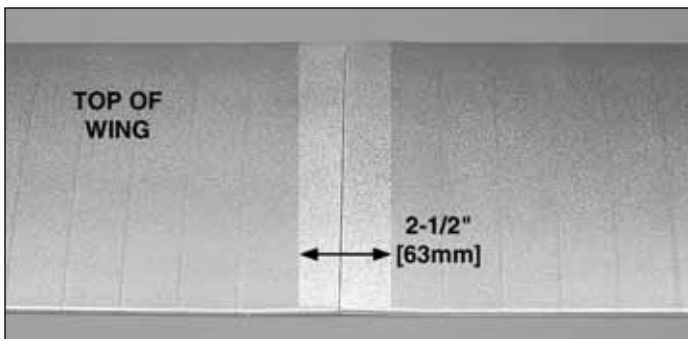


❑ 14. Use a very small amount of epoxy to glue the wheel covers to the wheels.

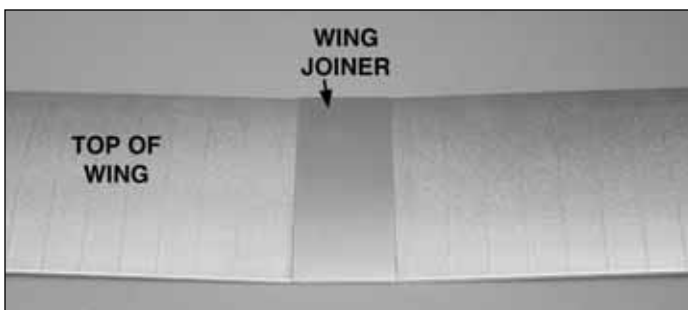
Wing Construction



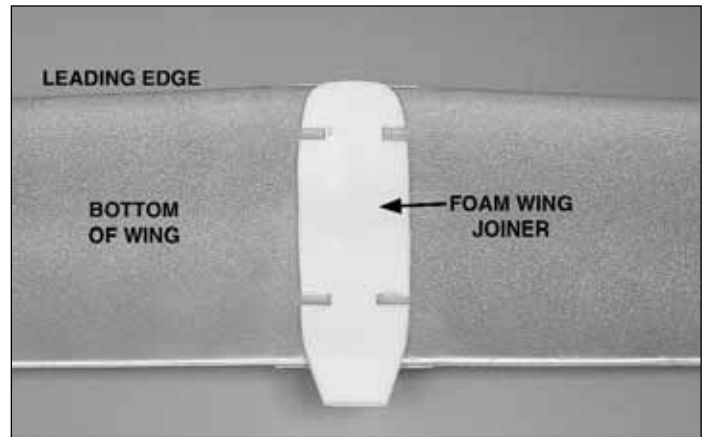
1. Tape the bottom of the two wing panels together with a single piece of tape. Make sure the leading and trailing edges are lined up, and the wing panels are tightly butted together.



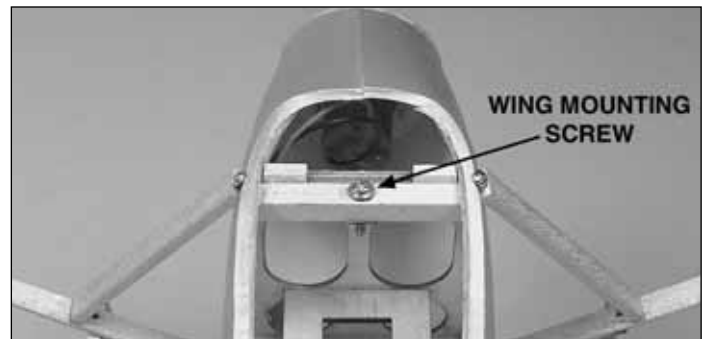
2. Flip the wing over, and lightly coat the shaded area shown with epoxy. Lightly coat the bottom (unpainted side) of the plastic wing joiner as well.



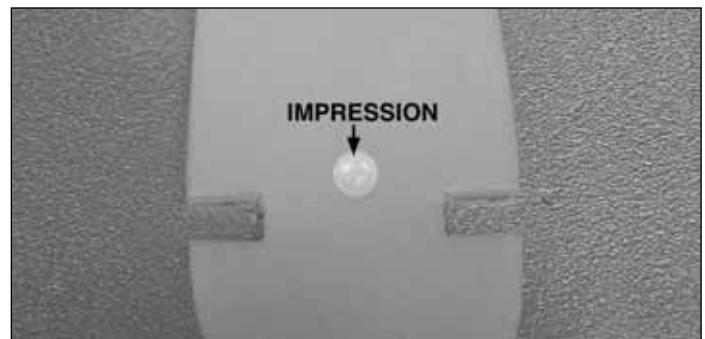
3. Prop both wing tips 1-1/2" [38mm] off your work table. Press the wing joiner down onto the joint of the wing, being careful to keep it centered. Place a small weight on the joiner to hold everything tight. Allow the epoxy to harden before proceeding.



4. Use 6-minute epoxy to glue the foam wing joiner to the bottom of the wing. Make sure that it is centered and that the leading edge of the wing is lined up with the front of the joiner.



