

# Siren™ ARF

## INSTRUCTION MANUAL



**Wingspan:** 78.5in [2000mm]  
**Wing Area:** 493 sq in [31.8dm<sup>2</sup>]  
**Weight:** 3 – 3.5 lb [1360 – 1550g]  
**Wing Loading:** 14 – 16 oz/sq ft [42 – 48g/dm<sup>2</sup>]  
**Length:** 39in [990mm]  
**Radio:** 3 – 4 channel  
**Motor:** 550 - 600 brushed motor  
200 - 500W brushless motor (1.45in [37mm] max dia.)

### 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

The Great Planes Siren™ ARF is a high-performance electric sailplane that performs well on a standard brushed motor while delivering great performance on a brushless motor. This is an electric powered glider that is very agile and likes to fly fast. It is not, therefore, an airplane for the beginner, but one for pilots with some experience. Unlike many airplanes of this type, the Siren ARF is an honest airplane. It will fly where you point it and has absolutely no

bad tendencies. Stalls are straight and smooth. The Siren ARF also has good thermaling capabilities.

For the latest technical updates or manual corrections to the Siren ARF visit the Great Planes web site at [www.greatplanes.com](http://www.greatplanes.com). Open the "Airplanes" link, and then select the Siren ARF. If there is new technical information or changes to this model a "tech notice" box will appear in the upper left corner of the page.

## AMA

We urge you to join the AMA (Academy of Model Aeronautics) and a local R/C club. The AMA is the governing body of model aviation and membership is required to fly at AMA clubs. Though joining the AMA provides many benefits, one of the primary reasons to join is liability protection. Coverage is not limited to flying at contests or on the club field. It even applies to flying at public demonstrations and air shows. Failure to comply with the Safety Code (excerpts printed in the back of the manual) may endanger insurance coverage. Additionally, training programs and instructors are available at AMA club sites to help you get started the right way. There are over 2,500 AMA chartered clubs across the country. Contact the AMA at the address or toll-free phone number below:

### Academy of Model Aeronautics

5151 East Memorial Drive

Muncie, IN 47302

Tele: (800) 435-9262

Fax (765) 741-0057

Or via the Internet at:

<http://www.modelaircraft.org>



**IMPORTANT!!!** Two of the most important things you can do to preserve the radio controlled aircraft hobby are to avoid flying near full-scale aircraft and avoid flying near or over groups of people.

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

1. Your Siren ARF should not be considered a toy, but rather a sophisticated, working model that functions very much like a full-size airplane. Because of its performance capabilities, the Siren ARF, if not assembled and operated correctly, could possibly cause injury to you or spectators and damage to property.

2. You must assemble the model **according to the instructions**. Do not alter or modify the model, as doing so may result in an unsafe or unflyable model. In a few cases the instructions may differ slightly from the photos. In those

instances the written instructions should be considered as correct.

3. You must take time to **build straight, true and strong.**

4. You must use an R/C radio system that is in first-class condition and a correctly sized engine and components (fuel tank, wheels, etc.) throughout the building process.

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

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

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

8. While this kit has been flight tested to exceed normal use, if the plane will be used for extremely high-stress flying, such as competition, or if a motor larger than one in the recommended range is used, the modeler is responsible for taking steps to reinforce the high-stress points and/or substituting hardware more suitable for the increased stress.

9. **WARNING:** The fuselage included in this kit is made of carbon fiber, the fibers of which may cause eye, skin and respiratory tract irritation. Never blow into the fuselage to remove dust, as the dust will blow back into your eyes. Always wear safety goggles, a particle mask and rubber gloves when grinding, drilling and sanding carbon fiber parts. Vacuum the parts and the work area thoroughly after working with carbon fiber parts.

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

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

## **DECISIONS YOU MUST MAKE**

### **Motor Recommendations**

The Great Planes Siren ARF can be built either as a sport electric sailplane or as an entry level hotliner. To fly the Siren

ARF as a sport sailplane you need a 600-size Great Planes brushed motor with an 8-cell NiMH and an 8x4 folding propeller. This setup delivers 20° climb out angles with a full-throttle endurance of around 7 minutes. To fly the Siren ARF as an entry level hotliner, you will need a Kontronik™ Brushless 480 motor with gearbox, and a 10-cell NiMH battery turning a 13x7 APC folding propeller. With this setup the Siren ARF is capable of three to four vertical climb outs at high speed. The Siren ARF climbs to altitude in about 10 seconds. This is a powerful setup that allows the airplane to deliver its full performance potential, but it also demands more attention from the pilot as extreme speeds are easy to achieve. Great Planes offers both power packages as options. You must choose a power package based on the performance you expect out of the airplane. The motor mount installed on the Siren ARF will fit both power packages.

#### **Great Planes Brushed Sport Package**

T-601 Ferrite Motor (GPMG0706)

Great Planes 8x4 folding propeller (GPMQ1650)

7-Cell 2000 mAh NiMH (GPMP0351)

8-Cell 2000 mAh NiMH (GPMP0352)

Great Planes Electrify™ C-30 Speed Control (GPMM2030)

#### **Brushless Power Package**

Kontronik 480 Brushless set (KONG5020) (includes motor, gearbox, and speed controller)

APC 13x7 Folding Propeller (APCQ4357)

Great Planes Folding Propeller Spinner (GPMQ1651)

10-Cell 2000 mAh NiMH (GPMP0353)

### **Using Lithium Batteries**

In addition to the NiMH batteries specified above, Lithium batteries can be used to power both power systems of the Siren ARF. Using Lithium batteries will increase your flight times substantially while decreasing the final weight of the airplane slightly. The following are the recommended lithium batteries for the Siren ARF.

#### **Great Planes Brushed Sport Package**

This power system requires two 7.4V 1500 mAh Li-Po batteries wired in parallel for a 2S-2P configuration.

(2) Great Planes Lithium-Polymer 1500 mAh 7.4V 2-cell pack (GPMP0830)

(2) W. S. Deans 2-Pin Ultra plug

(1) W. S. Deans Wet Noodle Flex 12-gauge red 2'/black 2'

#### **Brushless Power Package**

There are two options for this power package:

**First Option:** Two 11.1 V 1500 mAh Li-Po batteries wired in parallel for a 3S-2P configuration. This configuration will deliver slightly less performance than the 10-cell NiMH pack, but the run time will be increased to 5-6 minutes.

(2) Great Planes Lithium-Polymer 1500 mAh 11.1V 3-cell Pack (GPMP0831)

- (2) W. S. Deans 2-Pin Ultra Plug
- (1) W. S. Deans Wet Noodle Flex 12-gauge red 2'/black 2'

**Second Option:** Four 7.4V 1500mAh Li-Po batteries wired in series and parallel for a 4S-2P configuration. This configuration will deliver the highest performance and 4-5 minutes of run time.

