J-3 CUB ARF

INSTRUCTION MANUAL

Wingspan: 35.75 in [908mm]
Wing Area: 245 sq in [15.8dm²]
Weight: 10 oz [280g]
Wing Loading: 5.9 oz/sq ft [18g/dm²]
Length: 33 in [840mm]
Radio: 4-channel minimum, 3 micro servos, 7A ESC and micro receiver

WARRANTY

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

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

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

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

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

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

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

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

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INTRODUCTION

Thank you for your purchase of the Great Planes ElectriFly™ FlatOuts J-3 Cub! This stand-off scale Cub can be assembled in as little as an hour, and the foam construction can be repaired on site to get you back into the air as quickly as it takes to top off the battery in your radio. The FlatOuts J-3 Cub can comfortably fly in a large gymnasium at slow speeds, or fly with authority outdoors on a day of light, 5 mph or less wind. And the best features, the economical price and quick build time of the FlatOuts J-3 Cub, will allow you to fly without the worry of damage to an expensive or time consuming model.

For the latest technical updates or manual corrections to the FlatOuts J-3 Cub visit the Great Planes web site at **www.greatplanes.com**. Open the “Airplanes” link, and then select the FlatOuts J-3 Cub. 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.

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

1. Your FlatOuts J-3 Cub 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 FlatOuts J-3 Cub, 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 correctly install all R/C and other components so that the model operates correctly on the ground and in the air.

5. 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.

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

We, as the kit manufacturer, provide you with a top quality, thoroughly tested kit and instructions, but ultimately the quality and flyability of your finished model depends on how you build it; therefore, we cannot in any way guarantee the performance of your completed model, and no representations are expressed or implied as to the performance or safety of your completed model.

Remember: Take your time and follow the instructions to end up with a well-built model that is straight and true.

LITHIUM BATTERY HANDLING & USAGE

WARNING!! Read the entire instruction sheet included with this battery. Failure to follow all instructions could cause permanent damage to the battery and its surroundings, and cause bodily harm!

- ONLY use a LiPo approved charger. NEVER use a NiCd/NiMH peak charger!
- NEVER charge in excess of 4.20V per cell.
- ONLY charge through the "charge" lead. NEVER charge through the "discharge" lead.
- NEVER charge at currents greater than 1C.
- ALWAYS set charger's output volts to match battery volts.
- ALWAYS charge in a fireproof location.
- NEVER trickle charge.
- NEVER allow the battery temperature to exceed 150° F [65° C].
- NEVER disassemble or modify pack wiring in any way or puncture cells.
- NEVER discharge below 2.5V per cell.
- NEVER place on combustible materials or leave unattended during charge or discharge.
- ALWAYS KEEP OUT OF REACH OF CHILDREN.

DECISIONS YOU MUST MAKE

This is a partial list of items required to finish the FlatOuts J-3 Cub that may require planning or decision making before starting to build. Order numbers are provided in parentheses.

Radio Equipment & Electronics

The FlatOuts J-3 Cub requires a 4-channel or greater transmitter, a micro receiver, and three micro servos (9g or less). If you already have a transmitter you are going to use to fly the FlatOuts J-3 Cub, you can get the receiver and servos separately:

- Futaba® R114F 4-channel FM micro receiver w/o crystal (low band – FUTL0442, high band – FUTL0443)
- Futaba FM single conversion receiver crystal for R114F (low band – FUTL62**, high band – FUTL63**)
- Futaba S3110 micro servo 7.7g (FUTM0046)

Or, you can purchase a complete system (including transmitter) specially packaged for park flyers. If purchasing a complete system, the Futaba 4YF Skysport FM radio is suitable. It comes with a micro receiver and two Futaba S3108 micro servos. One additional servo will need to be purchased. The transmitter is also equipped with a rechargeable NiCd battery pack:

- Futaba 4YF Skysport FM radio system including transmitter, receiver, and servos (FUTJ37**)
- Futaba S3110 micro servo 7.7g (FUTM0046) or S3114 micro servo (FUTM0414)

A 11.1V 350mAh or 11.1V 640mAh LiPo battery pack and suitable charger are also required. Although there are different battery packs and chargers available that will work with the FlatOuts J-3 Cub, the economical choices recommended by Great Planes are:

- Great Planes 11.1V 350mAh 3S 20C discharge 2-pin LiPo (GPMP0801) (**Note:** When using with the C-7 Nano ESC, adapter required – GPMM3135)
- Great Planes 11.1V 640mAh 3S 15C discharge micro LiPo (GPMP0805)
- Great Planes 11.1V 640mAh 20C discharge with balance LiPo (GPMP0601) (**Note:** This requires the Equinox™ Cell Balancer – GPMM3160)

A suitable LiPo charger is required:

- Great Planes PolyCharge4 DC only 4 output LiPo charger (GPMM3015)

or

- Great Planes ElectriFly Triton2™ DC Peak Charger (GPMM3153)

Electronic Speed Control (ESC)

An Electronic Speed Control (ESC) with Battery Eliminator Circuitry (BEC) is required. The BEC allows both the motor and the radio system to be powered by the same battery (thus eliminating the on-board receiver battery). The Great Planes ElectriFly C-7 Nano Brushed ESC (GPMM2005) is recommended.

ADDITIONAL ITEMS REQUIRED

Adhesives & Building Supplies

- ❑ Great Planes Pro™ Foam Safe CA- Thick Glue 1 oz. (GPMR6072)
- ❑ Great Planes Pro Foam Safe CA+ Medium Glue 1 oz. (GPMR6069)
- ❑ Drill bits: 3/64" [1.2mm] or #60 and 1/8" [3mm]
- ❑ #1 Hobby knife (HCAR0105)
- ❑ Hobbico® soldering iron 60 Watt (HCAR0776)

Optional Supplies & Tools

Here is a list of optional tools that will help you build the FlatOuts J-3 Cub.

- ❑ Great Planes Pro Foam Safe CA Aerosol Activator 4 oz. [114g] (GPMR6034)
- ❑ 2 oz. [57g] Spray CA activator (GPMR6035)
- ❑ CA applicator tips (HCAR3780)
- ❑ CA debonder (GPMR6039)
- ❑ Hobbico Pin Vise 1/16" Collet w/six bits (HCAR0696)
- ❑ Long nose pliers with wire cutter (HCAR0625)
- ❑ CG Machine™ (GPMR2400)
- ❑ Hobbico Flexible 18" Ruler Stainless Steel (HCAR0460)

IMPORTANT BUILDING NOTES

• 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**, and then slightly modify or *custom fit* the part as necessary for the best fit.

• Whenever the term ***glue*** is written you should rely upon your experience to decide what type of glue to use. When a specific type of adhesive works best for that step, the instructions will make a recommendation.

• ***Photos*** and ***sketches*** are placed **before** the step they refer to. Frequently you can study photos in following steps to get another view of the same parts.

ORDERING REPLACEMENT PARTS

Replacement parts for the Great Planes FlatOuts J-3 Cub are available using the order numbers in the **Replacement Parts List** that follows. The fastest, most economical service can be provided by your hobby dealer or mail-order company.