5. Screw the 3 x 20mm wing mounting screw all the way down into the plastic blind nut in the fuselage.



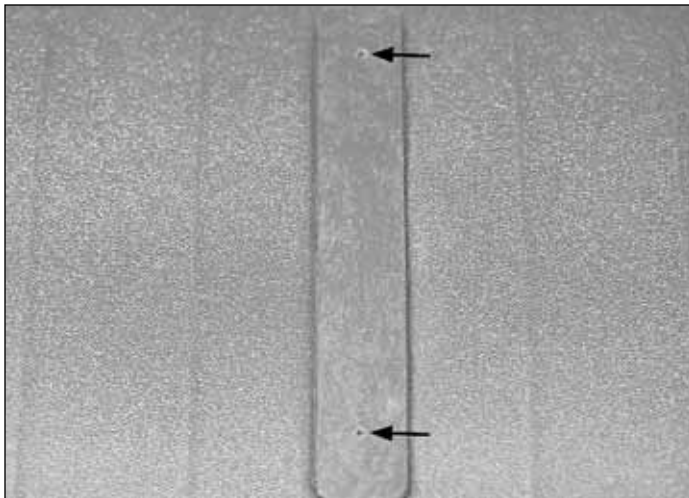
6. Test fit the wing to the fuselage by slipping the tongue at the trailing edge into the fuselage first. Then press the bottom joiner into the fuselage cutout. It should fit somewhat tightly. Making sure the wing is properly aligned, press down on the center of the wing near the leading edge. This will leave an impression of the wing mounting screw that we will use as a guide for drilling.



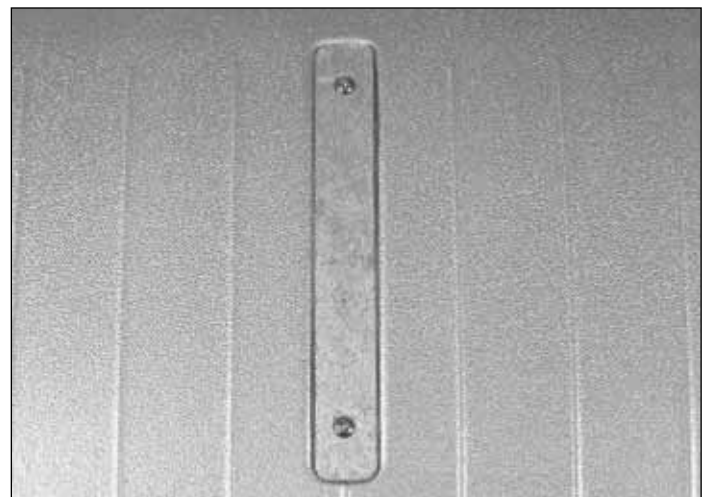
7. Epoxy the balsa wing reinforcement strips into the pre-molded indentations in the wings.



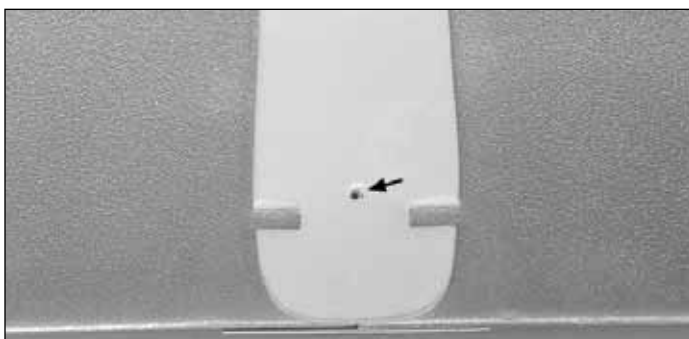
10. Remove the wing mounting screw from the fuselage and use it to secure the wing to the fuselage. Do not overtighten.



8. Drill a 1/16" [1.6mm] hole through the wing and reinforcement strips at each of the pre-marked points.



11. Thread 2 x 10mm wood screws part-way into the four holes you drilled in the wing reinforcement strips until they just begin to protrude out the bottom.



9. Drill a 7/64" [2.8mm] hole through the wing, using the impression of the screw that you made earlier as a guide. Make sure the hole is centered in the screw head impression.



12. As you perform this step, be very careful not to flex the wing. Gently lift one of the strut ends up against the screws that are now protruding from the bottom of the wing. Secure the strut using the screw. No pilot hole is necessary. Repeat this with the remaining three struts. Do not overtighten, as these will easily strip out. You will later be instructed to harden the "threaded" holes with CA.

13. Examine both panels of your wing for any twist. If either wing is twisted, use the procedure outlined below to straighten them.