- (4) Great Planes Lithium-Polymer 1500mAh 7.4V 2-cell Pack (GPMP0830)
- (4) W.S. Deans 2-Pin Ultra Plug
- (1) W.S. Deans Wet Noodle Flex 12-gauge red 2'/black 2'

### 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 Li-Po 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.

### Radio Equipment

The Siren ARF requires a radio with a minimum of three channels (throttle, elevator and ailerons). The transmitter should have a throttle stick, not a slider, especially when using the powerful brushless power package (the stick allows for more precise throttle control). The motor speed control should have a BEC to power the radio. The servos recommended for this airplane are good quality servos with at least 16 oz-in [1.2kg-cm] of torque such as the Futaba® S3107 Nano servo or the Hobbico® CS-5 Micro servo. Should you choose a different brand of servo, make sure they use slop-free gears and that they center well and fit in place. Lower quality servos can cause flutter and destroy an airplane quickly.

- Futaba® S3107 Nano Servo (FUTM0025)
- Hobbico CS-5 Servo (HCAM0090)

## ADDITIONAL ITEMS REQUIRED

In addition to the items listed in the “**Decisions You Must Make**” section, following is the list of hardware and accessories required to finish the Siren ARF. Order numbers are provided in parentheses.

### Hardware & Accessories

- Small Phillips screwdriver (#1)
- (3) 24" Servo extension (HCAM2200 for Futaba)
- “Y” harness (FUTM4130 for Futaba)
- Transparent tape
- Great Planes 3/8" heat shrink tubing (GPMM1060)
- Trinity® pre-cut single cell heat shrink tubing (TRIC6074)
- Hobbico® 1/4" [6mm] foam (HCAQ1000)

### Adhesives & Building Supplies

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

- Pro 6-minute epoxy (GPMR6045)
- Pro 30-minute epoxy (GPMR6047)
- #11 blades (5-pack, HCAR0211)
- Stick-on segmented lead weights (GPMQ4485)
- Allen wrenches for the motor screws
- Flat screwdriver

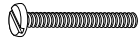
### Optional Supplies & Tools

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

- Epoxy brushes (6, GPMR8060)
- Mixing sticks (50, GPMR8055)
- Mixing cups (GPMR8056)
- Pliers with wire cutter (HCAR0630)
- Masking tape (TOPR8018)
- Threadlocker™ thread-locking cement (GPMR6060)
- Rotary tool such as Dremel®
- AccuThrow™ Deflection Gauge (GPMR2405)
- Denatured alcohol (for epoxy clean up)

## IMPORTANT BUILDING NOTES

**Machine screws** are designated by a number, **threads per inch**, and a length – for example, 4-40 x 3/4" [19mm].



*This is a number four screw that is 3/4" long with forty threads per inch.*

- When you see the term **test fit** in the instructions, it means that you should first position the part on the assembly **without using any glue**, then slightly modify or *custom fit* the part as necessary for the best fit.
- Whenever the term **glue** is written you should rely upon your experience to decide what type of glue to use. When a specific type of adhesive works best for that step, the instructions will make a recommendation.
- Whenever just **epoxy** is specified you may use **either** 30-minute (or 45-minute) epoxy **or** 6-minute epoxy. When 30-minute epoxy is specified it is highly recommended that you use only 30-minute (or 45-minute) epoxy, because you will need the working time and/or the additional strength.
- **Photos** and **sketches** are placed **before** the step they refer to. Frequently you can study photos in following steps to get another view of the same parts.
- The stabilizer and wing incidences and engine thrust angles have been factory-built into this model. However, some technically-minded modelers may wish to check these measurements anyway. To view this information, visit the web site at [www.greatplanes.com](http://www.greatplanes.com) and click on "Technical Data." Due to manufacturing tolerances which will have little or no effect on the way your model will fly, please expect slight deviations between your model and the published values.

## COMMON ABBREVIATIONS

Fuse = Fuselage  
Stab = Horizontal Stabilizer  
Fin = Vertical Fin  
LE = Leading Edge  
TE = Trailing Edge  
LG = Landing Gear  
" = Inches  
mm = millimeters

# ORDERING REPLACEMENT PARTS

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

To locate a hobby dealer, visit the Hobbico web site at [www.hobbico.com](http://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](http://www.towerhobbies.com), or by calling toll free (800) 637-6050.

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

Mail parts orders and payments by personal check to:

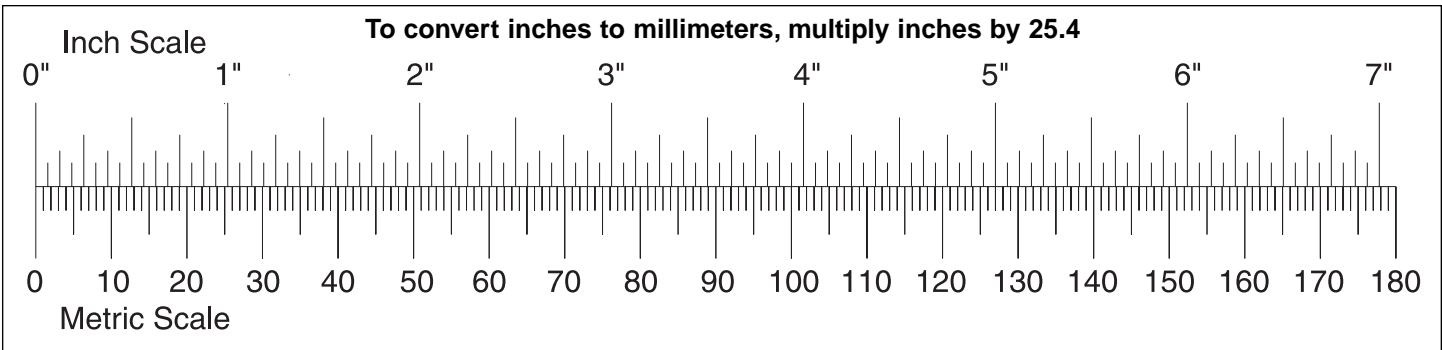
**Hobby Services**  
3002 N Apollo Drive, Suite 1  
Champaign, IL 61822