To locate a hobby dealer, visit the Hobbico web site at **www.hobbico.com**. Choose "Where to Buy" at the bottom of the menu on the left side of the page. Follow the instructions provided on the page to locate a U.S., Canadian or International dealer.

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

Mail parts orders and payments by personal check to:

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

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

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

Replacement Parts List

GPMG0420 .....180 Motor & 5:1 Ratio Gearbox
GPMG0292 .....180 Motor with Leads & Connectors
GPMG0182 .....Gearbox with Spur Gear Shaft 5:1 Ratio
GPMG0863 .....Spur Gear Shaft
GPMQ4619 .....Prop Saver O-ring
GPMQ4620 .....Prop Saver

COMMON ABBREVIATIONS

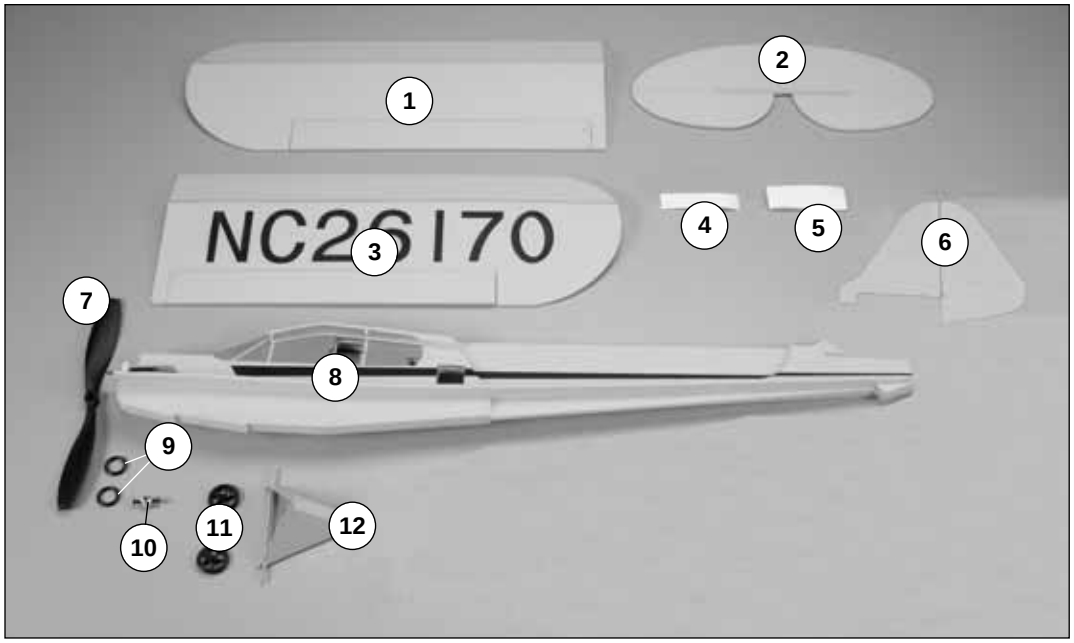
Fuse = Fuselage
Stab = Horizontal Stabilizer
Fin = Vertical Fin
LE = Leading Edge
LG = Landing Gear
" = Inches
mm = Millimeters
ESC = Electronic Speed Control

KIT INSPECTION

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

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

KIT CONTENTS



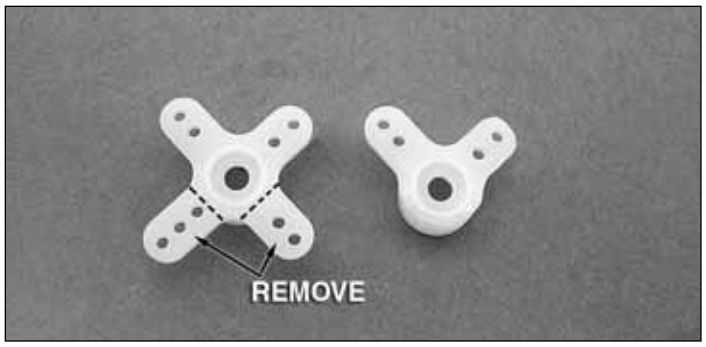
Kit Contents

1. Left Wing Panel
2. Horizontal Stabilizer & Elevators (L&R)
3. Right Wing Panel
4. Double-sided Servo Tape
5. Hook & Loop Material
6. Vertical Fin & Rudder
7. Propeller (9" x 4.5" S)
8. Fuselage
9. Prop Saver O-rings (2)
10. Prop Saver
11. Wheels (2)
12. Landing Gear

ASSEMBLE THE AIRPLANE

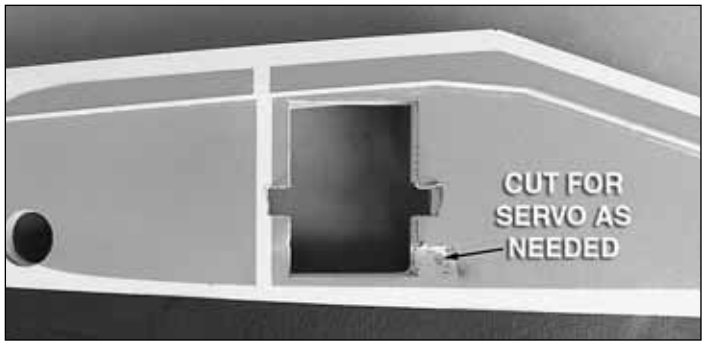
IMPORTANT NOTE: As stated in the ***Additional Items Required*** section you must use a Foam Safe CA glue in the assembly process. **Do not attempt to assemble this plane with standard CA. It will melt the foam!**

Install the Aileron Servo

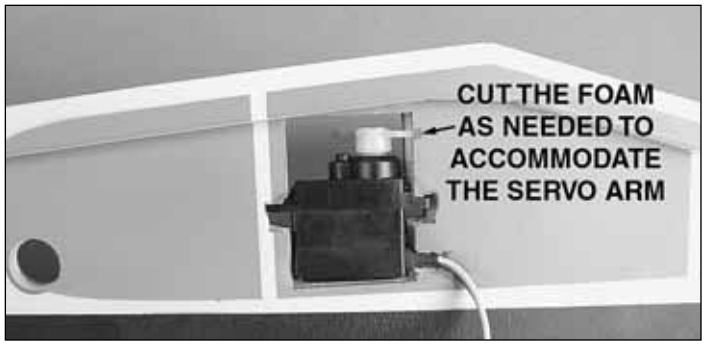


❏ 1. Remove two of the arms so that it matches the horn shown on the right. Each of the arms should have two holes. Enlarge the outer holes in the remaining servo arms with a 3/64" [1.2mm] drill bit. **Note:** The purpose for this configuration is to provide mechanical differential to the **ailerons**. In our test flying we determined the plane performs best with some differential in the ailerons.