If either of your wing panels has any twist in it, don't panic! We can take out this twist by adjusting the struts' positions on the wing. If the wing panel has wash-in (the tip of the wing is twisted so that the leading edge is higher than the trailing edge), then follow these steps:

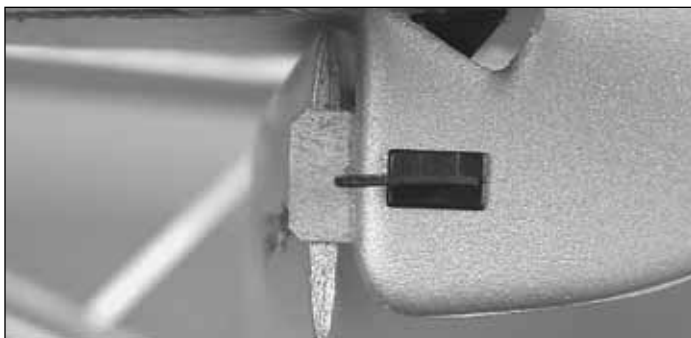
1. Unscrew the front strut from the wing panel.
2. Reposition the strut so that the screw contacts it a little closer to the fuselage. Start with about 1/16" [1.6mm].
3. Screw the strut to the wing in this position. This will pull the leading edge of the wing down and reduce the wash-in.
4. Check your wing panel for twist. If it still has wash-in, repeat the procedure. If it has wash-out (the opposite of wash-in), then go to the wash-out procedure below. If it's straight, you're done!

If the wing panel has wash-out (leading edge lower than trailing edge), then do the opposite:

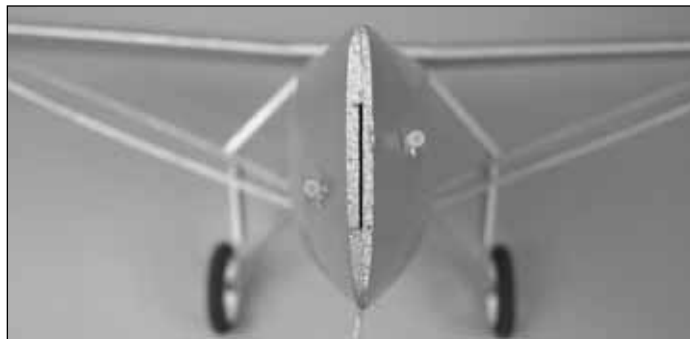
1. Unscrew the front strut from the wing panel.
2. Reposition the strut so that the screw contacts it a little further from the fuselage. Start with about 1/16" [1.6mm].
3. Screw the strut to the wing in this position. This will push the leading edge of the wing up and reduce the wash-out.
4. Check your wing panel for twist. If it still has wash-out, repeat the procedure. If it has wash-in (the opposite of wash-out), then go to the wash-in procedure above. If it's straight, you're done!

14. One at a time, unscrew each of the struts from the wing and use a drop of thin CA to harden the "threads" of the final hole that you made while adjusting the wing. Allow the CA to cure, and re-secure the struts.

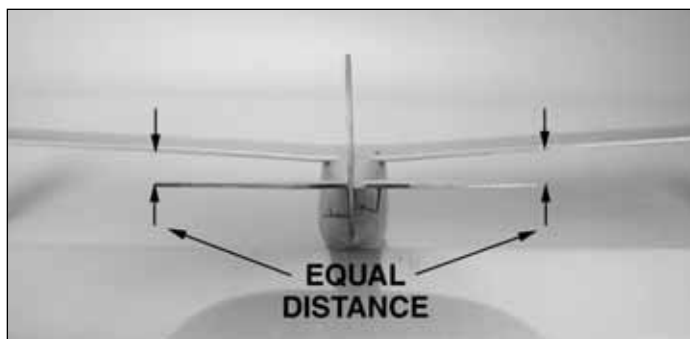
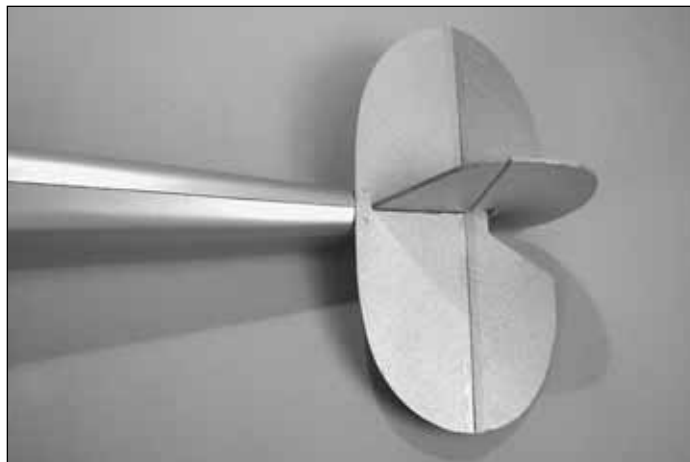
Attach the Tail



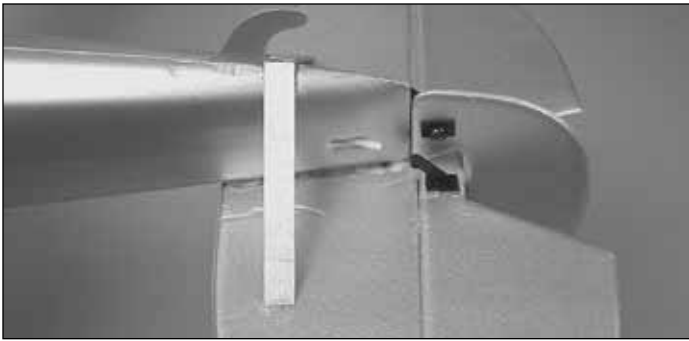
1. Hold the fin/stab assembly up to the tail of the fuselage and mark the top and bottom edges of the rudder hinge.



