



*Fly First Class™*

# Alpha 40 ARF

Assembly Manual



### Specifications

- Wingspan: ..... 63 in (1600mm)
- Length: ..... 52.5 in (1334mm)
- Wing Area: ..... 710 sq in (45.8 sq dm)
- Weight: ..... 5–5.5 lb (2.27–2.49 kg)
- Radio: ..... 4-channel minimum
- Engine: ..... .40–.46 2-stroke (glow), Power 25 (EP)

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## Notice

All instructions, warranties and other collateral documents are subject to change at the sole discretion of Horizon Hobby, Inc. For up-to-date product literature, visit <http://www.horizonhobby.com> and click on the support tab for this product.

## Meaning of Special Language

The following terms are used throughout the product literature to indicate various levels of potential harm when operating this product:

**NOTICE:** Procedures, which if not properly followed, create a possibility of physical property damage AND a little or no possibility of injury.

**CAUTION:** Procedures, which if not properly followed, create the probability of physical property damage AND a possibility of serious injury.

**WARNING:** Procedures, which if not properly followed, create the probability of property damage, collateral damage, and serious injury OR create a high probability of superficial injury.



**WARNING:** Read the ENTIRE instruction manual to become familiar with the features of the product before operating. Failure to operate the product correctly can result in damage to the product, personal property and cause serious injury.

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. Do not attempt disassembly, use with incompatible components or augment product in any way without the approval of Horizon Hobby, Inc. This 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 serious injury.

## Product Support

For technical assistance with this product, please contact the appropriate Horizon Product Support office. See page 51.

## Specifications

**Wingspan:** ..... 63 in (1600mm)  
**Length:** ..... 52.5 in (1334mm)  
**Wing Area:** ..... 710 sq in (45.8 sq dm)  
**Weight:** ..... 5–5.5 lb (2.27–2.49 kg)  
**Radio:** ..... 4-channel minimum  
**Engine:** ..... .40–.46 2-stroke (glow), Power 25 (EP)

## Included Parts Listing

### BAGGED SEPARATELY

Fuselage with hatch	(1)
Right wing panel with aileron	(1)
Left wing panel with aileron	(1)
Vertical fin	(1)
Horizontal stabilizer	(1)
Aluminum wing tube, 12mm x 318mm	(1)

### FUSELAGE

9 oz (260cc) fuel tank (assembled)	(1)	
#4 x 5/8-inch wood screw	(1)	Tank support tray
3mm x 12mm socket head cap screw	(2)	Fuselage lower hatch
#4 flat washer	(2)	Fuselage lower hatch
EZ connector with setscrew	(1)	Nose gear
#2 flat washer	(2)	EZ connector spacers
C-Clip	(2)	Secures EZ connector
4 <sup>3</sup> / <sub>4</sub> x 1/4-inch dowel rod	(2)	Wing to fuselage
Rubber band	(10)	Wing to fuselage
Plywood tank support tray	(1)	Secures tank in position
Plywood EP battery tray	(2)	Holds EP battery
Silicone safety clear tubing	(2)	Clevis keepers
Nylon clevis	(1)	Throttle
Snap link	(1)	Throttle

### MOTOR MOUNT

8-32 x 3/4-inch socket head cap screw	(4)	EP motor to EP standoffs
8-32 x 1-inch socket head cap screw	(4)	Motor mount to firewall/EP standoffs to firewall
#8 Silver flat washer	(4)	Motor mount to firewall/EP standoffs to firewall
4-40 x 1-inch socket head cap screw	(4)	Engine to motor mount
#4 silver flat washer	(4)	Engine to motor mount
8-32 blind nut	(4)	Engine mount
4-40 nylon inserted locknut	(4)	Engine to motor mount
Black nylon motor mount	(2)	
45mm EP standoffs	(4)	
2-inch (50mm) 2-blade spinner, red	(1)	

### WING

Nylon Clevis	(2)	Ailerons
Snap link	(2)	Ailerons
Clear wing center tape 1/2 x 14-inch	(1)	Seal top center wing joint
White covering 3/4 x 14-inch	(1)	Seal top center wing joint
Red covering 3/4 x 14-inch	(1)	Seal bottom center wing joint

### RUDDER AND ELEVATOR

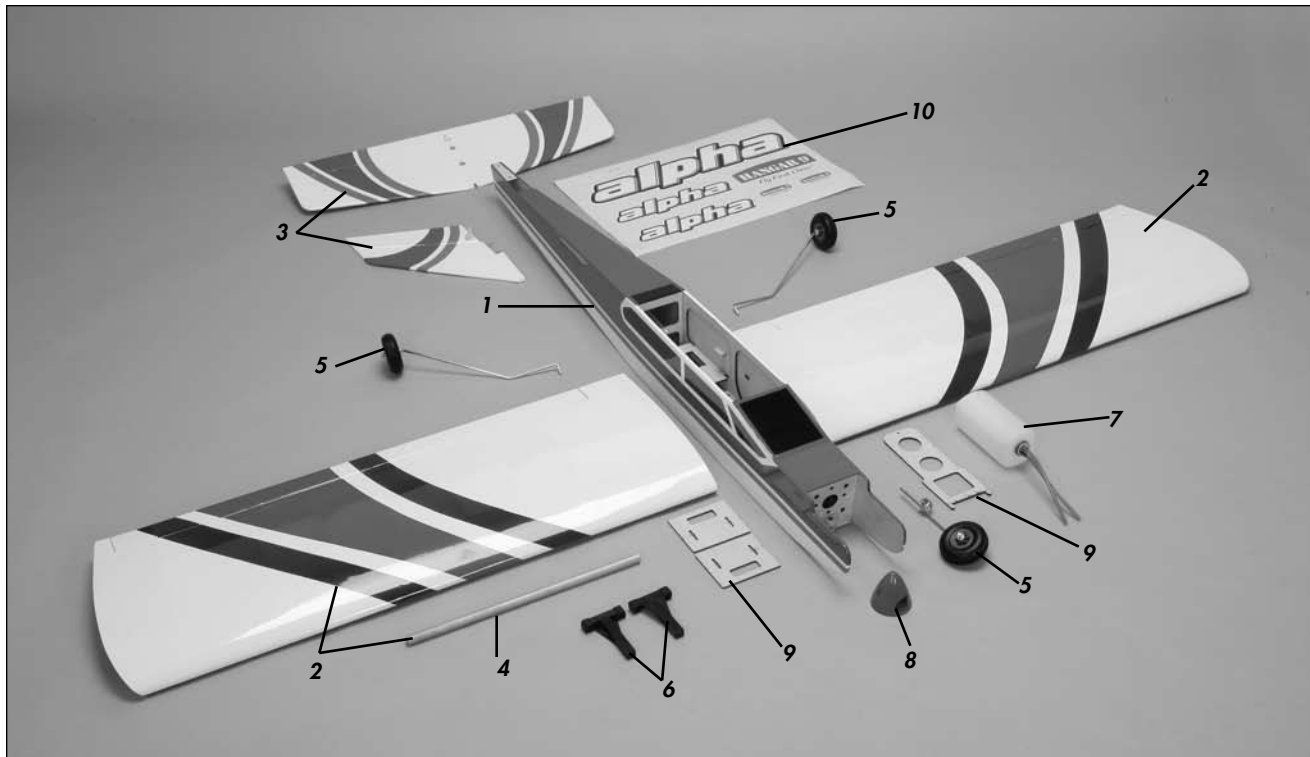
3mm x 10mm socket head cap screw	(2)	Stabilizer to fuselage
#4 silver flat washer	(2)	Stabilizer to fuselage
#4 silver flat washer	(2)	Rudder to stabilizer
3mm wing nut	(2)	Stabilizer to vertical fin
Nylon clevis	(2)	Rudder and elevator
Snap link	(2)	Rudder and elevator

### LANDING GEAR

Main landing gear assembly	(2)	Includes 2 <sup>1</sup> / <sub>2</sub> -inch (65mm) wheel and 4mm wheel collars
Nose gear assembly	(1)	Includes with 2 <sup>1</sup> / <sub>2</sub> -inch (65mm) wheel and 4mm wheel collars
#4 x 3/8-inch wood screw	(4)	Landing gear to fuselage
Landing gear straps	(2)	Landing gear to fuselage
Nose gear control arm with setscrew	(1)	

### PUSHRODS

3 <sup>3</sup> / <sub>8</sub> x 1/4-inch hardwood support pieces	(2)	Fuel tank support
2-56 x 6 <sup>1</sup> / <sub>8</sub> -inch one end threaded pushrod	(2)	Ailerons
2-56 x 16 <sup>3</sup> / <sub>4</sub> -inch pushrod with Z-bend	(1)	Nose gear
2-56 x 16 <sup>1</sup> / <sub>4</sub> -inch one end threaded pushrod	(1)	Throttle
2-56 x 28-inch one end threaded pushrod	(2)	Elevator and rudder



### Contents of Kit and Parts Layout

#### Large Replacement Parts

- |     |           |                              |
|-----|-----------|------------------------------|
| 1.  | HAN246001 | Fuselage with Hatch          |
| 2.  | HAN246002 | Wing Set with Wing Tube      |
| 3.  | HAN246003 | Tail Set                     |
| 4.  | HAN246004 | Wing Tube                    |
| 5.  | HAN246005 | Landing Gear Set with Wheels |
| 6.  | HAN246006 | Engine Nylon Mount           |
| 7.  | HAN246007 | Fuel Tank 9 oz               |
| 8.  | HAN246009 | Red 2-inch 2-blade Spinner   |
| 9.  | HAN246013 | Small Wood Parts             |
| 10. | HAN246015 | Decals                       |

#### Small Replacement Parts (not shown)

- |           |                     |
|-----------|---------------------|
| HAN246008 | EP 45mm Standoffs   |
| HAN246010 | Pushrods            |
| HAN246011 | Hardware Package    |
| HAN246012 | Nylon Parts Package |
| HAN246014 | Tail Set Wing Nuts  |

## Safety Precautions and Warnings

Read and follow all instructions and safety precautions before use. Improper use can result in fire, serious injury and damage to property.

### COMPONENTS

Use only with compatible components. Should any compatibility questions exist please refer to the product instructions, the component instructions or contact Horizon Hobby, Inc.

### FLIGHT

Fly only in open areas to ensure safety. It is recommended flying be done at AMA (Academy of Model Aeronautics) approved flying sites. Consult local ordinances before choosing a location to fly.

### PROPELLER

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 as injury can occur.

### BATTERIES

#### Notes on Lithium Polymer Batteries

When used improperly, Lithium Polymer batteries are significantly more volatile than alkaline or Ni-Cd/Ni-MH batteries used in RC applications. Always follow the manufacturer's instructions when using and disposing of any batteries. Mishandling of Li-Po batteries can result in fire and explosion causing serious injury and damage.

### SMALL PARTS

This kit includes small parts and should not be left unattended near children as choking and serious injury could result.

#### Safe Operating Recommendations

- Inspect your model before every flight to make certain it is airworthy.
- Be aware of any other radio frequency user who may present an interference problem.
- Always be courteous and respectful of other users of your selected flight area.
- Choose an area clear of obstacles and large enough to safely accommodate your flying activity.

- Make certain this area is clear of friends and spectators prior to launching your aircraft.
- Be aware of other activities in the vicinity of your flight path that could cause potential conflict.
- Carefully plan your flight path prior to launch.
- Abide by any and all established AMA National Model Aircraft Safety Code.

### **Important Information Regarding Warranty**

Please read our Warranty and Liability Limitations section on page 50 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 each step completed. Steps with a single box (☐) are performed once, while steps with two boxes (☐☐) indicate 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.

### **EasyCote™ Covering Colors**

- |                 |           |
|-----------------|-----------|
| • Midnight Blue | HANU70500 |
| • White         | HANU7000  |
| • True Red      | HANU70100 |

### **Before Starting Assembly**

Before beginning the assembly of your model, remove each part from its bag for inspection. Closely inspect the fuselage, wing panels, rudder and stabilizer for damage. If you find any damaged or missing parts, contact the place of purchase.

If you find any wrinkles in the covering, use a heat gun or covering iron to remove them. Use caution while working around areas where the colors overlap to prevent separating the colors.



**HAN100 – Heat Gun**



**HAN150 – Covering Glove**



**HAN101 – Sealing Iron**

**HAN141 – Sealing Iron Sock**

### **Radio Systems Requirements**

#### **Spektrum™ Radio System (recommended)**

- DX6i 6-channel radio or greater with receiver (SPM6600)
- DS821 Digital Sport Servo (4) (JRPS821)
- 6-inch Servo Extension (JSP98110)
- Receiver Battery, 2300mAh (JRPB5006)
- JR® Switch, Chargeswitch (JRPA004)

#### **Recommended Setup - Glow**

- Evolution® Trainer Power System: A (EVOE100) or
- Evolution .46NX with Muffler (EVOE0461)
- Evolution Propeller 11 x 5 (EVO11050)
- Evolution Propeller, 3-Blade (EVO100P) (optional)
- 3-Blade Spinner, White (EVOE100S) (optional)
- Exhaust Diverter (DUB697) (optional)

#### **Recommended Setup - Power 25**

- Power 25 Brushless Outrunner Motor, 870Kv (EFLM4025A)

- 11 x 8e Electric Propeller (APC11080E)
- 60-Amp Lite Switch-Mode BEC Brushless (EFLA1060)
- 3200mAh 4S 14.8V 20C Li-Po, 13AWG EC3 (EFLB32004S)

### **Field Equipment Required**

- Fuel (15% recommended)
- Propeller
- Long Reach Glow Plug Wrench (HAN2510)
- Metered Glow Driver with Ni-Cd & Charger (HAN7101)
- 2-Cycle Sport Plug (EVOGP1)
- Manual Fuel Pump (HAN118)

### **Optional Field Equipment**

- Selfstick Weights, 6 oz (HAN3626)
- PowerPro™ 12V Starter (HAN161)
- 12V 7Ah Sealed Battery (HAN102)
- Power Panel (HAN106)
- Blue Block After Run Oil (EVOX1001)
- Cleaner and towels

### **Tools and Supplies**

- |  |                    |
|--|--------------------|
| Drill  | Epoxy brush        |
| Felt-tipped pen  | Hook and loop tape |
| Hobby knife with #11 blade   | Low-tack tape      |
| Sandpaper  | Mixing cup         |
| Mixing stick   | Paper towel        |
| Phillips screwdriver: #1, #2   | Pencil             |
| Pin vise   | Pliers             |
| Ruler  | Diagonal cutters   |
| Rubbing alcohol  | Felt-tipped pen    |
| Threadlock   | Hook and loop tape |
| Hook and loop strap  |                    |
| Foam rubber, 1/4-inch (6mm)  |                    |
| Nut driver or box wrench: 1/4-inch   |                    |
| Box wrench to fit propeller nut  |                    |
| Box end or open end wrench: 10mm (2)   |                    |
| Hex wrench or ball driver: 1.5mm, 2.5mm, 3/32-inch, 9/64-inch                                      |                    |
| Drill bit: 1/16-inch (1.5mm), 5/64-inch (2mm), 1/8-inch (3mm), 5/32-inch (4mm), 11/64-inch (4.5mm) |                    |



## Additional Required Adhesives

30-Minute Epoxy	(HAN8002)
Medium CA	(PAAPT02)
Thin CA	(PAAPT08)

## Servo Installation-Fuselage

### Required Parts

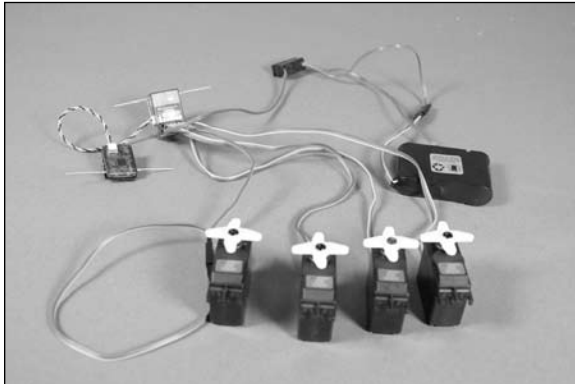
Fuselage	Servo with hardware (4)
Receiver	Receiver battery
Switch harness	
6-inch (152mm) servo extension	

### Required Tools and Adhesives

Phillips screwdriver: #1	Thin CA
--------------------------	---------

#### Step 1

Locate the necessary items for your radio system. Plug the servos and switch harness in the receiver. Plug a battery into the switch harness. Check that all the servos work properly.



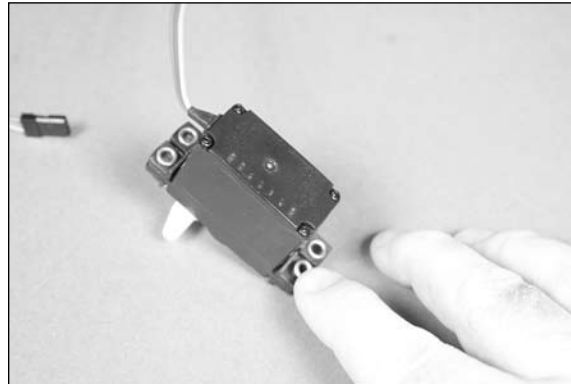
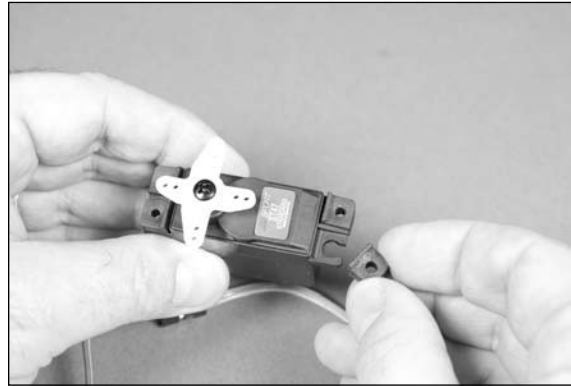
**Note:** You may need to bind your radio system if you are using a 2.4GHz system. Follow the instructions provided with your radio system to do so.

**Note:** Make sure to turn off both the transmitter and receiver before unplugging the servos.

**Important:** You will need to connect a 6-inch (152mm) extension in the Aileron port of the receiver to connect to the servo used for the Ailerons. Leave the extension plugged into the receiver when unplugging the servos.

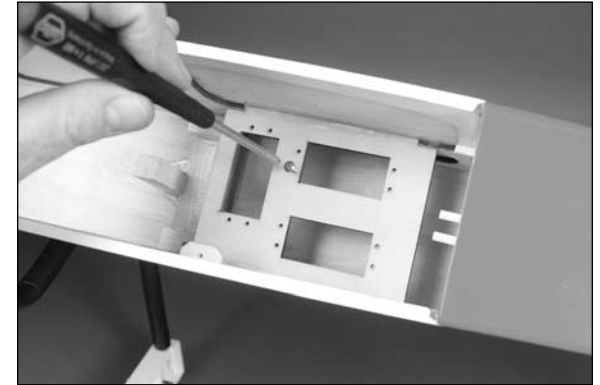
#### Step 2

Prepare the servos by installing the rubber grommets and brass eyelets in the servos. Note that the eyelets are inserted from the bottom of the servo.



#### Step 3

Use a #1 Phillips screwdriver to thread a servo mounting screw into the holes in the servo tray inside the fuselage. Apply 2–3 drops of thin CA in the holes to harden the surrounding wood. This makes the screws more secure and less likely to vibrate loose.



