

# Alpha™ Sport 450 ARF

Assembly Manual



## Specifications

Wingspan:	48.5 in (1230mm)
Length:	40 in (1015mm)
Wing Area:	395 sq in (25.5 sq dm)
Weight w/o Battery:	23–24 oz (650–680 g)
Weight w/Battery:	28–29 oz (790–820 g)

**E-flite**®  
ADVANCING ELECTRIC FLIGHT

## Table of Contents

Introduction .....	2
Important Warranty Information .....	2
Using the Manual .....	2
Product Registration .....	2
Contents of Kit/Parts Layout .....	2
Covering Colors .....	2
Recommended Radio Equipment .....	3
Optional Accessories .....	3
Brushless Outrunner Setup .....	3
Required Tools and Adhesives .....	3
Note on Lithium Polymer Batteries .....	3
Warning .....	3
Installing the Aileron Servos and Linkages .....	4
Installing the Nose Gear .....	7
Installing the Main Landing Gear .....	8
Installing the Motor and Speed Controller .....	9
Installing the Rudder and Elevator Servos .....	11
Installing the Tail Surfaces .....	14
Installing the Receiver .....	16
Installing the Motor Battery .....	16
Centering the Rudder, Nose Gear and Elevator .....	17
Attaching the Wing and Centering the Ailerons .....	19
Checking the Control Movements .....	21
Checking the Control Throws .....	23
Installing the Propeller and Spinner .....	25
Center of Gravity .....	27
Range Test Your Radio .....	28
Flying Your Alpha 450 .....	29
Age Requirements .....	29
Safety Do's and Don'ts for Pilots .....	29
Daily Flight Checks .....	29
Glossary of Terms .....	30
Warranty Information .....	30
CE Compliance Information for the European Union .....	32
2009 Official Academy of Model Aeronautics Safety Code .....	32
Building and Flying Notes .....	34-35

## Introduction

The Alpha Sport 450 ARF combines the mild manners of a high-wing trainer with all the fun of a sport aerobatic plane, making it the perfect companion for a few care-free hours at the local park or playground. Constructed from top-quality balsa and plywood, it comes out of the box covered in genuine UltraCote. And assembly takes just an evening or two thanks to convenient features like the bolt-on tail and pre-installed control horns.

### Important Warranty Information

Please read our Warranty and Liability Limitations section on Page 30 before building this product. If you as the Purchaser or user are not prepared to accept the liability associated with the use of this Product, you are advised to return this Product immediately in new and unused condition to the place of purchase.

### Using the Manual

This manual is divided into sections to help make assembly easier to understand, and to provide breaks between each major section. In addition, check boxes have been placed next to each step to keep track of its completion. Steps with a single circle (○) are performed once, while steps with two circles (○○) indicate that the step will require repeating, such as for a right or left wing panel, two servos, etc.

Remember to take your time and follow the directions.

## Product Registration

Register your product online at:  
[www.e-fliterc.com/register/](http://www.e-fliterc.com/register/)

### Contents of Kit/Parts Layout

EFL2826	Wing Set
EFL2827	Fuselage
EFL2828	Tail Set
EFL2829	Wing Tube
EFL2830	Main Gear
EFL2831	Pushrod Set
EFL2832	Fuselage Hatch
EFL2833	Nose Gear
EFL2834	Wheel Set
EFL2835	Hardware Set



### Covering Colors

HANU873	Deep Blue
HANU870	White
HANU866	True Red

## Recommended Radio Equipment

You will need a minimum of a 4-channel transmitter, receiver and four servos. You can choose to purchase a complete radio system. If you are using an existing transmitter, just purchase the other required equipment separately. We recommend the crystal-free, interference-free Spektrum™ DX5e 2.4GHz DSM® 5-channel system. If using your own transmitter, we recommend the E-flite S75 Sub-Micro servos.

If you own a Spektrum radio, just add a DSM2™ receiver and four E-flite S75 Sub-Micro servos. We show the installation of the AR500 receiver in the manual.

### Complete Radio System

SPM5500 DX5e 5-Channel Full Range w/o Servos

### Or Purchase Separately

SPMAR500 AR500 5-Channel Receiver

### And

EFLRS75 Sub-Micro S75 Servo (4)  
EFLREX3L 3-inch Extension,  
Lightweight (2)  
EFLRYH3 3-inch Y-Harness, Lightweight

## Optional Accessories

EFLA110 Power Meter  
EFLC3005 Celecra™ 1- to 3-Cell  
Li-Po Charger  
EFLC505 Intelligent 1- to 5-Cell  
Balancing Charger  
EFLSP175 1<sup>3</sup>/<sub>4</sub>-inch Aluminum Spinner  
APC10070E 10x7 Electric Prop

The Spektrum trademark is used with permission of Bachmann Industries, Inc.

## Brushless Outrunner Setup

EFLM1400 Park 450 Brushless Outrunner Motor, 890Kv  
EFLP1070 10x7 Slow Flyer Propeller  
EFLA1025 25-Amp Lite Pro Switch-Mode BEC Brushless  
EFLB18003S 1800mAh 3S 11.1V 20C Li-Po, 13AWG EC3

or

THP21003SPL2 2100mAh 3S 11.1V 20C Li-Po, 16AWG

## Required Tools and Adhesives

### Tools & Equipment

Ruler (EFLA264) Hobby knife (#11 blade)  
Nut driver: 5.5mm Pliers  
Pin drill Scissors  
String/dental floss  
Phillips Screwdriver: #0, #1, #2 (EFLA257 and EFLA258)  
Hex Wrench or Ball Driver: 5/64-inch  
Drill bit: 1/16-inch (1.5mm)

### Adhesives

Thin CA Threadlock  
Clear tape

### Optional Tools and Adhesives

Paper towel Epoxy mixing cup  
Epoxy mixing stick Epoxy brush  
Rubbing alcohol 6-minute Epoxy (HAN8000)  
Propeller reamer Drill  
Low tack tape  
Drill bit: 3/8-inch (9.5mm)  
Adjustable wrench or 10mm open-end wrench

## Note on Lithium Polymer Batteries



Lithium Polymer batteries are significantly more volatile than alkaline or Ni-Cd/ Ni-MH batteries used in RC applications. All manufacturer's instructions and warnings must be followed closely. Mishandling of Li-Po batteries can result in fire. Always follow the manufacturer's instructions when disposing of Lithium Polymer batteries.

## Warning

An RC aircraft is not a toy! If misused, it can cause serious bodily harm and damage to property. Fly only in open areas, preferably at AMA (Academy of Model Aeronautics) approved flying sites, following all instructions included with your radio.

Keep loose items that can get entangled in the propeller away from the prop, including loose clothing, or other objects such as pencils and screwdrivers. Especially keep your hands away from the propeller.

## E-tips

During the course of building your model, we suggest that you use a soft base for the building surface. Such things as a foam stand, large piece of bedding foam or a thick bath towel will work well and help protect the model from damage during assembly.

# Installing the Aileron Servos and Linkages

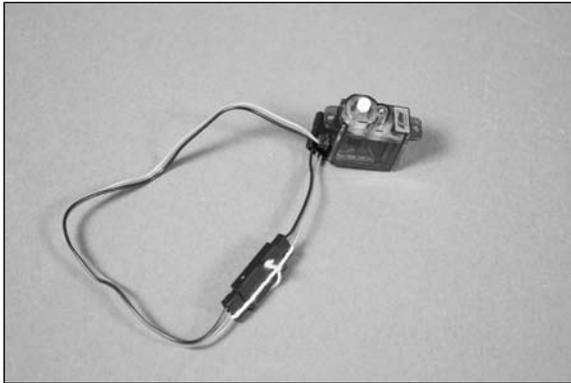
## Required Parts

- Radio system
- Wing panel (right and left)
- Servo with hardware (2)
- 4<sup>1</sup>/<sub>2</sub>-inch aileron pushrod (2)
- 3-inch (76mm) servo extension (2)
- Micro pushrod connector (2)
- Micro pushrod connector backplate (2)
- 2mm x 4mm machine screw (2)

## Required Tools and Adhesives

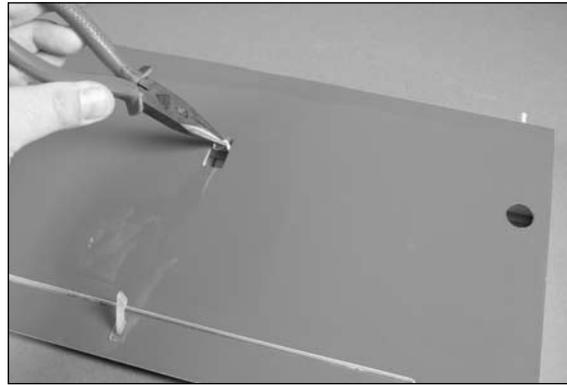
- |            |                              |
|------------|------------------------------|
| Pliers     | Dental floss or string       |
| Pin drill  | Drill bit: 1/16-inch (1.5mm) |
| Thin CA    | Phillips screwdriver: #0, #1 |
| Threadlock |                              |

- 1. Use a #0 Phillips screwdriver to remove the servo horn from the servo. Connect a 3-inch (76mm) servo extension to the lead from the servo. Use string or dental floss to secure the extension to the servo lead so it will not unplug while inside the wing. Make sure not to lose the screw from the servo as it will be used at the end of this section.

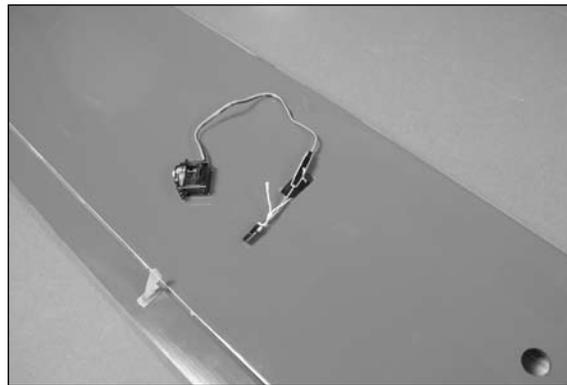


**Note:** Use the radio system to center the aileron servo at this time.

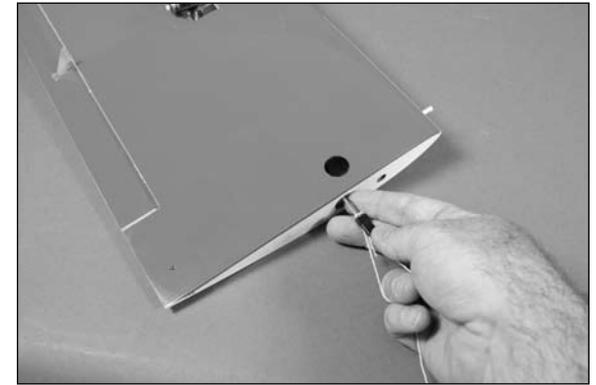
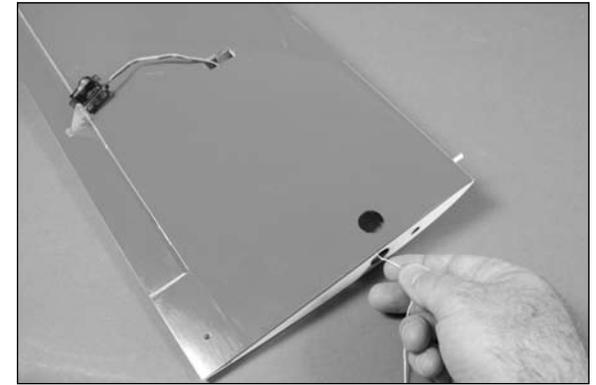
- 2. Use pliers to carefully pull the string out of the wing through the hole for the aileron servo. Use care not to detach the string from the end of the wing where it is taped.



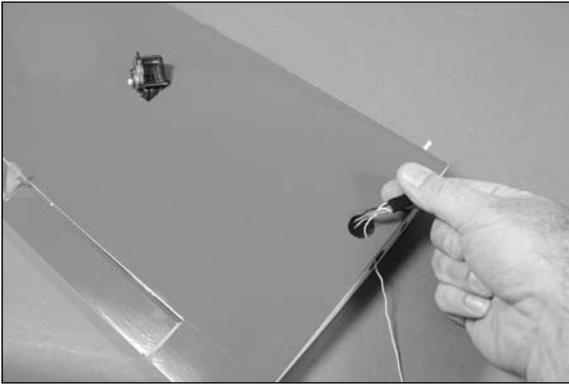
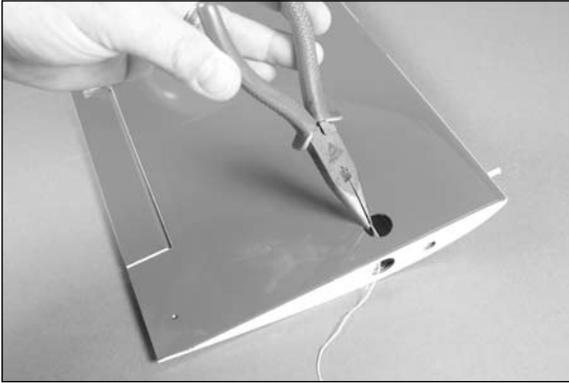
- 3. Use a knot to tie the string to the end of the servo extension that will plug into the Y-harness.



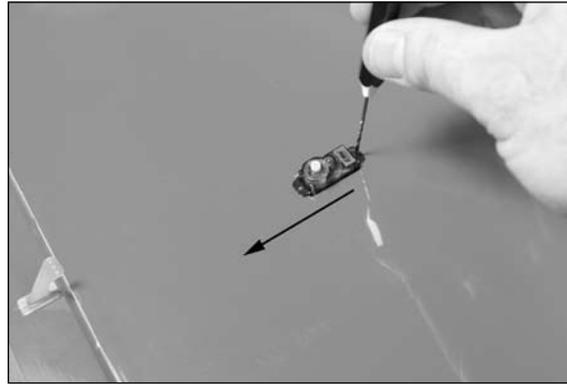
- 4. Use the string to carefully pull the extension and servo lead through the wing as shown. The end of the extension will eventually come out of the same hole the string was inserted in.