2. Cut a slot between the two marks you just made, following the centerline of the fuselage.



3. Glue the stab and fin to the fuselage using 6-minute epoxy. Coat the saddle area on the fuselage with epoxy, as well as the rudder hinge. As you fit the tail to the fuselage, be sure to insert the rudder hinge into the slot on the back of the fuselage. Make sure the fin is centered on the molded-in seam on the top of the fuselage, and that it is parallel with the centerline of the fuselage. If necessary, raise or lower one side of the stab until it is parallel with the wing. Use pins to hold the stab into position until the epoxy has fully hardened. Fill any gaps between the stab and fuse sparingly with additional epoxy.



❑ 4. Using 6-minute epoxy, glue the tail struts onto the stabilizer and fuselage in the position shown.

Radio Installation

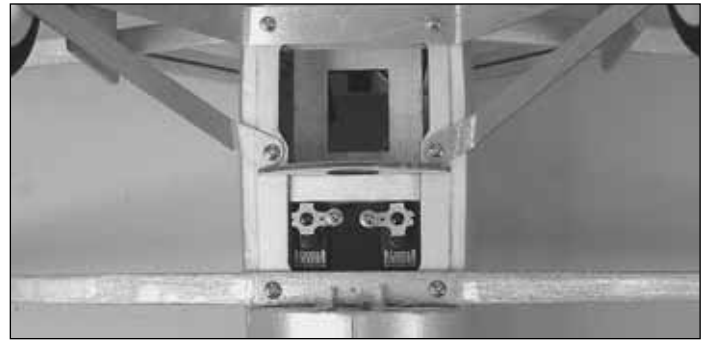


❑ 1. Remove the wing by unscrewing the strut screws and the main wing screw to gain access to the radio compartment.

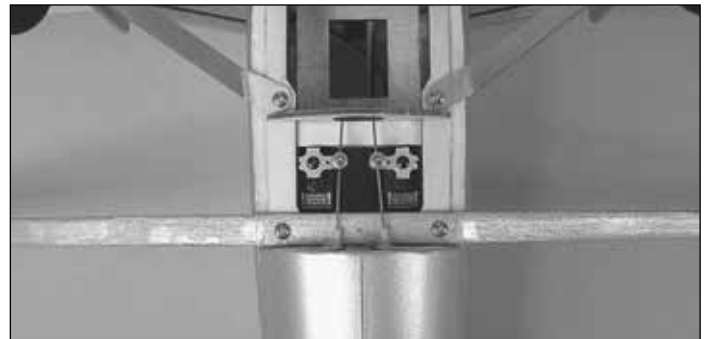
❑ 2. Remove the control arms from your servos. Use the hardware and screws included with your servos to install the servos upside-down in the servo bay.



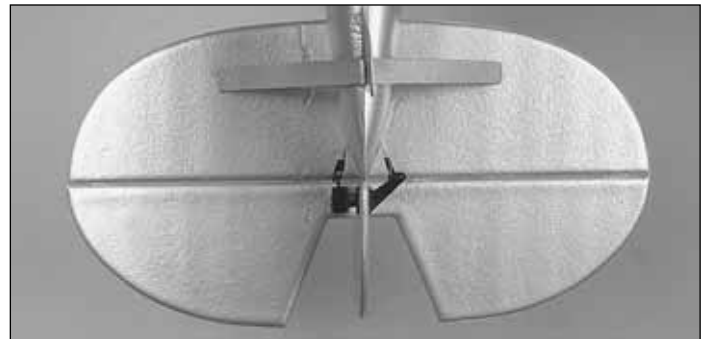
❑ 3. Using double-sided tape or hook-and-loop material, install your receiver and speed control. Install them on opposite sides of the fuselage to reduce the possibility of interference.



❑ 4. Install the included pushrod connectors onto the servo arms. You may have to enlarge the holes in your servo arms to do so. Center the servos with your radio and install the servo arms onto the servos.



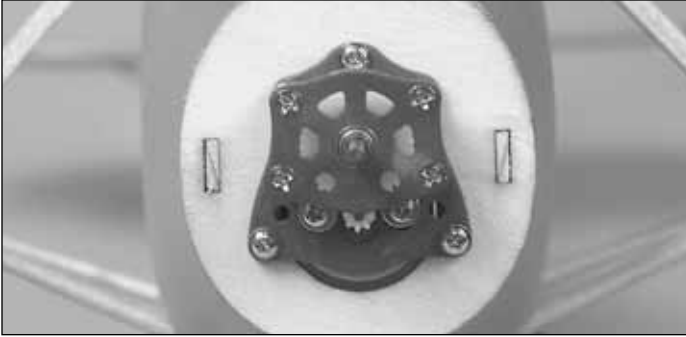
❑ 5. Slip the 1/32" [.8mm] wire pushrods into the pushrod guide tubes. As they emerge into the radio bay, insert them through the pushrod connectors.