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

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

### Replacement Parts List

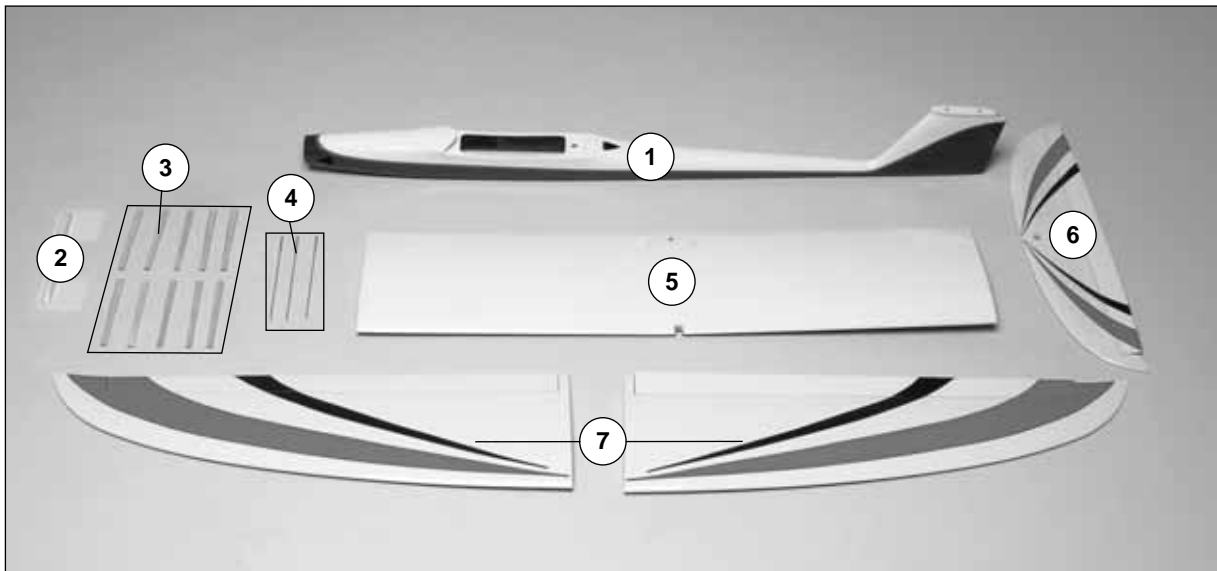
<u>Order Number</u>	<u>Description</u>	<u>How to Purchase</u>
	Missing pieces.....	Contact Product Support
	Instruction manual.....	Contact Product Support
	Full-size plans .....	Not available
GPMA2780	Wing Kit	} ..... Contact Your Hobby Supplier to Purchase These Items
GPMA2781	Fuse Kit	
GPMA2782	Stabilizer	
GPMA2783	Decal Sheet	
GPMQ1650	Sport Spinner/Propeller	
GPMQ1651	Brushless Spinner	



## KIT CONTENTS

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

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



### Kit Contents

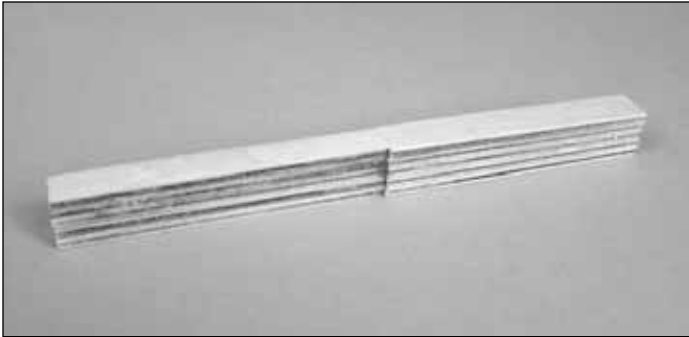
- |                      |                          |
|----------------------|--------------------------|
| 1. Fuselage          | 5. Wing Center-Section   |
| 2. Servo Cover       | 6. Horizontal Stabilizer |
| 3. Wing Joiners (10) | 7. Outer Wing Panels (2) |
| 4. Pushrods (3)      |                          |

### Kit Contents (not photographed)

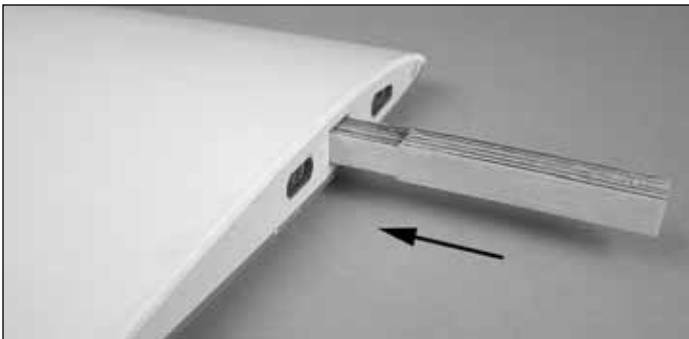
- |  |                                |
|--|--------------------------------|
| (3) Small Control Horns                      | (6) 2-56 x 5/8" Machine Screws |
| (3) 2mm x 150mm Pushrods (threaded one end)  | (8) 2mm x 9mm Screws           |
| (3) 2mm Nylon Clevises                       | (2) 10-32 x 2" Nylon Bolt      |
| (3) Silicone Retainers                       | (1) Velcro® Strip              |
| (3) Nylon FasLinks                           |                                |
| (1) 1/4-20 x 1" Nylon Bolt                   |                                |
| (1) 1/4-20 Blind Nut (pre-installed in fuse) |                                |

## ASSEMBLE THE WING

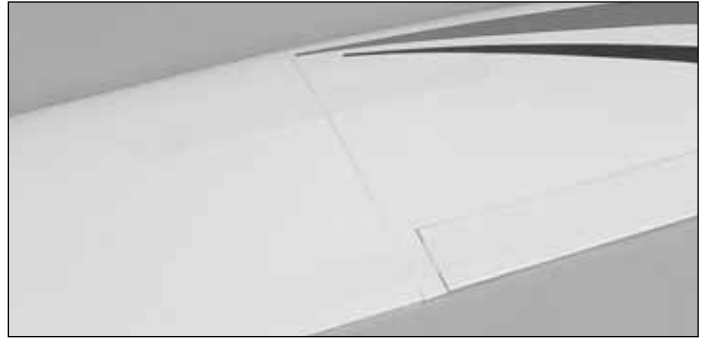
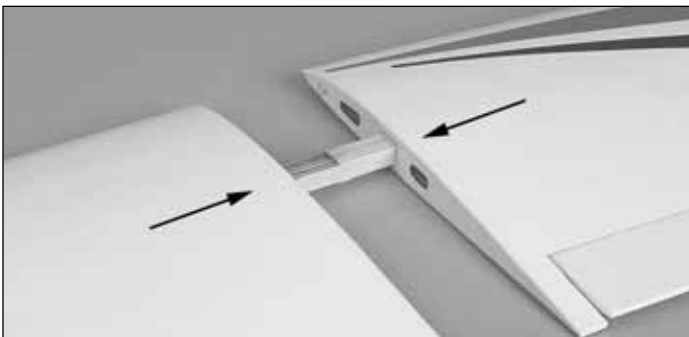
### Attach the Wing Tips



1. Locate five 1/16" [1.6mm] ply wing joiner plates. Mix a generous amount of 6-minute epoxy and glue the plates together. Clean up excess epoxy with denatured alcohol and a paper towel. Allow the epoxy to harden before proceeding.



2. Test fit the joiner into the wing center-section. The smaller end of the joiner will slide into the wing center-section. The fit should be snug. If not, sand the joiner plates as needed for a good fit. Also test fit one of the wing outer panels and sand the wing joiner as needed for a good snug fit. Glue the smaller end of the wing joiner into the wing center-section using 6 minute epoxy. Make sure the wing joiner is coated thoroughly with epoxy to ensure a good bond. Remove any excess epoxy that squeezes out with denatured alcohol and a paper towel. Try not to leave excess epoxy on the center-section rib as it will make for a poor wing fit. Allow the epoxy to harden before proceeding. Install a 24" [610mm] extension through the wing center-section.