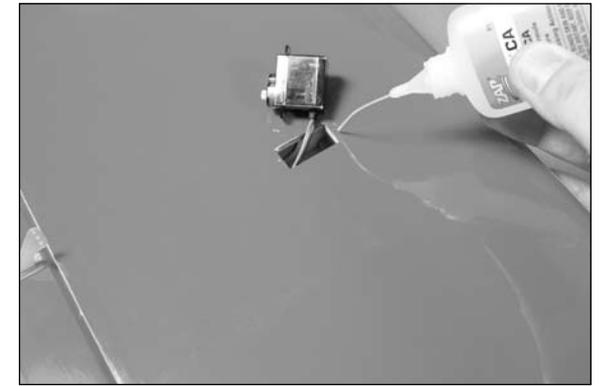
- 5. Use pliers to carefully pull the end of the extension through the large hole that is in the bottom of the wing. Do not damage the wiring in the process.



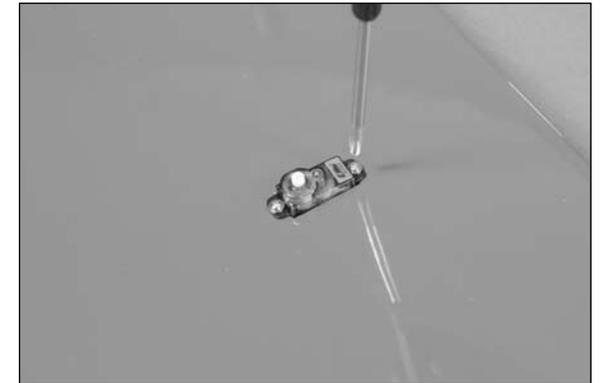
- 6. Insert the aileron servo in the rectangular opening in the wing for the aileron servo. Make sure the output shaft of the servo faces the trailing edge of the wing, which is where the aileron is hinged. Use a pin drill and 1/6-inch (1.5mm) drill bit to drill a hole through the tab on the servo and into the wing. Be careful not to drill through the top of the wing, damaging the covering.



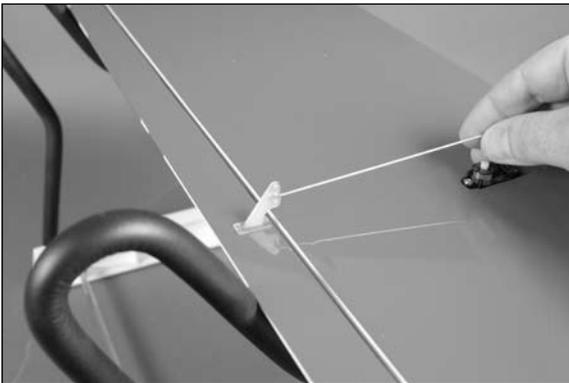
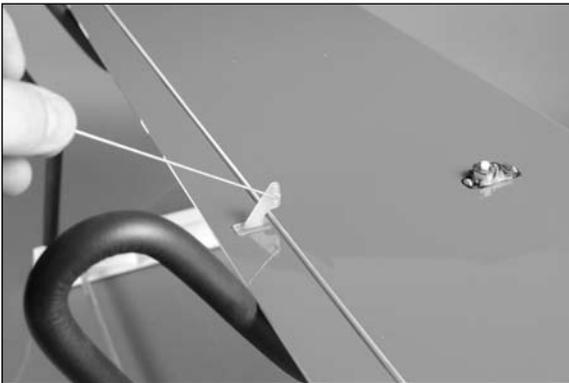
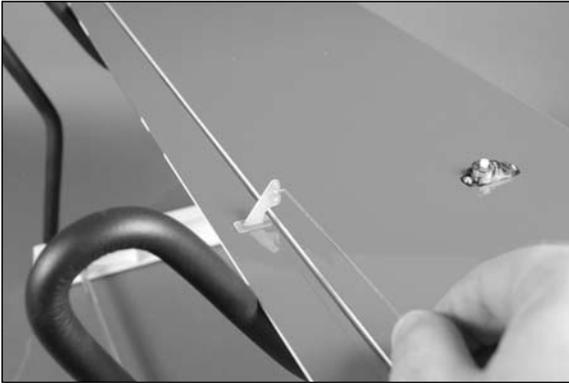
- 7. Remove the servo from the opening. Apply 2–3 drops of thin CA in each hole to harden the surrounding wood. This will toughen up the surrounding wood to provide a stronger surface for the servo mounting screws.



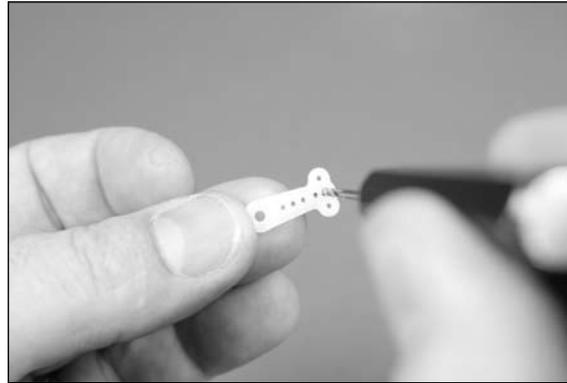
- 8. Use the two screws included with the servo to secure the servo to the wing. You will need to use a #1 Phillips screwdriver to tighten the screws. Remember the output of the servo will face the trailing edge of the wing when placed back in the rectangular opening for the servo in the wing.



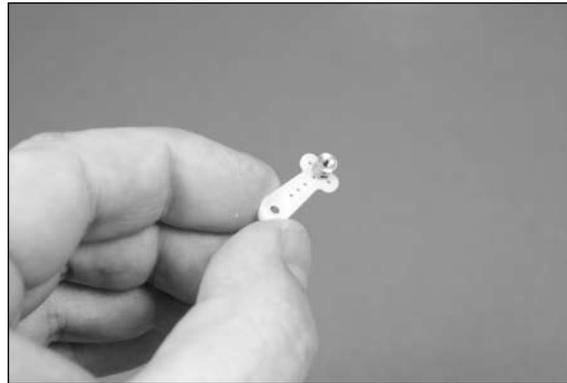
- ○ 9. Insert the prebent end of the 4 1/2-inch (114mm) aileron pushrod in the middle hole of the aileron control horn. Carefully rotate the aileron pushrod wire so the middle part of the bend is centered on the control horn. The pushrod will face the servo as shown in the last photo of this group.



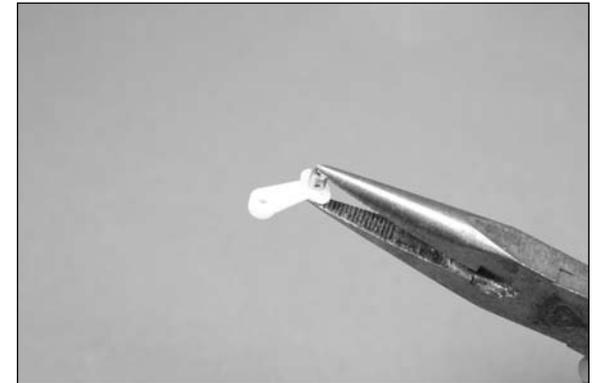
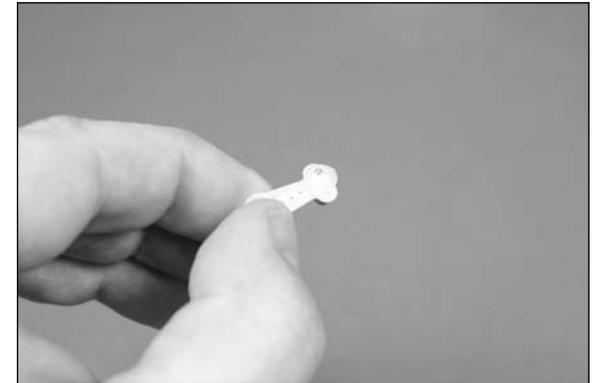
- ○ 10. Use a pin drill and 1/16-inch (1.5mm) drill bit to enlarge the outer hole of the servo arm that was removed in Step 1.



- ○ 11. Insert the micro pushrod connector in the hole drilled in the previous step. The connector will be on the top side of the servo horn.



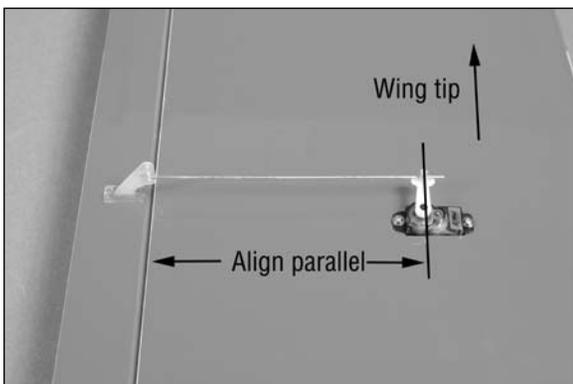
- ○ 12. Slide a micro pushrod connector backplate on the pushrod connector. Use pliers to fully seat the backplate in position. Be carefully not to damage the connector or servo arm by using too much pressure.



- 13. There is a small hole in the micro pushrod connector that is slightly larger than the pushrod wire. Insert the aileron pushrod wire in this hole and slide the servo horn assembly on the aileron pushrod wire.



- 14. Attach the servo arm to the aileron servo. Make sure the horn is aligned parallel to the hinge line of the aileron, and that the servo horn is facing toward the wing tip. Use the screw removed in Step 1 and a #0 Phillips screwdriver to secure the servo horn to the aileron servo.



- 15. Use a #1 Phillips screwdriver to install the 2mm x 4mm machine screw that will be used to secure the aileron pushrod wire to the micro pushrod connector. The alignment of the servo and aileron will take place later in this manual.



### ***E-tips***

Use threadlock on all metal-to-metal fasteners to keep them from vibrating loose.

- 16. Repeat Steps 1 through 15 to install the remaining aileron servo and linkage.

## ***Installing the Nose Gear***

### ***Required Parts***

Fuselage assembly    Nose gear assembly  
Nose gear steering arm  
3mm x 4mm machine screw

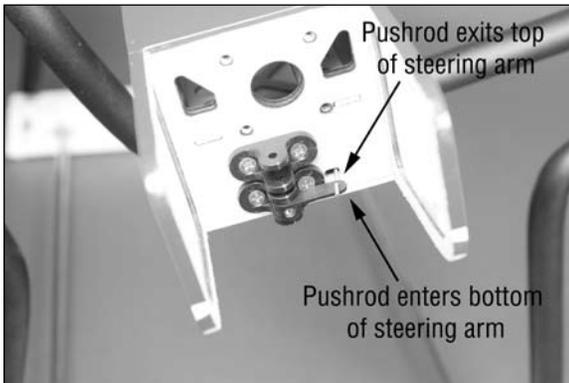
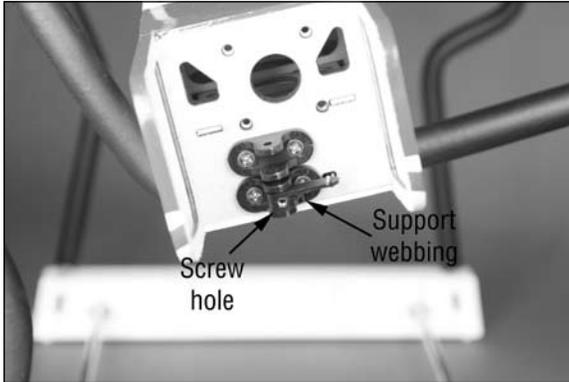
### ***Required Tools and Adhesives***

Threadlock                  Phillips screwdriver: #2

- 1. Slide the nose gear steering arm on the prebent nose gear steering pushrod. The flat side of the nose gear steering arm will be facing away from the firewall.



- 2. Rotate the nose gear steering arm to position it on the center portion of the prebent nose gear steering pushrod. Slide the nose gear steering arm in the lower nose gear support. The nose gear steering pushrod will enter the arm from the bottom of the nose gear steering arm and exit the top. The support webbing on the arm will face to the bottom of the fuselage. The hole for the nose gear attachment screw will also face away from the firewall so the nose gear can be secured in the following steps.



- 3. Slide the nose gear into the nose gear support and into the nose gear steering arm. The spring on the nose gear assembly will face to the rear of the fuselage and the flat area on the nose gear assembly will align with the hole in the nose gear steering arm.



- 4. Use a 3mm x 4mm machine screw to secure the nose gear assembly to the nose gear steering arm. A #2 Phillips screwdriver will be required to tighten the screw.



**E-tips**

Use threadlock on all metal-to-metal fasteners to keep them from vibrating loose.

## Installing the Main Landing Gear

### Required Parts

Fuselage assembly Main landing gear  
 #4 steel washer (2)  
 4-40 x 3/8-inch socket head bolt (2)

### Required Tools and Adhesives

Hex wrench or ball driver: 3/32-inch  
 Threadlock

- 1. Position the main landing gear on the bottom of the fuselage as shown. The main gear has a straight side and an angled side. The angled side goes forward and the straight side aft. Slide a #4 steel washer on the two 4-40 x 3/8-inch socket head bolts. The bolts go through the landing gear and in the blind nut installed inside the fuselage. The landing gear is secured using two bolts and washers. Tighten the bolts using a 3/32-inch hex wrench or ball driver.



**E-tips**

Use threadlock on all metal-to-metal fasteners to keep them from vibrating loose.

## Installing the Motor and Speed Controller

### Required Parts

Fuselage assembly    Motor with hardware  
#4 steel washer (5)    Motor standoff (4)  
Hook and loop material  
Electronic speed control (ESC)  
4-40 x 1<sup>1</sup>/<sub>2</sub>-inch socket head bolt (4)

### Required Tools and Adhesives

String                      Scissors  
Threadlock                Phillips screwdriver: #1  
Hex wrench or ball driver: 3/32-inch

- 1. Attach the X-mount to the motor using the hardware provided with the motor. Use a #1 Phillips screwdriver to tighten the screws.