**Step 4**

Mount the rudder and elevator servos in the fuselage using the screws provided with the servos. Use a #1 Phillips screwdriver to tighten the screws. Note the direction of the servos in the photo.



**Step 5**

If you are installing a glow engine, you will need to install the servo used to control the throttle at this time.



## Glow Engine Installation

### Required Parts

Fuselage assembly	Engine mount rail (2)
#8 washer (4)	#4 washer (4)
8-32 blind nut (4)	4-40 locknut (4)
Safety tubing	Clevis
2-56 x 16 1/4-inch throttle pushrod	
4-40 x 1-inch socket head screw (4)	
8-32 x 1-inch socket head screw (4)	

### Required Tools and Adhesives

Nut driver: 1/4-inch	Threadlock
Hex wrench or ball driver: 3/32-inch, 9/64-inch	

**Step 1**

Locate the necessary hardware to install the engine on your model.



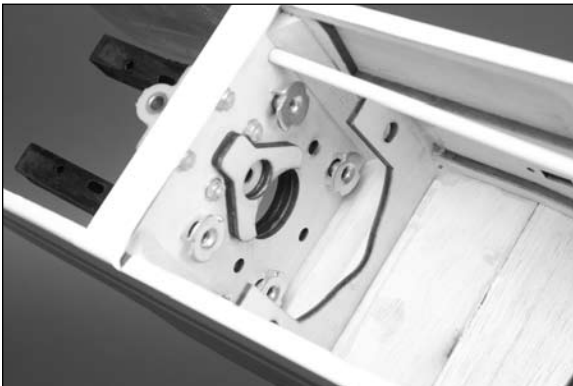
**Step 2**

Slide a #8 washer on an 8-32 x 1-inch socket head screw. Slide the screw into the engine mount rail as shown. You will be using four screws, four washers and two engine mount rails in this step to prepare the right and left engine mount rails. Place a drop of threadlock on the threads of each bolt. Threadlock will prevent the bolts from vibrating loose in flight.



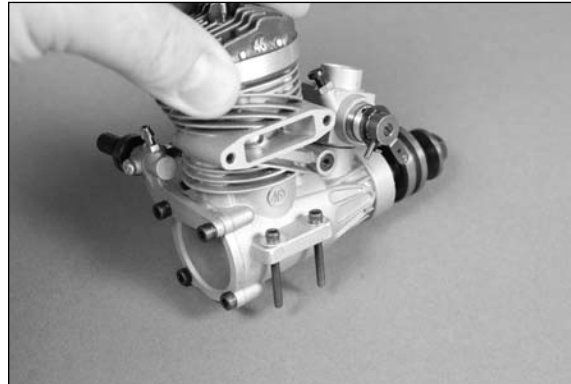
### □ Step 3

Position an engine mount rail on the fuselage. Thread an 8-32 blind nut on the screw. Note that the prongs on the blind nut will go into the backside of the firewall to keep them from rotating. The nuts are not to be tightened at this time so the mount can be positioned for your engine. The bolts will be tightened once the engine has been secured to the mounting rails.



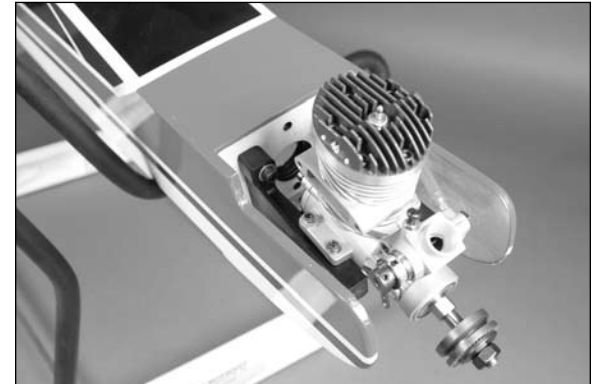
### □ Step 4

Place a #4 washer on each of the four 4-40 x 1-inch socket head bolts. Slide the screws through the holes in the engine mount flange.



### □ Step 5

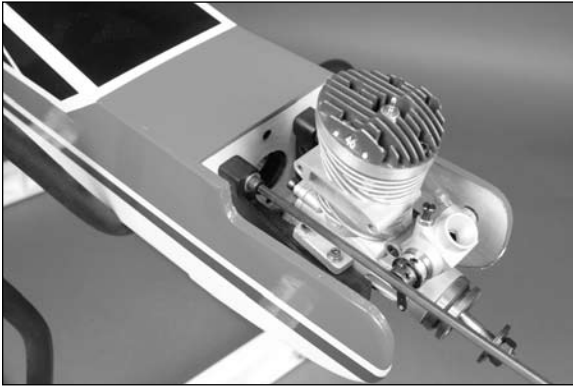
Place the engine on the mounting rails. The screws will go through the holes in the rails. Thread a 4-40 locknut on each screw. The nuts are only finger-tight at this time.





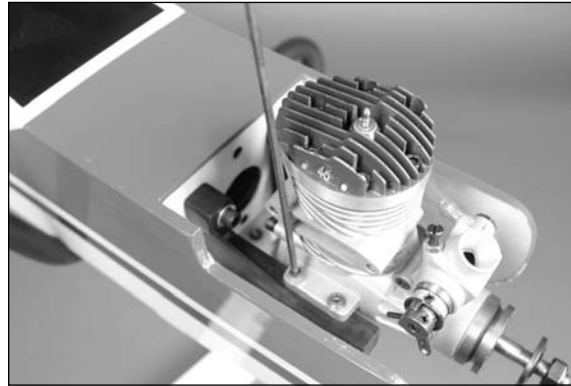
**Step 6**

Use a 9/64-inch hex wrench or ball driver to tighten the screws that attach the mount to the firewall. Make sure the blind nuts are drawn into the back of the firewall. Also make sure you have placed a small amount of threadlock on each of the screws so they don't vibrate loose in flight.



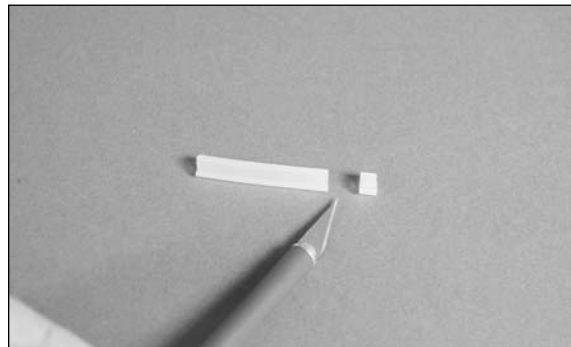
**Step 7**

Use a 3/32-inch hex wrench or ball driver and a 1/4-inch nut driver to tighten the hardware securing the engine to the engine mounting rails.



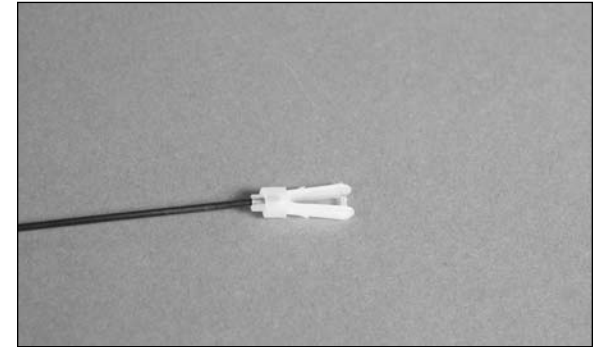
**Step 8**

Use a hobby knife to cut a 1/4-inch (6mm) piece of tubing from the 2-inch (52mm) safety tubing.



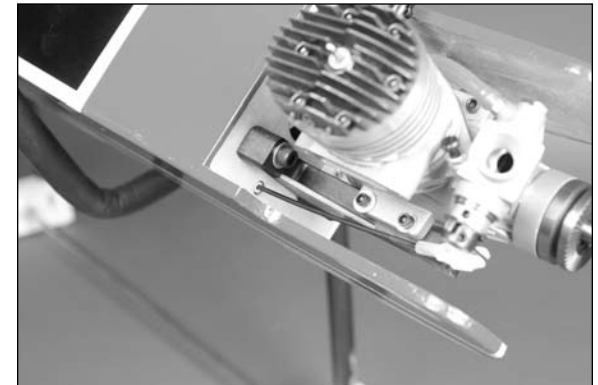
**Step 9**

Slide the piece cut in the previous step on a nylon clevis. Thread the clevis 10-turns onto the threaded end of the 2-56 x 16 1/4-inch throttle pushrod wire.



**Step 10**

Slide the pushrod wire into the tube in the firewall that aligns with the carburetor arm. Connect the clevis to the carburetor arm and slide the tubing over the forks of the clevis to keep the clevis from opening accidentally.



## Fuel Tank Installation

### Required Parts

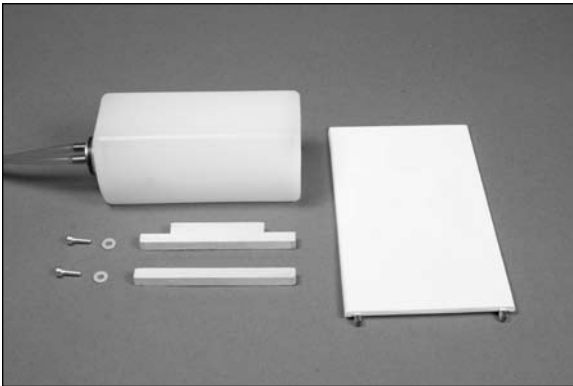
Fuselage	Fuel tank brace, front
Fuel tank brace, rear	3mm washer (2)
Fuselage hatch	Fuel tank (assembled)
3mm x 12mm socket head screw (2)	

### Required Tools and Adhesives

Threadlock	Scissors
Hobby knife with #11 blade	Phillips screwdriver: #2
Hex wrench or ball driver: 2.5mm	

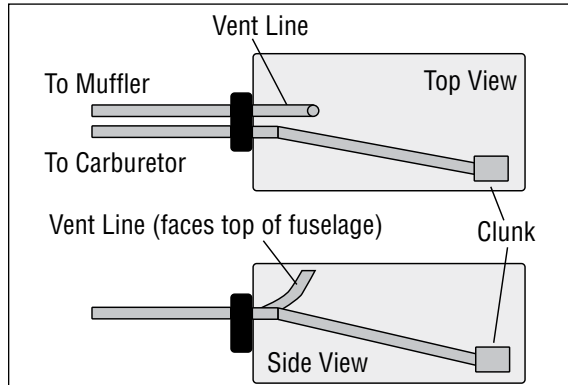
#### Step 1

Locate the items necessary to install the fuel tank in the fuselage.



#### Step 2

Inspect the fuel tank to determine the internal positioning of the vent line. This is important as the vent line must face to the top of the fuselage for the engine to run properly. You may want to place a piece of tape on the tube that corresponds to the vent line for easier identification later.



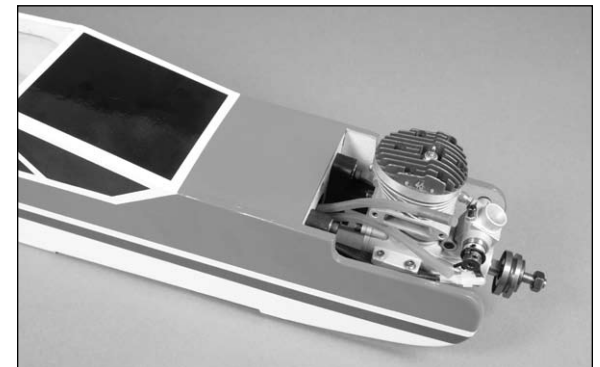
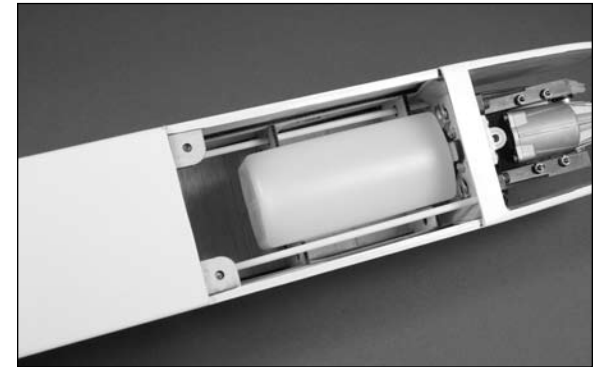
#### Step 3

Insert the fuel tank in the fuselage. Guide the fuel lines through the hole in the firewall.



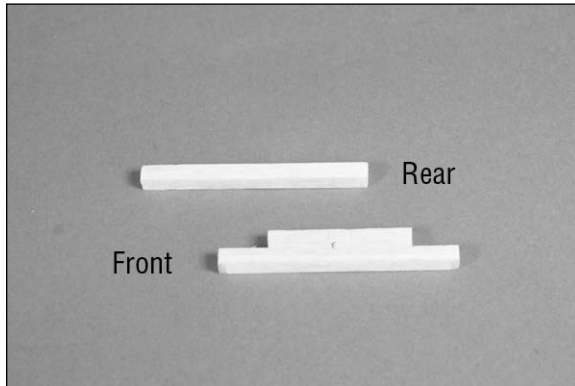
#### Step 4

Guiding the fuel tubes to the top of the fuselage, place the tank in the fuselage so it rests in the fuselage as shown. The tank will fit snug against the back of the firewall when installed.



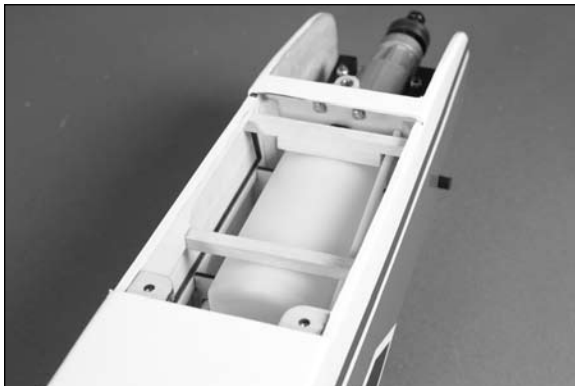
**Step 5**

Locate the fuel tank braces. The rectangular piece is the rear brace, while the shaped one is the front brace.



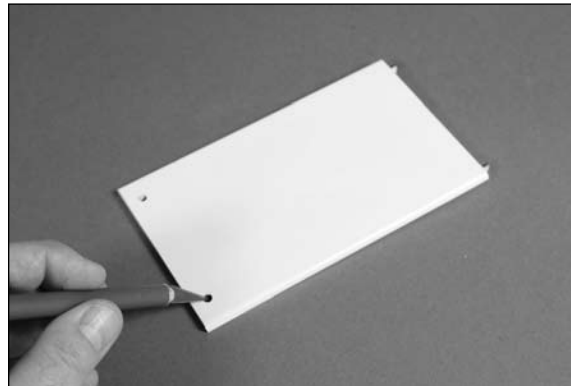
**Step 6**

Test fit the braces in the fuselage. They will lock into the sides of the fuselage when installed properly. Once fit, use medium CA to glue the braces to the fuselage sides.



**Step 7**

Use a hobby knife with a #11 blade to expose the two holes for the fuselage hatch mounting screws.



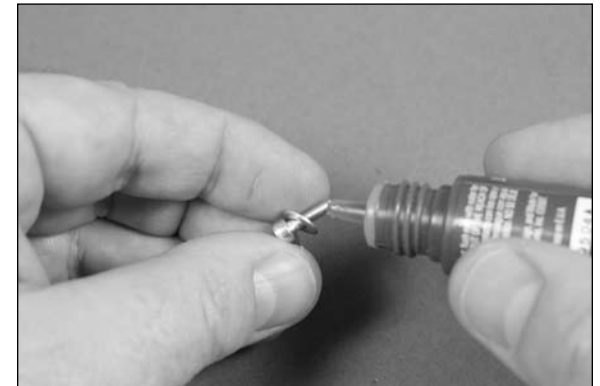
**Step 8**

Slide the fuselage hatch in position on the fuselage. The tabs will lock the front of the hatch in position.



**Step 9**

Slide a #4 washer on a 3mm x 12mm socket head screw. Place a drop of threadlock on the screw.



**Step 10**

Use a 2.5mm hex wrench or ball driver to tighten the screw. Use two screws and washers to secure the hatch to the fuselage.



## Muffler Installation

### Required Parts

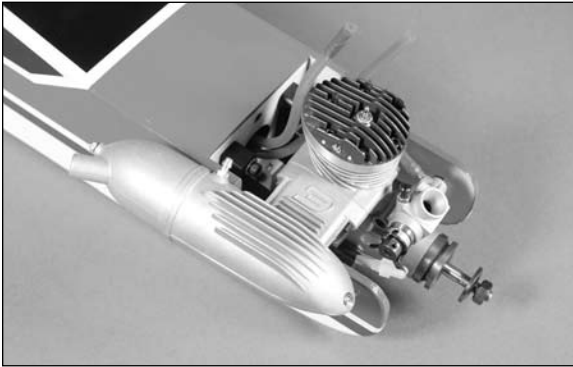
Fuselage                      Muffler

### Required Tools and Adhesives

Hobby knife with #11 blade    Hex wrench to fit muffler

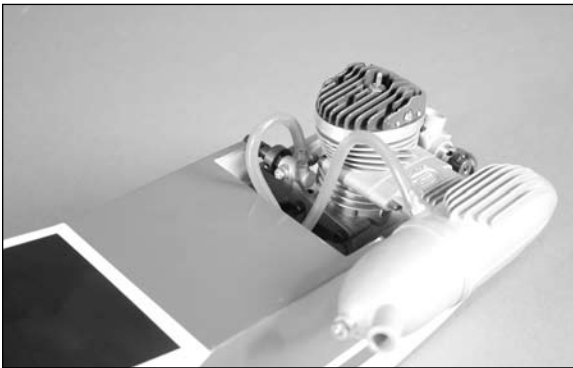
#### Step 1

Attach the muffler to the engine using the hardware provided with the engine. Make sure to follow the engine manufacturer's instructions where applicable.



#### Step 2

Connect the fuel lines to the carburetor and muffler. The line from the vent will attach to the muffler, while the line from the clunk will attach to the carburetor. Use scissors or a hobby knife and #11 blade to trim the length of the line if necessary so they don't interfere with the operation of the engine.



## Propeller and Spinner - Glow Engine Installation

### Required Parts

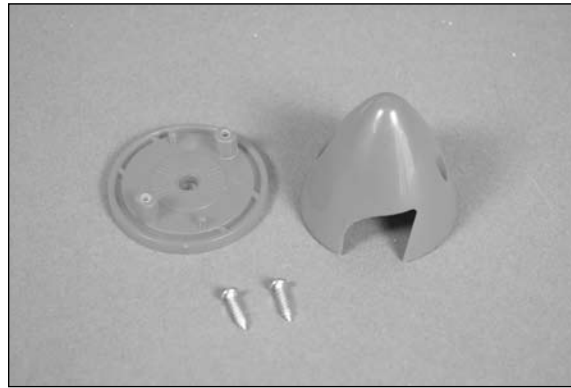
Fuselage assembly                      Spinner assembly  
Propeller

### Required Tools and Adhesives

Open end or box wrench: 3/8-inch  
Phillips screwdriver: #1

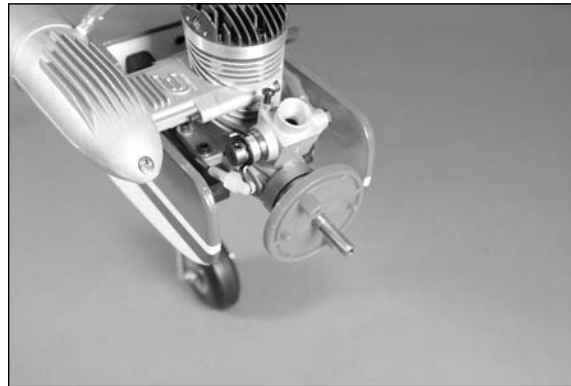
#### Step 1

Locate the items necessary to install the spinner on your engine.