❏ 2. Connect the aileron servo to the receiver. Use your ESC or a receiver pack to power the receiver. Turn on your transmitter and center the aileron servo. Do not skip this step as the aileron servo must be installed into the **fuselage** with the servo horn installed as shown.



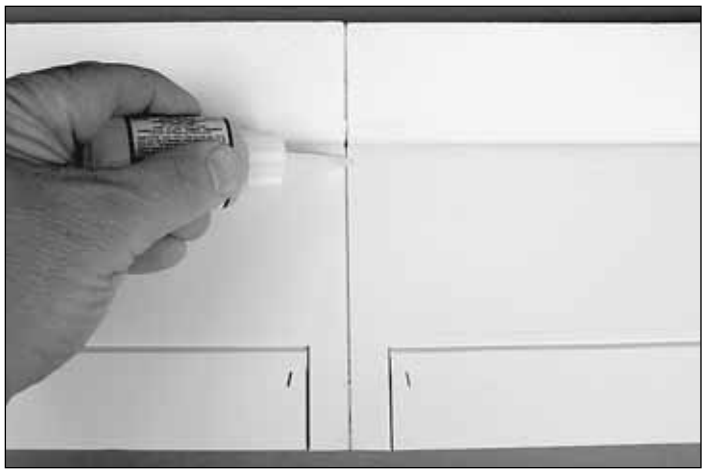
❏ 3. Cut a slot in the fuselage on the **right side** large enough to accommodate the servo connector in the locations shown in the picture. Their exact placement will depend on where the servo lead wires exit out of the aileron servo being used.



❏ 4. Position the servo in the fuselage making sure that the servo arm is positioned as shown. Push the aileron downward into the servo bay until it is firmly seated in position. Center the servo in the fuselage. Cut the foam as needed to accommodate the servo arm.

❏ 5. Apply a couple drops of thick, foam safe CA glue to each servo case tab, securing the servo to the fuselage. Add a couple drops of foam safe CA glue near the base of the servo case as well. It does not require much CA glue to secure the servo to the fuselage. Excess glue will simply make it difficult to remove the servo in the future.

Install the Wing Panels

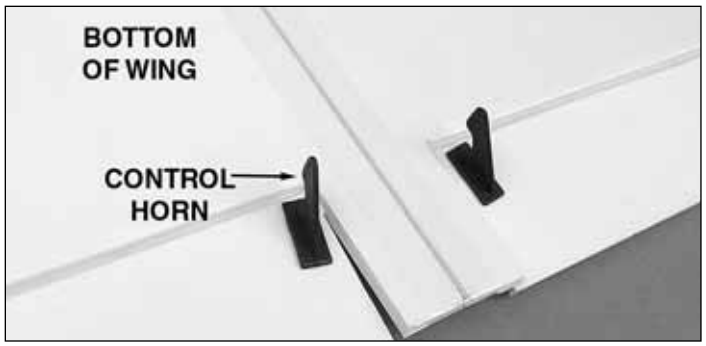


❏ 1. Locate the **left** and **right wing panels**. Place them upside-down on the bench. Apply a bead of thick foam safe CA

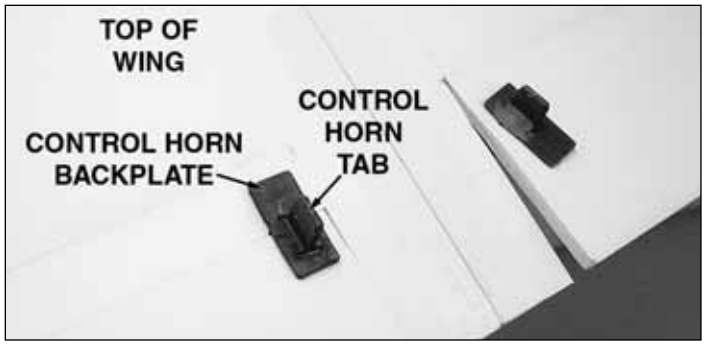
along the edge of the wing. Press the two halves of the wing together until the glue has hardened. Fill any gaps in the wing joint with thick foam safe CA and harden it with CA accelerator.

❏ 2. Apply the included **wing joining tape** to the bottom and the top of the wing at the wing joint. Press the tape firmly to the surface of the wing.

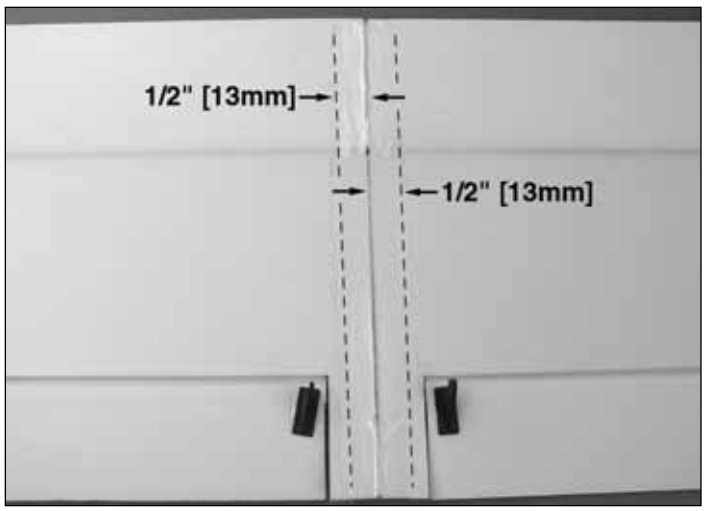
Assemble the Aileron Pushrods



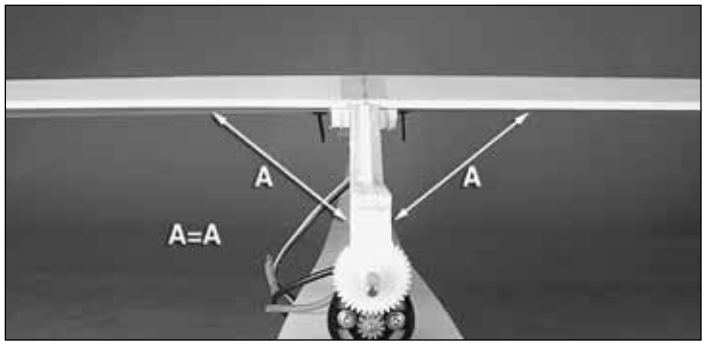
❏ 1. Enlarge the outer holes of the control horns with a 3/64" [1.2mm] drill bit. Apply a couple drops of CA glue to the underside of the **control horn backplates**. Push the control horn tabs through the slots in the ailerons as shown.



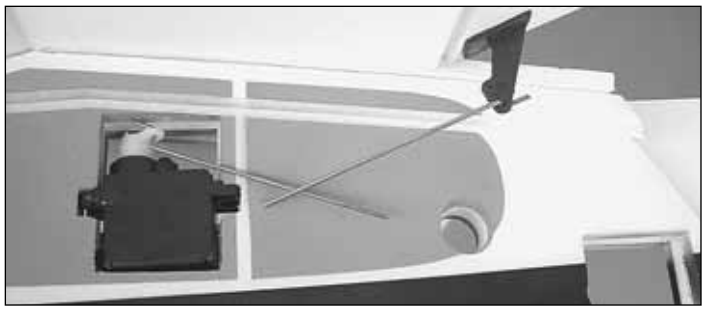
❏ 2. Press the control horn backplates onto the tabs to secure the **control horns** to the ailerons. Glue the backplates to the control horn tabs with a drop of CA.