**E-tips**

Use threadlock on all metal-to-metal fasteners to keep them from vibrating loose.

- 2. Slide a 4-40 x 1<sup>1</sup>/<sub>2</sub>-inch socket head bolt through the mount. Next, slide a motor standoff on the screw. The last is to slide a #4 steel washer on the screw. Prepare the motor using four bolts, standoffs and washers at this time.



- 3. Use a 3/32-inch hex driver or ball wrench to secure the motor to the firewall as shown.

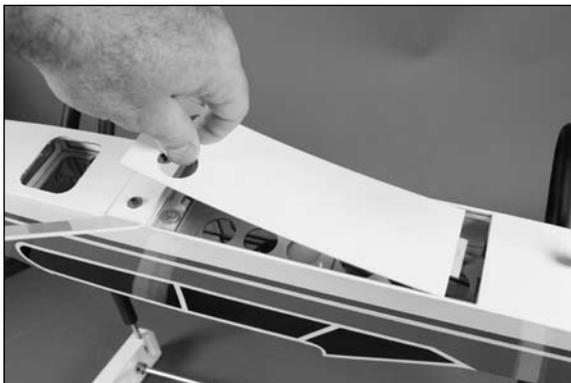


**E-tips**

Use threadlock on all metal-to-metal fasteners to keep them from vibrating loose.

- 4. Lift up at the rear of the battery hatch and slide it to the rear of the fuselage to remove. Set the battery hatch aside.

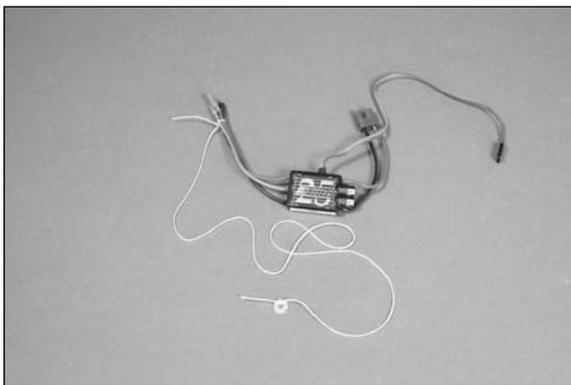




### IMPORTANT INFORMATION ABOUT YOUR BRUSHLESS ESC

Make sure your ESC brake is programmed to Off. Also, be sure to use an ESC with the proper 9V cutoff when using 3-cell Li-Po packs.

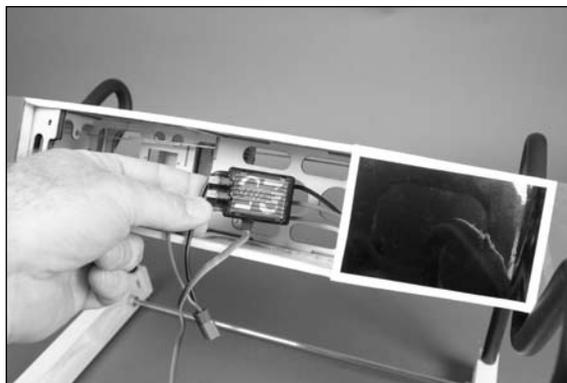
- 5. Use a knot to tie a 12-inch (300mm) length of string around the motor leads of the speed control. On the opposite end of the string, use a knot to tie a #4 steel washer to the string. You will have to open a bag not associated to the motor installation to obtain the washer.



- 6. Lower the string from the wing opening in the fuselage for the radio compartment. The washer will weight the string so you can guide it through the hole in the firewall as shown.



- 7. Lower the speed control into the fuselage as shown. As you pull the string through the firewall you will need to guide the speed control into the fuselage.



- 8. Eventually you will pull the motor leads from the speed control through the firewall. Use care not to pull too hard and break the string.



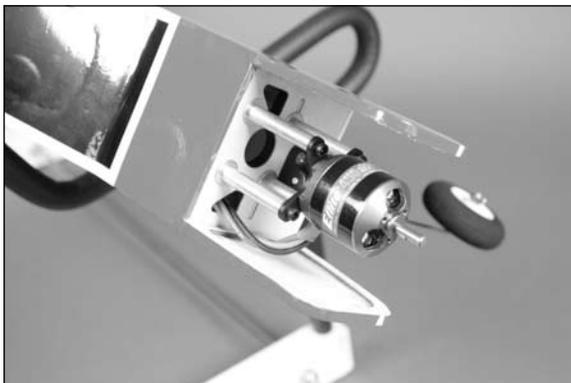
- 9. Connect the leads from the motor to the speed control as shown.



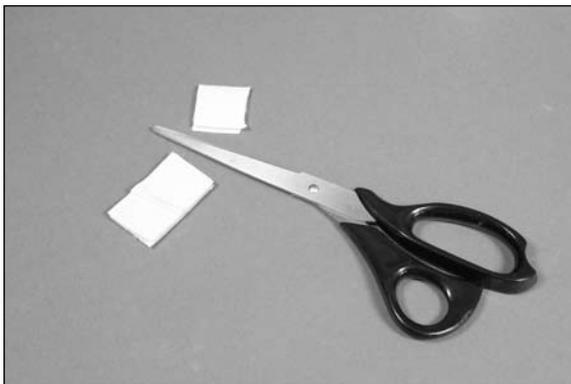
***Etips***

If using all E-flite branded equipment in your power system, the wires will connect to the corresponding colors; red to red, blue to blue, black to black.

- 10. Carefully tuck the leads from the motor and speed control back into the fuselage. This is done so the leads do not get entangled with the motor or propeller when flying your model.



- 11. Use scissors to cut a 1-inch (25mm) piece of hook and loop material. Use care not to cut your fingers while cutting the hook and loop material.



- 12. Remove the backing from one of the pieces of hook and loop material and apply the hook and loop to the bottom of the speed control.



- 13. Remove the remaining backing from the hook and loop material. Position the speed control in the fuselage as shown.



## Installing the Rudder and Elevator Servos

### Required Parts

Fuselage assembly    Servo with hardware (2)  
 Radio system  
 2mm x 3mm machine screw (3)  
 Micro pushrod connector (3)  
 Micro pushrod connector backplate (3)

### Required Tools and Adhesives

Pin drill                      Phillips screwdriver: #0, #1  
 Pliers                         Drill bit: 1/16-inch (1.5mm)  
 Thin CA                      Hobby knife with #11 blade

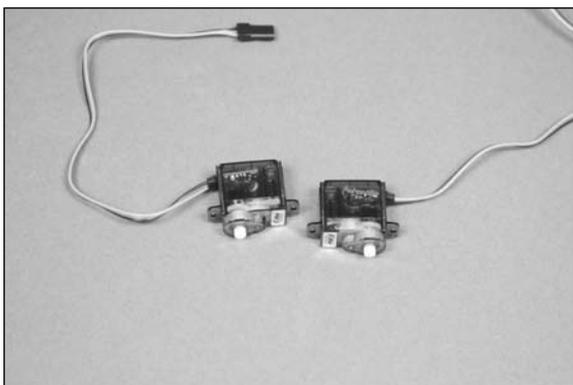
- 1. Use a #1 Phillips screwdriver to thread one of the servo mounting screws into each of the four holes in the servo tray as shown. This will tap the wood so it can be hardened in the next step.



- 2. Apply 2–3 drops of thin CA into each of the four holes for the servo mounting screws. This will harden the surrounding wood and provide a harder surface so the screws are more secure when installed.

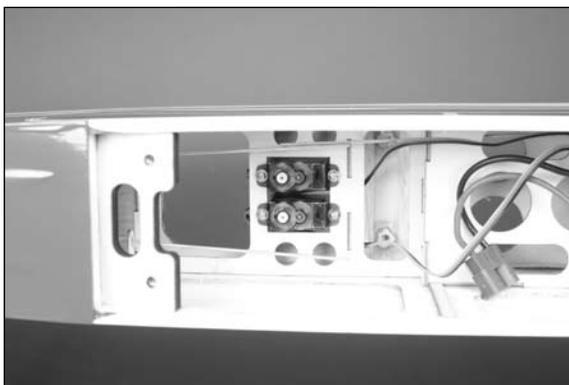


- 3. Use a #0 Phillips screwdriver to remove the servo horns from the rudder and elevator servos.



- 4. Use a #1 Phillips screwdriver and the screws provided with the servo to install them in the fuselage. Note that the output of the servo faces the rear of the fuselage when installed.

**Note:** Use the radio system to center the rudder and elevator servos at this time.



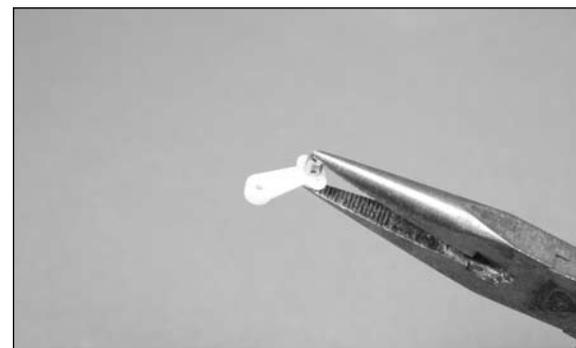
- 5. Use a pin drill and 1/16-inch (1.5mm) drill bit to enlarge the outer hole of the servo arm.



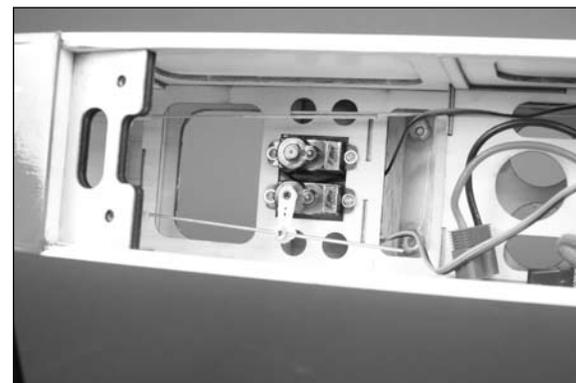
- 6. Insert the micro pushrod connector in the hole. The connector will be on the top side of the servo horn.



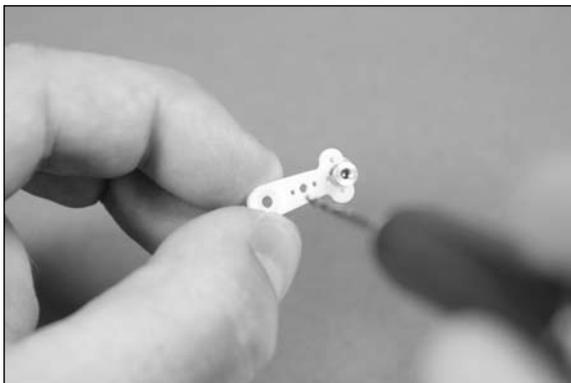
- 7. Slide a micro pushrod connector backplate on the pushrod connector. Use pliers to fully seat the backplate in position.



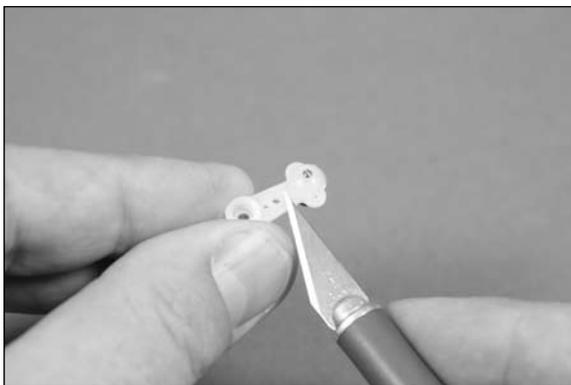
- 8. The servo horn can now be installed on the elevator servo. Make sure to slide the elevator pushrod wire through the hole in the micro pushrod connector when installing the servo horn.



- 9. Prepare a second servo horn for the rudder servo following steps 5 through 7. You will also need to drill a second hole in the horn to install the connector for the nose gear steering.



- 10. Use a hobby knife to remove the ribs on the bottom of the servo horn. This is necessary so the micro pushrod connector backplate rests flush against the horn.



- 11. Insert the micro pushrod connector in the hole drilled in Step 9. The connector will be on the top side of the servo horn.



- 12. Slide a micro pushrod connector backplate on the pushrod connector. Use pliers to fully seat the backplate in position.



- 13. The servo horn can now be installed on the rudder servo. Make sure to slide the rudder and nose gear pushrod wires through the holes in the micro pushrod connectors when installing the servo horn. Temporarily install the 2mm x 3mm machine screw in the pushrod connectors. These will be tightened down later in the manual. You may install the servo horn screw at this time using a #0 Phillips screwdriver.