❑ 6. Connect the pushrods to the innermost holes on the control horns. Secure them with the included Micro FasLinks. Center the control surfaces and tighten down the easy-adjusters on the servos.

❑ 7. Reinstall the wing.

Motor Installation



1. Using three 2 x 10mm wood screws, install the motor and gearbox onto the firewall. Plug the motor into the electronic speed control.



2. Install the prop adapter onto the gearbox output shaft.



3. Put a mark at the top of the molded plastic **cowl**. The center-section of the cowl has a line which points to the top. Note that this is aligned with the indentation for the top cylinder. Trim the excess material from the aft edge of the cowl. Cut a hole in the front of the cowl for the gearbox.



4. Carefully cut the molded **cylinder heads** from the plastic sheet. Lightly sand the edges flat and smooth with some

120-grit sandpaper placed flat on your worktable. Glue two of the cylinder heads together to form a cylinder head assembly. This is easiest to do if you hold the assembly as shown in the photo while gluing the center-section together first with CA. After the CA has cured, hold the assembly in the center and glue the rippled ends together.

5. Carefully cut this assembly in half to obtain two cylinders. Do this for the remaining cylinder heads to obtain nine complete cylinders.



6. Glue all nine cylinders to the cowl with medium CA.



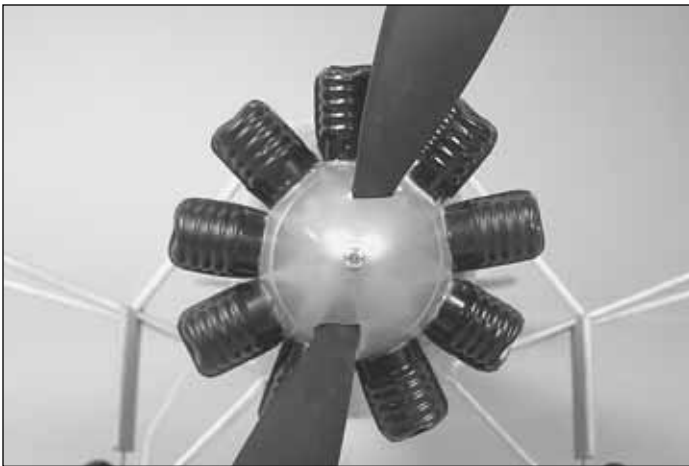
7. Center the cowl on the prop shaft adapter. Drill a 1/16" [1.6mm] hole through the cowl, into the balsa nose formers for each screw. Mount the cowl to the fuselage with three wood screws. This photo shows the finished cowl mounted to the completed model.



8. Slip the plastic adapter ring into the propeller. Install the propeller onto the prop adapter and secure it with the washer and nut.



9. Cut the excess plastic away from the spinner at the molded-in cut line. Trim the spinner to fit the propeller. Do this by removing a small amount of material at a time until you have a good fit.



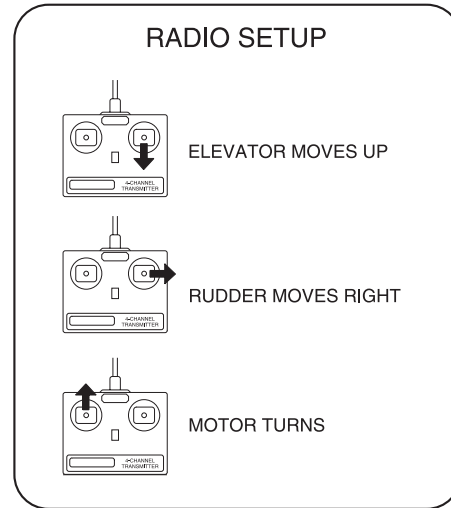
10. Secure the spinner to the prop adapter with the 2 x 15mm machine screw.

PREPARE FOR FLYING

Set the Control Throws

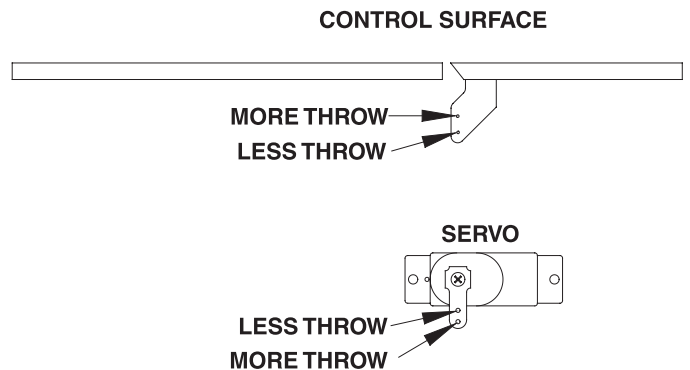
Note: Unless you are specifically checking the operation of the motor, for safety remove the propeller from the model while setting it up on your workbench.