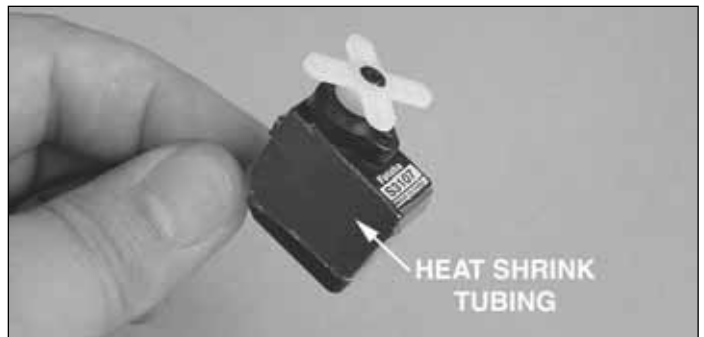
3. Cut away the covering from the servo bay. Using 30-minute epoxy, coat the wing joiner, wing center-section rib, and wing outer panel. Attach the wing outer panel. Route the servo extension from the center-section into the servo bay. Clean up any excess epoxy with denatured alcohol and a paper towel. Align the trailing edge of the center-section and the outer panel. Hold the two in place using masking tape while the epoxy hardens.

4. Repeat steps 1-3 for the other side of the wing.

5. Inspect the hinges and the hinging motion of the ailerons now and before each flight.

### Install the Aileron Servos

The servos in this model are mounted with heat shrink tubing (not included). If you wish to do so, you can carefully remove the mounting tabs on the servos. A sharp hobby knife works well for this.



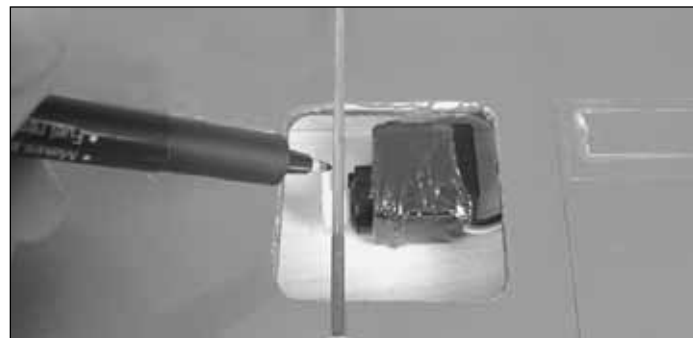
1. Using a piece of Trinity Single Cell heat shrink tubing, fit the tubing over the servo and heat shrink it. This will allow you to easily replace the servo later since the tubing will be glued in place, not the servo.



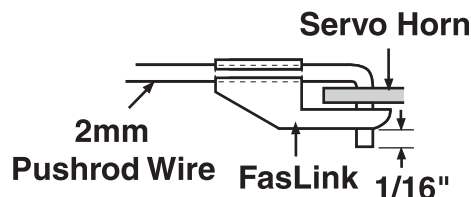
2. Connect the servo lead to the 24" [610mm] servo extension. Secure the connection with a 1-1/2" [38mm] piece of

3/8" [10mm] heat shrink tubing to prevent the leads from becoming disconnected.

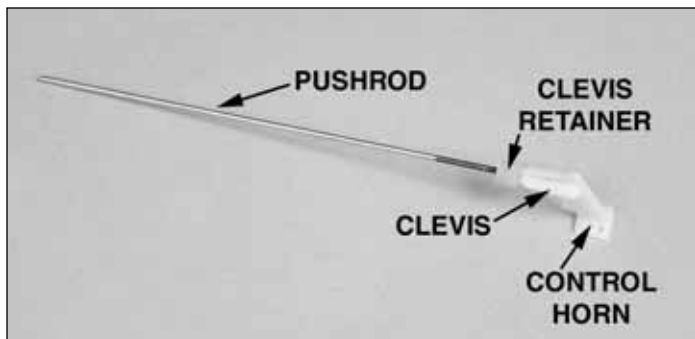
control horn using two 2-56 x 5/8 [16mm] machine screws. Use the backing nylon plate on the other side of the aileron.



3. Temporarily attach the servo to the receiver. Turn on the radio and center the servo. Test fit the servo in the servo bay. Adjust the servo arm until one of the arms is at a 90° angle to the bottom of the wing. Cut off the remaining servo arms and tack glue the servo in place with a drop of medium CA.

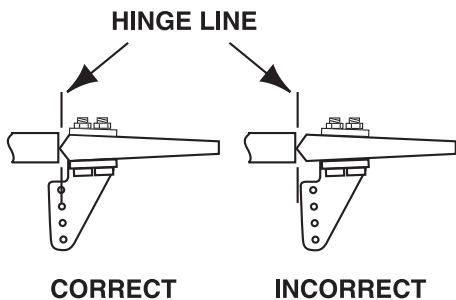


6. Mark the pushrod where it crosses the servo arm. Make a 90° bend at the mark and push through the servo arm. Attach a nylon FasLink and trim off the excess pushrod, leaving approximately 1/16" [1.6mm] past the FasLink. Remove the elevator servo.



4. Thread a nylon clevis twenty turns onto the threaded end of a 2mm x 150mm threaded pushrod. Slide a clevis retainer over the clevis. Attach the clevis to the outer hole of a small nylon control horns.

7. Carefully trim the servo cover along the cutlines. Lightly sand the area of the heat shrink servo wrap that will be glued to the wing. Align the servo so that the pushrod clears the cover. The servo travel should not bind against the servo cover. When you have everything lined up, glue the servo in place using epoxy.



5. Align the holes in the control horn with the hinge line, keeping the pushrod aligned with the servo arm. Mount the

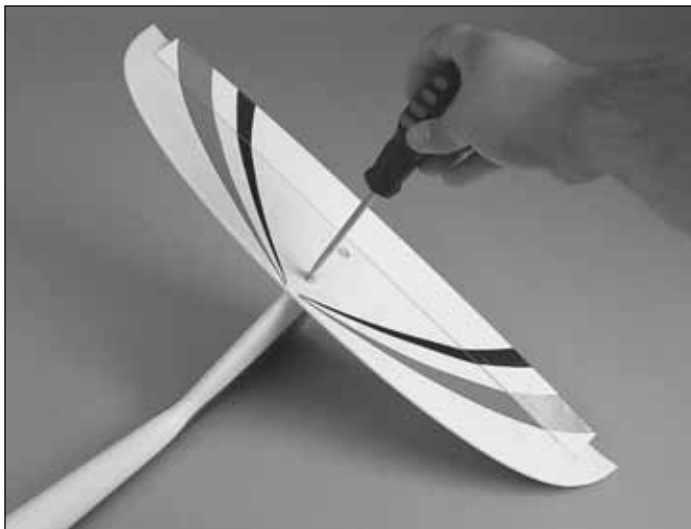
8. Mark the location of the servo cover screws on the wing. Drill a 1/16" [1.6mm] hole at that location. Harden the

hole with CA. Attach the servo cover to the wing using four 2mm x 9mm wood screws.