❏ 3. Measure outward 1/2" [13mm] on either side of the wing joint. Lightly sand the tape and the foam to scuff it slightly, giving a better gluing surface for joining the wing to the fuselage.



❏ 4. Center the wing with the top of the fuselage. Glue the wing to the top of the fuselage with medium or thick foam safe CA glue making sure that the wing is perpendicular to the sides of the fuselage.

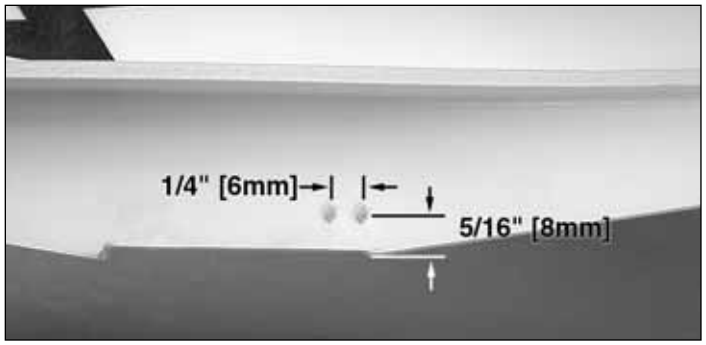


❏ 5. Locate the four 2-1/4" [57mm] **pushrods** and hook the Z-bends into the outer holes of the servo horn and the outer

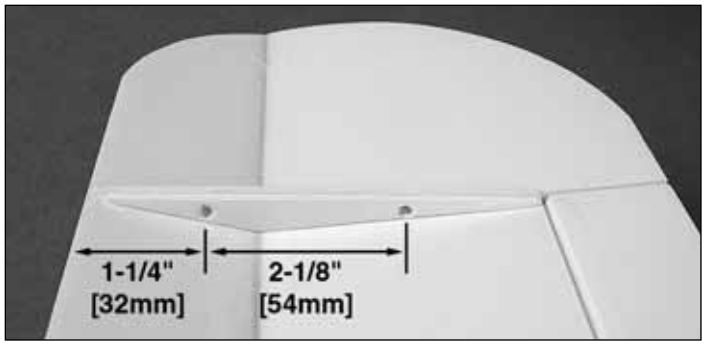
holes in the control horns. Slide a piece of 1" [25mm] heat-shrink tubing onto one of the pushrods for each wing panel.

❏ 4. Center the aileron. Overlap the pushrod ends and join them with the heat-shrink tubing. **CAREFULLY** use a soldering iron to shrink the tubing around the pushrods. Keep the iron away from the foam and move it quickly back and forth across the heat-shrink tubing until the pushrods are joined together tightly. **We do not suggest using a heat gun or micro torch** t**o shrink the tubing** as this will melt the foam that is close to the pushrods. When satisfied, apply a couple drops of CA glue to each end of the heat-shrink tubing.

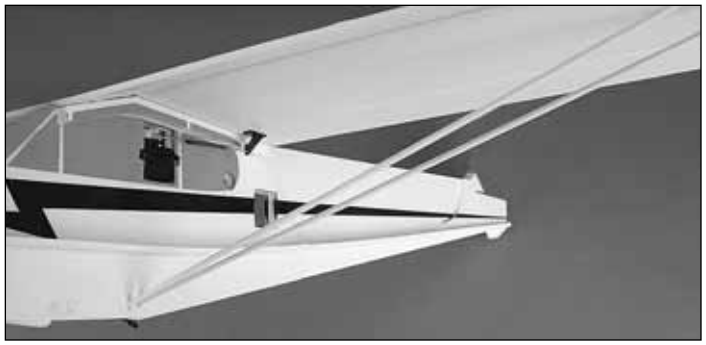
Install the Wing Struts



❏ ❏ 1. From the bottom of the fuselage measure up 5/16" [8mm] and make a mark. Measure forward from the mark 1/4" [6mm] and make another mark. On each of these marks drill a 1/8" [3mm] hole at a 30° upward angle to the fuselage. Do not use a electric drill to make the holes. Just twist the drill bit using your fingers. You do not want to drill all the way through the fuselage. Just drill in far enough so the drill bit just makes contact with the skin on the opposite side of the fuselage.

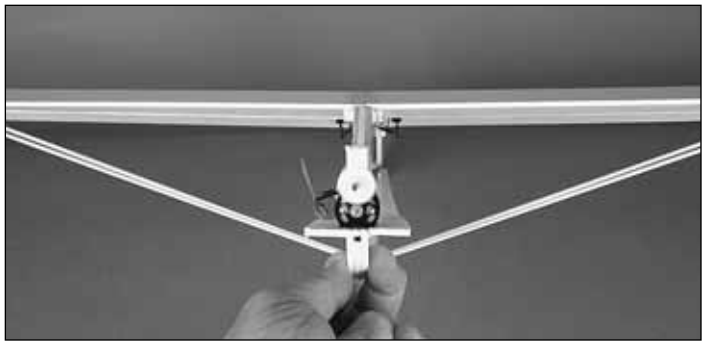


❏ ❏ 2. On the inside of the **wing rib** measuring from the front of the rib, make a mark 1-1/4" [32mm] back from the front of the rib. Measure back 2-1/8" [54mm] from that mark and make another mark. Hand drill a 1/8" [3mm] hole on each of the marks using the same technique used for the other holes. When drilling these two holes **do not drill through the top of the wing** and be sure the hole is through the wing rib but as close to the bottom of the wing as possible.



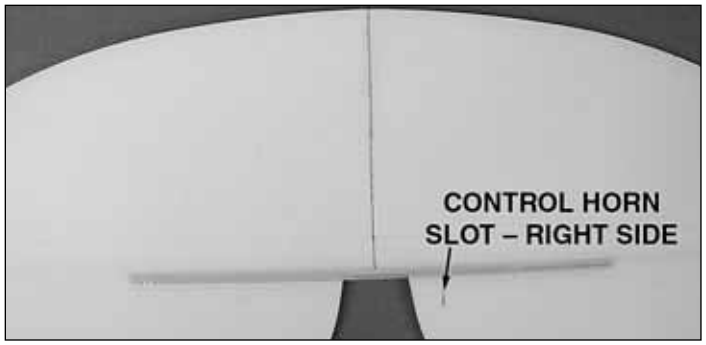
❏ ❏ 3. Install a **strut** into the holes. **DO NOT** glue them in place at this time.

❏ 4. Repeat steps 1 to 3 for the other side of the fuselage. **Note:** When drilling the holes in the opposite side of the fuselage, move the location of the two holes forward or back from the dimensions specified so the struts do not conflict with the struts on the opposite side of the fuselage.