IMPORTANT: Whenever connecting the battery always hold onto the fuselage in case the motor accidentally comes on and the propeller turns.



1. Turn on the transmitter and connect the battery to the speed control in the model. Be certain the rudder, elevator and motor respond as shown in the chart. If required, use the reversing function in the transmitter to reverse any controls necessary so they respond correctly.

2. Use the ATV function in the transmitter or adjust the position of the pushrods on the servo arms or the control horns on the elevator and rudder to get the control surface throws shown in the chart that follows. The throws are measured at the widest part of the control surface.



3. To **increase** the control surface throw, move the pushrod to the hole that is closer-in on the control horn on the control surface, or move the pushrod to the hole that is farther out on the servo arm. To decrease the control surface throw, do the opposite.

Set up the Spirit of St. Louis so it has the following control surface throws:

ELEVATOR:	5/8" up [15.9mm]	5/8" down [15.9mm]
RUDDER:	1-1/4" right [31.8mm]	1-1/4" left [31.8mm]

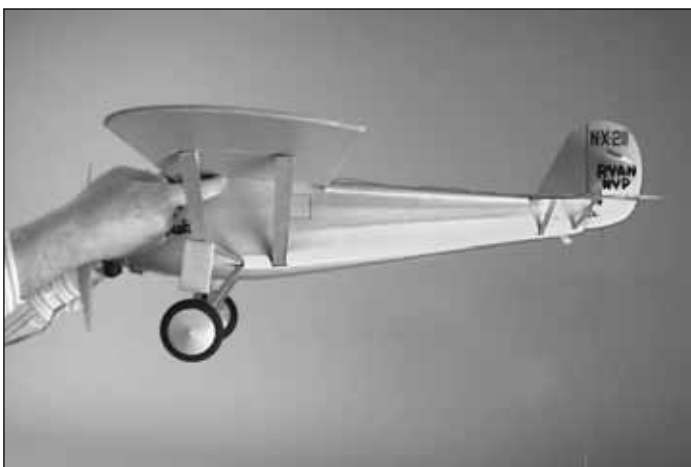
Second to the C.G., the control throws have the greatest effect on the way a model flies. Set the throws as close to these settings as possible. If you have too much control throw the model may respond too quickly. If you do not have enough throw you may not be able to maneuver the model or have enough control to land it when the motor is off.

Balance the Model (C.G.)

IMPORTANT: The C.G. (center of gravity), or balance point has the greatest effect on how a model flies. Do not overlook this important procedure. Modelers who do so often find that the airplane is difficult to control, or out of control after it is too late. Preserve your model and insure that the first flight won't be the last by balancing the model according to the following instructions.

The C.G. (center of gravity) must be checked when the model is ready to fly with the propeller and battery installed.

1. Use a felt-tip pen or narrow strips of tape to mark the balance point on the **bottom** of the wing 1-5/8" [41.3mm] rearward from the leading edge of the wing on both sides of the fuselage.



2. Lift the model right-side up at the balance point you marked on the bottom of the wing. If the nose drops, the model is nose-heavy and you must add weight to the tail. If the tail drops, the model is tail-heavy and you must add weight to the nose.

3. If additional weight is required to balance the model, use small pieces of Great Planes stick-on weight

(GPMQ4485). If weight is required in the nose, do not stick weight to the cowl. Remove the cowl and stick the weight to the firewall. If weight is required in the tail, it can be stuck to the top or bottom of the stab next to the fuselage.

4. After placing weight on the model where necessary, recheck the C.G. to confirm that it is correct.

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 19 and place it on or inside your model.

Charge the Transmitter Batteries

Be certain the transmitter batteries are fully charged. Follow the battery charging instructions that came with your radio control system to charge the batteries or replace if using alkaline batteries.

Ground Inspection

Before you fly you should perform one last overall inspection to make sure the model is truly ready to fly and that you haven't overlooked anything. If you are not thoroughly familiar with the operation of R/C models, ask an experienced modeler to perform the inspection. Check to see that you have the radio installed correctly and that all the controls are connected properly. The motor must also be checked by confirming that the prop is rotating in the correct direction and the motor sounds like it is reaching full power. Make certain the elevator and rudder are secure, the pushrods are connected, the controls respond in the correct direction, radio components are securely mounted, and the C.G. is correct.

Range Check

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

Performance Tips

- Using multiple battery packs for successive flights may cause the motor to become excessively hot, thus causing damage. Allow the motor to cool for at least 10 minutes between flights.
- Keep epoxy use to the “useful minimum.” Less weight will make for better flight performance.

Motor Safety Precautions

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

Get help from an experienced pilot when learning to operate motors.

Use safety glasses when running motors.

Do not run the motor in an area of loose gravel or sand; the propeller may throw such material in your face or eyes.

Keep your face and body as well as all spectators away from the path of the propeller as you start and run the motor.

Keep items such as these away from the prop: loose clothing, shirt sleeves, ties, scarfs, long hair or loose objects (pencils, screwdrivers) that may fall out of shirt or jacket pockets into the prop.