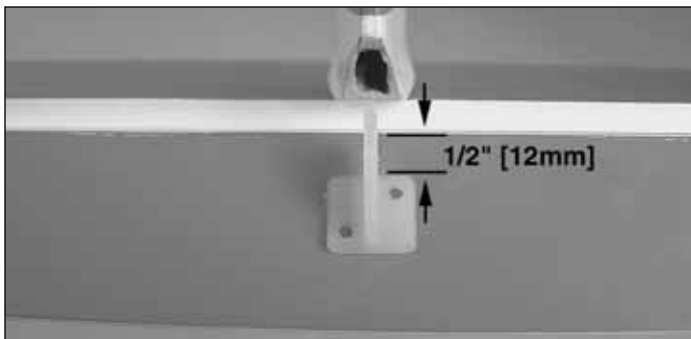
- ❑ 9. Repeat Steps 1-8 for the other aileron servo.

## ASSEMBLE THE FUSELAGE

### Mount the Stabilizer



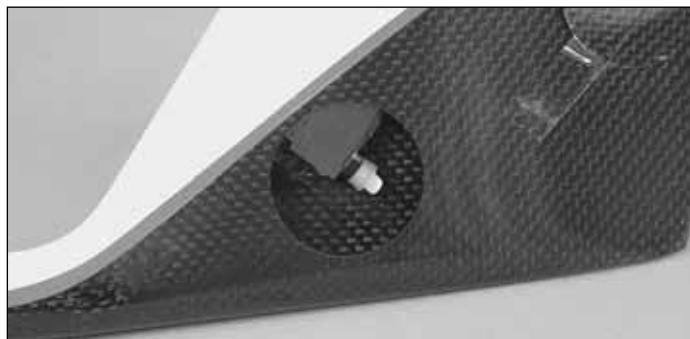
- ❑ 1. Inspect the hinges and the hinging motion of the elevator now and before each flight. Cut the 10-24 x 2" [52mm] nylon bolts to 3/4" [19mm] long. Attach the stab to the fuse using the two nylon bolts. Be careful not to overtighten.



- ❑ 2. Cut the remaining small control horn as shown. The horn is installed centered on the opening in the top of the fin and the base of the horn is 1/2" [12mm] back from the hinge line. Install the control horn using two 2-56 x 5/8" [16mm] bolts and the nylon backplate. Remove the stab from the fuselage.

- ❑ 3. Remove the elevator servo hatch cover and set aside for now. Cover the elevator servo with Trinity single cell heat shrink as you did before on the aileron servos.

- ❑ 4. Connect a 24" [610mm] servo extension to the elevator servo. Secure the connection with 3/8" [10mm] heat shrink tubing. Route the servo lead through the fuselage.



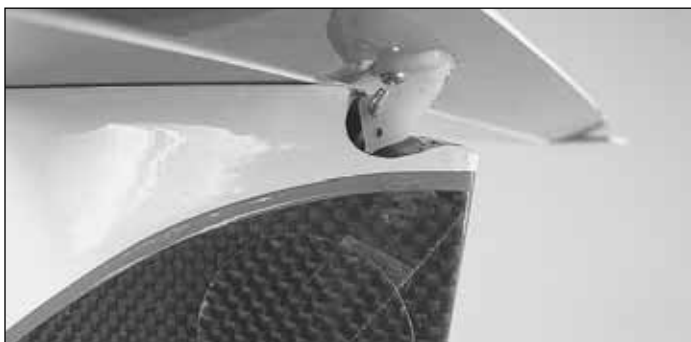
- ❑ 5. Temporarily position the elevator servo as shown. Use fine-grit sandpaper to sand the area on the fuselage and heat shrink wrap where the servo will be glued. **Note:** Alternatively the servo can also be installed right-side up.

- ❑ 6. Thread a nylon clevis and retainer onto a 2mm x 150mm threaded pushrod. Make a Z-bend approximately 4-1/4" [108mm] from the end of the threaded end of the rod. Connect the Z-bend to the elevator control horn & reinstall the stabilizer while sliding the pushrod into the fin.



- ❑ 7. Center the servo and attach the clevis to the servo arm. Shift the servo to get the elevator neutral and the top of the servo parallel with the pushrod.

- ❑ 8. When you have the proper angle set, permanently mount the servo using epoxy. Make sure that the servo is securely glued in place after the epoxy has cured.



- ❑ 9. It may be necessary to widen the opening in the top of the fin, or to remove a portion of the opening to allow the pushrod to travel.

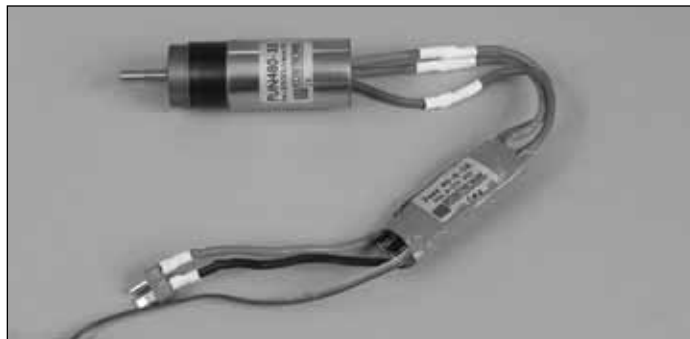
- ❑ 10. Use an epoxy bottle or similar to draw a 1-5/8" [41mm] circle on the decal material. Cut the circle out. Use this decal material to secure the tail servo cover to the fin.

## ***Install the Motor***

### **Warnings Before Motor System Installation**

- The power system you are just about to install is very high power and it needs to be handled carefully to avoid serious injury. Both the Brushless motor installation and the Brushed motor installations are capable of producing injury at any throttle setting.
- Make sure when doing these installations that the radio system is set to the lowest throttle setting at all times.
- Do not plug in the motor battery to the motor ESC at any point until directed to do so.
- Under no circumstances should the radio system in the airplane be switched on before the transmitter is switched on.
- Do not plug the battery in the airplane to the ESC until the transmitter is on and transmitting and throttle is at idle.
- Never stand or have any part of your body near the propeller when the motor battery is connected.
- Watch out for loose clothing or other objects in the path of the propeller.
- Securely hold the model when testing the motor.
- Always test the motor outdoors. Never turn on the motor indoors.
- **Exercise extreme caution when handling the model with the propeller on.**