#### Step 2

Check that the flywheel is fully installed on the engine. It fits closely to the engine when positioned correctly. Slide the spinner backplate onto the engine crankshaft so it is tight against the flywheel.



#### Step 3

Slide the propeller onto the engine crankshaft. The blades of the propeller will be positioned against the bosses for the spinner screws of the spinner backplate as shown below.



#### Step 4

Slide the propeller washer onto the engine crankshaft.



### □ Step 5

Thread the propeller nut onto the engine crankshaft.



### □ Step 6

Use an adjustable wrench to tighten the propeller nut. Secure the propeller and spinner backplate onto the engine crankshaft.



**Important:** When tightening the propeller nut, always use an adjustable wrench, box end wrench or 3/8-inch drive socket. Using pliers will not allow you to place enough grip to properly tighten the propeller nut.

**Note:** Make sure the propeller has not moved from its position as described back in Step 3. If it has, the spinner cone will not be able to be installed in the following steps.

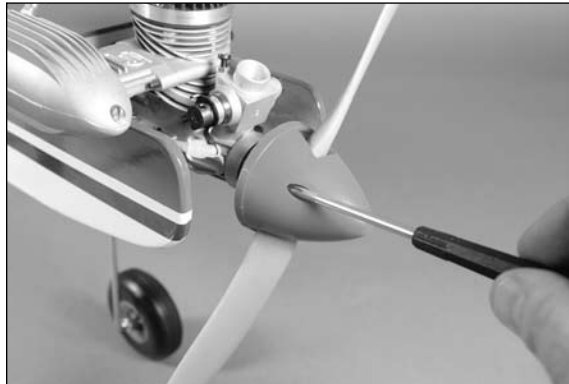
### □ Step 7

Slide the spinner cone over the propeller. It will fit into the grooves in the spinner backplate when installed.



### □ Step 8

Use the two 3mm x 10mm sheet metal screws supplied with the spinner to secure the spinner cone to the spinner backplate. A #1 Phillips screwdriver will be required to tighten the screws.



## Electric Motor Installation

### Required Parts

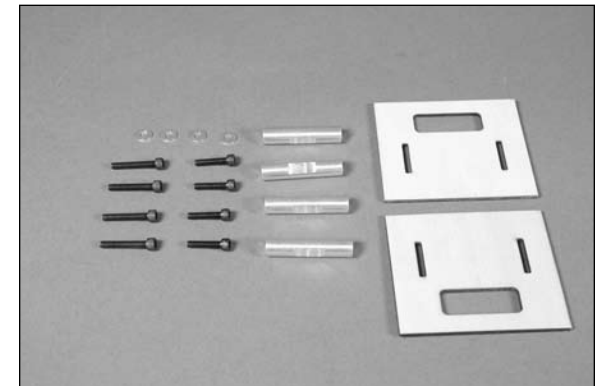
Fuselage	45mm Motor standoff (4)
#8 washer (4)	Battery tray (2)
Fuselage hatch	3mm washer (2)
Motor battery	
Electric motor with mount and hardware	
Electronic speed control (ESC)	
Hook and loop strap (not included)	
Hook and loop tape (not included)	
3mm x 12mm socket head screw (2)	
Motor with mounting hardware	
8-32 x 1-inch socket head screw (4)	
8-32 x 3/4-inch socket head screw (4)	

### Required Tools and Adhesives

30-minute epoxy	Mixing stick
Threadlock	Drill
Open end wrench: 5/16-inch	Phillips screwdriver: #1
Drill bit: 11/64-inch (4.5mm)	
Hex wrench of ball driver: 9/64-inch, 2.5mm	

### □ Step 1

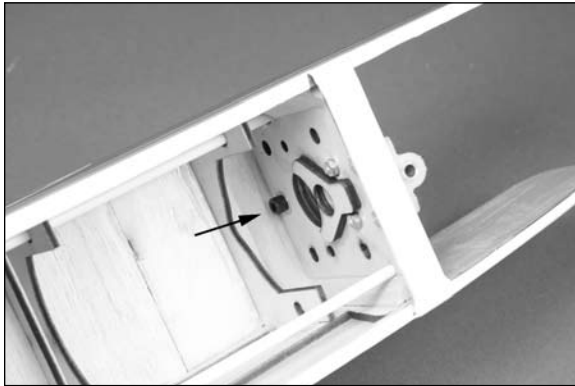
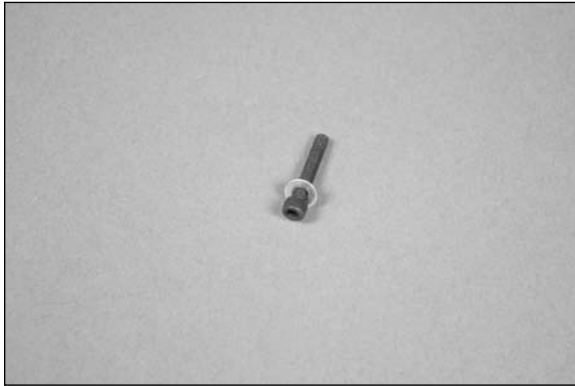
Locate the parts necessary to install the electric motor on the fuselage.





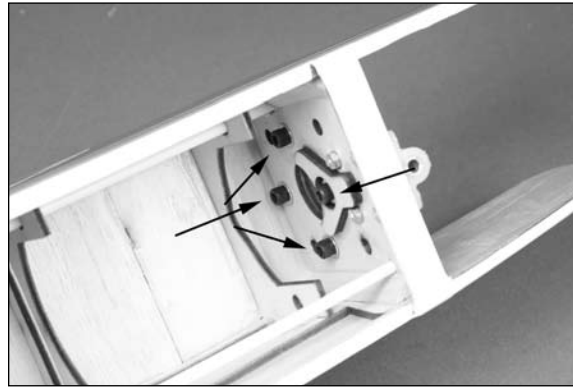
**Step 2**

Slide a #8 washer on a 8-32 x 1-inch socket head screw. Insert the screw through the appropriate hole in the firewall from the inside of the fuselage.



**Step 3**

Prepare three more 8-32 x 1-inch socket head screws and insert them into the firewall as shown.



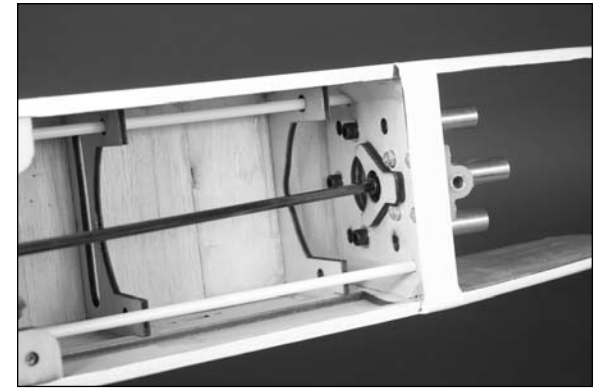
**Step 4**

Place a drop of threadlock on each of the screws.



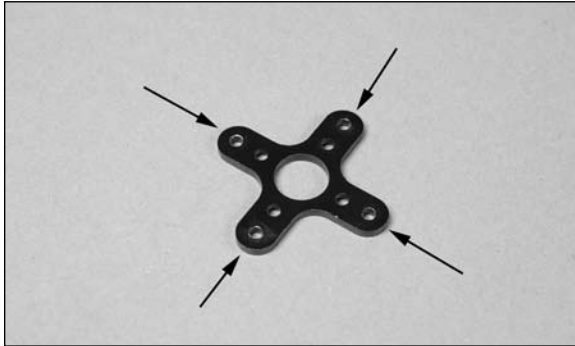
**Step 5**

Thread a 45mm EP standoff on each of the screws. Use a 9/64-inch hex wrench or ball driver to tighten the 8-32 socket head screws while holding the standoff with a 5/16-inch open end wrench. Install all four standoffs at this time.



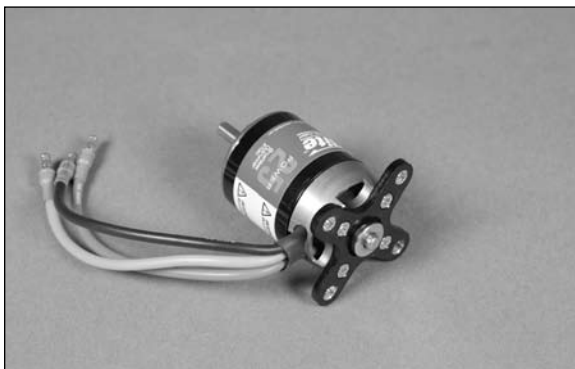
### □ Step 6

Use a drill and 1/16-inch (4.5mm) drill bit to enlarge the mounting holes in the X-mount. It is highly recommended to use a drill press as the X-mount can easily be pulled from your hand if using a hand drill.



### □ Step 7

Apply a drop of threadlock on each of the screws used to attach the X-mount to the motor. Use a #1 Phillips screwdriver to secure the mount to the motor.



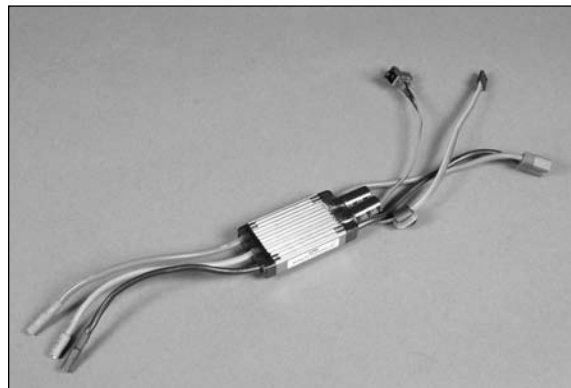
### □ Step 8

Use four 8-32 x 3/4-inch socket head screws to attach the motor to the motor standoffs. Remember to use threadlock on the screws so they don't vibrate loose. The wires from the motor will go into the fuselage through the large hole in the firewall.



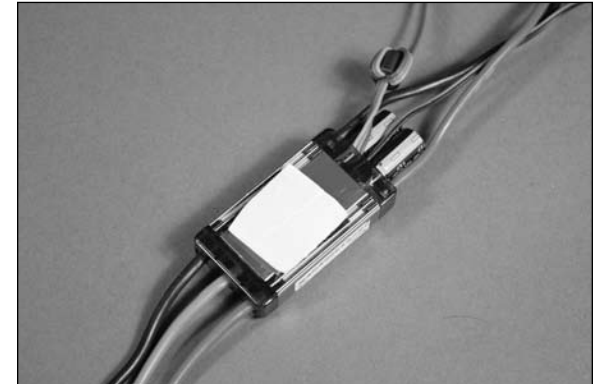
### □ Step 9

Prepare the speed control with the necessary connectors to connect it to your choice of battery and motor. Follow the instructions provided with the speed control to complete this step.



### □ Step 10

Place a piece of hook and loop tape on the bottom of the speed control. Leave the backing on the mating piece of tape until instructed to remove.



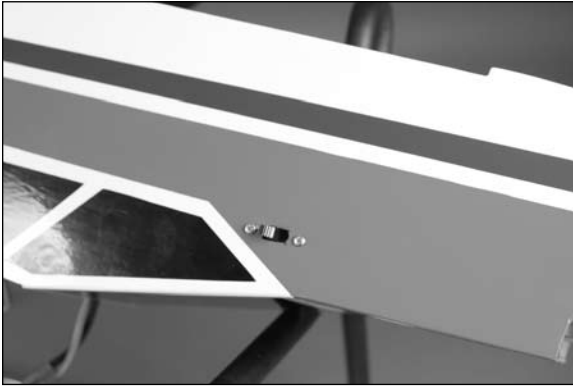
### □ Step 11

Connect the leads from the motor to the speed control. If you are using E-flite components, the colors will match from the speed control and motor. If you are using other components you may need to change the motor wires later when checking the operation of the motor.



**Step 12**

Use a hobby knife to remove the covering from the opening in the side of the fuselage for the speed control switch. Use the hardware provided with the speed control to mount the switch in the side of the fuselage.



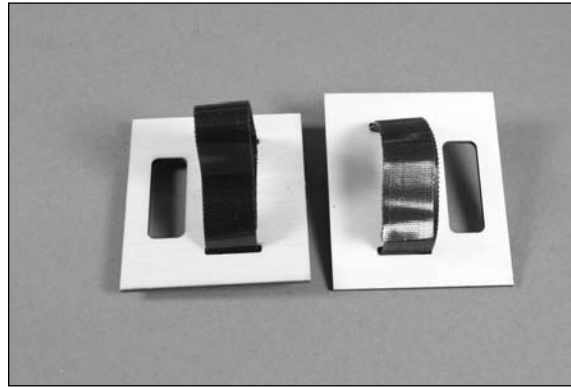
**Step 13**

Position the speed control in the fuselage as shown. It will be secured once the battery trays have been installed.



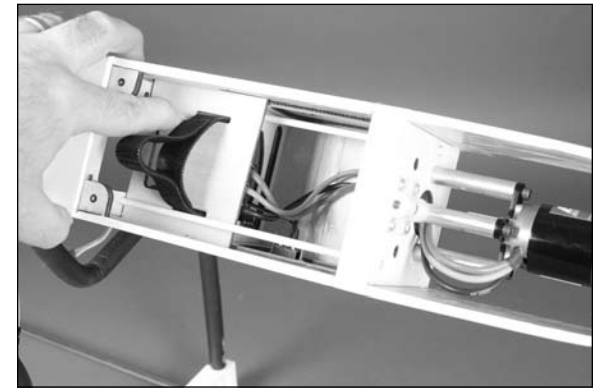
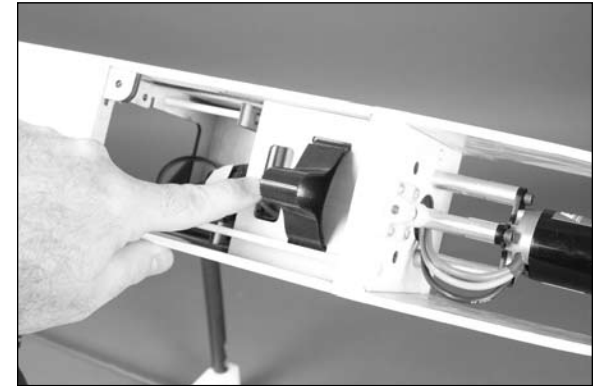
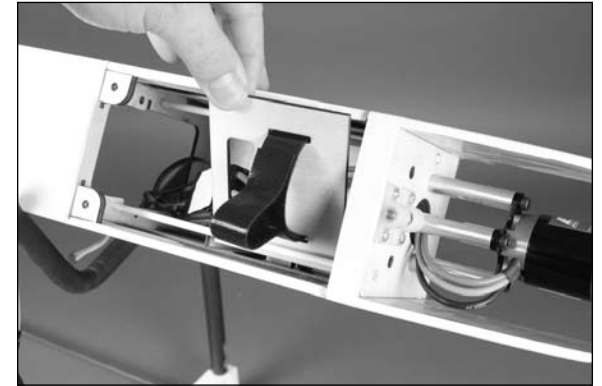
**Step 14**

Pass a hook and loop strap (not included) through the slots in the two battery trays as shown.



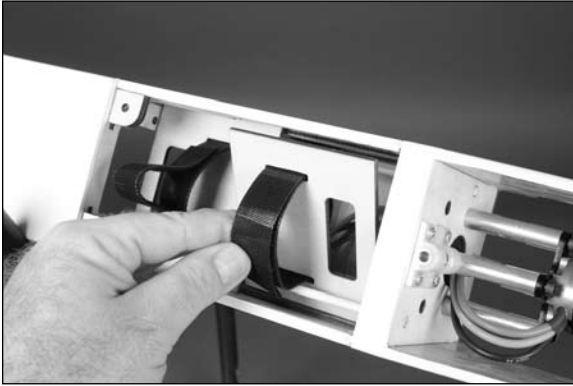
**Step 15**

Insert the first battery tray by angling it in the fuselage as shown. The tray will then fit into the fuselage where it can be slid toward the rear of the fuselage.



### □ Step 16

The second tray goes in the same as the first, but is positioned to the front of the fuselage.

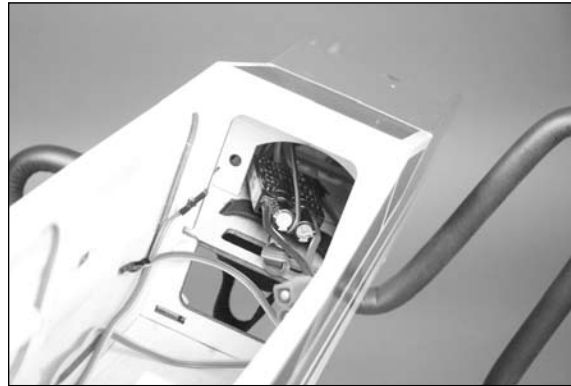


### □ Step 17

Once both trays are in the fuselage, use a small amount of 30-minute epoxy to glue the trays to the sides of the fuselage. Make sure they are secure so the weight of the battery does not cause them to come loose.

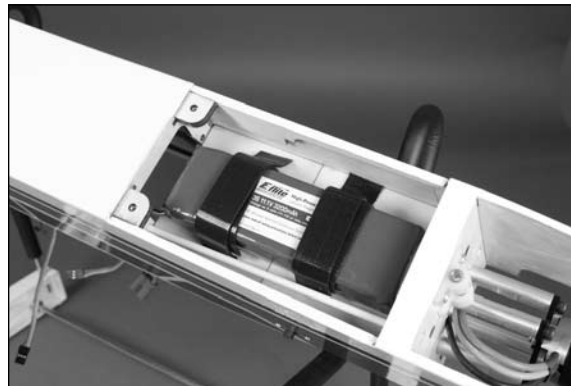
### □ Step 18

The next step is to remove the backing from the hook and loop material from the speed control and secure it to the battery trays. This is tricky and will require patience to accomplish.



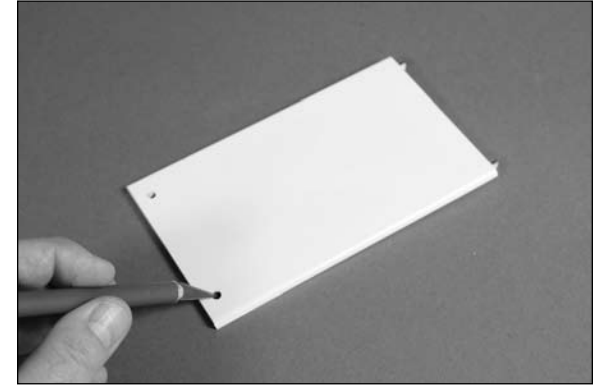
### □ Step 19

Use the hook and loop straps to secure the motor battery in the fuselage. If the battery slides forward or aft in the fuselage, use a small piece of hook and loop tape between the tray and battery to prevent it from doing so.