The electric motor and motor battery used in The Spirit of St. Louis ARF are very powerful and the spinning propeller has a lot of momentum; therefore, if you touch the propeller while it is spinning it may inflict severe injury. Respect the motor and propeller for the damage they are capable of and take whatever precautions are necessary to avoid injury. Always disconnect and remove the motor battery until you are ready to fly again and always make sure the transmitter is turned on before connecting the battery.

AMA SAFETY CODE (excerpts)

Read and abide by the following Academy of Model Aeronautics Official Safety Code:

GENERAL

1. I will not fly my model aircraft in competition or in the presence of spectators until it has been proven to be airworthy by having been previously successfully flight tested.
2. I will not fly my model aircraft higher than approximately 400 feet within 3 miles of an airport without notifying the airport operator. I will give right of way to and avoid flying in the proximity of full-scale aircraft. Where necessary, an observer shall be 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.

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

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 flyer, unless assisted by an experienced helper.

3. I will perform my initial turn after takeoff away from the pit, spectator and parking areas and I will not thereafter perform maneuvers, flights of any sort or landing approaches over a pit, spectator or parking area.

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

FIND A SAFE PLACE TO FLY

Though The Spirit of St. Louis ARF is a “Park Flyer,” the **best** place to fly **any** model is at an AMA chartered club field. Club fields are set up for R/C flying, making your outing safer and more enjoyable. We recommend that you join the AMA and a local club so you can have a safe place to fly and have insurance to cover you in case of a flying accident. The AMA address and telephone number are in the front of this manual.

If there is no club or R/C flying field in your area, find a suitable site that is clear of trees, telephone poles, buildings, towers, busy streets and other obstacles. Since you are not flying at a sanctioned AMA site, be aware that there may be others like yourself who could be flying nearby. If both of your models happen to be on the same frequency, interference will likely cause one or both of the models to crash. An acceptable minimum distance between flying models is five miles, so keep this in mind when searching for a flying site.

In addition to obstacles, it is important to be aware of people who may wander into the area once you begin flying. At AMA club flying sites it is a severe rule infraction to fly over others, and this is a good practice to follow if flying elsewhere. R/C models tend to attract onlookers whose numbers can soon multiply, forming small, uncontrolled crowds. Onlookers pose two main problems. First is the danger of actually crashing your model into a person, causing injury. Second is the distraction from those who ask you questions while you are trying to concentrate on flying. To minimize or avoid this problem, have an assistant standing by who can spot people who wander into your flying site (so you can avoid flying over them) and who can perform “crowd control” if people start to gather.

FLYING

IMPORTANT: If you are an inexperienced modeler we strongly urge you to seek the assistance of a competent, experienced R/C pilot to check your model for airworthiness AND to teach you how to fly. No matter how stable or “forgiving” The Spirit of St. Louis ARF is, attempting to learn to fly on your own is dangerous and may result in destruction of your model or even injury to yourself and others. Therefore, find an instructor and fly only under his or her guidance and supervision until you have acquired the skills necessary for safe and fully controlled operation of your model.

Takeoff

We recommend flying The Spirit of St. Louis ARF when the wind is no greater than five miles per hour. Less experienced flyers should fly only in calm (less than one mile per hour) conditions. Frequently, winds are calm in the early morning and early evening. Often these are the most enjoyable times to fly anyway! Until you have The Spirit of St. Louis ARF properly trimmed for level flight, we recommend having an assistant hand-launch the model instead of taking off from the ground.

Turn on the transmitter and plug the battery into the speed control. Turn the receiver on by following the instructions that came with your speed control.

IMPORTANT: Confirm that the transmitter operates the controls by moving the sticks and watching the surfaces respond. Occasionally, electric models have been launched with the transmitter turned off or the battery disconnected from the speed control!

When ready to hand launch, the assistant should hold the bottom of the fuselage behind the main landing gear, then raise the model high above his head and point it **into the wind**. With the pilot (*that would be you!*) standing behind the plane, fully advance the throttle to start the motor. As soon as the motor is at full power, the hand launcher should gently toss the plane into the air at a **level** or **slightly nose-up** attitude. Be certain the model is being launched **into** the wind and be immediately ready to make corrections to keep the airplane flying straight, level and into the wind.

When the model has gained adequate flying speed under its own power, **gently** pull the elevator stick back until the airplane starts a gradual climb. Many beginners tend to pull too hard causing the model to stall, so be gentle on the elevator and don't panic. If you do pull too hard and you notice the model losing speed, release the elevator stick and allow the model to regain airspeed.

Continue a **gradual** climb and establish a gentle turn until the airplane reaches an altitude of 75 to 100 feet.

Flight

The main purpose of the first few flights is to learn how your model behaves and to adjust the trims for level flight. After the model has climbed to a safe altitude reduce the throttle slightly to slow the model, yet maintain altitude. The Spirit of St. Louis ARF should fly well and maintain adequate airspeed at about 1/2 to 3/4 throttle.

Adjust the elevator trim so the model flies level at the throttle setting you are using. Adjust the rudder trim to level the wings. It may take a few minutes to get the trims adjusted, but this should be your first priority once at a comfortable altitude. Continue to fly around, executing turns and making mental notes (or having your assistant take notes for you) of what additional adjustments or C.G. changes may be required to fine tune the model so it flies the way you like.