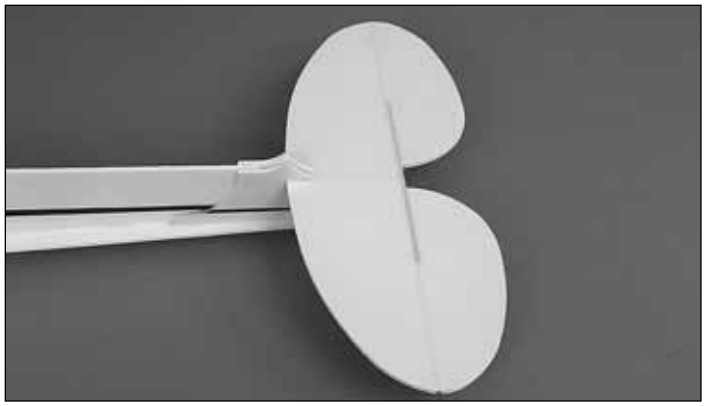


❏ 5. Look at the wing to be sure the wing is straight, without any twist. The wing should be flat without any dihedral. When you are satisfied with the wing, glue the struts in place with medium foam safe CA. Be sure to get a good bond between the struts, the wing and the fuselage. The struts are a functional, structural part of the construction of the plane and it is important that they are secured well.

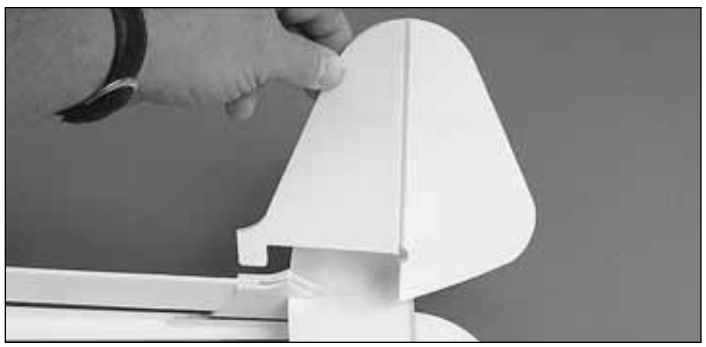
Install the Horizontal Stabilizer & Rudder

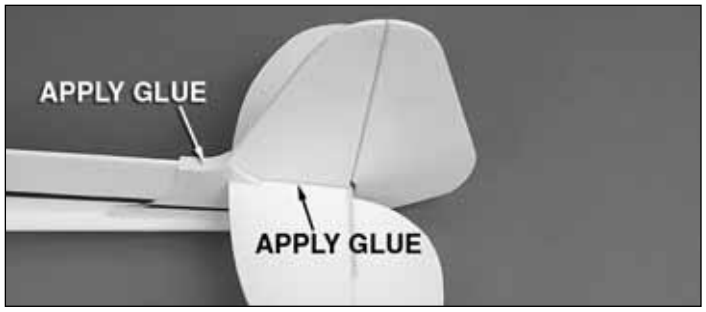


❏ 1. Draw a line on the center of the **top and bottom** of the **horizontal stabilizer**. The top of stab has the control horn slot on the right side of the elevator.



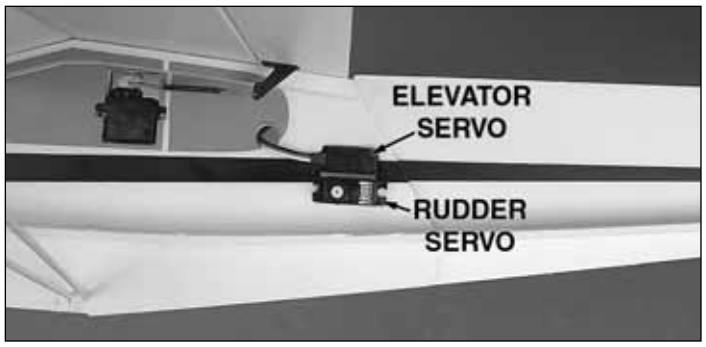
❏ 2. Lightly scuff the surface of the stab using sandpaper 5/64" [2mm] on both sides of the line drawn in step 1. Wipe the area with denatured alcohol. Do this on both the top and bottom of the stab. Position the stab onto the back of the fuselage. Using the line drawn in step 1 as a reference, position the stab making sure the stab is parallel to the wing. When you are satisfied with the fit, glue the stab to the fuselage.





❏ 3. Glue the vertical stabilizer/rudder into the slot in the fuselage and the top of the horizontal stabilizer. Hold it in place until the glue hardens.

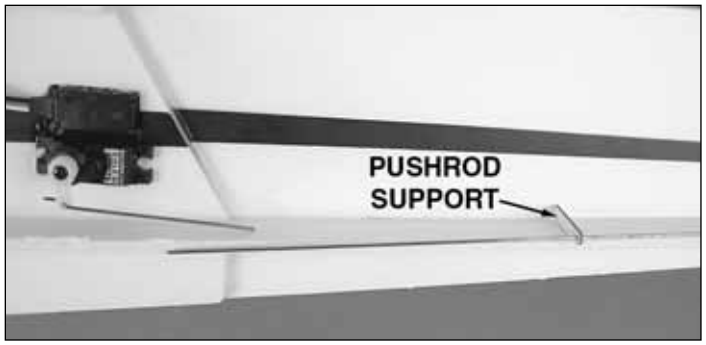
Install the Tail Servos & Linkages



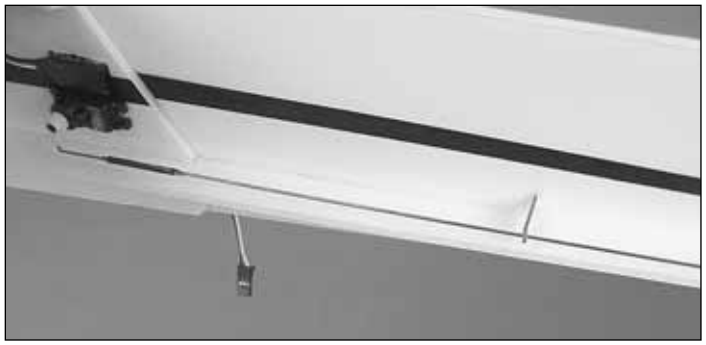
❏ 1. Glue the rudder and elevator servos into the cutout in the fuselage with the output splines both facing the front of the plane. The servo in the bottom of the slot is the rudder servo and should be installed with the splines on the **left side** of the fuselage. The servo in the top of the slot is the elevator servo and should be installed with the splines on the **right side** of the fuselage. Both servo leads should exit out of the right side. There is a small circle cutout in the fuselage to allow the lead from the elevator servo to get access to the right side of the fuselage.

❏ 2. Using the same technique used for the ailerons, install a control horn onto the left side of the rudder and one on the bottom of the right elevator half.