## Installing the Tail Surfaces

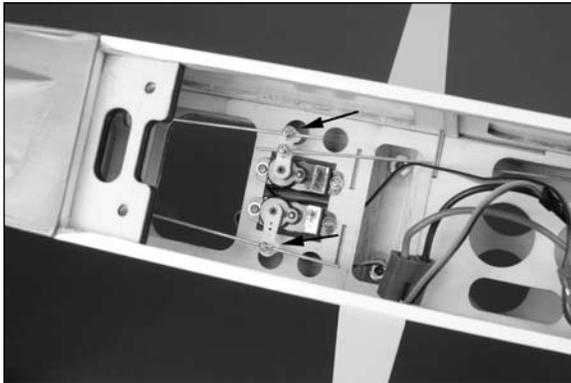
### Required Parts

Fuselage assembly	Elevator assembly
Rudder assembly	3mm x 50mm machine bolt
3mm locknut (3)	3mm steel washer (4)

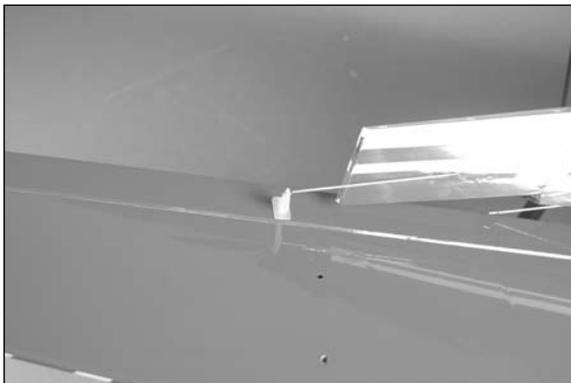
### Required Tools and Adhesives

Nut driver: 5.5mm    Phillips screwdriver: #1, #2

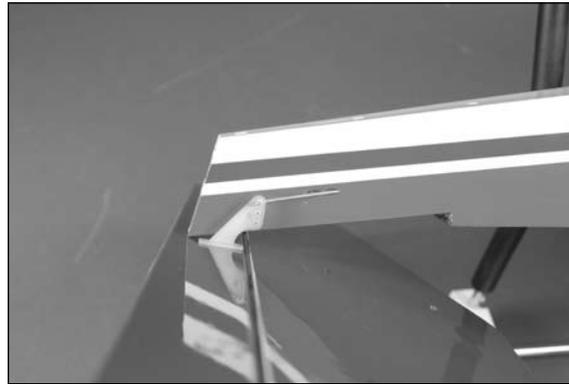
- 1. Use a #1 Phillips screwdriver to loosen the screws that secure the rudder and elevator pushrod to the connectors at the servo. This will allow you to move the pushrods without damaging the servos to install the rudder and elevator assemblies.



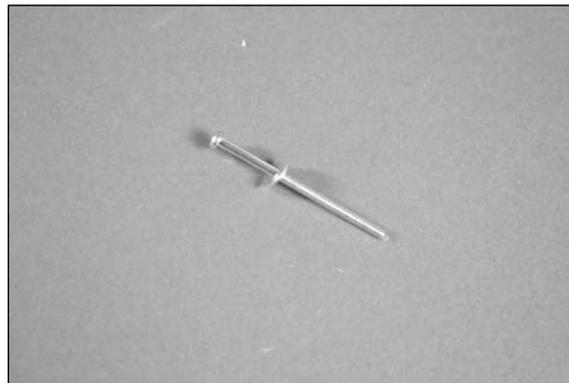
- 2. Insert the bend in the elevator pushrod wire into the outer hole of the elevator control horn.



- 3. Rotate the elevator into position, making sure the pushrod wire for the rudder is on the top side of the elevator.



- 4. Slide a 3mm steel washer on the 3mm x 50mm machine bolt.



- 4. Insert the 3mm x 50mm machine bolt through the hole in the stabilizer that is the closest to the rear of the aircraft. The bolt will pass through the fuselage through holes that have been previously made in the fuselage for this purpose.



- 5. Slide a 3mm steel washer on the bolt and then thread a 3mm locknut on the bolt. Leave the nut slightly loose at this time.



- 6. Insert the bend in the rudder pushrod wire into the outer hole of the rudder control horn.



- 7. Rotate the rudder into position as shown.



- 8. Insert the threaded rods from the rudder through the two forward holes in the stabilizer and into the holes in the fuselage.



- 9. Slide the rudder assembly into position, making sure it is fully seated on the fuselage as shown.



- 10. Slide two 3mm steel washers on the threaded rods from the rudder assembly. The rudder assembly is then secured using two 3mm locknuts. Use a 5.5mm nut driver and a #2 Phillips screwdriver to tighten the nuts. Make sure not to over-tighten the nuts and damage the fuselage.



## Installing the Receiver

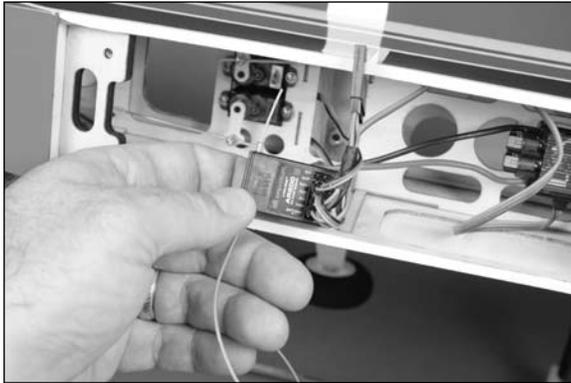
### Required Parts

Fuselage assembly Receiver  
Y-harness Hook and loop tape

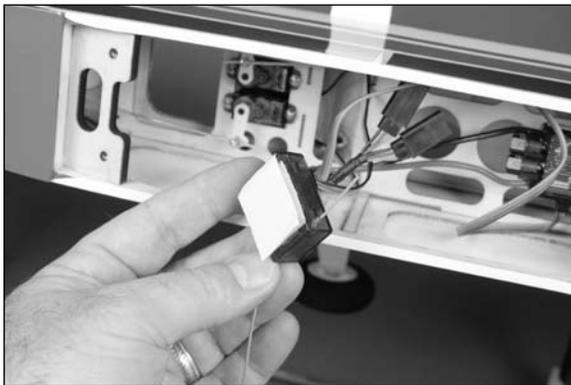
### Required Tools and Adhesives

Scissors Clear tape

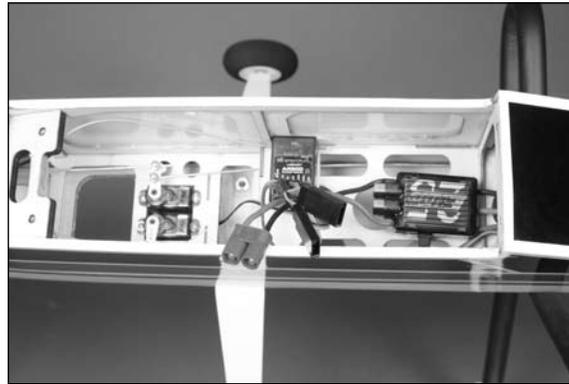
- 1. Plug the leads from the rudder servo, elevator servo and speed control into the appropriate ports of the receiver. Plug the Y-harness into the aileron port of the receiver.



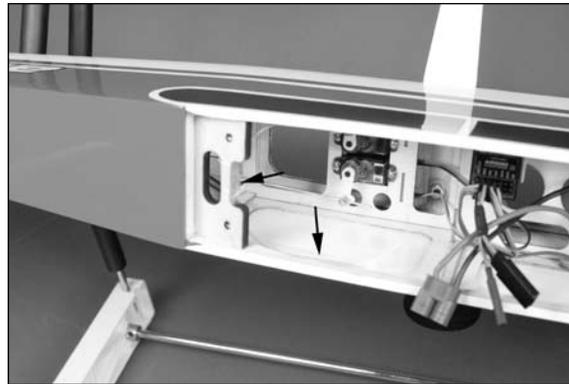
- 2. Use scissors to cut a small piece of hook and loop tape. Remove the backing and apply the hook and loop to the bottom of the receiver.



- 3. Remove the remaining backing from the hook and loop tape. Position the receiver in the fuselage as shown.



- 4. Use clear tape to secure the longer antenna wire from the receiver under the wing mounting plate and to the side of the fuselage to keep it from interfering with the operation of the servos and to provide the best reception for your radio system.

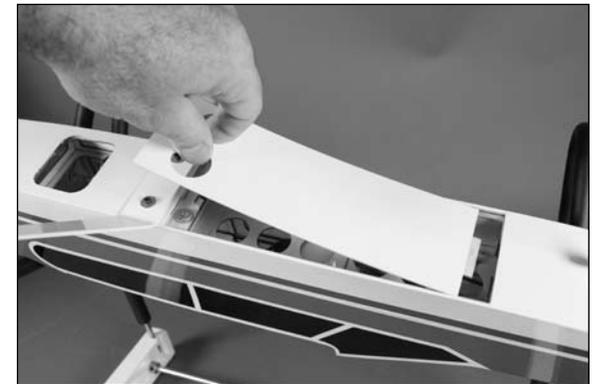


## Installing the Motor Battery

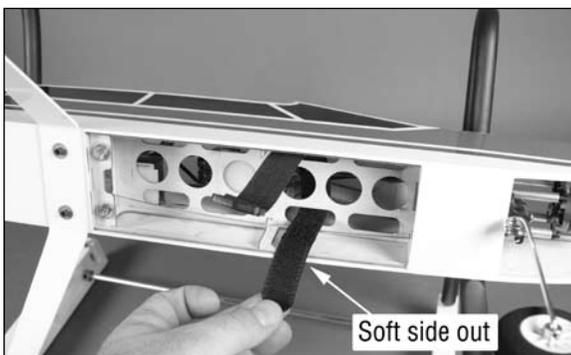
### Required Parts

Fuselage assembly Motor battery (charged)  
Hook and loop strap Hook and loop tape

- 1. Lift up at the rear of the battery hatch and slide it to the rear of the fuselage to remove. Set the battery hatch aside to install the motor battery.



- 2. Slip the hook and loop strap through the holes in the battery tray as shown. Make sure the softer loop tape is facing out or you will not be able to secure the battery with the strap.



**Etips**

When installing the hook and loop strap, make sure the wire to the nose gear does not interfere with the strap. The wire must remain free to move when the strap is installed.

- 3. Take the connector from the speed control for the battery and insert it through the hole in the battery tray into the battery compartment.



- 4. Use the hook and loop strap to secure the motor battery in the battery compartment. If the motor battery slides forward or rearward in the compartment, use a piece of hook and loop tape between the motor battery and battery tray to keep it from moving.



**Etips**

When balancing your model, you will be required to move the battery forward or aft to achieve the best CG for flight.

## Centering the Rudder, Nose Gear and Elevator

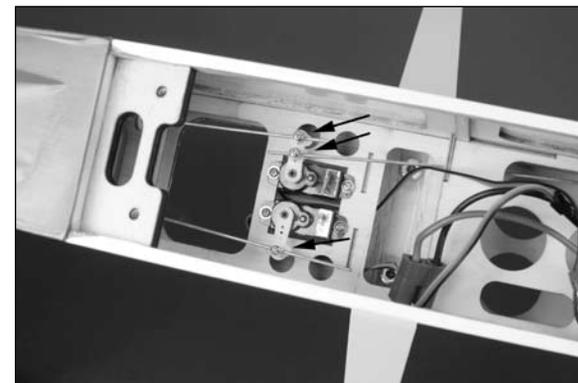
### Required Parts

Fuselage assembly Transmitter  
Motor battery (charged)

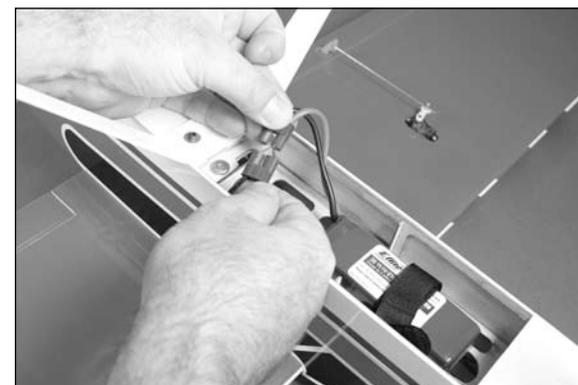
### Required Tools and Adhesives

Ruler Phillips screwdriver: #1  
Threadlock

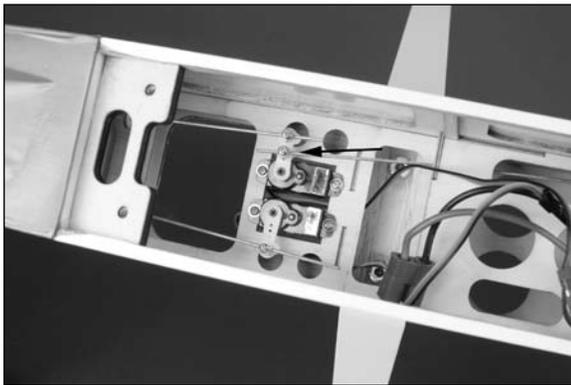
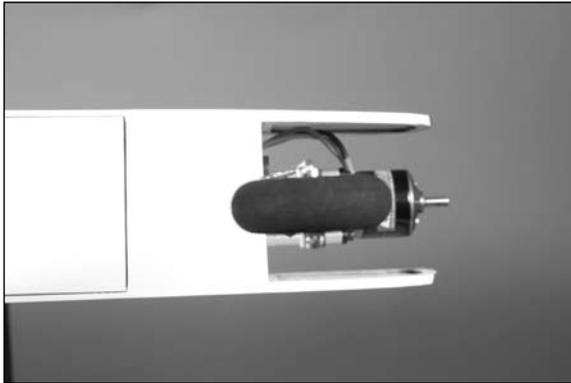
- 1. Use a #1 Phillips screwdriver to loosen the screws that secure the rudder, nose gear and elevator pushrod to the connectors at the servo.



- 2. Move the switch on your transmitter to the on position. Make sure the throttle stick is toward the bottom of the transmitter, or low throttle position. Connect the leads for the battery and motor.



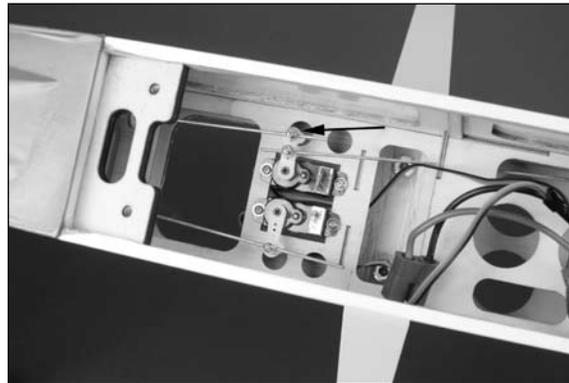
- 3. Make sure the rudder trim and stick have been centered at the transmitter. Position the nose wheel so it aligned with the sides of the fuselage as shown in the image below. Tighten the screw at the rudder servo using a #1 Phillips screwdriver to secure the nose gear pushrod wire to the connector at the servo.