If The Spirit of St. Louis ARF reaches a high enough altitude, you may periodically cut off the motor power and glide. This may extend the flight time by several minutes, especially if you fly into a rising air current.

Landing

Because The Spirit of St. Louis ARF flies slowly, it requires little room to land. Begin the landing approach by flying downwind at an altitude of approximately 20 feet [6 meters]. When the airplane is approximately 50 to 100 feet [15 to 30 meters] past you, gradually reduce power and make the “final” 180° turn **into** the wind aligning the airplane with the runway or landing area. Do not dive the airplane, as it will pick up too much speed. Instead, allow the airplane to establish a gradual descent. Concentrate on keeping it heading into the wind toward the runway. When the plane settles to an altitude of about 4 feet [1 meter], gently apply a little “up elevator” to level the plane, but be careful as too much up elevator will cause it to stall. While holding a slight amount of up elevator, the airplane will slow and descend as it loses flying speed and touch down on the runway.

Until you are able to accurately judge how far The Spirit of St. Louis ARF can glide, it may be helpful to reserve some battery power to run the motor so the plane can be flown back to the runway. If needed, most BEC systems allow you to move the throttle to idle and then apply power to get a short burst of power.

After landing, allow the motor to cool for about 10 minutes before flying the model again. The battery should also be allowed to cool for at least 10 minutes before it is recharged.

ROG Takeoff

When speaking of small models, frequently a takeoff from the ground is called an “ROG” (*rise off ground*) takeoff. Landings on grass will be a little rough, but doing a ROG takeoff from grass

will probably not be possible with The Spirit of St. Louis ARF. If planning an ROG takeoff, find a smooth, paved surface.

After you have trimmed The Spirit of St. Louis ARF for flight and have become familiar with its flight characteristics, you may try some ROG takeoffs. With the model on the runway and pointing directly into the wind, gently apply power. Initially, the plane may turn to the left or right because it has not gained enough speed for the controls to become effective. Do your best to get through this brief moment and maintain a straight heading down the runway and into the wind. Make corrections with the rudder to keep it rolling straight into the wind. If the model veers too far off, cut the throttle and try again. As the model begins to gain speed the controls will become effective.

After the airplane has gained adequate speed (this requires experience to gauge), gently pull back on the elevator stick allowing the airplane to become airborne. Release some of the up elevator control and establish a gentle climb the same as when you were hand-launching.

Best of luck and happy flying!

Identification Tag

AMA number	Phone number	City, State, Zip	Address	Name	This model belongs to:
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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.

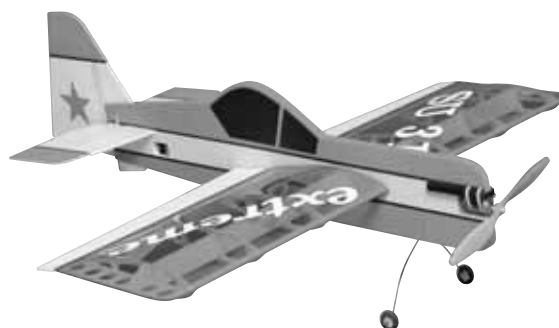
OTHER ITEMS AVAILABLE FROM GREAT PLANES



Great Planes Piper Cub EP Park Flyer ARF

It's a fresh look at an old favorite – in a compact, electric version that's perfect for "grab-and-go" impulse flying. In just 4-6 hours this Cub is ready for small-field flying, with strong, stick-built balsa sections and realistic looks enhanced by the trim scheme

and decals. A performance-matched 280 motor, 3.5:1 gearbox and 10x7 prop are included. Large rudder and elevator surfaces make for smooth, slow flying with simple, 3-channel radio control – and an easy-access hatch and band-on wing allow for convenient on-board gear maintenance and quick battery pack replacement. **GPMA1153**



Great Planes Sukhoi SU-31 EP Park Flyer ARF

Now the nearest field for 3D aerobatics may be as close as your own back yard! Built of ultra light materials, the Sukhoi SU-31 ARF can fly at speeds that would make other aircraft stall. Its low weight also means that servos and control surfaces have less mass to move and more power available for speed, strength and agility. And because it's an ARF, there's less "wait" between buying and flying, too. The Sukhoi SU-31 ARF can be flight-ready – and floating through its first flight – just a few hours after you open the box! **GPMA1185**



Futaba® 3FR 3-Channel FM Radio

This version of Futaba's 3FR 3-channel FM radio features super-light on-board components that are ideal for park flyers and other weight-sensitive aircraft: the compact R114F single-conversion receiver and two S3108 micro servos. Single-stick simplicity makes the 3FR very user-friendly, and the case is ergonomically designed for comfort and easy access to controls. Performance perks include V-tail mixing, a proportional 3rd channel, trims, servo reversing and more. Plus, 600mAh NiCd transmitter batteries with Sanyo® cells and a 50A overnight AC charger are included. **FUTJ53****