❏ 3. Use your radio system to center the elevator and rudder servos. Cut three arms from two four-arm servo horns and install them onto the elevator and rudder servos, both pointing downward. Enlarge the outer holes of the servo horns with a 3/64" [1.2mm] drill bit. Enlarge the **inner hole** of the control horns (closest to the elevator and rudder) with the same size bit.

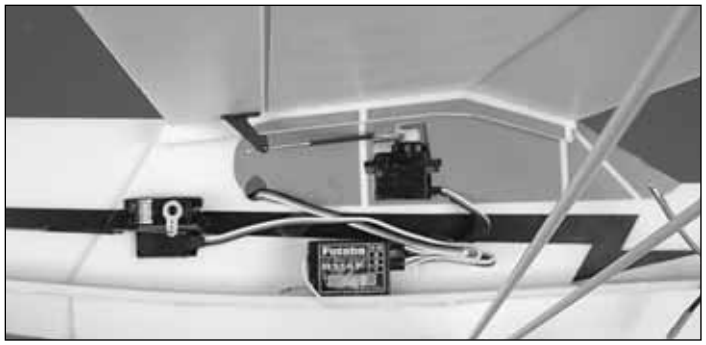


❏ 4. Hook the remaining two 2-1/4" [57mm] pushrods into the outer hole of the elevator and rudder control horns. Connect the 16-1/4" [413mm] pushrods onto the inner hole of the elevator and rudder servo horns. Slide a **pushrod support** onto the elevator and rudder pushrods. Join the pushrod wires together with a 1" [25mm] piece of heat-shrink tubing while centering the control surfaces. Apply a drop of CA to the ends of the heat-shrink tubing after shrinking the tubing with a soldering iron.



❏ 5. Position the pushrod supports in the middle of the pushrods and lightly press them into the fuselage creating indentations in the foam. Use a sharp hobby knife to cut a hole in the foam at the indentations you made. Insert the pushrod supports into the holes and glue them in place.

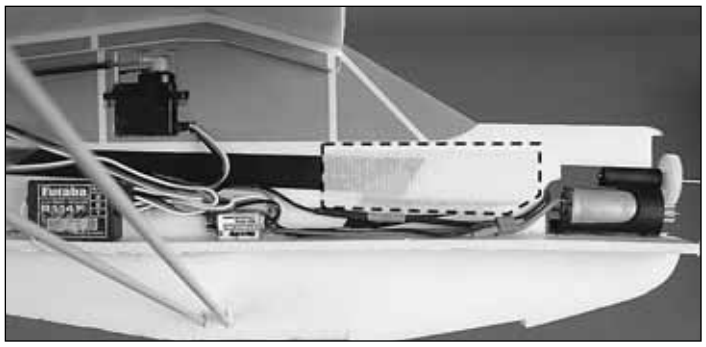
Install the Electronics & Propeller



❏ 1. Determine the location of the receiver. Wipe the area with denatured alcohol only once or twice. Excessive wiping will remove the paint. Cut a piece of double-sided tape to fit your receiver and stick it to the underside. Connect the aileron, rudder, and elevator servos to the receiver. Peel the backing from the double-sided tape and secure the receiver to the fuselage in the location shown in the picture. For a tidy installation you may wish to tape the servo leads to the fuselage.

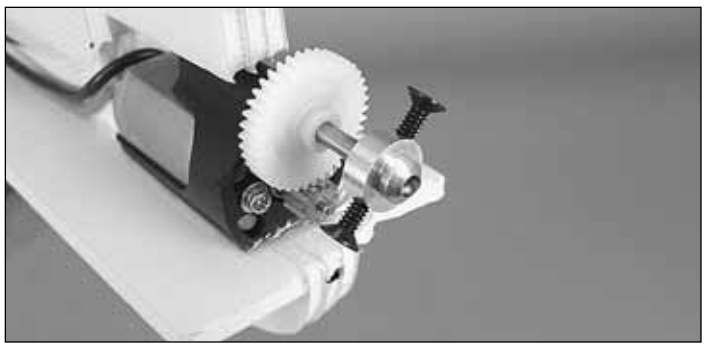
❏ 2. Tape the receiver antenna to the bottom of the fuselage longeron as shown. Be sure that none of the antenna is exposed on the underside of the airplane, as it could become damaged on landing.

❏ 3. Connect the motor leads from the ESC to the leads coming from the motor. Plug the ESC into the receiver. Wipe the area where the ESC will be installed with alcohol as described in step 1. Secure the ESC to the fuselage with double-sided tape.

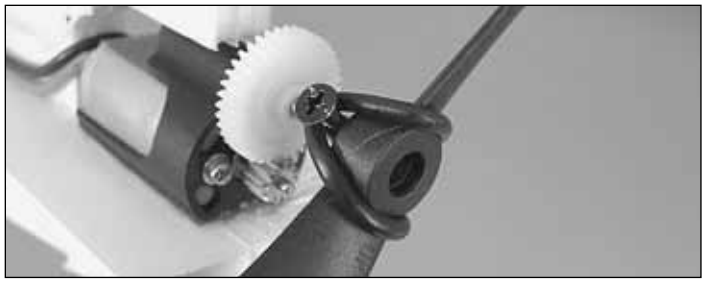


❏ 4. Wipe the area where the hook and loop material will be installed as shown with alcohol as described in step 1. Apply the “hook” side of the hook and loop material to the fuse.

❏ 5. The “loop” side of the hook and loop material should be applied to your battery.



❏ 6. Attach the **prop saver** by tightening the two screws against the flat spots on the prop shaft.

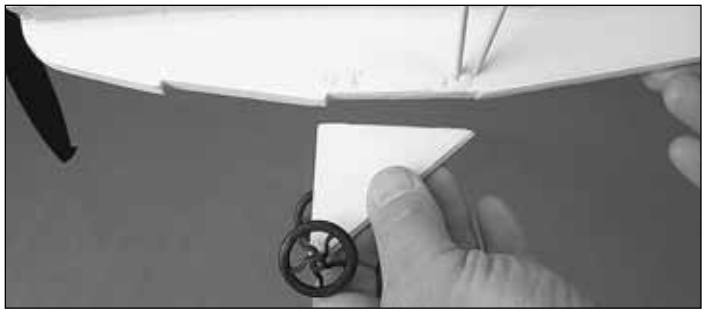


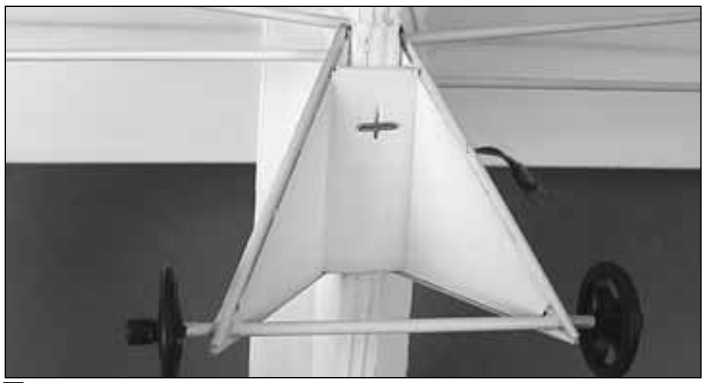
❑ 7. Loop the prop saver O-ring around one of the screws and over the prop hub. Hook the O-ring onto the other screw to secure the propeller to the prop saver. Long nose pliers may make it easier to stretch the O-ring onto the screws.