### □ Step 20

Use a hobby knife with a #11 blade to expose the two holes for the fuselage hatch mounting screws.



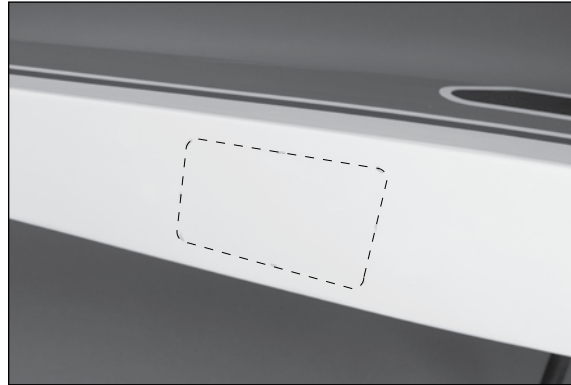
### Step 21

Slide the fuselage hatch in position on the fuselage. The tabs will lock the front of the hatch in position. Slide a #4 washer on a 3mm x 12mm socket head screw. Place a drop of threadlock on the screw. Use a 2.5mm hex wrench or ball driver to tighten the screw. Use two screws and washers to secure the hatch to the fuselage.



### Step 22

On the bottom of the fuselage, right behind the rear window, is an area that can be removed to provide cooling air to pass through the fuselage to cool the motor battery. Removing this covering is only necessary if you are not using the newer Li-Po batteries capable of a 25C discharge rate.



## **Propeller and Spinner Installation- Electric Motor**

### **Required Parts**

Fuselage assembly  
Propeller

Spinner assembly  
Propeller adapter

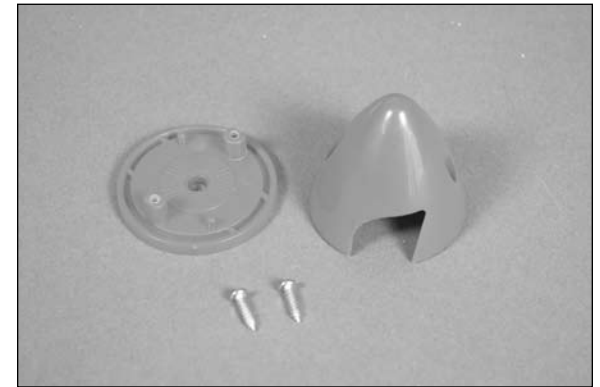
### **Required Tools and Adhesives**

Phillips screwdriver: #1

Hex wrench or ball driver: 3/32-inch (2mm)

### Step 1

Locate the items necessary to install the propeller and spinner on the motor.



### Step 2

Slide the propeller adapter on the motor as shown.





**Step 3**

Slide the spinner backplate onto the engine crankshaft so it is tight against the flywheel.



**Step 4**

Slide the propeller onto the engine crankshaft. The blades of the propeller will be positioned against the bosses for the spinner screws of the spinner backplate as shown below.



**Step 5**

Thread the propeller nut onto the engine crankshaft.



**Step 6**

Use a 3/32-inch or 2.5mm hex wrench or ball driver to tighten the adapter nut to secure the propeller and spinner backplate onto the propeller adapter.



**Note:** Make sure the propeller has not moved from its position as described back in Step 4. If it has, the spinner cone will not be able to be installed in the following steps.

**Step 7**

Slide the spinner cone over the propeller. It will fit into the grooves in the spinner backplate when installed.



**Step 8**

Use the two 3mm x 10mm sheet metal screws supplied with the spinner to secure the spinner cone to the spinner backplate. A #1 Phillips screwdriver will be required to tighten the screws.



## Landing Gear Installation

### Required Parts

Fuselage	Main landing gear (2)
Nose gear	Steering arm
#4 x 3/8-inch wood screw (4)	Landing gear strap (2)
2-56 x 16 <sup>3</sup> / <sub>4</sub> -inch steering pushrod	

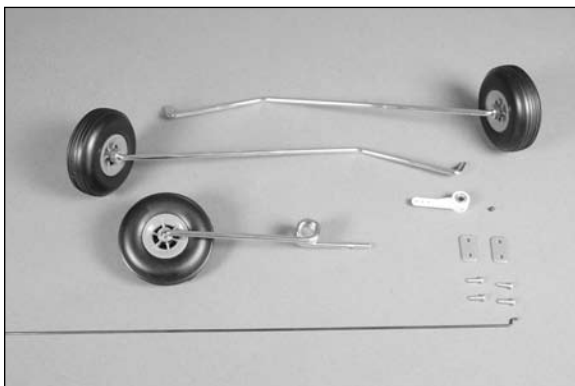
### Required Tools and Adhesives

Felt-tipped pen	Drill
Drill bit: 5/64-inch (2mm)	Phillips screwdriver: #2
Hobby knife with #11 blade	Thin CA
Threadlock	Medium CA
Alcohol	Paper towel
Hex wrench or ball driver: 1.5mm	

**Note:** The landing gear installation is identical if you are using a glow engine or electric motor.

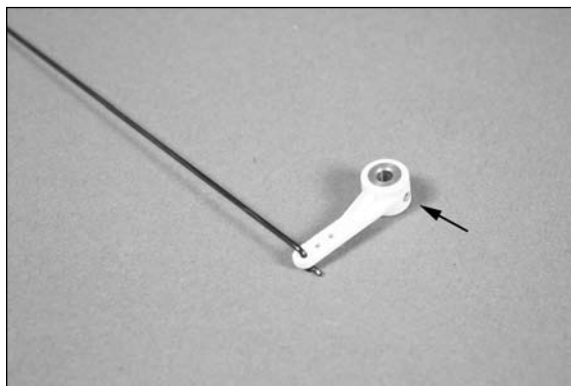
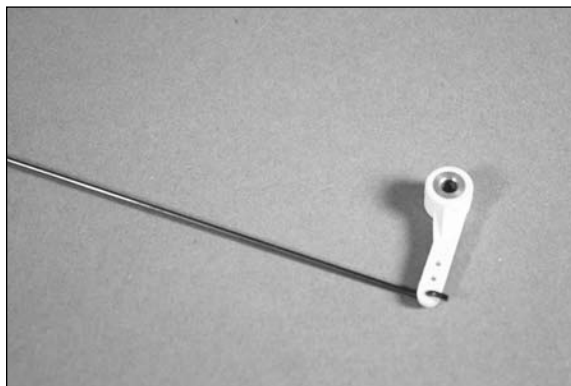
### □ Step 1

Locate the items necessary to install the nose gear and main landing gear on your aircraft.



### □ Step 2

Connect the steering arm to the 2-56 x 16<sup>3</sup>/<sub>4</sub>-inch steering pushrod. Note the position of the steering arm and setscrew location in the arm in relationship to how the pushrod is located. If the pushrod is on the opposite side it will bind the steering/rudder servo during operation.



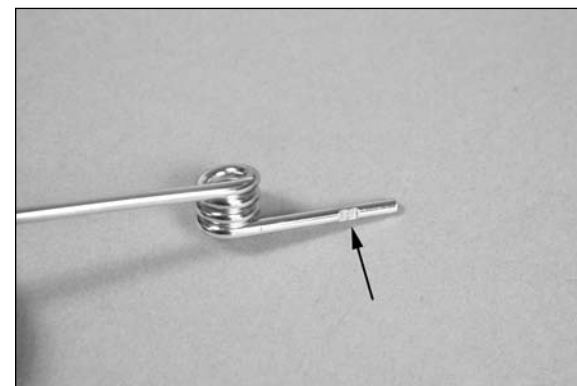
### □ Step 3

Slide the pushrod into the pushrod tube in the fuselage. Position the steering arm between the block on the firewall as shown. Make sure the hole for the setscrew faces forward so it can be accessed.



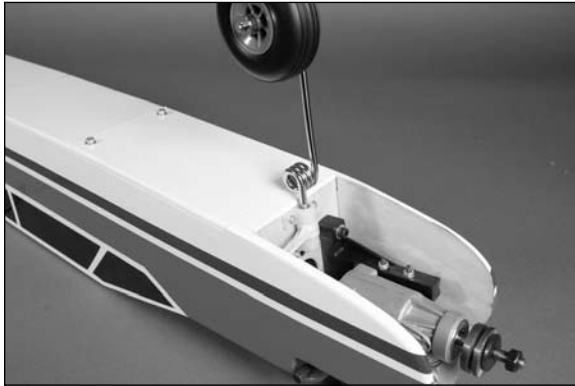
### □ Step 4

Inspect the nose gear assembly. There is a small notch in the wire that will align with the hole for the setscrew in the steering arm.



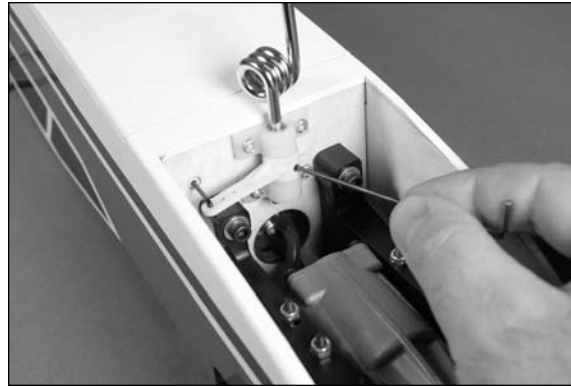
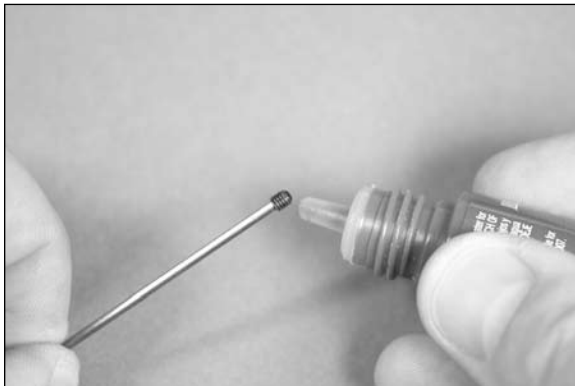
### □ Step 5

Slide the nose gear assembly into the nose gear blocks and steering arm. Note the direction of the coil spring and that it faces to the back of the fuselage.



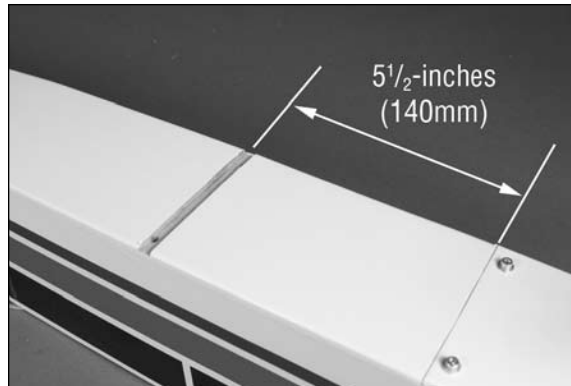
### □ Step 6

Apply a drop of threadlock on the 3mm x 3mm setscrew. Use the setscrew to secure the steering arm to the nose gear assembly. The setscrew must be tightened on the notch of the nose gear wire or it might vibrate loose during flight or cause the nose gear to twist if the model encounters a poor landing. Use a 1.5mm hex wrench or ball driver to tighten the setscrew.



### □ Step 7

Use a hobby knife to remove the covering to expose the slot on the bottom of the fuselage for the main landing gear wires. The main gear slot is located 5½-inches (140mm) behind the rear edge of the fuselage hatch.



### □ Step 8

Apply a thin coat of medium CA to the slot to seal the exposed wood. This will keep fuel from soaking into the wood and causing it to soften over time. Use a paper towel to wipe away any excess CA. This is not necessary if you are using an electric power system.



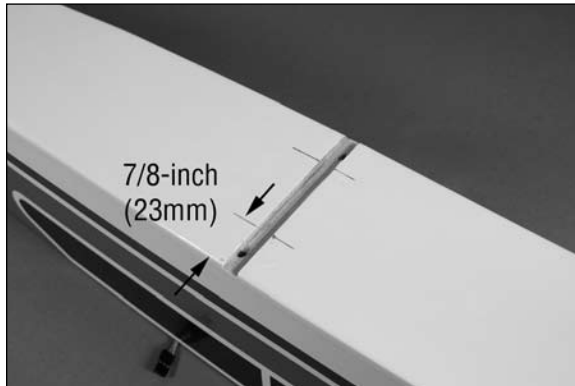
### □ Step 9

Use a hobby knife and #11 blade to bevel the inside edge of both holes in the main landing gear block. This is necessary to accept the radius of the bend on the main gear assemblies, allowing them to fit snug in the slot.



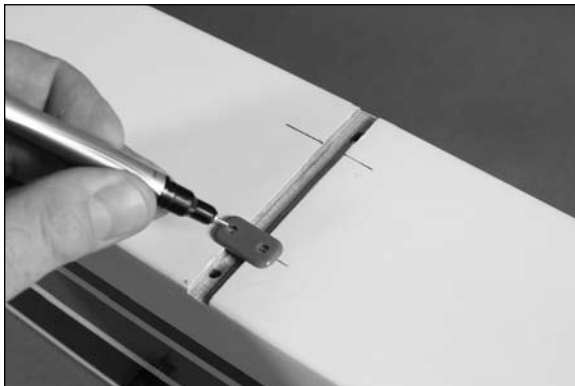
### □ Step 10

Measure in 7/8-inch (23mm) from each side of the fuselage and use a felt-tipped pen to draw a line as shown.



### □ Step 11

Position the landing gear strap on the line and center it over the slot in the fuselage. Use a felt-tipped pen to mark the locations for the two mounting screws for each landing gear strap.



### □ Step 12

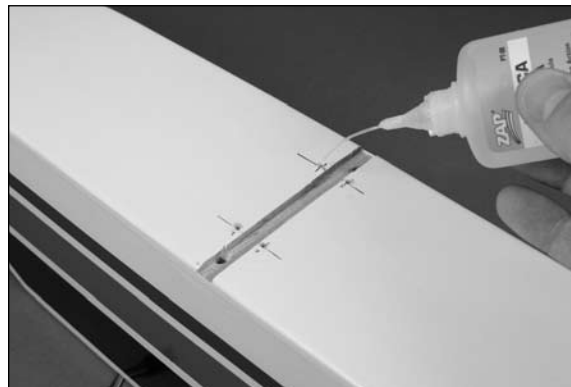
Use a drill and 5/64-inch (2mm) drill bit to drill the four holes in the bottom of the fuselage for the landing gear strap screws.



### □ Step 13

Apply 2–3 drops of thin CA in each hole to harden the surrounding wood. This will make the screws more secure and help prevent them from vibrating loose in flight.

**Hint:** At this time you can remove the lines from the bottom of the fuselage using rubbing alcohol and a paper towel.



### □ Step 14

Fit the gear to the fuselage. They must fit flush with the bottom of the fuselage as shown. If not, it may be necessary to enlarge the bevel made back in Step 9.



### □ Step 15

Secure the main landing gear assemblies using the two landing gear straps and four #4 x 3/8-inch wood screws. Use a #2 Phillips screwdriver to tighten the screws.



## Receiver Installation- Electric Motor Option

### Required Parts

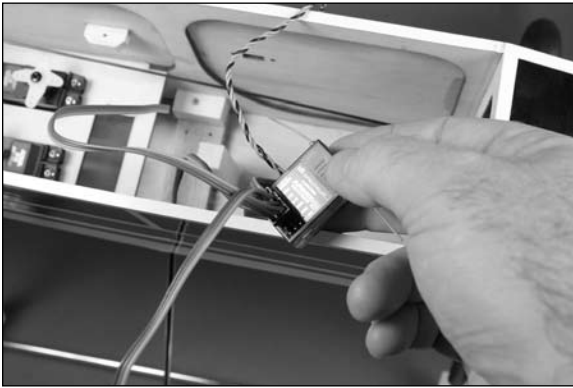
Fuselage Receiver

### Required Tools and Adhesives

Hook and loop tape

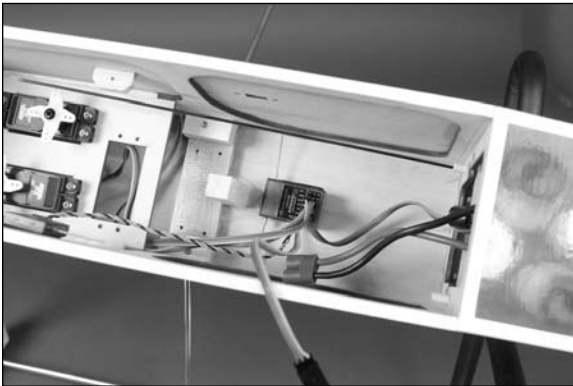
#### Step 1

Plug the rudder, elevator and throttle servos into the appropriate ports of the receiver. The 6-inch (152mm) extension should still be plugged in the aileron port of the receiver.



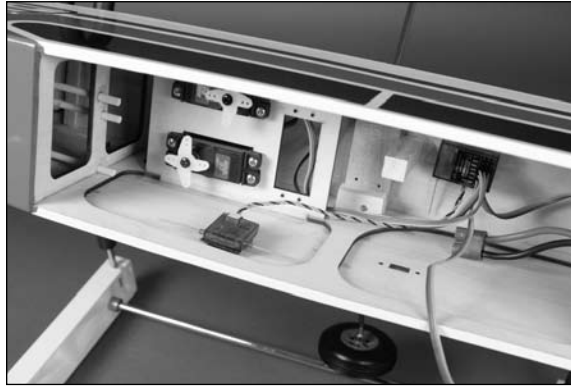
#### Step 2

Mount the receiver to the bottom of the fuselage using hook and loop tape.



#### Step 3

The remote receiver is then mounted to the side of the fuselage above the elevator servo using hook and loop tape. Mount it as high as possible in the fuselage for the best reception from your radio system.



## Receiver Installation- Glow Engine Option

### Required Parts

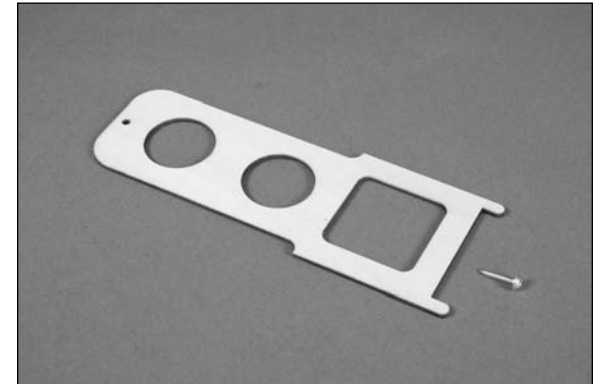
Fuselage Radio tray  
#4 x 5/8-inch wood screw Receiver battery  
Switch harness Receiver  
1/4-inch (6mm) foam (not included)

### Required Tools and Adhesives

Phillips screwdriver: #1 Hook and loop tape  
Drill bit: 3/32-inch (2.5mm) Drill  
Pencil Thin CA  
Hobby knife with #11 blade Scissors

#### Step 1

Locate the hardware necessary to install the radio tray in the fuselage.





**Step 2**

Slide the radio tray into the notches in the former. The tray will fit against the rear of the fuel tank to keep it from moving.