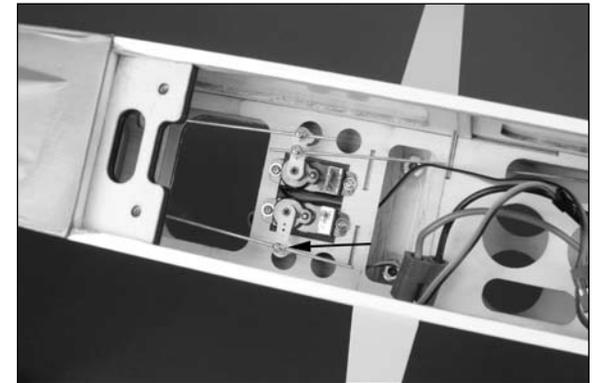
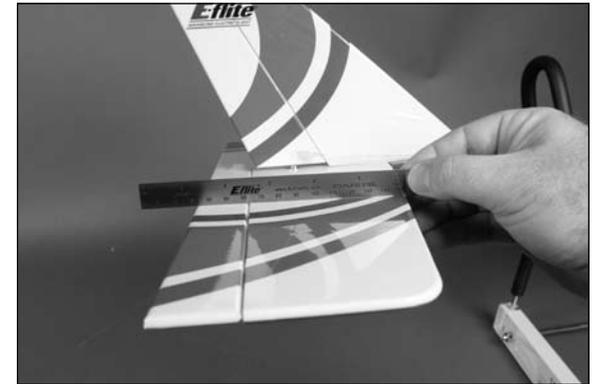
### ***E-tips***

If you find your model does not track straight on the runway, you may need to re-center the nose wheel. Do not use the rudder trim to correct a tracking problem with your aircraft. The rudder trim is used to trim the model in flight.

- 4. Make sure the rudder trim and stick have been centered at the transmitter. Use a ruler to make sure the rudder is aligned with the fin. Tighten the screw at the rudder servo using a #1 Phillips screwdriver to secure the rudder pushrod wire to the connector at the servo.



- 5. Make sure the elevator trim and stick have been centered at the transmitter. Use a ruler to make sure the elevator is aligned with the stabilizer. Tighten the screw using a #1 Phillips screwdriver at the elevator servo to secure the elevator pushrod wire to the connector at the servo.



### ***E-tips***

Use threadlock on all metal-to-metal fasteners to keep them from vibrating loose.

## Attaching the Wing and Centering the Ailerons

### Required Parts

Fuselage assembly	Wing panel (right and left)
Wing tube	#4 steel washer (2)
Wing bolt plate	Motor battery (charged)
Transmitter	
4-40 x 3/4-inch socket head bolt (2)	

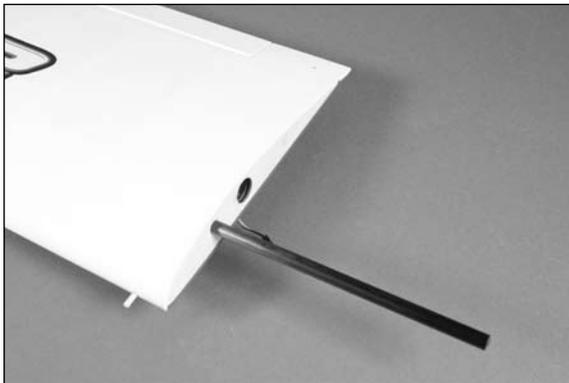
### Required Tools and Adhesives

Ruler	Phillips screwdriver: #0
Threadlock	
Hex wrench or ball driver: 3/32-inch	

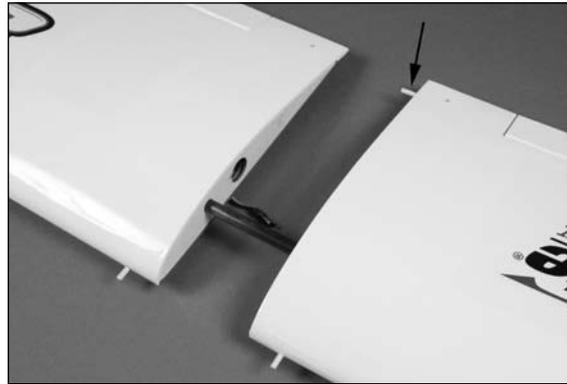
### Optional Tools and Adhesives

6-minute epoxy	Paper towel
Rubbing alcohol	Epoxy brush
Mixing stick	Mixing cup
Low-tack tape	

- 1. Slide the wing tube in the socket in the root end of the wing. The tube will slide in easily. Do not force the wing tube in farther than it can easily slide.



- 2. Slide the remaining wing panel on the wing tube. The pin at the rear will fit into the hole in the opposite wing panel.



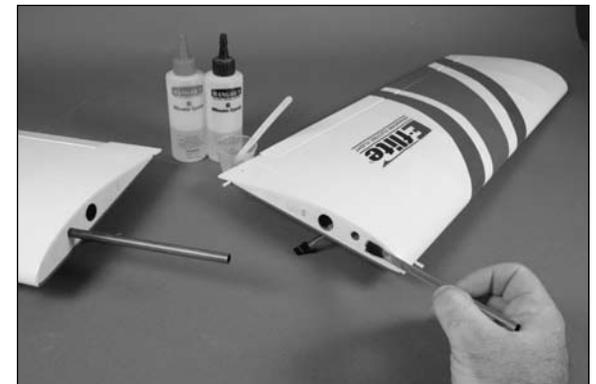
- 3. The wing panels will fit tightly together. This is necessary for the wing to fit on the fuselage.



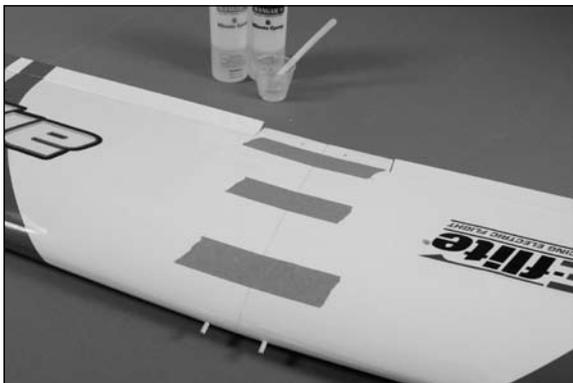
## OPTIONAL - EPOXY THE WING HALVES

As an option, you can use epoxy to join the wings together of your Alpha 450. Make sure your vehicle is large enough to accept the assembled wing before gluing the two panels into a one-piece wing.

- A. Mix 1/2 oz (15ml) of 6-minute epoxy. Use an epoxy brush to apply a thin layer of epoxy to the exposed plywood on the left and right wing panels as shown.



- B. Use six 3-inch (76mm) pieces of low-tack tape, three on the top of the wing and three on the bottom of the wing, to hold the wing panels together until the epoxy fully cures.



- C. Use a paper towel and rubbing alcohol to remove any excess epoxy from the wing before it has a chance to cure. You may need to use two or three clean paper towels to remove all the epoxy residue from the wing.



- 4. Plug the leads from the aileron servos into the Y-harness from the receiver that is plugged into the AIL port of the receiver.



- 5. To fit the wing to the fuselage, rest it on the fuselage as shown. The dowels at the front of the wing will fit into the holes in the fuselage. Slide the wing forward until the leading edge of the wing is against the fuselage as shown in the bottom photo.



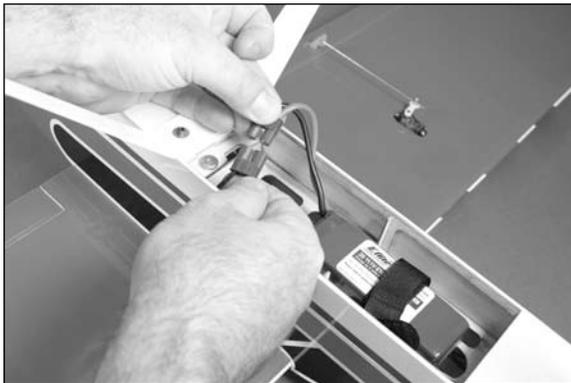
- 6. Position the wing bolt plate as shown in the photo. The rounded end will face to the front of the airframe. The holes in the plate will align with the holes in the wing.



- 7. Slide a #4 steel washer on a 4-40 x 3/4-inch socket head bolt. Then slide the bolt through the hole in the wing bolt plate and wing. You will use two steel washers and two bolts to secure the wing to the fuselage. Blind nuts are installed in the fuselage to accept the bolts. Use a 3/32-inch hex wrench or ball driver to tighten the wing bolts that secure the wing to the fuselage.



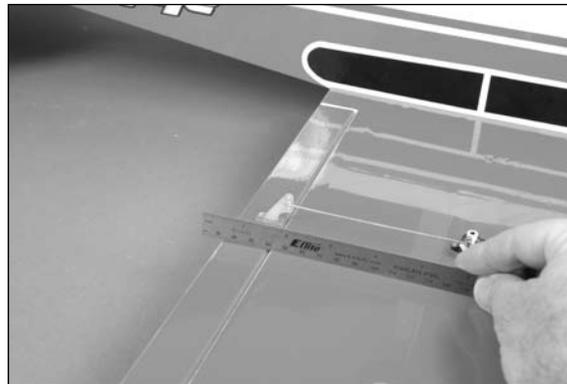
- 8. Move the switch on your transmitter to the On position. Make sure the throttle stick is toward the bottom of the transmitter, or low throttle position. Connect the leads for the battery and motor.



- 9. Loosen the screw that secures the aileron pushrod wire to the servo using a #1 Phillips screwdriver. Do this for both ailerons.



- 10. Make sure the aileron stick and trim are centered at the transmitter. Use a ruler to align the aileron with the bottom of the wing. Use a #1 Phillips screwdriver to tighten the screw at the aileron servo connector to secure the aileron pushrod wire. Do this for both ailerons.



**Etips**

Use threadlock on all metal-to-metal fasteners to keep them from vibrating loose.

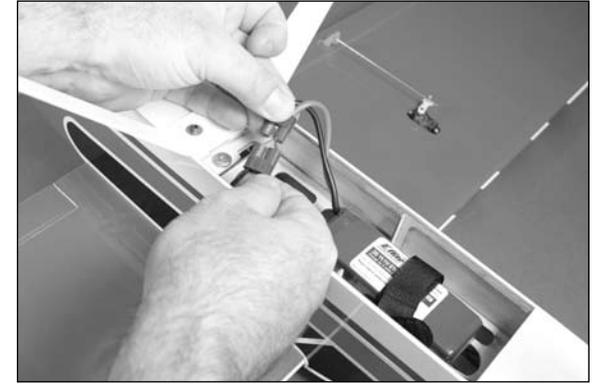
- 11. Unplug the motor battery and then turn off the transmitter if you are not continuing to the next section of this manual.

## Checking the Control Movements

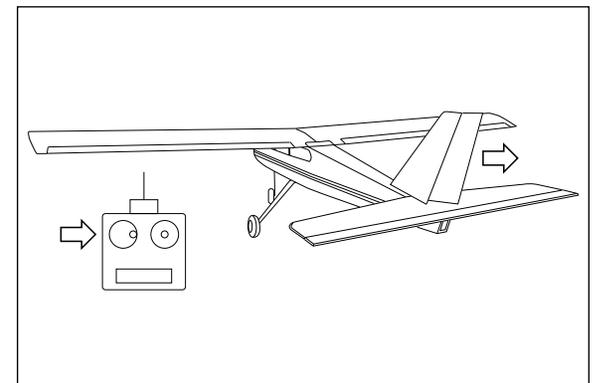
### Required Parts

Assembled airframe Transmitter  
Motor battery (charged)

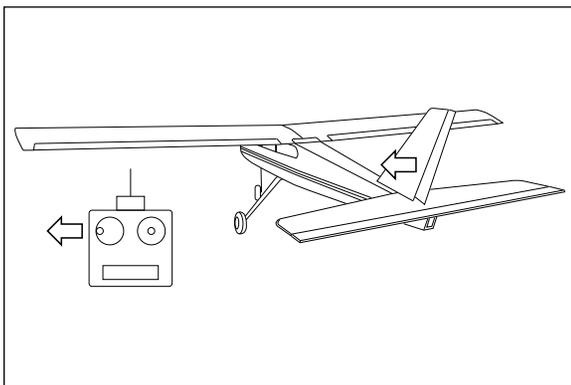
- 1. Move the switch on your transmitter to the On position. Make sure the throttle stick is toward the bottom of the transmitter, or low throttle position. Connect the leads for the battery and motor.



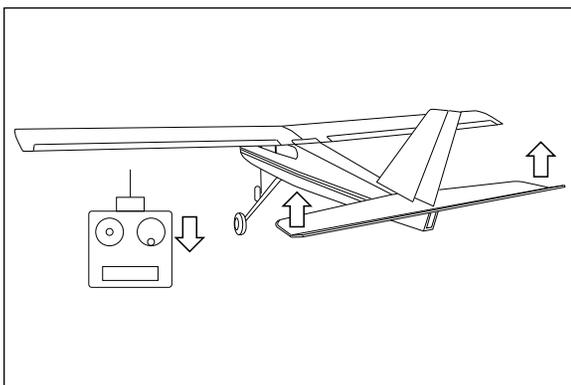
- 2. Check the movement of the rudder using the transmitter. When the rudder/throttle stick (left side of the transmitter) is moved right, the rudder should also move right.