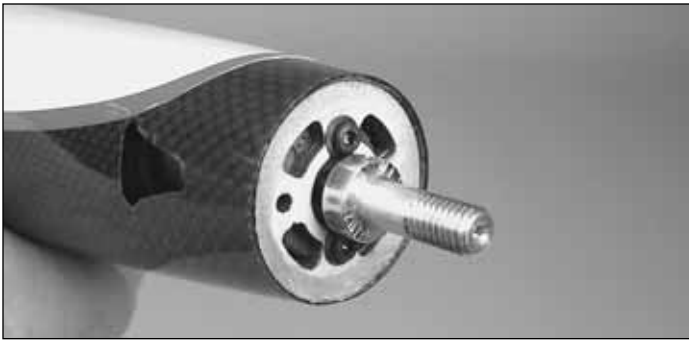
## ***Brushless Motor Installation***



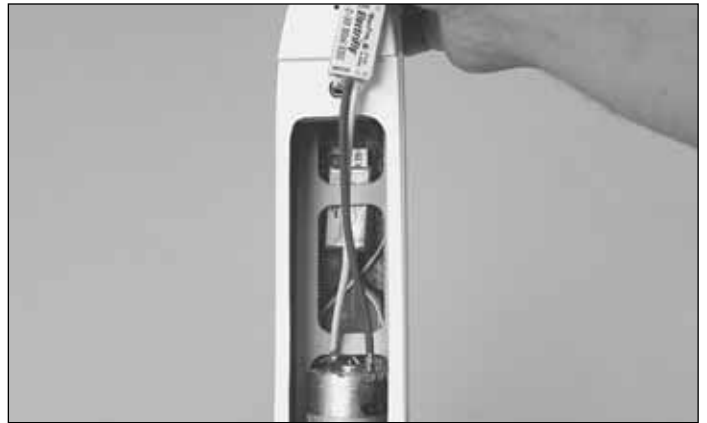
- ❑ 1. Connect the motor to the ESC following the manufacturer's instructions.



- ❑ 2. Guide the motor into the nose of the airplane from the inside of the fuselage. Secure the motor to the firewall using screws provided by the motor manufacturer and thread-locking compound.



❑ 3. Check for proper motor rotation. Attach the prop adapter, adapter washer, prop, and spinner to the motor shaft as determined by the motor manufacturer.



❑ 2. Guide the motor into the nose of the airframe from the inside of the fuselage. Mount the motor to the firewall using the screws that came with the motor and Threadlocker.



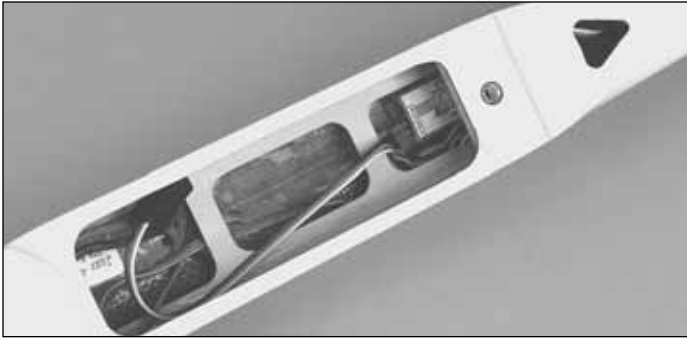
❑ 3. Check for proper motor rotation. Attach the prop adapter, prop, and spinner to the motor shaft as determined by your manufacturer.

### **Brushed Motor Installation**

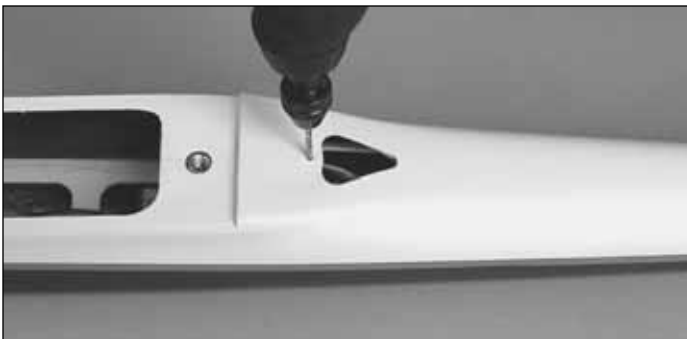


❑ 1. Solder the motor to the ESC following the manufacturer's instructions.

## Receiver & Battery Installation



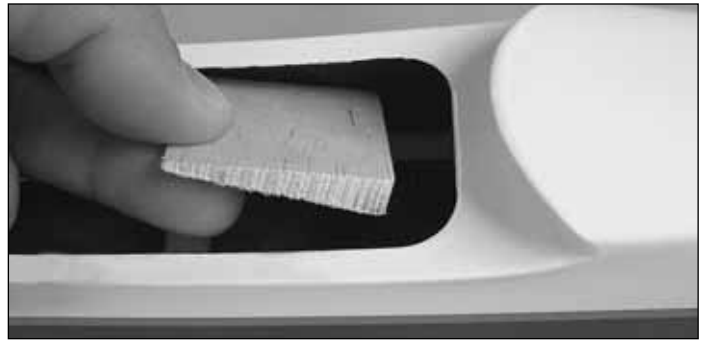
❑ 1. Connect the elevator, ESC, and aileron Y-harness to the receiver. Mount the receiver in the rear of the radio compartment with double-sided tape.



❑ 2. Drill a small hole as shown for the antenna to exit the fuse. **Do not route the antenna inside the carbon fiber fuselage!**



❑ 3. Slide the battery into the radio compartment. **DO NOT CONNECT THE BATTERY TO THE ESC AT THIS TIME.** Use 1/4" [6mm] foam to hold the battery in place. Adding foam to the front or back of the battery compartment can be helpful in shifting the battery location for balancing. The battery will be a tight fit. Glue Velcro with CA or epoxy to the bottom side of the battery and to the battery tray to hold the battery in place.



❑ 4. If the battery does not slide forward far enough to fit inside the fuselage, tack glue the hardwood wedge on the battery tray against the forward former. This wedge will lift the front of the battery and it will help it slide through the forward former easily.

## Apply the Decals

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

2. Be certain the model is clean and free from oily fingerprints and dust. Prepare a dishpan or small bucket with a mixture of liquid dish soap and warm water—about one teaspoon of soap per gallon of water. Submerge the decal in the soap and water and peel off the paper backing. **Note:** Even though the decals have a “sticky-back” and are not the water transfer type, submersing them in soap and water allows accurate positioning and reduces air bubbles underneath.

3. Position decal on the model where desired or use the airplane’s box as a guide. Holding the decal down, use a paper towel to wipe most of the water away.

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

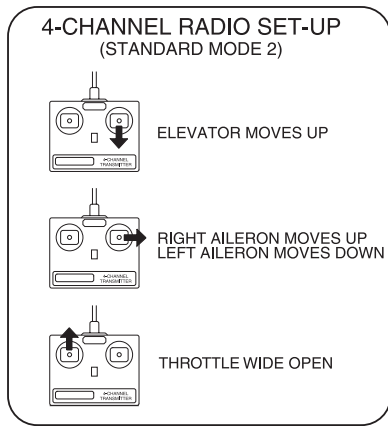
## GET THE MODEL READY TO FLY

### Check the Control Directions

**Note:** Exercise extreme caution when handling the model with the propeller on.

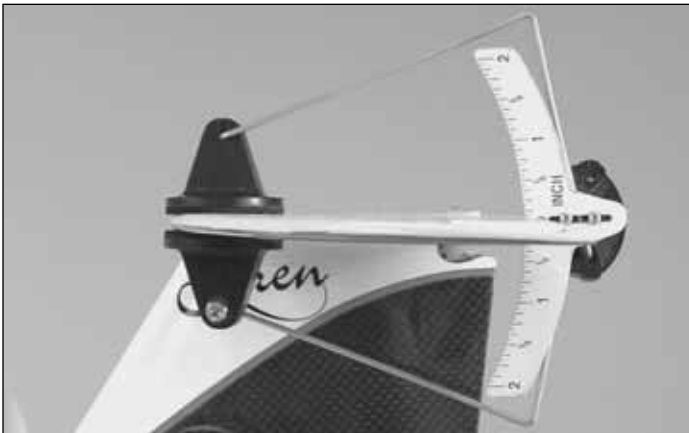
❑ 1. Turn on the transmitter and receiver and center the trims. If necessary, remove the servo arms from the servos and reposition them so they are centered. Reinstall the screws that hold on the servo arms. The throttle stick should be at the idle or low position.