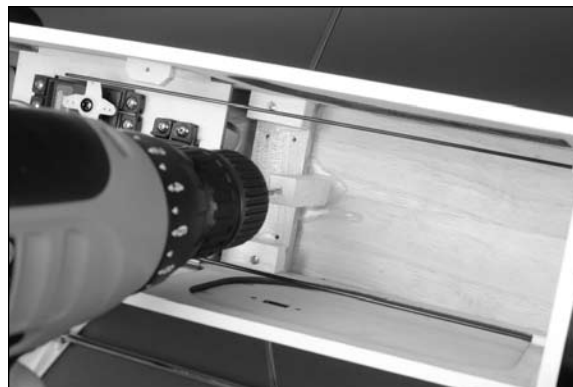
**Step 3**

Use a pencil to mark the support block in the fuselage for the radio tray screw.



**Step 4**

Remove the radio tray from the fuselage. Use a drill and 3/32-inch (2.5mm) drill bit to drill a hole in the support block for the screw that will secure the position of the radio tray.



**Step 5**

Place 2–3 drops of thin CA in the hole. This will harden the surrounding wood, making the screw less likely to vibrate loose.



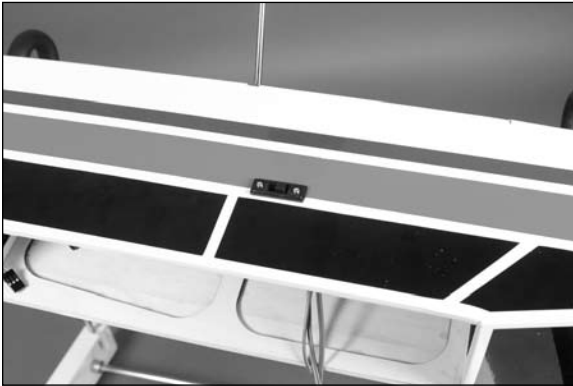
**Step 6**

Use a hobby knife with a #11 blade to remove the covering and expose the mounting location for the radio switch.



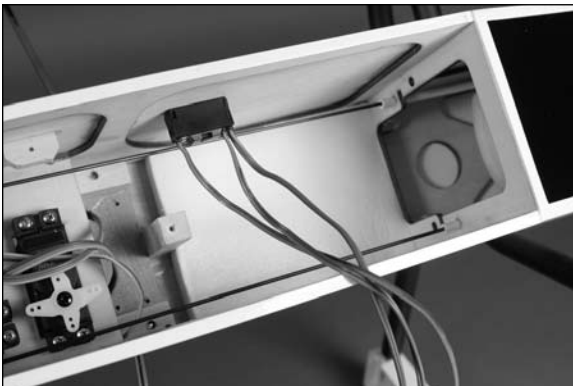
**Step 7**

Mount the switch to the side of the fuselage using the hardware included with the switch. Use a #1 Phillips screwdriver to tighten the screws for the switch.



**Step 8**

Use scissors to cut a piece of 1/4-inch (6mm) foam. Place the foam in the bottom of the radio compartment.



**Step 9**

Plug the throttle, rudder and elevator servos into the appropriate ports of the receiver. Also connect the battery to the switch harness and plug the switch harness in the battery port of the receiver. The 6-inch (152mm) servo extension should still be plugged into the aileron port of the receiver. If not, reconnect it at this time.



**Step 10**

Place the receiver and receiver battery in the fuselage. Use scissors to cut small pieces of 1/4-inch (6mm) foam to isolate the receiver and battery from each other, as well as from the fuselage sides.



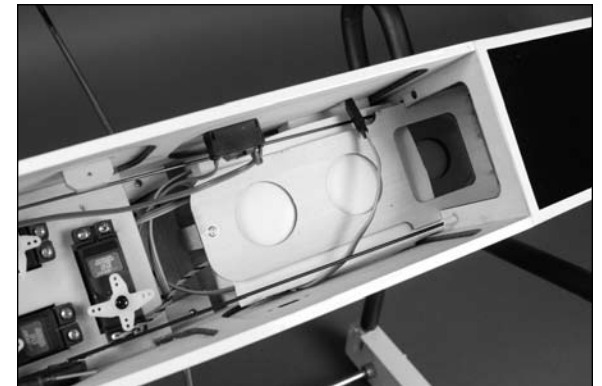
**Step 11**

Use scissors to cut a final piece of 1/4-inch (6mm) foam to cover the receiver and receiver battery.



**Step 12**

Slide the radio tray in position. Use a #4 x 5/8-inch wood screw to secure the tray in position. Use a #1 Phillips screwdriver to tighten the screw.



### Step 13

Use hook and loop tape to secure the remote receiver above the throttle servo as shown. Mount the receiver as high in the fuselage and as far away from the main receiver as possible to provide the best reception from your radio system.



## **Wing Dowel Installation**

### **Required Parts**

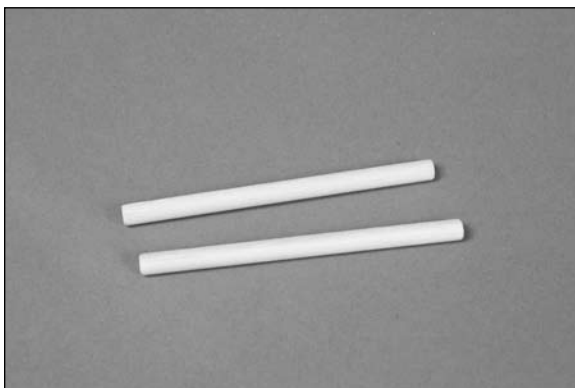
Fuselage assembly                      Wing dowel (2)

### **Required Tools and Adhesives**

Thin CA

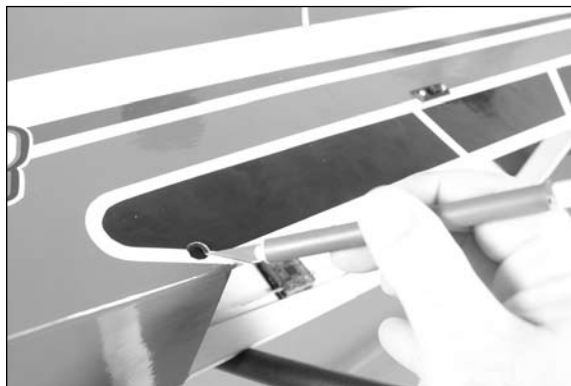
### Step 1

Locate the wing dowels for your aircraft.



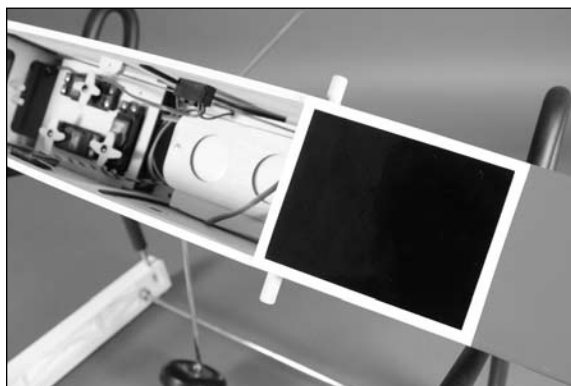
### Step 2

Use a hobby knife with a #11 blade to remove the covering from the fuselage for the wing dowels.



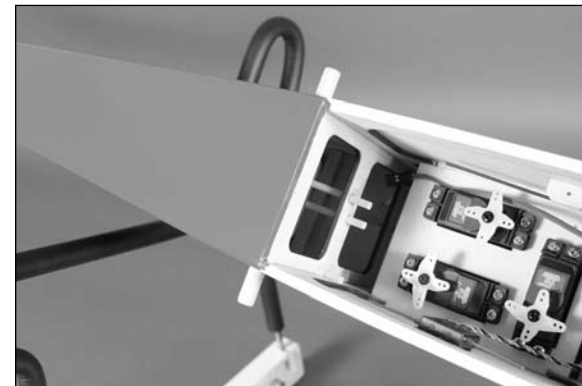
### Step 3

Slide the wing dowel into the pre-drilled holes in the front of the fuselage. Center the dowel so it extends equally from both sides of the fuselage.



### Step 4

Slide the second wing dowel into the pre-drilled holes in the rear of the fuselage. Center the dowel so it extends equally from both sides of the fuselage.



### Step 5

Apply thin CA into the joint between the dowel and fuselage to keep it from moving.



## Fin and Stabilizer Installation

### Required Parts

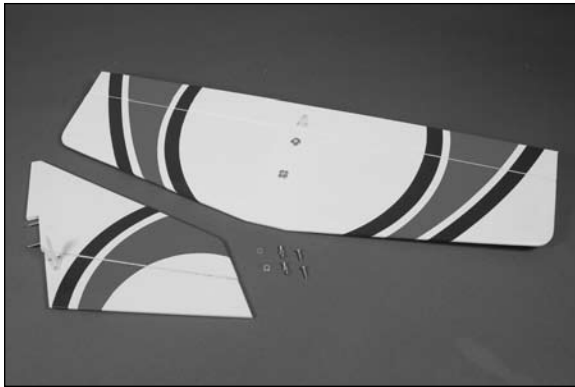
Fin/Rudder assembly	#4 washer (4)
Stabilizer/Elevator assembly	Wing nut (2)
3mm x 10mm machine screw	(2)

### Required Tools and Adhesives

Phillips screwdriver: #1	Threadlock
Hobby knife with #11 blade	

#### Step 1

Locate the fin and stabilizer assemblies and the hardware necessary to install them on the fuselage.



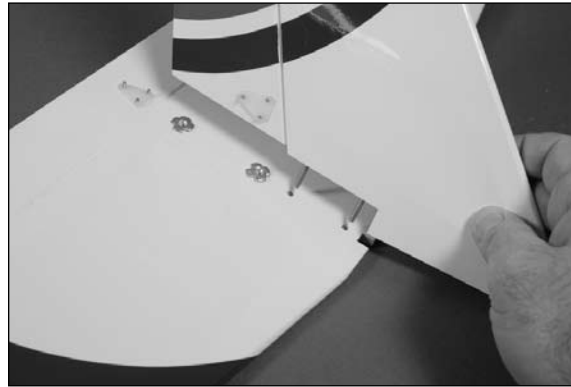
#### Step 2

Use a hobby knife with a #11 blade to remove the covering from the notch at the front of the stabilizer. Also remove the covering from the pre-drilled holes in the stabilizer.



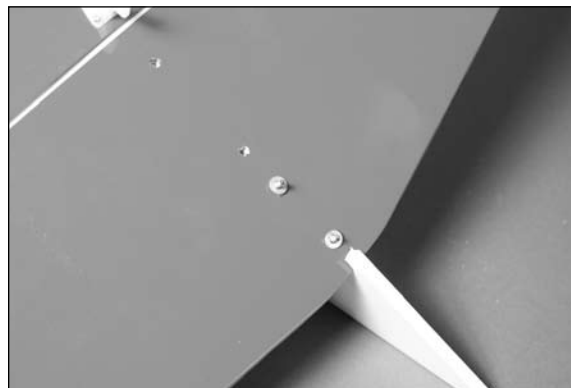
#### Step 3

The threaded rods from the fin will fit into the holes that are pre-drilled in the stabilizer as shown.



#### Step 4

Slide the two #4 washers onto the threaded rods from the bottom of the stabilizer.



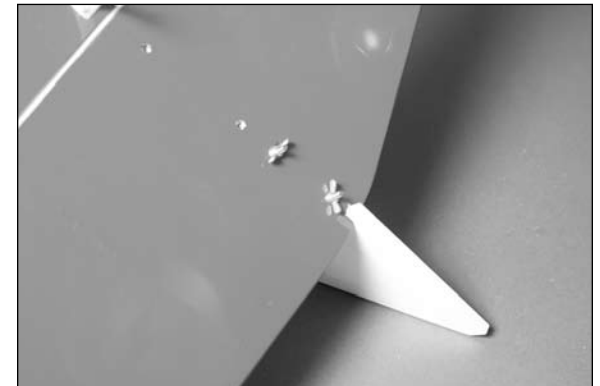
#### Step 5

Apply a drop of threadlock onto each of the threaded rods.



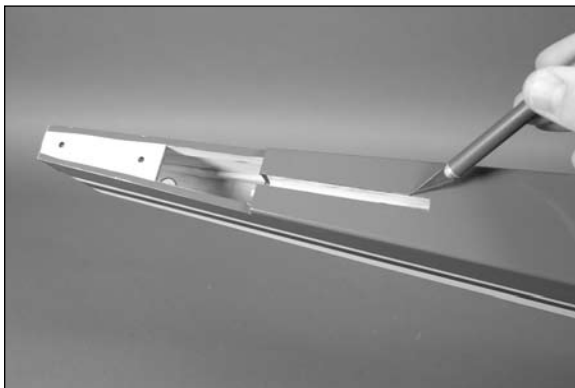
#### Step 6

Thread the two wing nuts onto the threaded rods to secure the fin to the stabilizer. Don't over-tighten the wing nut and damage the underlying wood.



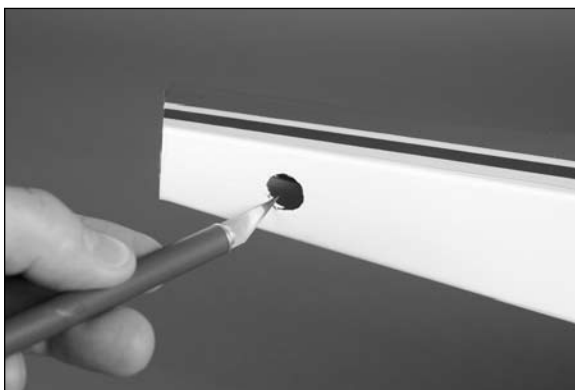
**Step 7**

Use a hobby knife to remove the covering from the slot on the top of the fuselage for the fin.



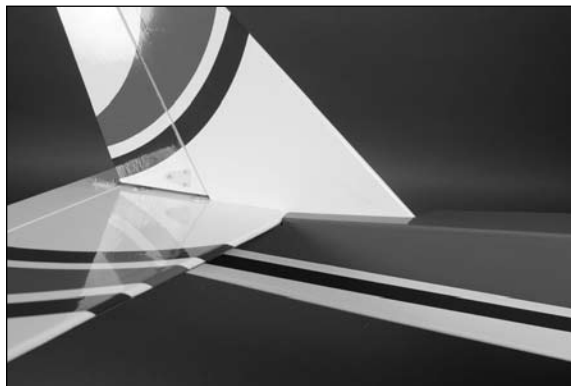
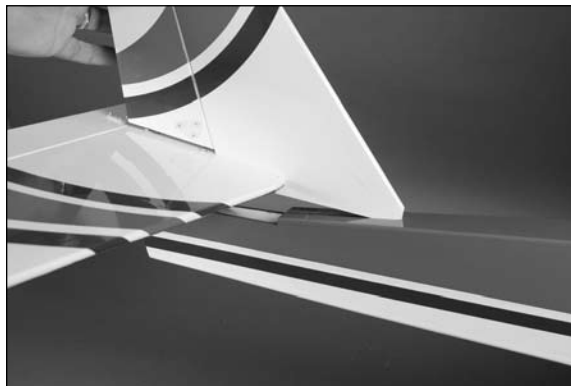
**Step 8**

Use a hobby knife with a #11 blade to remove the covering on the bottom of the fuselage for the stabilizer attachment screw.



**Step 9**

Slide the fin into position on the fuselage as shown.



**Step 10**

Locate a #4 washer and 3mm x 10mm machine screw. Slide the washer onto the screw, then apply a small amount of threadlock on the screw.



**Step 11**

Insert the screw into the hole in the fuselage and through the stabilizer to the preinstalled blind nut on the top of the stabilizer. Use a #2 Phillips screwdriver to tighten the screw.





## □ Step 12

Repeat Steps 10 and 11 to install the second screw.



## Throttle Linkage Connection

### Required Parts

Fuselage	Pushrod snap link
Transmitter	

### Required Tools and Adhesives

Pliers	Felt-tipped pen
Drill bit: 5/64-inch (2mm)	Pin vise
Diagonal cutters	

**Note:** This section covers the installation and connection of the throttle linkage. If you have installed an electric power system you can skip this section of the manual.

## □ Step 1

Locate the pushrod snap link. This will be used to secure the pushrod wire to the throttle servo horn.



## □ Step 2

With the radio system on, move the throttle stick and trim on the transmitter to the center. Remove the throttle servo horn from the servo. Rotate the horn so the arm that aligns with the throttle pushrod measures 1/2-inch (13mm) from the center of the horn, which aligns with the outer hole of the servo horn.



## □ Step 3

Move the throttle stick to the closed throttle position at the transmitter. Pull the throttle linkage so the carburetor at the engine is closed. Use a felt-tipped pen to mark the pushrod wire where it crosses the hole on the servo horn that is 1/2-inch (13mm) from the center of the horn.



## □ Step 4

Use the radio to move the servo to the open throttle position. Push the linkage to open the carburetor. The line made in the previous step should align with the same hole on the servo horn. If the line is further forward than the servo horn, you will need to use a longer servo horn or connect the clevis at the carburetor closer to the center of the carburetor. If the line does not move far enough you will need to use a shorter servo horn or connect the clevis at the carburetor to a hole farther away from the center or the arm. Adjust as necessary so the servo movement is correct for your engine.

**Note:** If using a computer radio you can use the travel volume to adjust for minor differences. It is best to set it as close mechanically to result in linear travel of the throttle.



**Step 5**

Once set, use pliers to make a 90-degree bend in the pushrod wire at the mark made.



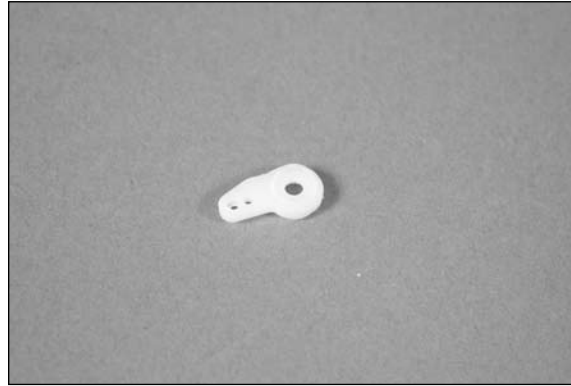
**Step 6**

Use a pin vise and 5/64-inch (2mm) drill bit to enlarge the hole in the servo horn that has aligned for use with your linkage position.



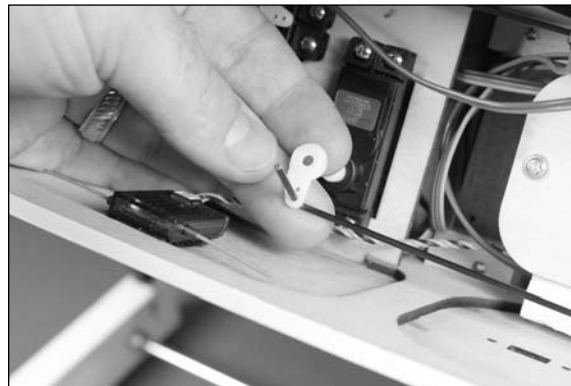
**Step 7**

Remove the servo horn from the servo using a #1 Phillips screwdriver. Use diagonal cutters to remove any unused arms from the horn so they don't interfere with the operation of the servo.



**Step 8**

Slide the pushrod wire through the hole in the servo horn. The horn will fit against the bend in the wire.