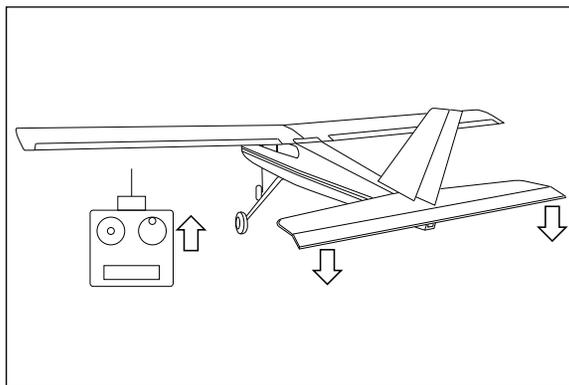
- 3. Check the movement of the rudder using the transmitter. When the left stick is moved left, the rudder should also move left.



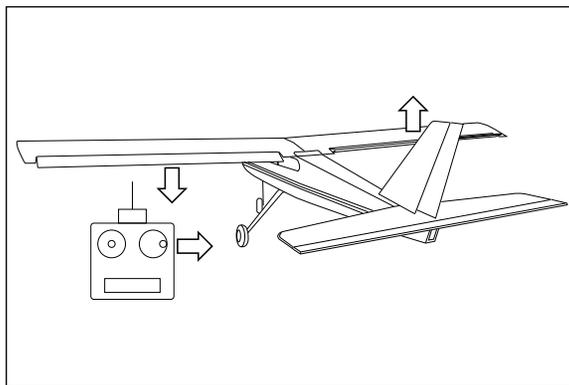
- 4. Check the movement of the elevator with the radio system. Pulling the right stick back will make the airplane elevator move up.



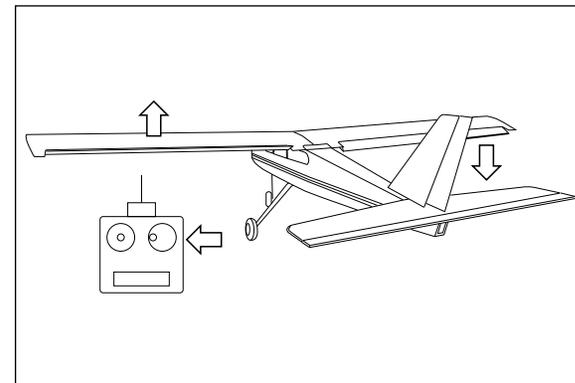
- 5. Check the movement of the elevator with the radio system. Pushing the right stick forward will make the airplane elevator move down.



- 6. Check the movement of the aileron using the transmitter. When the right stick is moved right, the right aileron will move up and the left aileron will move down.



- 7. Check the movement of the aileron using the transmitter. When the right stick is moved left, the left aileron will move up and the right aileron will move down.



- 8. Unplug the motor battery and then turn off the transmitter if you are not continuing to the next section of this manual

## Checking the Control Throws

### Required Parts

Assembled airframe Transmitter  
Motor battery (charged)

### *E-tips*

The first part of the Checking the Control Throws section details the basics for setting the control throws. We at E-flite have also detailed how to measure the control throws if this is the first time you have set the control throws for a model aircraft.

1. Turn on the transmitter and receiver of your model. Check the movement of the rudder using the transmitter. When the stick is moved right, the rudder should also move right. Reverse the direction of the servo at the transmitter if necessary.
2. Check the movement of the elevator with the radio system. Moving the elevator stick toward the bottom of the transmitter will make the airplane elevator move up.
3. Check the movement of the ailerons with the radio system. Moving the aileron stick right will make the right aileron move up and the left aileron move down.
4. Use a ruler to adjust the throw of the elevator, ailerons and rudder. Adjust the position of the pushrod at the control horn to achieve the following measurements when moving the sticks to their endpoints.

**Note:** If using the DX5e you will find your control throws to be slightly different than listed in the manual on both high and low rates. The control throws will work fine as delivered by the DX5e on both high and low rate.

### Aileron Low Rate

Up 1/4-inch (6mm)  
Down 1/4-inch (6mm)

### Aileron High Rate

Up 1/2-inch (12mm)  
Down 1/2-inch (12mm)

### Elevator Low Rate

Up 3/8-inch (9mm)  
Down 3/8-inch (9mm)

### Elevator High Rate

Up 1/2-inch (12mm)  
Down 1/2-inch (12mm)

### Rudder High Rate

Up 1/2-inch (12mm)  
Down 1/2-inch (12mm)

### *E-tips*

Measurements are taken at the inner or widest point on the control surface.

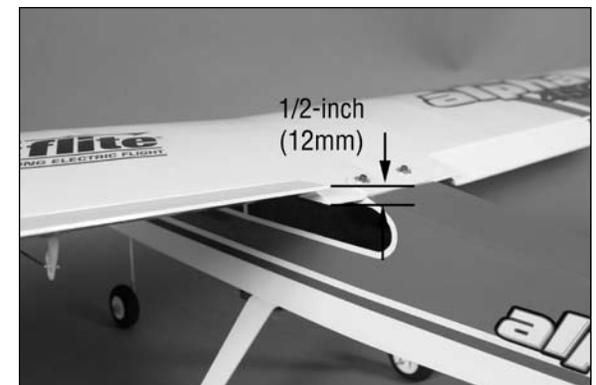
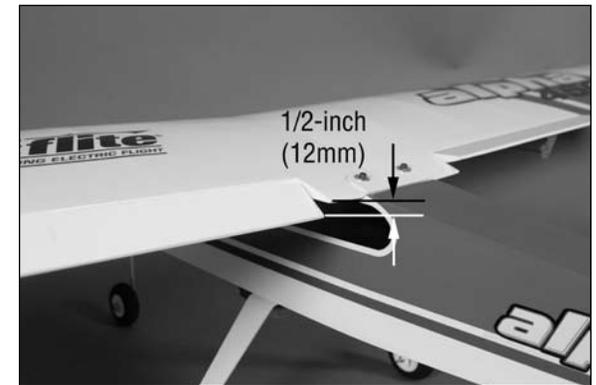
These are general guidelines measured from flight testing here at E-flite. You can experiment with higher rates to match your preferred style of flying.

### *E-tips*

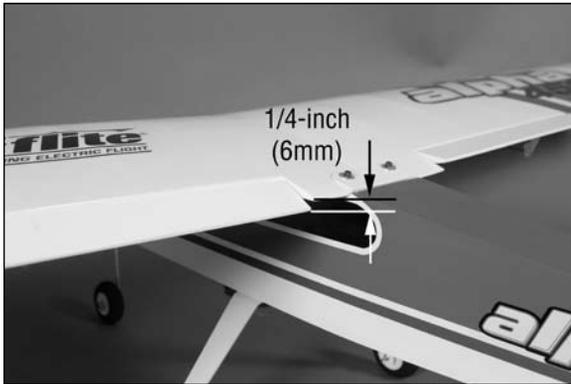
If using a computer radio the Travel Adjust and Sub Trims are not listed and should be adjusted according to each individual model and preference.

## AILERON THROW

5. Use a ruler to check the control throws on the ailerons. The dimensions are shown below. For your reference the aileron pushrods are set up in the following holes: the middle hole on the aileron control horn and the outside hole on the aileron servo arm.
6. From center, use a ruler to measure the movement of the ailerons. Make sure the ailerons move up 1/2-inch (12mm) from center and down 1/2-inch (12mm) from center. Measure both the right and left ailerons to make sure they are working in unison. This is the setting for the high rate.

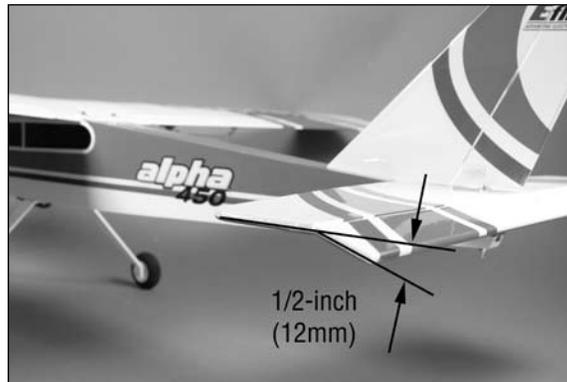
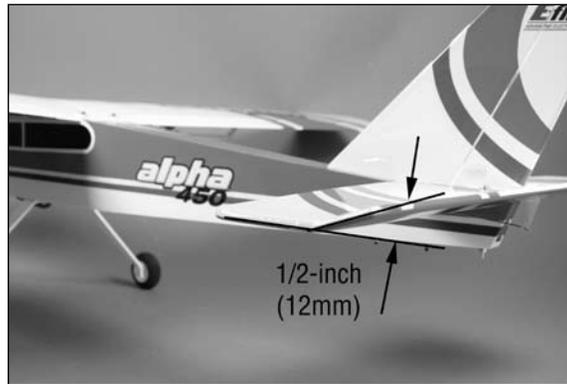


- 7. From center, use a ruler to measure the movement of the ailerons. Make sure the ailerons move up 1/4-inch (6mm) from center and down 1/4-inch (6mm) from center. Measure both the right and left ailerons to make sure they are working in unison. This is the setting for the low rate.

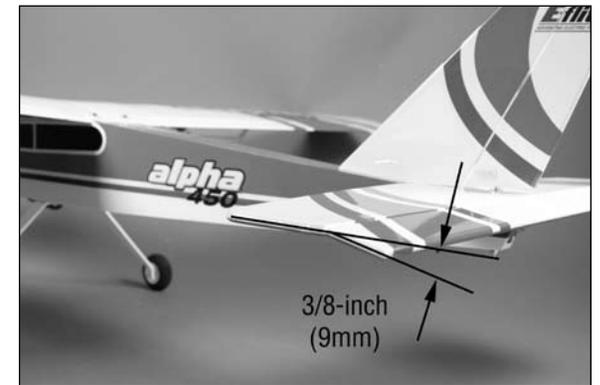
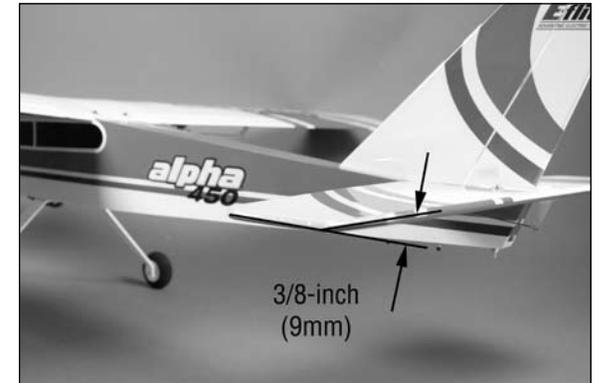


## ELEVATOR THROW

- 8. Use a ruler to check the control throws on your elevator. The dimensions are shown below. For your reference the elevator pushrod is set up in the following holes: The outside hole on the elevator control horn and the outside hole in on the elevator servo arm.
- 9. From center, use a ruler to measure the movement of the elevator. Make sure the elevator move up 1/2-inch (12mm) from center and down 1/2-inch (12mm) from center. This is the setting for the high rate.

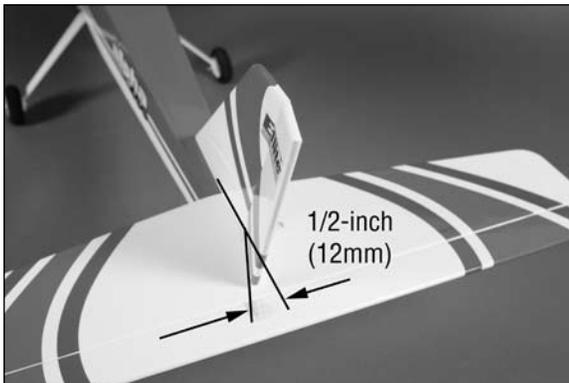
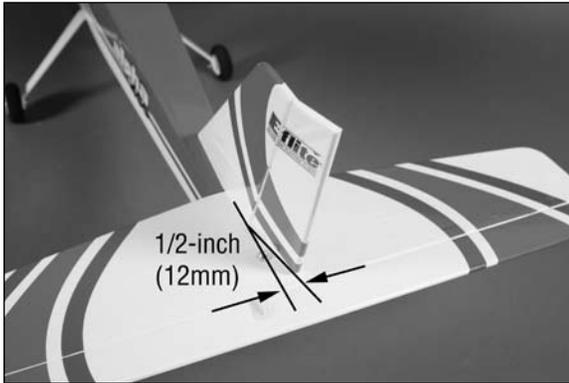


- 10. From center, use a ruler to measure the movement of the elevator. Make sure the elevator move up 3/8-inch (9mm) from center and down 3/8-inch (9mm) from center. This is the setting for the high rate.



## RUDDER THROW

- 11. Use a ruler to check the control throws on your rudder. The dimensions are shown below. For your reference the rudder pushrod is set up in the following holes: the outside hole on the rudder control horn and the outside hole on the rudder servo arm.
- 12. From center, use a ruler to measure the movement of the rudder. Make sure the rudder moves left 1/2-inch (12mm) from center and right 1/2-inch (12mm) from center. This is the setting for the rudder throw. There is only one rate for the rudder.



- 13. Unplug the motor battery and then turn off the transmitter before installing the propeller.

## Installing the Propeller and Spinner

### Required Parts

Fuselage assembly    Propeller  
Spinner backplate    Spinner cone  
Propeller adapter with nut

### Required Tools and Adhesives

Adjustable wrench  
Hex wrench or ball driver: 5/64-inch

### Optional Items

1<sup>3</sup>/<sub>4</sub>-inch aluminum spinner  
APC 10x7E propeller  
Drill                      Drill bit: 3/8-inch (9.5mm)  
or  
Propeller reamer with 3/8-inch (9.5mm) step

Important: Make sure the motor battery has been unplugged and the transmitter switch is in the off position before installing the propeller. Although rare, the motor could start and cause personal injury if these conditions are not met.