Assemble the Landing Gear

Note: The landing gear is designed for display purposes, not for use in flight. **For this reason assembling the landing gear is optional.**

❑ 1. Install the **wheels** onto the **axle** and hold them in place with the black plastic **wheel retainers**.





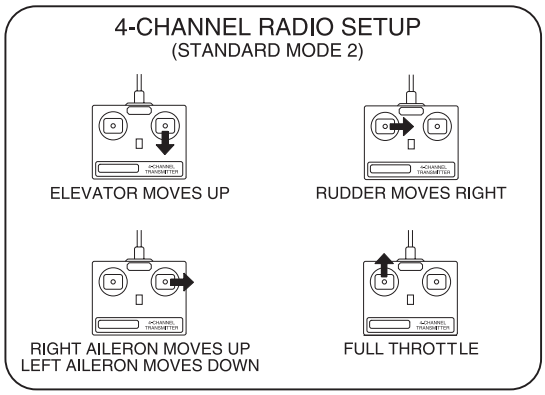
❑ 2. Slide the landing gear onto the fuselage. Hold it in place by sliding a T-pin through the bottom of the landing gear and into the fuselage.

GET THE MODEL READY TO FLY

Check the Control Directions

❑ 1. Turn on the transmitter and receiver and center the trims.

❑ 2. With the transmitter and receiver still on, check all the control surfaces to see if they are centered. If the lengths of the pushrods need to be adjusted to center the control surfaces, break the glue bond at the ends of the heat-shrink tubing and make your adjustments. Be sure to re-glue the ends of the heat-shrink tubing to the pushrod wires when you are satisfied.



❑ 3. Make certain that the control surfaces and the throttle respond in the correct direction as shown in the diagram. If any of the controls respond in the wrong direction, use the servo reversing in the transmitter to reverse the servos connected to those controls. Be certain the control surfaces have remained centered.

Set the Control Throws

Use a ruler to accurately measure and set the control throw of each control surface as indicated in the chart that follows. If your radio does not have dual rates, we recommend setting the throws at the **low rate** setting.

Note: The throws are measured at the **widest part** of the elevators, rudder and ailerons.

These are the recommended control surface throws:

	High Rate	Low Rate
ELEVATOR:	1-1/4" [32mm] up 1-1/4" [32mm] down	1" [25mm] up 1" [25mm] down
RUDDER:	1-1/4" [32mm] right 1-1/4" [32mm] left	1" [25mm] right 1" [25mm] left
AILERONS:	(Only One Rate)	1/2" [13mm] up 3/16" [4.8mm] down

IMPORTANT: The FlatOuts J-3 Cub 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 FlatOuts J-3 Cub 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."

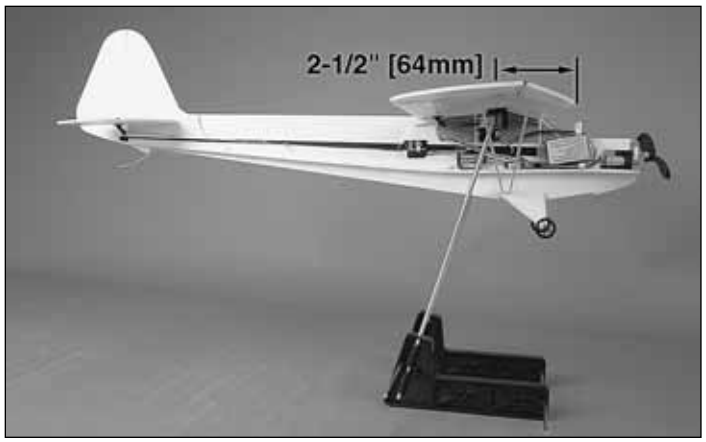
Balance the Model (C.G.)

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 battery, receiver and ESC.

❏ 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 2-1/2" [64mm] back from the LE of the wing 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 1/4" [6mm] forward or 3/8" [9.5mm] 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 all parts of the model installed (ready to fly), place the model upside-down on a Great Planes CG Machine, or lift it at the balance point you marked.

❏ 3. If the tail drops, the model is "tail heavy" and the battery pack must be shifted forward to balance. If the nose drops, the model is "nose heavy" and the battery pack must be shifted back to balance. This model is very weight sensitive. Do not add any weight to achieve the suggested balance point. Instead, shift the battery pack forward or aft to alter the C.G.

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 14 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 motor batteries the night before you go flying, and at other times as recommended by the manufacturer.

CAUTION: Unless the instructions that came with your radio system state differently, the **initial** charge on **new** transmitter 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.

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.

AMA SAFETY CODE (excerpts)

Read and abide by the following excerpts from the Academy of Model Aeronautics Safety Code. For the complete Safety Code refer to *Model Aviation* magazine, the AMA web site or the Code that came with your AMA license.

General

1) I will not fly my model aircraft in sanctioned events, air shows, or model flying demonstrations until it has been proven to be airworthy by having been previously, successfully flight tested.

2) I will not fly my model aircraft higher than approximately 400 feet within 3 miles of an airport without notifying the airport operator. I will give right-of-way and avoid flying in the proximity of full-scale aircraft. Where necessary, an observer shall be utilized to supervise flying to avoid having models fly in the proximity of full-scale aircraft.

3) Where established, I will abide by the safety rules for the flying site I use, and I will not willfully and deliberately fly my models in a careless, reckless and/or dangerous manner.

5) I will not fly my model unless it is identified with my name and address or AMA number, on or in the model. **Note:** This does not apply to models while being flown indoors.

7) I will not operate models with pyrotechnics (any device that explodes, burns, or propels a projectile of any kind).

Radio Control

1) I will have completed a successful radio equipment ground check before the first flight of a new or repaired model.

2) I will not fly my model aircraft in the presence of spectators until I become a qualified flier, unless assisted by an experienced helper.

3) At all flying sites a straight or curved line(s) must be established in front of which all flying takes place with the other side for spectators. Only personnel involved with flying the aircraft are allowed at or in the front of the flight line. Intentional flying behind the flight line is prohibited.

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

5) **I will not knowingly operate my model within three miles of any pre-existing flying site except in accordance with the frequency sharing agreement listed** (in the complete AMA Safety Code).

9) Under no circumstances may a pilot or other person touch a powered model in flight; **nor should any part of the model other than the landing gear, intentionally touch the ground, except while landing**.