**Step 9**

Slide the pushrod snap link on the wire. Rotate the link so it snaps on the wire. You may need to use pliers to snap the link onto the wire.



### Step 10

Use diagonal cutters to trim the excess wire above the link so it does not interfere with the operation of the radio system. Leave a small amount of wire so the pushrod snap link cannot accidentally slip up and over the wire.



### Step 11

Move the throttle stick to the low throttle position. With the carburetor closed, attach the servo horn on the servo using a #1 Phillips screwdriver.



### Step 12

Check the operation of the carburetor using the radio system. The servo should move without any binding at closed or open throttle. If it does, adjust the clevis at the carburetor as necessary, or use the radio travel volume to correct any adjustment issues.

### Step 13

If you are going to step away from your model, make sure to turn off both the transmitter and receiver.

## **Elevator Linkage Installation**

### **Required Parts**

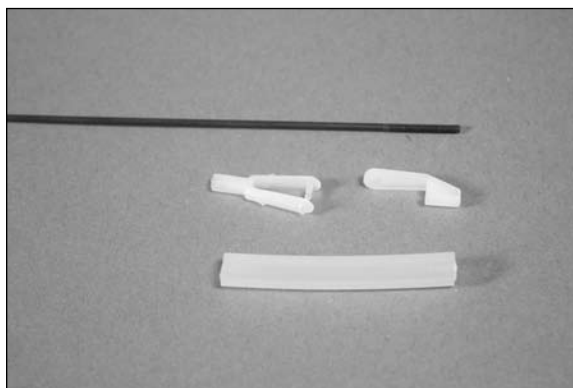
Fuselage	Safety tubing
Clevis	Pushrod snap link
2-56 x 28-inch pushrod wire	

### **Required Tools and Adhesives**

Hobby knife with #11 blade	Pliers
Phillips screwdriver: #1	Ruler
Diagonal cutters	

### Step 1

Locate the items necessary to install the elevator linkage.



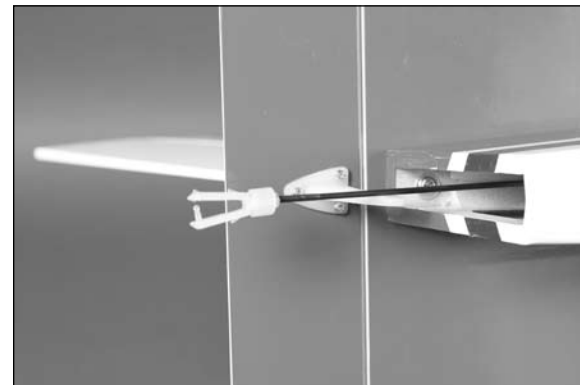
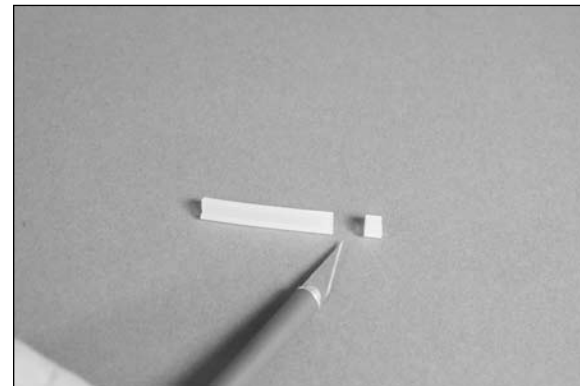
### Step 2

Slide the 2-56 x 28-inch pushrod wire into the tube in the fuselage for the elevator. Make sure the threaded end goes into the tube first.



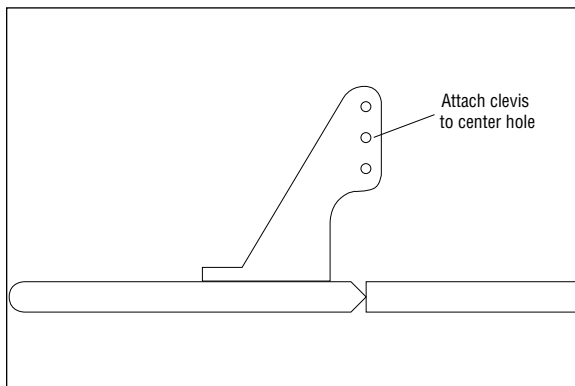
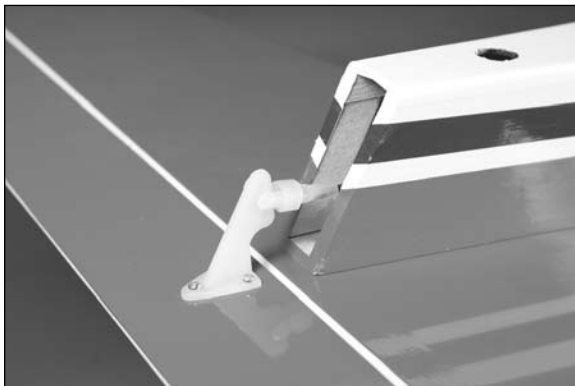
### Step 3

Use a hobby knife to cut a 1/4-inch (6mm) piece from the clear safety tubing. Slide the tubing onto the clevis, and then thread the clevis 10-turns on the elevator pushrod wire as shown.



#### □ Step 4

Connect the clevis to the center hole of the elevator control horn. Slide the safety tubing over the forks of the clevis to prevent it from opening accidentally.



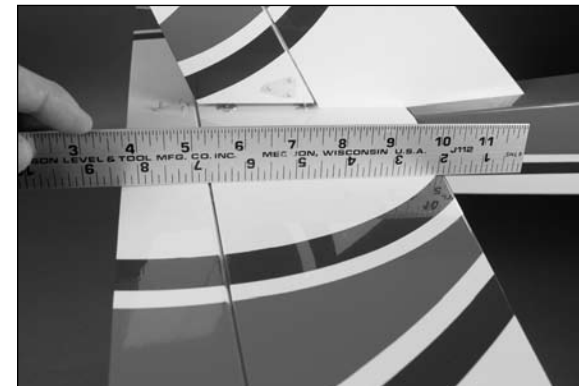
#### □ Step 5

With the radio system on, center the stick and trim for the elevator at the radio. Check that the servo horn on the elevator servo is centered, and that the arm with the hole 1/2-inch (13mm) from the center of the horn is facing toward the elevator pushrod wire.



#### □ Step 6

Use a ruler to make sure the elevator is centered with the stabilizer. Use a felt-tipped pen to mark the pushrod wire where it crosses the hole on the servo horn.



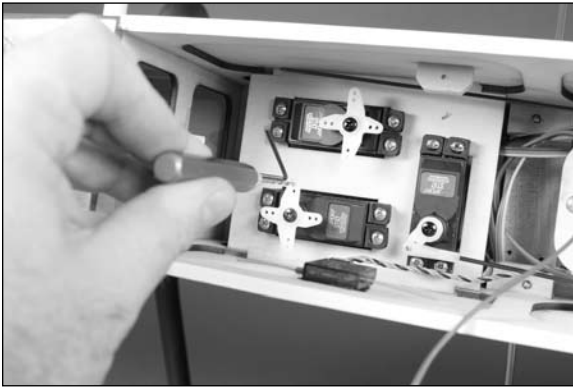
#### □ Step 7

Use pliers to bend the pushrod wire 90-degrees at the mark made in the previous step.



**Step 8**

Use a pin vise and 5/64-inch (2mm) drill bit to enlarge the hole in the servo horn.



**Step 9**

Remove the servo horn from the servo using a #1 Phillips screwdriver. Use diagonal cutters to remove any unused arms from the horn so they don't interfere with the operation of the servo.



**Step 10**

Slide the pushrod wire through the hole in the servo horn. The horn will fit against the bend in the wire.



**Step 11**

Slide the pushrod snap link on the wire. Rotate the link so it snaps on the wire. You may need to use pliers to snap the link onto the wire.



**Step 12**

Use diagonal cutters to trim the excess wire above the link so it does not interfere with the operation of the radio system. Leave a small amount of wire so the pushrod snap link cannot accidentally slip up and over the wire.



**Step 13**

Secure the elevator servo horn to the elevator servo using the screw removed from the servo. Use a #1 Phillips screwdriver to tighten the screw.



**Step 14**

If you are going to step away from your model, make sure to turn off both the transmitter and receiver.

## Rudder and Steering Linkage Installation

### Required Parts

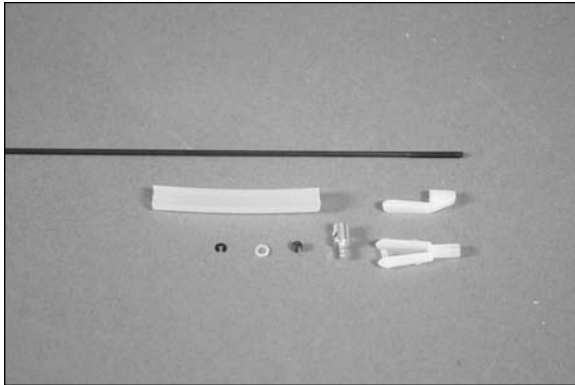
Fuselage	180-degree servo horn
Safety tubing	Clevis
Pushrod snap link	E-clip
Small washer	Pushrod connector
3mm x 3mm setscrew	Transmitter
2-56 x 28-inch pushrod wire	

### Required Tools and Adhesives

Drill bit: 5/64-inch (2mm)	Pin vise
Felt-tipped pen	Pliers
Hobby knife with #11 blade	Ruler
Hex wrench or ball driver: 1.5mm	

### Step 1

Locate the items necessary to install the rudder linkage and to connect the steering pushrod wire to the rudder servo horn.



### Step 2

With the radio system on, center the rudder stick and trim. Remove the standard servo horn from the rudder servo and place a 180-degree horn on the rudder servo. The horn will align perpendicular to the servo centerline as shown. If not, rotate the arm 180-degrees as there are an odd number of splines on the servo output and this usually corrects the alignment issue.



### Step 3

Use a pin vise and 5/64-inch (2mm) drill bit to enlarge a hole on the servo horn that is 9/16-inch (14mm) from the center of the servo horn on the side closest to the steering pushrod wire.



### Step 4

Use a pin vise and 5/64-inch (2mm) drill bit to enlarge a hole on the servo horn that is 1/2-inch (12mm) from the center of the servo horn on the side closest to the rudder pushrod tube.



### Step 5

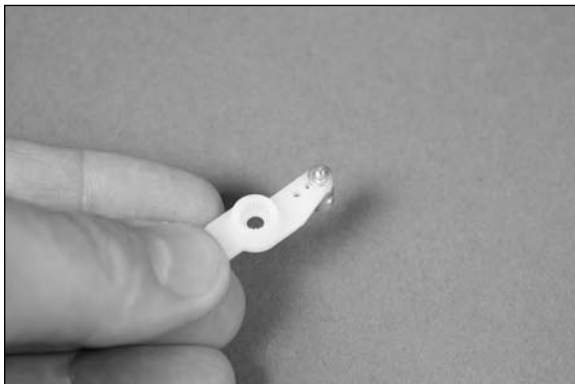
Remove the horn from the servo. Insert the pushrod connector in the outer hole of the servo horn.





**Step 6**

Place the small washer on the opposite side of the horn. The connector is then secured using a small E-clip. Use pliers to snap the E-clip in position.



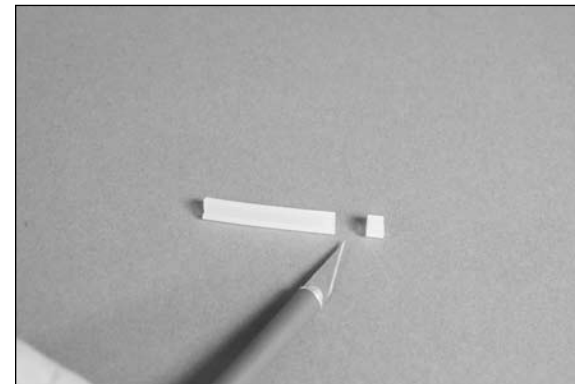
**Step 7**

Slide the 2-56 x 28-inch pushrod wire into the tube in the fuselage for the rudder. Make sure the threaded end goes into the tube first. Use a hobby knife and #11 blade to trim the covering on the fuselage where the pushrod exits.



**Step 8**

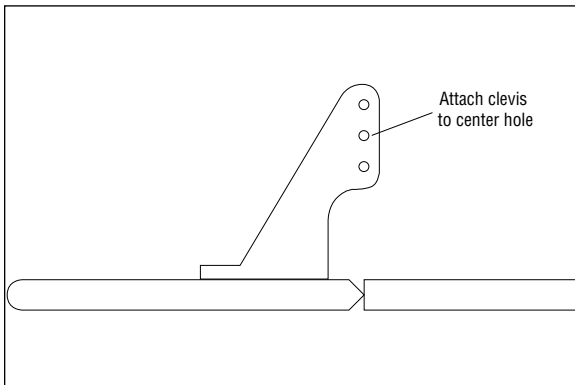
Use a hobby knife to cut a 1/4-inch (6mm) piece from the clear safety tubing. Slide the tubing onto the clevis, and then thread the clevis 10-turns on the rudder pushrod wire as shown.





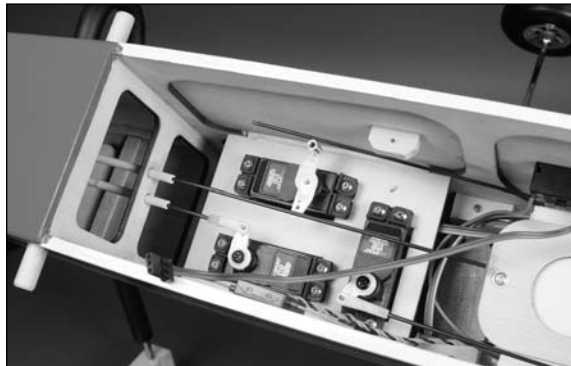
### □ Step 9

Connect the clevis to the center hole of the rudder control horn. Slide the safety tubing over the forks of the clevis to prevent it from opening accidentally.



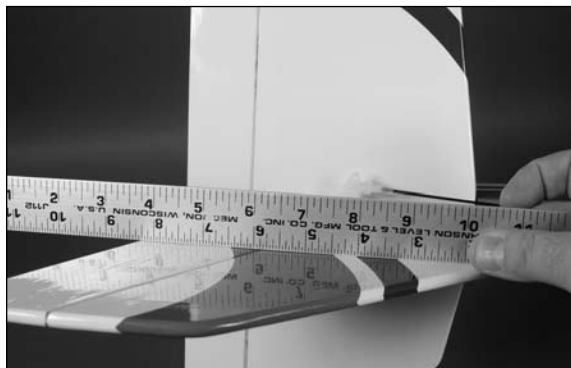
### □ Step 10

Place the servo horn back on the rudder servo. Make sure the horn is aligned correctly as described previously.



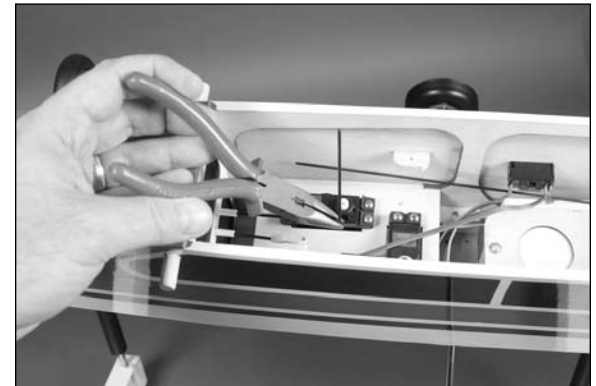
### □ Step 11

Use a ruler to make sure the rudder is centered with the fin. Use a felt-tipped pen to mark the pushrod wire where it crosses the hole enlarged previously on the servo horn.



### □ Step 12

Remove the rudder servo horn. Use pliers to bend the pushrod wire 90-degrees at the mark made in the previous step.



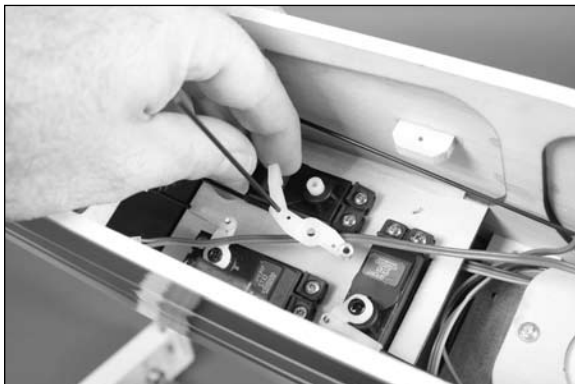
### □ Step 13

Slide the pushrod wire through the hole in the servo horn. The horn will fit against the bend in the wire.



#### □ Step 14

Slide the pushrod snap link on the wire. Rotate the link so it snaps on the wire. You may need to use pliers to snap the link onto the wire.



#### □ Step 15

Use diagonal cutters to trim the excess wire above the link so it does not interfere with the operation of the radio system. Leave a small amount of wire so the pushrod snap link cannot accidentally slip up and over the wire.



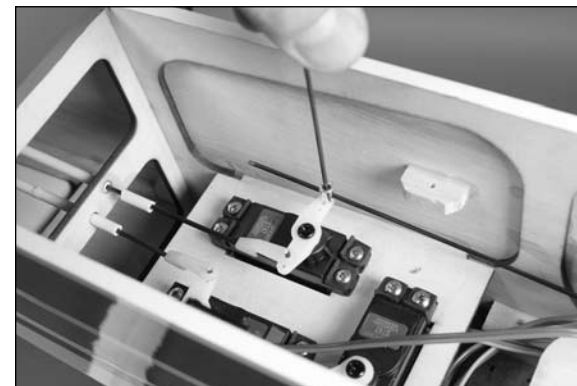
#### □ Step 16

Slide the steering pushrod wire through the pushrod connector. Use the screw from the servo and a #1 Phillips screwdriver to attach the horn to the rudder servo.



#### □ Step 17

Center the nosewheel so it is aligned with the centerline of the fuselage. Use a 3mm x 3mm setscrew and 1.5mm hex wrench to tighten the setscrew that secures the steering pushrod wire. Make sure to use threadlock on the setscrew.



**Note:** If you find that your model does not track straight on the ground, loosen the setscrew to adjust the steering. Do not use the rudder trim to adjust the steering. Use the rudder trim for in-flight corrections only.

#### □ Step 18

If you are going to step away from your model, make sure to turn off both the transmitter and receiver.