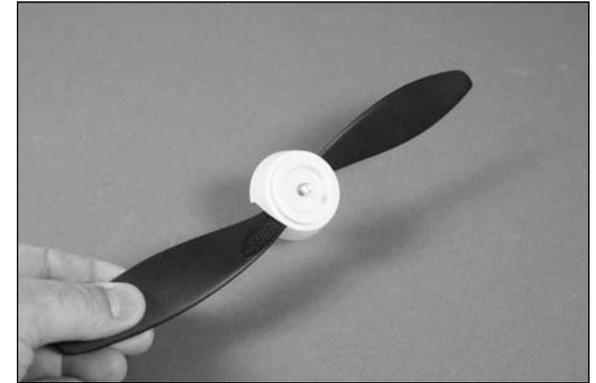
### IMPORTANT INFORMATION ABOUT YOUR PROPELLER

It is very important to check to be sure the propeller is balanced before installation. An unbalanced propeller may strip the gears or cause poor flight characteristics.

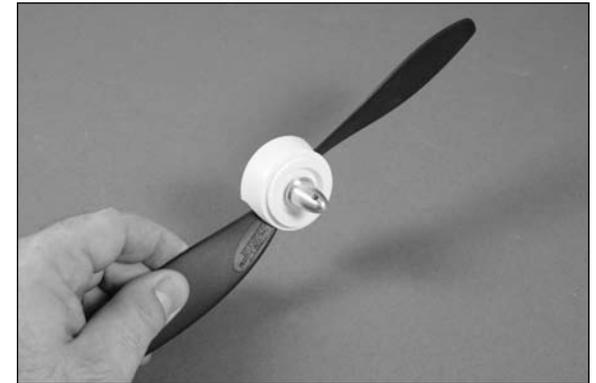
- 1. Slide the propeller adapter in the hole in the center of the propeller. The E-flite logo will be on the side with the threads to be installed in the correct direction.



- 2. Slide the spinner backplate in position over the threads of the propeller adapter.



- 3. Thread the propeller nut on the threads of the propeller adapter. Only thread the nut on a few turns, as tightening it now will not allow you to install the adapter on the motor.



- 4. Slide the propeller assembly on the motor shaft. It should slide easily on the motor shaft.



- 5. Use a hex wrench to tighten the propeller nut to secure the assembly to the motor shaft.



- 6. Snap the spinner cone on the spinner backplate. It will take a slight amount of force to snap the spinner cone securely.

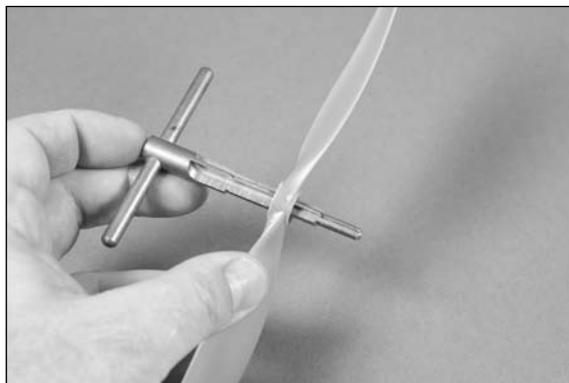


### **OPTIONAL - ALUMINUM SPINNER AND APC PROPELLER INSTALLATION**

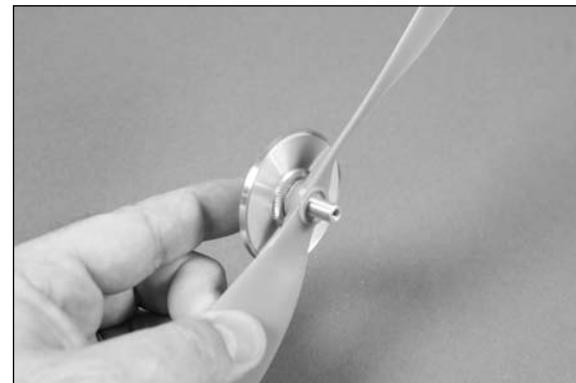
#### **IMPORTANT INFORMATION ABOUT YOUR PROPELLER**

It is very important to check to be sure the propeller is balanced after the hole has been enlarged. An unbalanced propeller may strip the gears or cause poor flight characteristics.

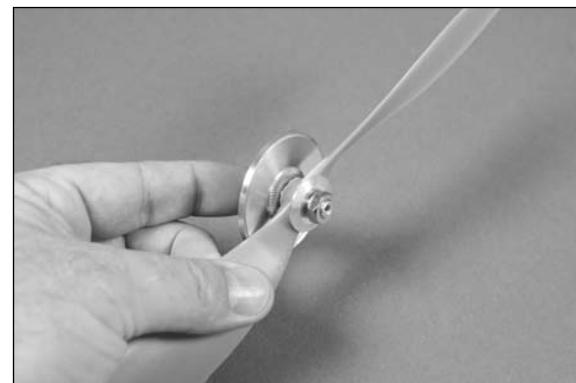
- A. Use a drill and 3/8-inch (9.5mm) drill bit or a propeller reamer to enlarge the hole in the propeller so it will fit on the aluminum spinner.



- B. Slide the propeller on the threaded shaft of the spinner adapter. Make sure the numbers embossed on the propeller are facing away from the spinner backplate.



- C. Slide the washer included with the spinner assembly on the threaded shaft. The nut included with the spinner assembly is then threaded on the shaft. Only thread the nut 2-3 turns: it does not need to be tightened at this time.



- D. Slide the assembly on the motor shaft. It should fit snugly on the shaft. If it seems to be excessively loose, you have used the wrong motor adapter and need to return to Step B and swap the adapter out with the remaining adapter included with the spinner assembly.



- E. Use an adjustable wrench or 10mm open-end wrench to tighten the nut. This will secure the adapter and propeller to the motor shaft.



- F. Place the spinner cone on the backplate. Position the spinner cone so the openings in the spinner cone are not in contact with the propeller. Use the screw included with the spinner assembly and a 3/32-inch hex wrench or ball driver to tighten the screw to secure the spinner cone in position.

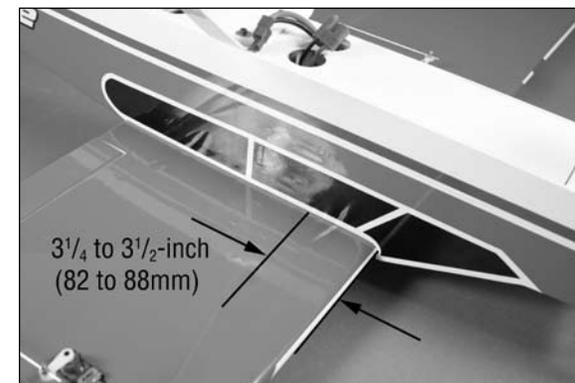


## Center of Gravity

An important part of preparing the aircraft for flight is properly balancing the model.

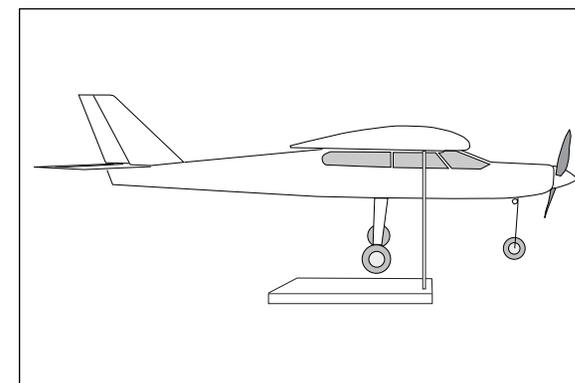
**Caution: Do not inadvertently skip this step!**

The recommended Center of Gravity (CG) location for the Alpha 450 is  $3\frac{1}{4}$  to  $3\frac{1}{2}$  (82 to 88mm) back from the leading edge of the top wing. Mark the location for the Center of Gravity on the bottom of the top wing in the center as shown.



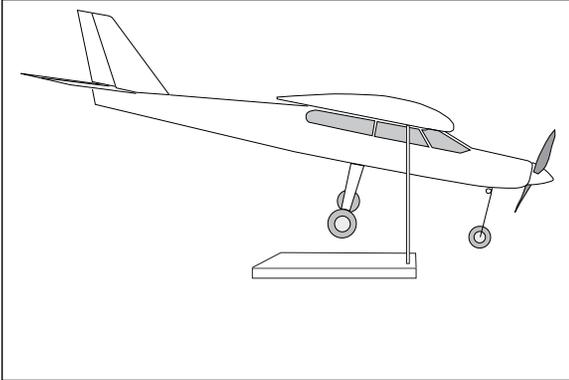
When balancing your Alpha 450 Sport 450, support the plane upright at the marks made on the bottom of the wing with your fingers or a commercially available balancing stand. Move the motor battery as necessary so the model hangs level or slightly nose down. This is the correct balance point for your model.

### BALANCED MODEL



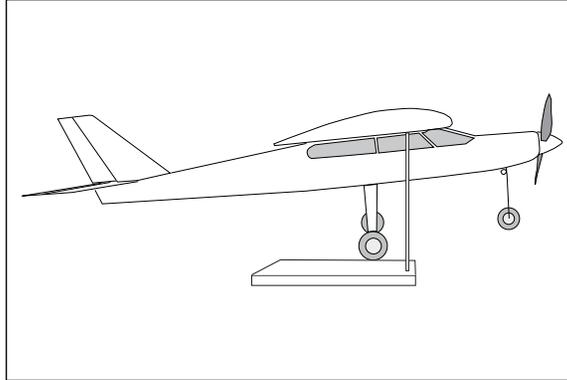
## NOSE HEAVY - MOVE BATTERY BACK

If the model is positioned with the nose facing downward as shown in the illustration, it will be necessary to move the battery rearward in the battery compartment to achieve the correct Center of Gravity.



## TAIL HEAVY - MOVE BATTERY FORWARD

If the model is positioned with the tail facing downward as shown in the illustration, it will be necessary to move the battery forward in the battery compartment to achieve the correct Center of Gravity.



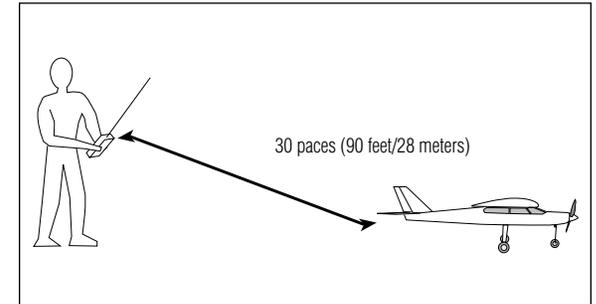
Once you model is balanced correctly, it is recommended to mark the position of the battery in the battery compartment using a pencil or felt-tipped pen. This way it can be returned to the same location after it has been removed for charging.

After the first flights, the CG position can be adjusted for your personal preference.

## Range Test Your Radio

Before each flying session, and especially with a new model, it is important to perform a range check. It is helpful to have another person available to assist during the range check. If you are using a Spektrum transmitter, please refer to your transmitter's manual for detailed instructions on the range check process.

1. With the model resting on the ground, stand 30 paces (approximately 90 feet) away from the model.
2. Face the model with the transmitter in your normal flying position. Be sure the throttle is in the full down position and plug the flight battery into the speed control.
3. As you move the controls, watch to be sure the airplane's motor and controls operate smoothly. You should have total control of the model at 30 paces (90 feet).



4. If control issues exist, call the Horizon Support Team at 1 877 504 0233 or go to [horizonhobby.com](http://horizonhobby.com) to find a local Spektrum distributor in your country for service if you are using a Spektrum radio system.

## Flying Your Alpha 450

The Alpha Sport 450 is a park flyer version of the famous Hangar 9 Alpha trainer but with reduced dihedral for a more spirited flight envelope. Takeoffs are easily accomplished with the addition of full power and a slight amount of up elevator. Takeoff rolls are routinely in the 20–30 foot range with a strong climb out. Once at altitude, trim the plane for level flight at 3/4 throttle. You will find the model behaves in a very benign way in all aspects of the flight envelope. Inverted flight requires a fair amount of down elevator, and the roll authority is quite good with the prescribed high rate. This model is not capable of extreme performance flight and was never designed for that. Gentle majestic flight is its main purpose.

Landings are easily accomplished by reducing power and gliding down to your favorite landing spot on the runway with a very short roll out. We hope you enjoy flying the Alpha as much as we do.

Happy landings.

## Age Requirements

Age Recommendation: 14 years or over. This is not a toy. This product is not intended for use by children without direct adult supervision.

### Safety Do's and Don'ts for Pilots

- Check all control surfaces prior to each takeoff.
- Do not fly your model near spectators, parking areas or any other area that could result in injury to people or damage of property.
- Do not fly during adverse weather conditions. Poor visibility can cause disorientation and loss of control of your aircraft. Strong winds can cause similar problems.
- Do not take chances. If at any time during flight you observe any erratic or abnormal operation, land immediately and do not resume flight until the cause of the problem has been ascertained and corrected. Safety can never be taken lightly.
- Do not fly near power lines.

## Daily Flight Checks

- 1. Check the battery voltage of the transmitter battery. Do not fly below the manufacturer's recommended voltage. To do so can crash your aircraft.

**E-tips**

When you check these batteries, ensure that you have the polarities correct on your expanded scale voltmeter.

- 2. Check all hardware (linkages, screws, nuts, and bolts) prior to each day's flight. Be sure that binding does not occur and that all parts are properly secured.
- 3. Ensure that all surfaces are moving in the proper manner.
- 4. Perform a ground range check before each day's flying session.
- 5. Prior to starting your aircraft, turn off your transmitter, then turn it back on. Do this each time you start your aircraft. If any critical switches are on without your knowledge, the transmitter alarm will sound a warning at this time.
- 6. Check that all trim levers are in the proper location.
- 7. All servo pigtails and switch harness plugs should be secured in the receiver. Make sure that the switch harness moves freely in both directions.

## Glossary of Terms

**Ailerons:** Each side of this airplane has a hinged control surface (aileron), located on the trailing edge of the wing. Move the aileron stick on the transmitter left, the left aileron moves up and the right aileron moves down. Moving the left aileron up causes more drag and less lift, causing the left wing to drop down. When the right aileron moves down, more lift is created, causing the right wing to rise. This interaction causes the airplane to turn or roll to the left. Perform the opposite actions, and the airplane will roll to the right.