CHECK LIST

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

- ❏ 1. Check the C.G. according to the measurements provided in the manual.
- ❏ 2. Be certain the battery and receiver are securely mounted to the fuselage.
- ❏ 3. Confirm that all controls operate in the correct direction and the throws are set up according to the manual.
- ❏ 4. Check the operation of the motor and gearbox prior to each flight.
- ❏ 5. Make sure that all servo arms are secured to the servos with the screws included with your radio.
- ❏ 6. Place your name, address, AMA number and telephone number on or inside your model.
- ❏ 7. If you wish to photograph your model, do so before your first flight.
- ❏ 8. Range check your radio when you get to the flying field.
- ❏ 9. Confirm that the hinge tape is properly secured.

FLYING

The FlatOuts J-3 Cub is a good flying indoor model. However, it is not a trainer. Flying the airplane requires the use of the ailerons, elevator and **rudder**. If you are not proficient with using the rudder, it is recommended that you practice flying the model **outdoors** in a 1 to 2 mph wind before taking it into a confined indoor flying site.

Takeoff

For your first flight you may wish to have someone launch the airplane so that you can concentrate on trimming it. After the airplane is properly trimmed, you should be able to easily hand launch the plane and fly the plane yourself. To hand launch, apply full power and gently toss the plane into the air.

Flight

The FlatOuts J-3 Cub can fly fast or slow depending on how you choose to fly it. For slow flight you will want to fly in a "High Alpha" or slightly nose high attitude using the power of the motor to drag it through the sky. You can achieve high alpha flight more easily flying at an aft C.G. When flying the FlatOuts J-3 Cub you will find that you will use the rudder for most all of the turning of the airplane. The ailerons will be used primarily to level the wings.

Landing

Landings are best completed by making your approach with the airplane in a nose high attitude and "dragging" the airplane to the ground.

Repair

Damage to your plane is inevitable when flying indoors. However, the simplicity of this model allows it to be repaired quickly at the flying site. Be sure to put some thick foam-safe CA glue and CA activator in your field box. You will be able to be back in flight in a matter of minutes should repair be necessary.

This model belongs to:

Name

Address

City, State Zip

Phone number

AMA number

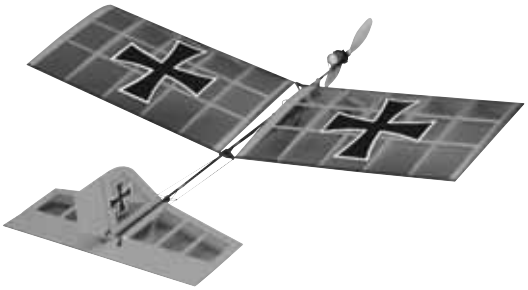
Make a copy of this identification tag and put it on or inside your model.

OTHER ITEMS AVAILABLE FROM GREAT PLANES

ElectriFly™ FlatOuts™ HellCat and Zero
Enjoy solo sport flying or exciting combat with another flat fighter – indoors or out! Made of lightweight, precolored foam, the FlatOuts Hellcat and Zero indoor ARF models demand little time, effort or expense – and they're a perfect way to use your .40 glow trainer experience to learn indoor piloting skills. Both have a low parts count and factory-applied trim scheme, so you can have your Hellcat or Zero flight-ready in as little as 1 to 2 hours. Precut slots in the foam panels are ready for easy installation of linkages and radio gear. The wing of each has a Jedelsky-type airfoil design to improve lift and slow flight characteristics. It also incorporates a round carbon-fiber spar to keep weight low and increase strength. Both models include prop, prop saver/adapter, streamers, and factory-installed motor and gearbox. **Hellcat – GPMA1121, Zero – GPMA1122**

ElectriFly Reactor™ 3D EP ARF
With its generous wingspan, the Reactor 3D electric ARF is easy to handle and track indoors or out. The wing's ultra-thin airfoil allows radical attitude changes and gentle handling on approach. Oversized ailerons, adjustable pushrods and short, direct linkages combine for crisp, powerful response. The structure is factory-built from interlocking, laser-cut balsa parts, with covering already applied, and the fiberglass cowl and plastic wheel pants are painted to match. Magnetic "latches" on the cowl and battery hatch eliminate the need for screw fasteners and offer clean looks

and improved aerodynamics. Unlike most electrics, the Reactor 3D ARF was designed for in-runner or out-runner motors and includes mounts for both. **GPMA1540**



ElectriFly Yard Stik™ ARF
No need to worry about the weather – with a Yard Stik, anytime is flying time! It flies equally well in a park, a field or a large, wide-open building, and flies at the pace of a brisk walk. Assembly is quick (less than an hour) and easy. The included 280 motor, prop and 3.5:1 gearbox simply slide into place on the boom fuselage. The wing halves and tail are balsa, prebuilt and factory-covered in a film that contrasts black and white Maltese Crosses against a transparent red background. The boom and the wing's leading and trailing edges are made of a carbon-fiber composite for strength, rigidity and weight savings. Nylon in the wheels and pod add to ease and style, but virtually nothing to the Yard Stik's 11 to 12 oz. all-up weight. **GPMA1100**

ElectriFly C-7 Nano Brushed ESC
The compact, easy-to-use C-7 Nano ESC is LiPo/NiCd/NiMH compatible and offers BEC, fully proportional forward, factory-installed connectors, "Safe Start" system and low voltage cut-off, plus audible tones for easy set-up. **GPMM2005**

Futaba® 4YF SkySport FM Radio
With its two 0.27 oz [7.7g] S3110 micro servos, the 4YF FM is an ideal system for the FlatOuts J-3 Cub. In addition to servo reversing and trims, the 4YF also includes an R114F single-conversion receiver, charger, battery LEDs, and sticks with length and tension adjustments. One additional S3110 servo will be required. **FUTJ37****

ElectriFly PolyCharge4™
For convenience with multiple LiPo packs, there's the DC PolyCharge4. Each of its four independent outputs can charge a one-to-four cell Lithium-Polymer pack. It's ideal if you don't have the time for one-at-a-time charging – and don't want the expense and hassle of multiple chargers. Each output can handle packs from 300 to 3000mAh. Set the capacity, and PolyCharge4 will automatically set the charge rate to get you started – and use light and sound cues to tell you when your pack is done. **GPMM3015**

ElectriFly Triton™2 DC Computerized Peak Charger, Discharger & Cycler
Like the popular original Triton charger, the Triton2 offers easy programming. But the adjustable charge current has been increased from 5.0A maximum to 7.0A, and the Triton2 can handle LiPo packs with up to 5 cells in series. A cool blue backlight on the 2 x 16 LCD screen makes for easier reading in any conditions, and the rotating dial has been raised for enhanced feel and more precise fingertip control. The Triton2 is more versatile too: you get alligator clips that mate onto the banana plugs, for quick connection to 12V batteries or power supplies. You'll still be able to charge 1 to 4 cell lithium-ion and lithium-polymer batteries, and peak 1 to 24 cell NiCd and NiMH packs at rates you set to peak detection values you choose – before discharging them at custom rates and then repeating the cycle up to 10 times. **GPMM3153**

BUILDING NOTES

Kit Purchased Date: _____

Where Purchased:_____

Date Construction Started: _____

Date Construction Finished: _____

Finished Weight: _____

Date of First Flight: _____

FLIGHT LOG