## Aileron Servo Installation

### Required Parts

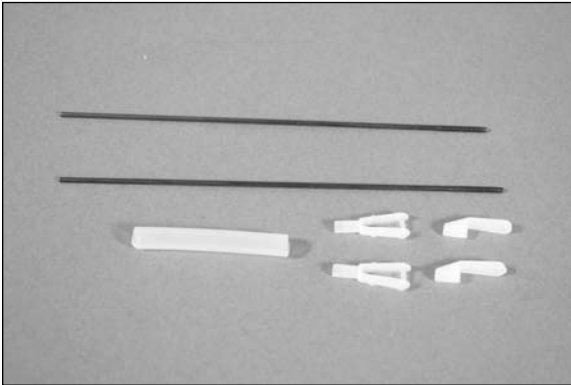
Wing panel, right	Servo with hardware
Clevis (2)	Pushrod snap link (2)
2-56 x 6 $\frac{1}{8}$ -inch pushrod wire (2)	
Safety tubing	

### Required Tools and Adhesives

Drill bit: 5/64-inch (2mm)	Drill
Hobby knife with #11 blade	Pin vise
Ruler	Pliers
Pencil	Thin CA
Phillips screwdriver: #1	

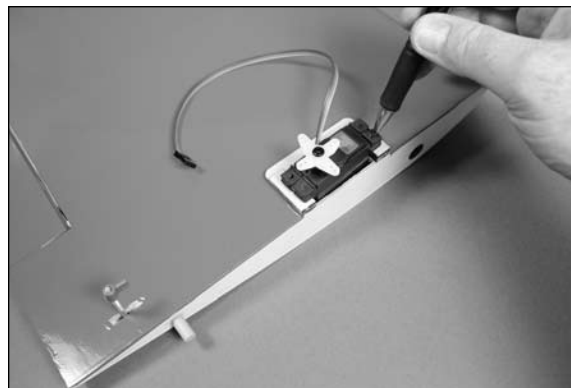
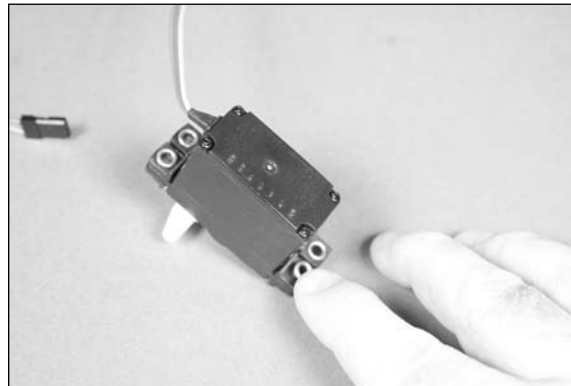
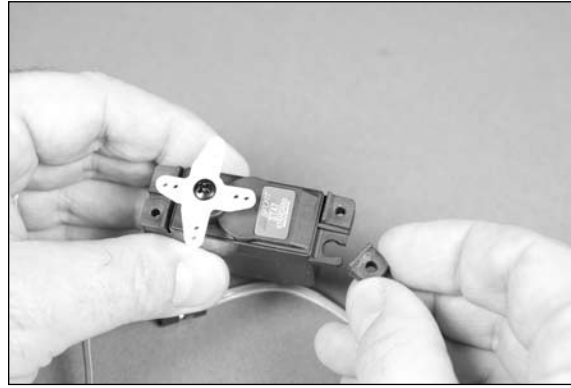
### Step 1

Locate the items necessary to install the aileron servo in the wing.



### Step 2

Install the grommets and brass eyelets in the servo. Place the servo in the wing with the servo output shaft to the trailing edge of the wing. Use a pencil to transfer the positions for the servo mounting screws onto the servo mount.



### Step 3

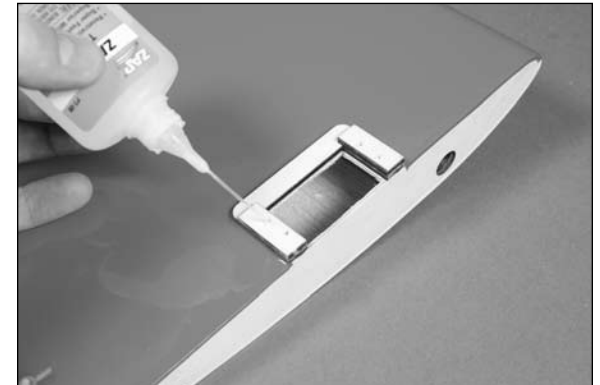
Remove the servo from the wing. Use a drill and 5/64-inch (2mm) drill bit to drill the four holes to mount the servo.



**Hint:** Place the drill bit in the drill as far as possible to avoid accidentally drilling through the top of the wing.

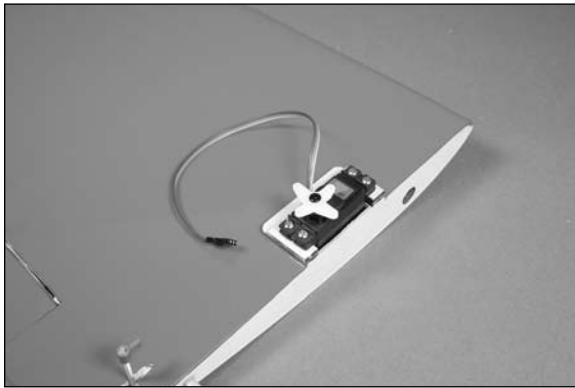
### Step 4

Place 2–3 drops of thin CA in each of the holes to harden the surrounding wood. This will make the screws more secure and less likely to vibrate loose.



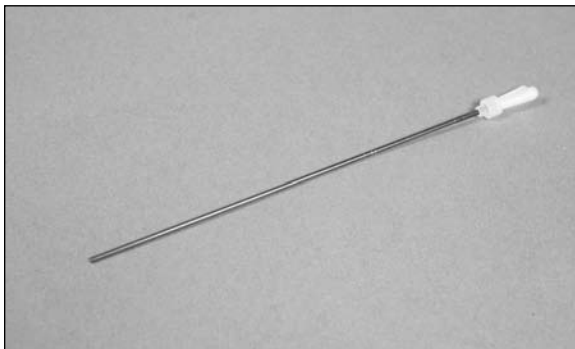
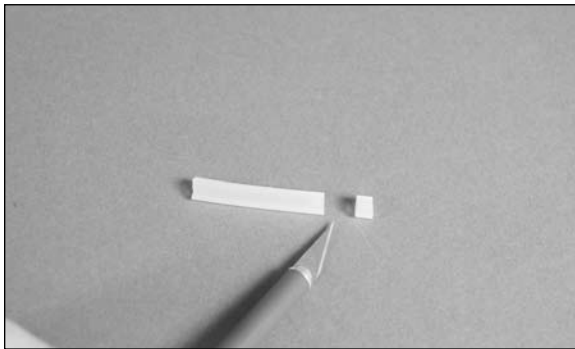
**Step 5**

Use a #1 Phillips screwdriver and the screws provided with the servo to secure the aileron servo in the wing.



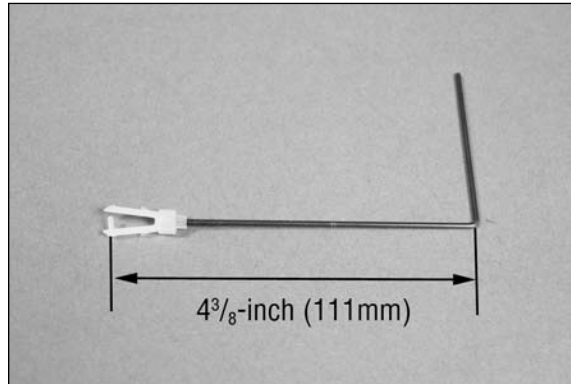
**Step 6**

Use a hobby knife to cut a 1/4-inch (6mm) piece from the safety tubing. Slide the tubing onto a nylon clevis. Thread the clevis 10-turns on a 6-1/8-inch (155mm) threaded pushrod.



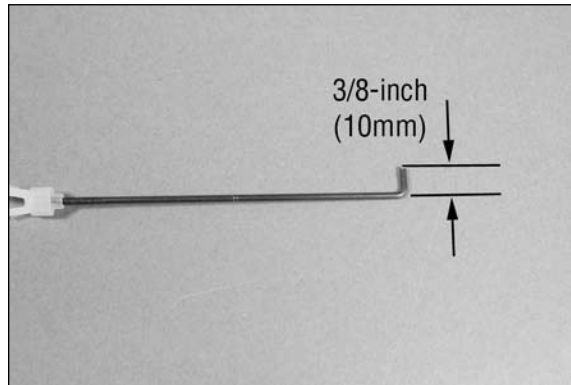
**Step 7**

Use a ruler and measure 4<sup>3</sup>/<sub>8</sub>-inch (111mm) from the pin in the clevis. Use a felt-tipped pen to mark the pushrod wire. Use pliers to make a 90-degree bend in the pushrod wire as shown.



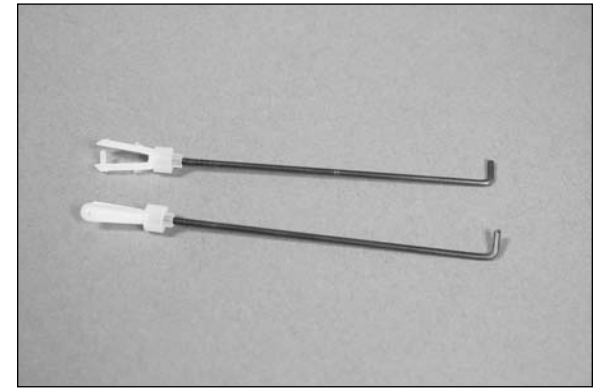
**Step 8**

Measure 3/8-inch (10mm) up from the bend and use diagonal cutters to trim the pushrod wire as shown.



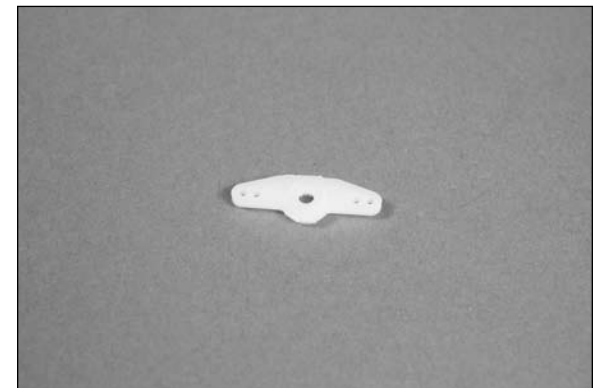
**Step 9**

Repeat Steps 6 through 8 to make a second aileron pushrod wire.



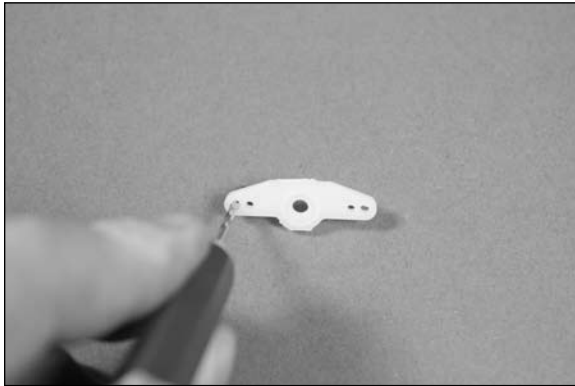
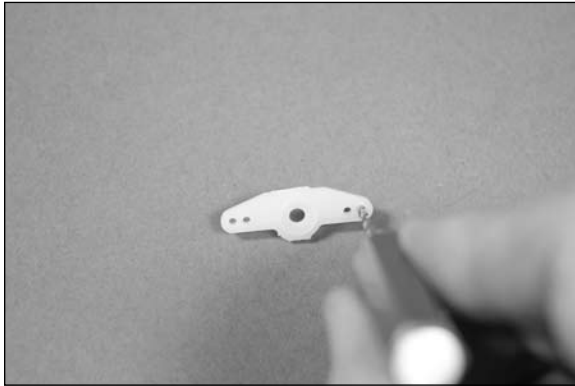
**Step 10**

Remove the servo horn from the aileron servo. Use side cutters to remove the two shorter arms from the servo horn.



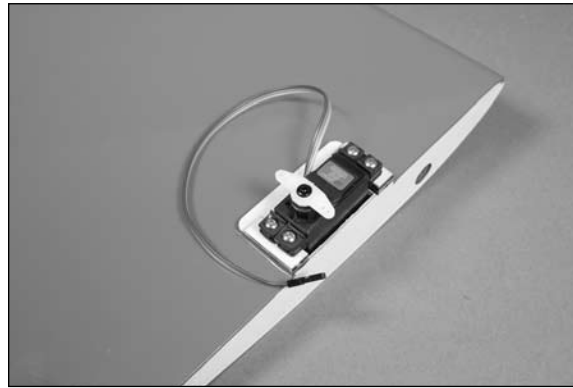
### Step 11

Use a pin vise and 5/64-inch (2mm) drill bit to enlarge the holes in the servo arm that are 1/2-inch (12mm) from the center of the horn as shown.



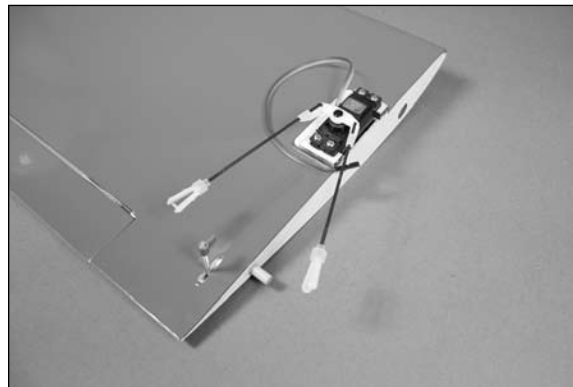
### Step 12

Plug the aileron servo into the extension inside the fuselage. Turn on the transmitter and center the aileron stick and trim. Attach the servo horn to the servo using the screw provided with the servo and a #1 Phillips screwdriver.



### Step 13

Connect the aileron linkages to the holes of the servo horn that were enlarged in the previous steps. Use the pushrod snap links for this step.



## Wing Assembly

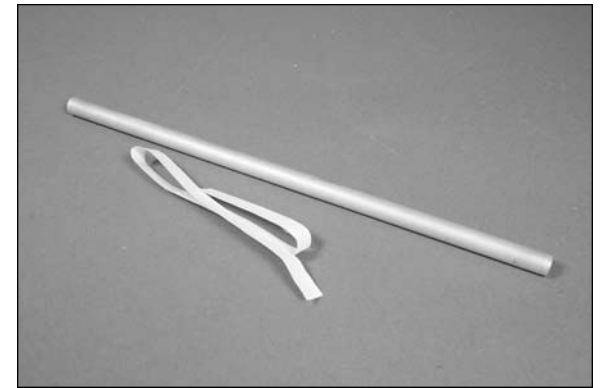
### Required Parts

Wing panel (left and right)      Aluminum wing tube  
Clear tape

**Note:** The following covers the assembly of the wing without the use of glue. The wing, when joined in this method, is very strong and does not need to be glued together. You will want to purchase additional clear tape if you plan on breaking the wing down into two pieces for transportation purposes.

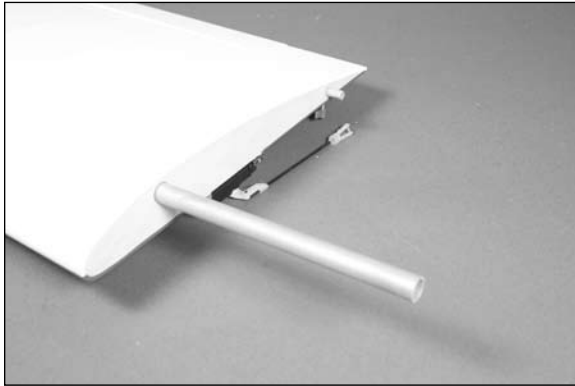
### Step 1

Locate the items necessary to join the left and right wing panels.



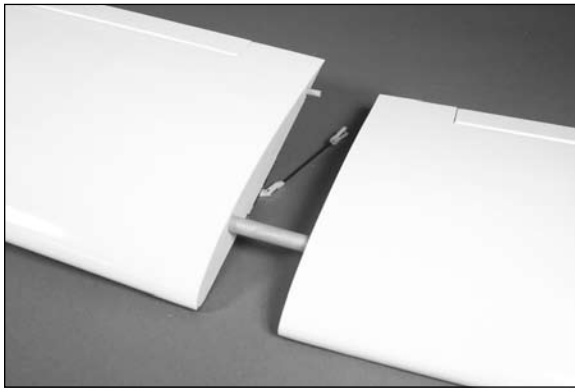
**Step 2**

Slide the wing tube into the wing panel as shown. The wing tube will only slide in halfway, so do not force it in any further than it will slide easily.



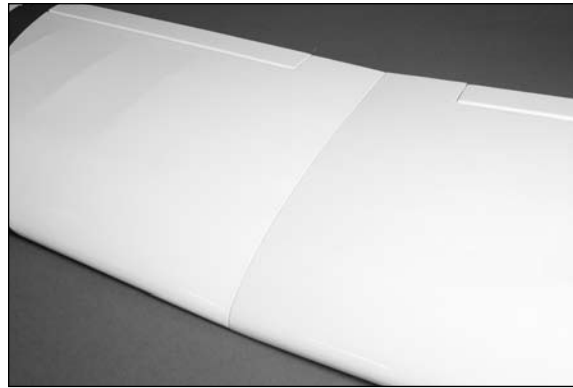
**Step 3**

Slide the remaining wing panel onto the wing tube.



**Step 4**

As you slide the wing panels together, make sure the aluminum pin at the back (trailing edge) of the wing slides into the hole of the receiving wing panel. Slide the two wing panels tightly together so there is no gap between the two.



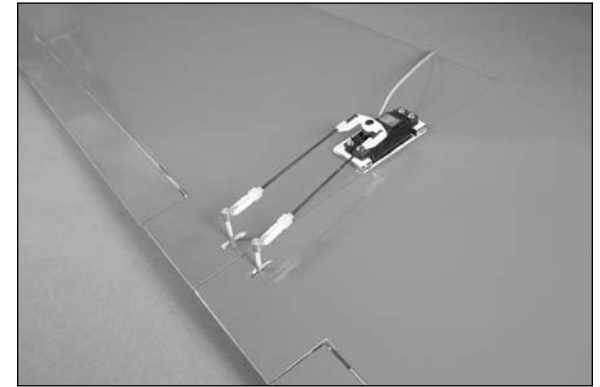
**Step 5**

Use the supplied clear tape to secure the joint between the two wing panels. Make sure to apply the tape to both the top and bottom of the joint.



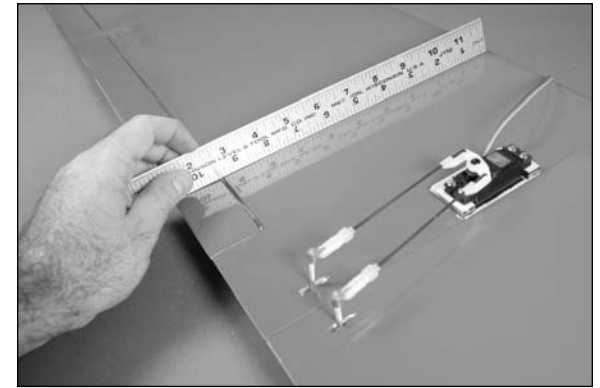
**Step 6**

Connect the clevises from the aileron pushrods to the aileron control horns.



**Step 7**

Plug the aileron servo into the extension coming from the aileron port of the receiver. Turn on the radio system and center the aileron stick and trim. Use a ruler to check that the aileron are in alignment with the bottom of the wing. If they are not, thread the clevis in or out as necessary to align the aileron and wing. Make sure to align both aileron at this time.