❑ 2. With the transmitter and receiver still on, check all the control surfaces to see if they are centered. If necessary, adjust the clevises on the pushrods to center the control surfaces.



3. Make certain that the control surfaces and the 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. Adjust if necessary.

### Set the Control Throws



Use a Great Planes AccuThrow™ (or a ruler) to accurately measure and set the control throw of each control surface as indicated in the chart that follows. If your radio does not have dual rates, we recommend setting the throws at the **middle of both rate settings**.

**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
<b>ELEVATOR:</b>	1/2" [12mm] up	5/16" [8mm] up
	1/2" [12mm] down	5/16" [8mm] down
<b>AILERONS:</b>	3/8" [9mm] up	3/16" [5mm] up
	3/8" [9mm] down	3/16" [5mm] down

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

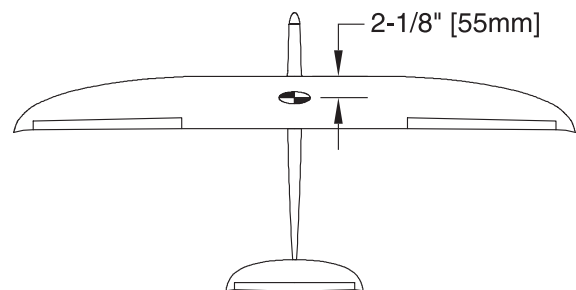
### Balance the Model (C.G.)

More than any other factor, the **C.G.** (balance point) can have the **greatest** effect on how a model flies, and may determine whether or not your first flight will be successful. If you value this model and wish to enjoy it for many flights, **DO NOT OVERLOOK THIS IMPORTANT PROCEDURE**. A model that is not properly balanced will be unstable and possibly unflyable.

At this stage the model should be in ready-to-fly condition with all of the systems in place including the motor, battery, finishing, and the radio system.

1. Use a felt-tip pen or 1/8" [3mm]-wide tape to accurately mark the C.G. on the bottom of the wing on both sides of the fuselage. The C.G. is located 2-1/8" [55mm] back from the leading edge of the wing.

This is where your model should balance for the first flights. Later, you may wish to experiment by shifting the C.G. up to 3/8" [9mm] forward or 3/8" [10mm] back to change the flying characteristics. Moving the C.G. forward may improve the smoothness and stability, but the model may be more difficult to slow for landing. Moving the C.G. aft makes the model more maneuverable, but could also cause it to become too difficult to control. In any case, **start at the recommended balance point** and do not at any time balance the model outside the specified range.



2. With the wing attached to the fuselage and all parts of the model installed (ready to fly), place the model 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 and/or receiver must be shifted forward or weight must be added to the nose to balance. If the nose drops, the model is “nose heavy” and the battery pack and/or receiver must be shifted aft or weight must be added to the tail to balance. If possible, relocate the battery pack and receiver to minimize or eliminate any additional ballast required. If relocating the battery pack and receiver does not correct the balance of the Siren ARF you may use Great Planes (GPMQ4485) “stick-on” lead. Begin by placing incrementally increasing amounts of weight on the fuse over the firewall until the model balances. Once you have determined the amount of weight required, it can be permanently attached.

**Note:** Do not rely upon the adhesive on the back of the lead weight to permanently hold it in place. Use RTV silicone or epoxy to permanently hold the weight in place.

❑ 4. **IMPORTANT:** If you found it necessary to add any weight, recheck the C.G. after the weight has been installed.

### ***Balance the Model Laterally***

❑ 1. With the wing level, have an assistant help you lift the model by the motor propeller shaft and the bottom of the fuse under the TE of the fin. Do this several times.

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

## ***PREFLIGHT***

### ***Identify Your Model***

No matter if you fly at an AMA sanctioned R/C club site or if you fly somewhere on your own, you should always have your name, address, telephone number and AMA number on or inside your model. It is **required** at all AMA R/C club flying sites and AMA sanctioned flying events. Fill out the identification tag on page 18 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 in your transmitter. You should always charge your transmitter and receiver batteries the night before you go flying, and at other times as recommended by the radio manufacturer.

**CAUTION:** Unless the instructions that came with your radio system state differently, the **initial** charge on **new** transmitter and receiver batteries should be done for 15 hours **using the slow-charger that came with the radio system.** This will “condition” the batteries so that the next charge may be done using the fast-charger of your choice. If the initial charge is done with a fast-charger the batteries may not reach their full capacity and you may be flying with batteries that are only partially charged.

### ***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.

## ***MOTOR SAFETY PRECAUTIONS***

**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 a motor of this power.

Use safety glasses when starting or 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 plane of rotation of the propeller as you start and run the motor.

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

The motor gets hot! Do not touch it during or immediately after operation.

## 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 (that's why it's called a *check list!*).

- 1. Check the C.G. according to the measurements provided in the manual.
- 2. Be certain the battery and receiver are securely mounted in the fuse. Simply stuffing them into place is not sufficient.
- 3. Extend your receiver antenna and make sure it has a strain relief inside the fuselage to keep tension off the solder joint inside the receiver.
- 4. Balance your model *laterally* as explained in the instructions.
- 5. Use thread-locking compound to secure critical.
- 6. Make sure all hinges are **securely** in place.
- 7. Confirm that all controls operate in the correct direction and the throws are set up according to the manual.
- 8. Make sure there are silicone retainers on all the clevises and that all servo arms are secured to the servos with the screws included with your radio.
- 9. Secure connections between servo wires and Y-connectors or servo extensions, and the connection between your battery pack and the on/off switch with vinyl tape, heat shrink tubing or special clips suitable for that purpose.
- 10. Make sure any servo extension cords you may have used do not interfere with other systems (servo arms, pushrods, etc.).
- 11. Balance your propeller (and spare propellers).
- 12. Tighten the propeller nut and spinner.
- 13. Place your name, address, AMA number and telephone number on or inside your model.
- 14. Cycle your battery pack (if necessary) and make sure it is fully charged.
- 15. If you wish to photograph your model, do so before your first flight.
- 16. Range check your radio when you get to the flying field.