**Clevis:** The clevis connects the wire end of the pushrod to the control horn of the control surface. Being a small clip, the clevis has fine threads so that you can adjust the length of the pushrod.

**Control Horn:** This arm connects the control surface to the clevis and pushrod.

**Dihedral:** The degree of angle (V-shaped bend) at which the wings intersect the fuselage is called dihedral. More dihedral gives an airplane more aerodynamic stability. Some sailplanes and trainer planes with large dihedral dispense with ailerons and use only the rudder to control the roll and yaw.

**Elevator:** The hinged control surface on the back of the stabilizer that moves to control the airplane's pitch axis. Pulling the transmitter's control stick toward the bottom of the transmitter moves the elevator upward, and the airplane begins to climb. Push the control stick forward, and the airplane begins to dive.

**Fuselage:** The main body of an airplane.

**Hinge:** Flexible pieces used to connect the control surface to the flying surface. All hinges must be glued properly and securely to prevent the airplane from crashing. (This has already been done for you on the Alpha Advanced trainer.)

**Horizontal Stabilizer:** The horizontal flying surface of the tail gives the airplane stability while in flight.

**Leading Edge:** The front of a flying surface.

**Main Landing Gear:** The wheel and gear assembly the airplane uses to land. It is attached to the bottom of the fuselage.

**Nose Gear:** The part of the landing gear that is attached to the nose of the fuselage. The nose gear is usually connected to the rudder servo to help you steer the airplane on the ground.

**Pitch Axis:** The horizontal plane on which the airplane's nose is raised or lowered. By moving the elevator, you can raise the airplane's nose above the pitch axis (climb) or lower it below the pitch axis (dive).

**Pushrod:** The rigid mechanism that transfers movement from the servo to the control surface.

**Roll Axis:** The horizontal plane on which the airplane's wings are raised or lowered. By adjusting the ailerons, you can drop a wing tip below the roll axis and cause the airplane to bank or roll.

**Rudder:** The hinged control surface on the vertical stabilizer that controls the airplane's yaw. Moving the rudder to the left causes the airplane to yaw left; moving the rudder to the right causes it to yaw right.

**Servo:** The servo transforms your ground commands into physical adjustments of the airplane while it's in the air.

**Servo Output Arm:** A removable arm or wheel connecting the servo to the pushrod (also called servo horn).

**Spinner:** Term describing the nose cone that covers the propeller hub.

**Threadlock:** A liquid that solidifies; used to prevent screws from loosening due to vibration.

**Torque Rods:** Inserted into the ailerons, these rigid wire rods run along the wing's trailing edge, then bend downward and connect to the pushrod.

**Vertical Stabilizer:** The vertical flying surface of the tail gives the airplane stability while in flight.

**Wheel Collar:** The round, metal retaining piece that anchors wheels in place on the wheel axle.

**Wing:** The lifting surface of an airplane.

**Yaw Axis:** The vertical plane through which the airplane's nose rotates as it yaws to the left or to the right. The rudder controls the yaw axis.

## Warranty Information

### WARRANTY PERIOD

Exclusive Warranty- Horizon Hobby, Inc., (Horizon) warranties that the Products purchased (the "Product") will be free from defects in materials and workmanship at the date of purchase by the Purchaser.

### LIMITED WARRANTY

(a) This warranty is limited to the original Purchaser ("Purchaser") and is not transferable. REPAIR OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE EXCLUSIVE REMEDY OF THE PURCHASER. This warranty covers only those Products purchased from an authorized Horizon dealer. Third party transactions are not covered by this warranty. Proof of purchase is required for warranty claims. Further, Horizon reserves the right to change or modify this warranty without notice and disclaims all other warranties, express or implied.

(b) Limitations- HORIZON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCT. THE PURCHASER ACKNOWLEDGES THAT THEY ALONE HAVE DETERMINED THAT THE PRODUCT WILL SUITABLY MEET THE REQUIREMENTS OF THE PURCHASER'S INTENDED USE.

(c) Purchaser Remedy- Horizon's sole obligation hereunder shall be that Horizon will, at its option, (i) repair or (ii) replace, any Product determined by Horizon to be defective. In the event of a defect, these are the Purchaser's exclusive remedies. Horizon reserves the right to inspect any and all equipment involved in a warranty claim. Repair or replacement decisions are at the sole discretion of Horizon. This warranty does not cover cosmetic damage or damage due to acts of God, accident, misuse, abuse, negligence, commercial use, or modification of or to any part of the Product. This warranty does not cover damage due to improper installation, operation, maintenance, or attempted repair by anyone other than Horizon. Return of any goods by Purchaser must be approved in writing by Horizon before shipment.

## DAMAGE LIMITS

HORIZON SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCT, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY. Further, in no event shall the liability of Horizon exceed the individual price of the Product on which liability is asserted. As Horizon has no control over use, setup, final assembly, modification or misuse, no liability shall be assumed nor accepted for any resulting damage or injury. By the act of use, setup or assembly, the user accepts all resulting liability.

If you as the Purchaser or user are not prepared to accept the liability associated with the use of this Product, you are advised to return this Product immediately in new and unused condition to the place of purchase.

Law: These Terms are governed by Illinois law (without regard to conflict of law principles).

## SAFETY PRECAUTIONS

This is a sophisticated hobby Product and not a toy. It must be operated with caution and common sense and requires some basic mechanical ability. Failure to operate this Product in a safe and responsible manner could result in injury or damage to the Product or other property. This Product is not intended for use by children without direct adult supervision. The Product manual contains instructions for safety, operation and maintenance. It is essential to read and follow all the instructions and warnings in the manual, prior to assembly, setup or use, in order to operate correctly and avoid damage or injury.

## QUESTIONS, ASSISTANCE, AND REPAIRS

Your local hobby store and/or place of purchase cannot provide warranty support or repair. Once assembly, setup or use of the Product has been started, you must contact Horizon directly. This will enable Horizon to better answer your questions and service you in the event that you may need any assistance. For questions or assistance, please direct your email to [productsupport@horizonhobby.com](mailto:productsupport@horizonhobby.com), or call 877.504.0233 toll free to speak to a service technician.

## INSPECTION OR REPAIRS

If this Product needs to be inspected or repaired, please call for a Return Merchandise Authorization (RMA). Pack the Product securely using a shipping carton. Please note that original boxes may be included, but are not designed to withstand the rigors of shipping without additional protection. Ship via a carrier that provides tracking and insurance for lost or damaged parcels, as Horizon is not responsible for merchandise until it arrives and is accepted at our facility. A Service Repair Request is available at [www.horizonhobby.com](http://www.horizonhobby.com) on the "Support" tab. If you do not have internet access, please include a letter with your complete name, street address, email address and phone number where you can be reached during business days, your RMA number, a list of the included items, method of payment for any non-warranty expenses and a brief summary of the problem. Your original sales receipt must also be included for warranty consideration. Be sure your name, address, and RMA number are clearly written on the outside of the shipping carton.

## WARRANTY INSPECTION AND REPAIRS

To receive warranty service, you must include your original sales receipt verifying the proof-of-purchase date. Provided warranty conditions have been met, your Product will be repaired or replaced free of charge. Repair or replacement decisions are at the sole discretion of Horizon Hobby.

## NON-WARRANTY REPAIRS

Should your repair not be covered by warranty the repair will be completed and payment will be required without notification or estimate of the expense unless the expense exceeds 50% of the retail purchase cost. By submitting the item for repair you are agreeing to payment of the repair without notification. Repair estimates are available upon request. You must include this request with your repair. Non-warranty repair estimates will be billed a minimum of 1/2 hour of labor. In addition you will be billed for return freight. Please advise us of your preferred method of payment. Horizon accepts money orders and cashiers checks, as well as Visa, MasterCard, American Express, and Discover cards. If you choose to pay by credit card, please include your credit card number and expiration date. Any repair left unpaid or unclaimed after 90 days will be considered abandoned and will be disposed of accordingly. Please note: non-warranty repair is only available on electronics and model engines.

### United States:

Electronics and engines requiring inspection or repair should be shipped to the following address:

Horizon Service Center  
4105 Fieldstone Road  
Champaign, Illinois 61822  
USA

All other Products requiring warranty inspection or repair should be shipped to the following address:

Horizon Product Support  
4105 Fieldstone Road  
Champaign, Illinois 61822  
USA

Please call 877-504-0233 or e-mail us at [productsupport@horizonhobby.com](mailto:productsupport@horizonhobby.com) with any questions or concerns regarding this product or warranty.

**United Kingdom:**

Electronics and engines requiring inspection or repair should be shipped to the following address:

Horizon Hobby UK  
Units 1-4 Ployters Rd  
Staple Tye  
Harlow, Essex  
CM18 7NS  
United Kingdom

Please call +44 (0) 1279 641 097 or e-mail us at sales@horizonhobby.co.uk with any questions or concerns regarding this product or warranty.

**Germany:**

Electronics and engines requiring inspection or repair should be shipped to the following address:

Horizon Technischer Service  
Hamburger Strasse 10  
25335 Elmshorn  
Germany

Please call +49 4121 46199 66 or e-mail us at service@horizonhobby.de with any questions or concerns regarding this product or warranty.

## CE Compliance Information for the European Union

### INSTRUCTIONS FOR DISPOSAL OF WEEE BY USERS IN THE EUROPEAN UNION

This product must not be disposed of with other waste. Instead, it is the user's responsibility to dispose of their waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or where you purchased the product.



Age Recommendation: 14 years or over. Not a toy. Not intended for use by children without direct adult supervision.

## 2009 Official Academy of Model Aeronautics Safety Code

### GENERAL

1. A model aircraft shall be defined as a non-human-carrying device capable of sustained flight in the atmosphere. It shall not exceed limitations established in this code and is intended to be used exclusively for recreational or competition activity.
2. The maximum takeoff weight of a model aircraft, including fuel, is 55 pounds, except for those flown under the AMA Experimental Aircraft Rules.
3. I will abide by this Safety Code and all rules established for the flying site I use. I will not willfully fly my model aircraft in a reckless and/or dangerous manner.
4. I will not fly my model aircraft in sanctioned events, air shows, or model demonstrations until it has been proven airworthy.
5. I will not fly my model aircraft higher than approximately 400 feet above ground level, when within three (3) miles of an airport without notifying the airport operator. I will yield the right-of-way and avoid flying in the proximity of full-scale aircraft, utilizing a spotter when appropriate.
6. I will not fly my model aircraft unless it is identified with my name and address, or AMA number, inside or affixed to the outside of the model aircraft. This does not apply to model aircraft flown indoors.
7. I will not operate model aircraft with metal-blade propellers or with gaseous boosts (other than air), nor will I operate model aircraft with fuels containing tetranitromethane or hydrazine.

8. I will not operate model aircraft carrying pyrotechnic devices which explode, burn, or propel a projectile of any kind. Exceptions include Free Flight fuses or devices that burn producing smoke and are securely attached to the model aircraft during flight. Rocket motors up to a G-series size may be used, provided they remain firmly attached to the model aircraft during flight. Model rockets may be flown in accordance with the National Model Rocketry Safety Code; however, they may not be launched from model aircraft. Officially designated AMA Air Show Teams (AST) are authorized to use devices and practices as defined within the Air Show Advisory Committee Document.
9. I will not operate my model aircraft while under the influence of alcohol or within eight (8) hours of having consumed alcohol.
10. I will not operate my model aircraft while using any drug which could adversely affect my ability to safely control my model aircraft.
11. Children under six (6) years old are only allowed on a flightline or in a flight area as a pilot or while under flight instruction.
12. When and where required by rule, helmets must be properly worn and fastened. They must be OSHA, DOT, ANSI, SNELL or NOCSAE approved or comply with comparable standards.

#### **RADIO CONTROL**

1. All model flying shall be conducted in a manner to avoid over flight of unprotected people.
2. I will have completed a successful radio equipment ground-range check before the first flight of a new or repaired model aircraft.

3. I will not fly my model aircraft in the presence of spectators until I become a proficient flier, unless I am assisted by an experienced pilot.
4. At all flying sites a line must be established, in front of which all flying takes place. Only personnel associated with flying the model aircraft are allowed at or in front of the line. In the case of airshows demonstrations straight line must be established. An area away from the line must be maintained for spectators. Intentional flying behind the line is prohibited.
5. I will operate my model aircraft using only radio-control frequencies currently allowed by the Federal Communications Commission (FCC). Only individuals properly licensed by the FCC are authorized to operate equipment on Amateur Band frequencies.
6. I will not knowingly operate my model aircraft within three (3) miles of any preexisting flying site without a frequency-management agreement. A frequency-management agreement may be an allocation of frequencies for each site, a day-use agreement between sites, or testing which determines that no interference exists. A frequency-management agreement may exist between two or more AMA chartered clubs, AMA clubs and individual AMA members, or individual AMA members. Frequency-management agreements, including an interference test report if the agreement indicates no interference exists, will be signed by all parties and copies provided to AMA Headquarters.
7. With the exception of events flown under official AMA rules, no powered model may be flown outdoors closer than 25 feet to any individual, except for the pilot and located at the flightline.

8. Under no circumstances may a pilot or other person touch a model aircraft in flight while it is still under power, except to divert it from striking an individual.
9. Radio-controlled night flying is limited to low-performance model aircraft (less than 100 mph). The model aircraft must be equipped with a lighting system which clearly defines the aircraft's attitude and direction at all times.
10. The operator of a radio-controlled model aircraft shall control it during the entire flight, maintaining visual contact without enhancement other than by corrective lenses that are prescribed for the pilot. No model aircraft shall be equipped with devices which allow it to be flown to a selected location which is beyond the visual range of the pilot.







© 2009 Horizon Hobby, Inc.  
4105 Fieldstone Road  
Champaign, Illinois 61822  
USA  
(877) 504-0233  
[horizonhobby.com](http://horizonhobby.com)  
[E-fliteRC.com](http://E-fliteRC.com)