## FLYING

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

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

## Takeoff

Remember to launch into the wind. When you're ready, point the model straight into the wind, and apply full throttle. Throw the model straight and level with a good toss. If using the brushed power package, the Siren ARF will fly off of your hand and fly level until it picks up speed. The climb angle will be around 20-30 degrees. If you are using the brushless power package, the Siren ARF will fly off your hand and start a vertical climb if you apply elevator. Using this power system, you should keep in mind the amount of power that your motor is producing and avoid prolonged climbs. The model will climb rapidly and become a spec in the sky within ten to fifteen seconds of launch.

## Flight

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

Take it easy with the Siren ARF for the first few flights, gradually getting acquainted with it as you gain confidence. Adjust the trims to maintain straight and level flight. After flying around for a while, and while still at a safe altitude with plenty of battery, practice slow flight and execute practice landing approaches by reducing the throttle to see how the model handles at slower speeds. Add power to see how she climbs as well. Continue to fly around, executing various maneuvers and making mental notes (or having your

assistant write them down) of what trim or C.G. changes may be required to fine tune the model so it flies the way you like. Mind your fuel level, but use this first flight to become familiar with your model before landing.

If it is your intention to perform high-speed passes, then make sure that you shut off power while at altitude before diving. This way the folding propeller will fold and the airplane will pick up maximum speed.

## Landing

To initiate a landing approach, lower the throttle while on the downwind leg. Allow the nose of the model to pitch downward to gradually bleed off altitude. Continue to lose altitude, but maintain airspeed by keeping the nose down as you turn onto the crosswind leg. Make your final turn toward the runway (into the wind) keeping the nose down to maintain airspeed and control. Level the attitude when the model reaches the runway threshold. If you are going to overshoot, smoothly advance the throttle and climb out to make another attempt. When you're ready to make your landing flare and the model is a foot or so off the deck, smoothly increase up elevator until it gently touches down. The Siren ARF is a very efficient electric glider and as such it will lose very little altitude as it glides. Keep some reserve power in the first few landings to get used to its gliding path.

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

**Remember to think.**

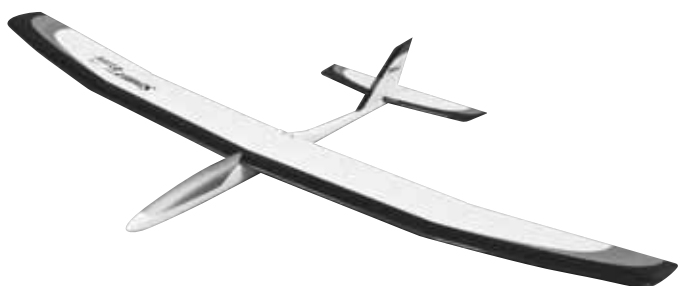
**Have a ball! But always stay in control and fly in a safe manner.**

**GOOD LUCK AND GREAT FLYING!**

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

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 Spirit Elite™ ARF**

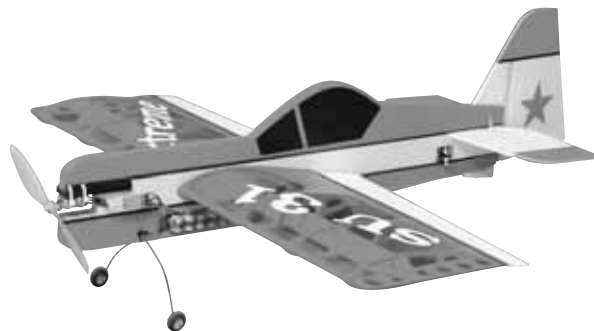
Like the International Model of the Year kit version, the MonoKote®-covered, 2-meter Spirit Elite ARF 4-6 channel sailplane is ideal for competition – with rudder, elevator, ailerons, flaps, and balsa/ply wing panels that employ an SA 7035 root airfoil for speed and SA 7036 airfoil at the wingtips for low-speed stability and lift. The fuselage is durable, gel-coated white fiberglass, shaped to reduce drag. Assembly time is minimal...leaving you more time for set-up, flight, and experimenting with mixes! Requires a 4-6 channel radio with 4-6 mini or micro servos. **GPMA1047**



**Great Planes ElectroStreak™ ARF**

This swift, sporty aerobat is ready in just 8-10 hours for clean, quiet electric flight! All major sections are preassembled, then covered with Top Flite® MonoKote film. The fuselage is made of lightweight, hand-laid fiberglass that is gel-coated for a sleek appearance. Remove two screws, and the balsa wing

comes off for easy transport. Quality Great Planes hardware is included – along with a 550 motor, spinner, 8x5 folding prop and electronic speed control with BEC. In the air, the ElectroStreak ARF's pull/pull rudder linkage saves space compared to push/pull configurations, and offers efficient power transfer without slop. **GPMA1055**



**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**



**ElectriFly™ by Great Planes Triton™ Peak Charger**

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



**Hobbico® Pro Series™ Accu-Cycle™ Elite**

Accu-Cycle Elite is an AC/DC charger, discharger and cycler in one. It makes full, deep charges virtually effortless. Enter the cell chemistry, voltage and capacity from your battery label, and its Auto Smart Set will automatically set the safety-time-out period, charge current and discharge voltage cut-off for Li-Ion/Li-Po packs – and all three plus the trickle rate for NiCds and NiMHs. You can also program custom battery routines and store them in 10-battery memory. It can handle a single cell or a pack; one of each simultaneously; or two cells or packs at once – even if they're of different chemistries. The large, 2-line, 16-character LCD make progress easy to see! **HCAP0280**



**Great Planes ElectriFly 2000mAh Nickel-Metal Hydride Battery**

Be ready for launching fast with this preassembled and shrink-wrapped 9.6V NiMH pack! Made with 4/5 sub-C cells, it's compact and lightweight – but offers a generous 2000mAh of capacity for long flight times. Includes a 2-pin red charge connector. **GPMP0352**



**Great Planes ElectriFly 1500mAh Lithium Polymer Battery**

Lithium-Polymer (Li-Po) cells provide three times the voltage of NiCd and NiMH cells – at less than half the weight! Exclusive SafeCharge™ circuitry protects ElectriFly Li-Po packs by preventing any cell from overcharging. This 11.1V, 3 series pack includes a 2-pin red charge connector and separate discharge connector. **GPMP0831**



**Kontronik™ Brushless Set 480**

This high-RPM, gear driven motor system is ideal for sailplanes and larger electric airplanes using 7-10 cells. Lithium compatible, it includes the Fun 480-33 motor; Jazz 40-6-18 electronic speed control; and KPG25 gear drive with 4.2:1 gear ratio. This system also makes an excellent choice for converting most .40-.60 size glow-powered trainers and sport models to electric power! **KONG5020**



**Great Planes C.G. Precision Aircraft Balancer**

Accurate balancing makes trainers more stable, low-wings more agile, and pylon planes move at maximum speed. The innovative C.G. Machine helps you achieve optimum balance easily, without measuring or marking—and without the errors that fingertip balancing can cause. You'll quickly pinpoint your plane's exact center of gravity. Then you'll know at a glance whether weight should be added, removed or relocated. The C.G. Machine works with kits and ARF models of any size and wingspan. Its slanted wire balancing posts support models weighing up to 40 pounds. **GPMP2400**