## Optional: Gluing the Wing Halves

### Required Parts

Wing panel (left and right)	Aluminum wing tube
Covering (white)	Covering (red)

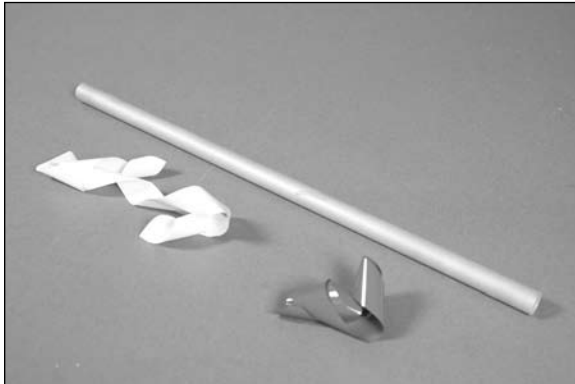
### Required Tools and Adhesives

30-minute epoxy	Mixing cup
Mixing stick	Epoxy brush
Rubbing alcohol	Paper towel
Low-tack tape	Covering iron

**Note:** It is not necessary to glue the wing panels together on your model. This section has been provided in case you opt to do so. Make sure your vehicle has enough room to transport the joined wing before joining the wing panels using this method.

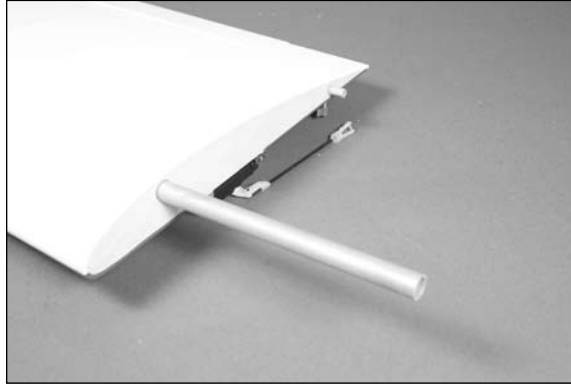
### □ Step 1

Locate the items necessary to join the left and right wing panels.



### □ Step 2

Slide the wing tube into the wing panel as shown. The wing tube will only slide in halfway, so do not force it in any further than it will slide easily.



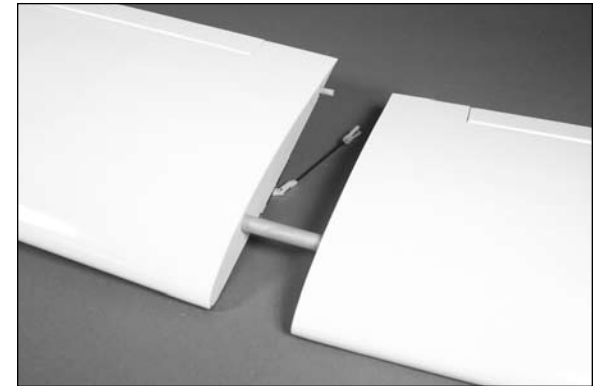
### □ Step 3

Mix 1/2-ounce total (15ML) of 30-minute epoxy. Use an epoxy brush to apply a thin layer of epoxy to each of the wing roots as shown.



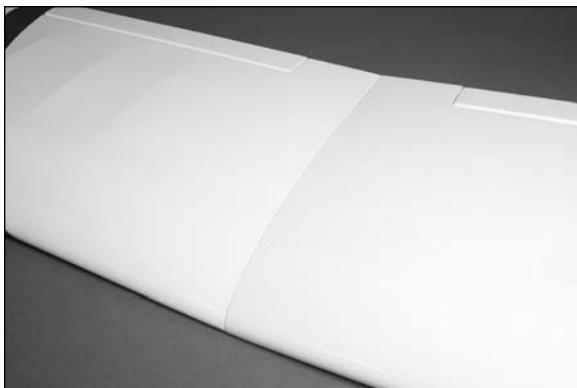
### □ Step 4

Slide the remaining wing panel onto the wing tube.



### □ Step 5

As you slide the wing panels together, make sure the pin at the back (trailing edge) of the wing slides into the hole of the receiving wing panel. Slide the two wing panels tightly together so there is no gap between the two.



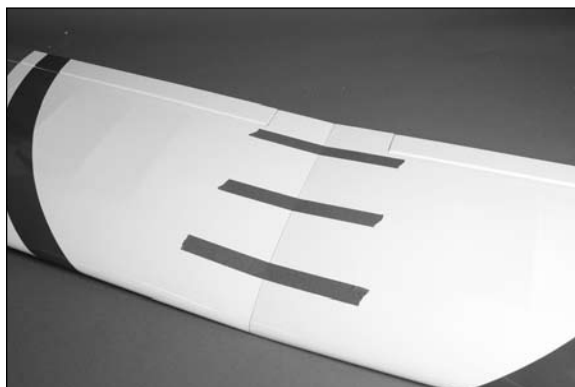
### □ Step 6

Use a paper towel and rubbing alcohol to remove any epoxy that seeps from the joint between the two wing panels.



### □ Step 7

Use tape (low-tack tape suggested) to keep the two wing panels tight against each other until the epoxy is fully cured.



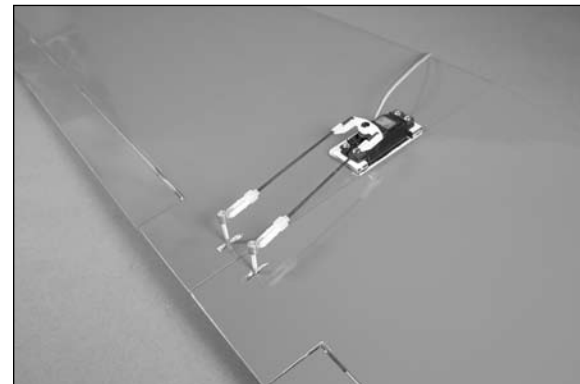
### □ Step 8

After the epoxy has fully cured, use a covering iron to apply the covering to the joint of the wing. Use the red covering on the bottom of the wing, and the white covering on the top of the wing.



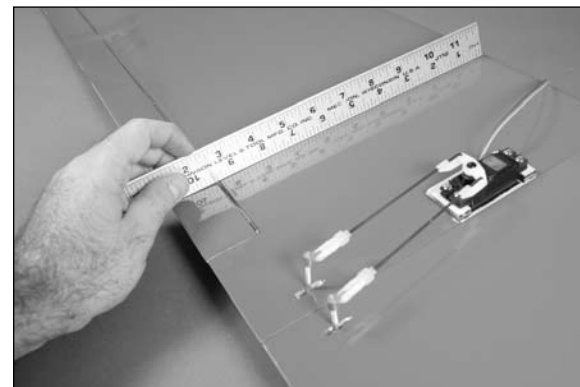
### □ Step 9

Connect the clevises from the aileron pushrods to the aileron control horns. The alignment of the ailerons will be checked later in this manual.



### □ Step 10

Plug the aileron servo into the extension coming from the aileron port of the receiver. Turn on the radio system and center the aileron stick and trim. Use a ruler to check that the aileron are in alignment with the bottom of the wing. If they are not, thread the clevis in or out as necessary to align the aileron and wing. Make sure to align both aileron at this time.



## Wing Installation

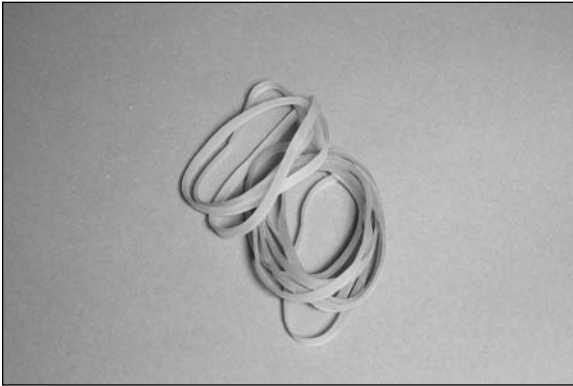
### Required Parts

Wing  
Rubber band (10)

Fuselage

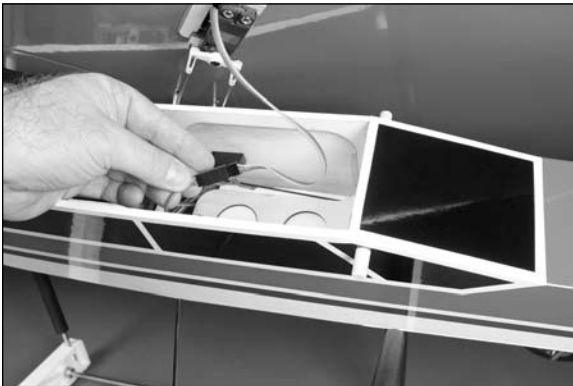
### Step 1

Locate the rubber band to secure the wing to the fuselage.



### Step 2

Locate the aileron extension that is inside the fuselage. Align the colors from the aileron servo lead with the extension so they match, then plug them together.



### Step 3

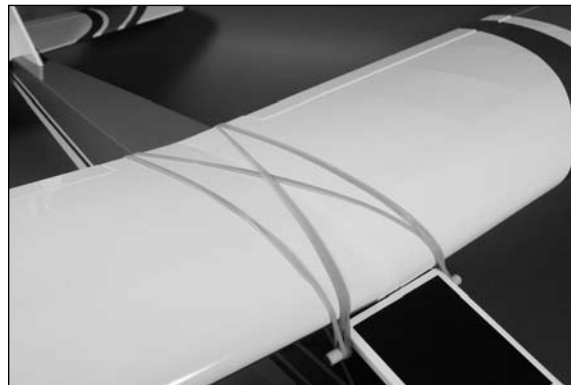
Start securing the wing to the fuselage by installing two of the rubber bands.



**Hint:** Always start with the cross rubber bands. This will keep the wing from twisting on the fuselage when installing the remaining rubber bands.

### Step 4

Install a second set of rubber bands on the wing as shown.



### Step 5

Continue installing a total of six or more of the rubber bands, alternating the direction of each set until they have all been installed.



**Hint:** Always end the rubber band installation by installing the cross rubber bands last. They will help in keeping all the other rubber bands in position on the wing dowels.

**Hint:** After flying, store your rubber bands in a bag with a small amount of baby powder. This will soak up the fuel that is on the rubber bands, making them last longer.

## Checking the Control Surface Movement

### Required Parts

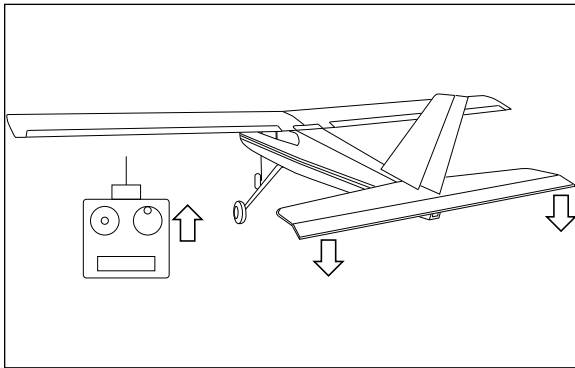
Transmitter

Assembled airframe

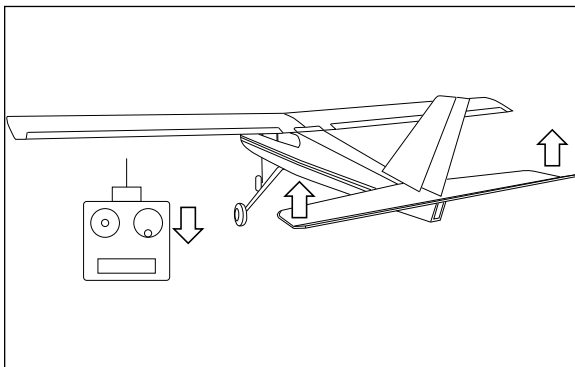
The control direction has been set at the factory. This section has been provided in case any servos or control surfaces are replaced so the control direction can be checked at a later date.

### CHECKING THE ELEVATOR

Check the movement of the elevator with the radio system. Pushing the elevator/aileron stick (right stick on the transmitter) forward will make the airplane elevator move down. This will cause the aircraft to pitch down while in flight.

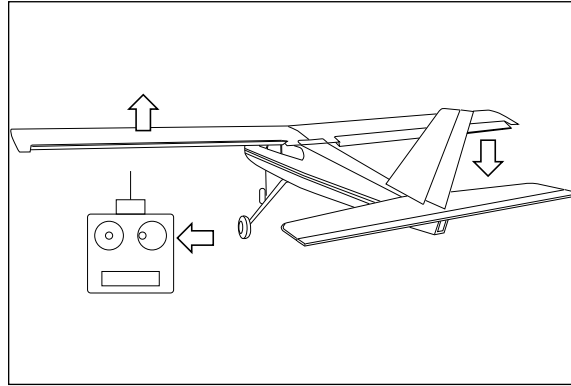


Check the movement of the elevator with the radio system. Pulling the elevator/aileron stick (right stick on the transmitter) back will make the airplane elevator move up. This will cause the aircraft to pitch up in flight.

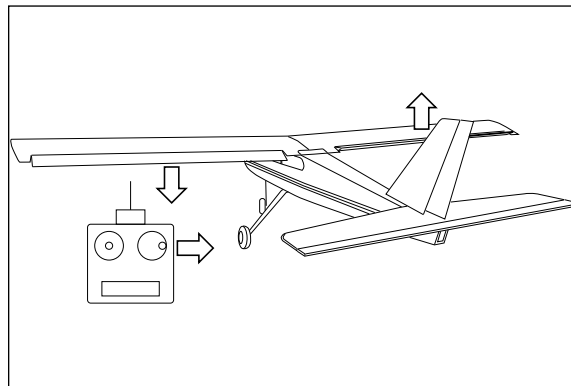


### CHECKING THE AILERONS

Check the movement of the aileron using the transmitter. When the aileron/elevator stick is moved left, the left aileron will move up and the right aileron will move down. This will cause the aircraft to roll left in flight.

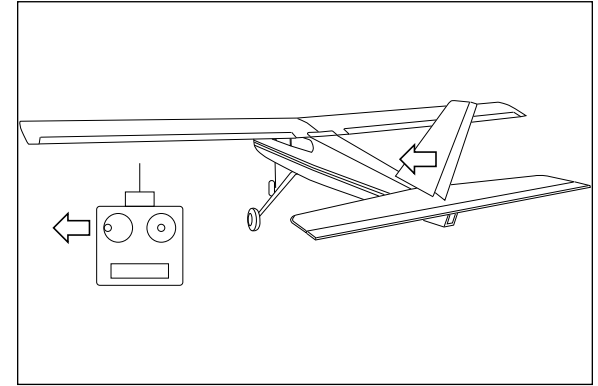


Check the movement of the aileron using the transmitter. When the elevator/aileron stick is moved right, the right aileron will move up and the left aileron will move down. This will cause the aircraft to roll right in flight.

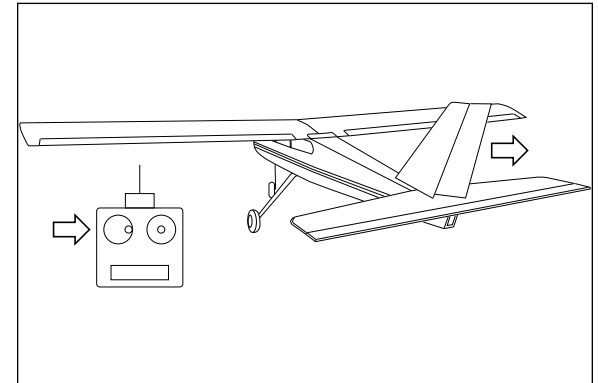


### CHECKING THE RUDDER

Check the movement of the rudder using the transmitter. When the left stick is moved left, the rudder should also move left. This will cause the aircraft to turn left while on the ground and to yaw left while in flight.



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. This will cause the aircraft to turn right while on the ground and to yaw right while in flight.



## Checking the Throttle Operation

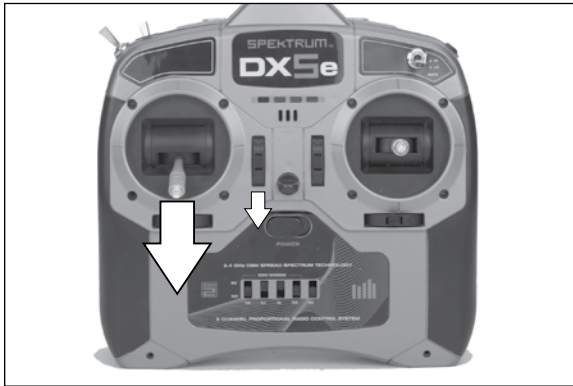
### Required Parts

Fuselage assembly

Transmitter

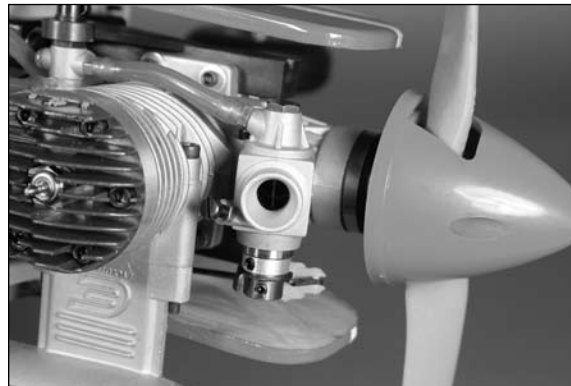
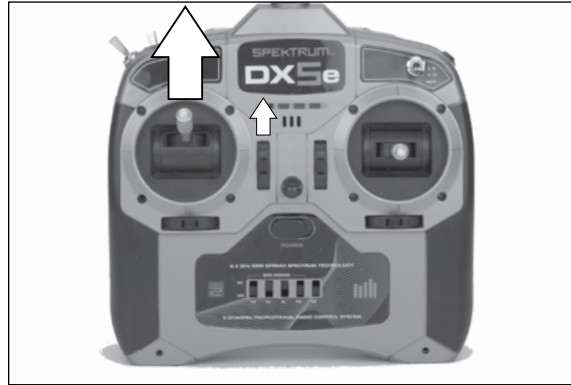
### THROTTLE CLOSED

Move the throttle stick and trim down to the fully closed position as shown. The carburetor should close without binding the throttle servo. If the servo binds, you will need to adjust the clevis at the carburetor by threading it in or out to eliminate any binding.



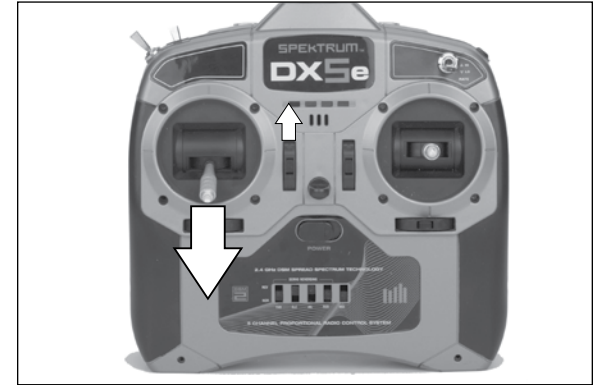
### THROTTLE OPEN

Move the throttle stick and trim up or to the fully open position as shown. The carburetor should open without binding the throttle servo. If the servo binds, you will need to adjust the clevis at the carburetor by threading it in or out to eliminate any binding.



### THROTTLE SET TO IDLE

Move the throttle stick down to the fully closed position. Move the trim lever upward to open the carburetor roughly 1/16-inch (1.5mm). This will be the idle position for your engine. The idle will be fine-tuned at the field so the engine will idle reliably without stalling for slow flight and landing procedures.

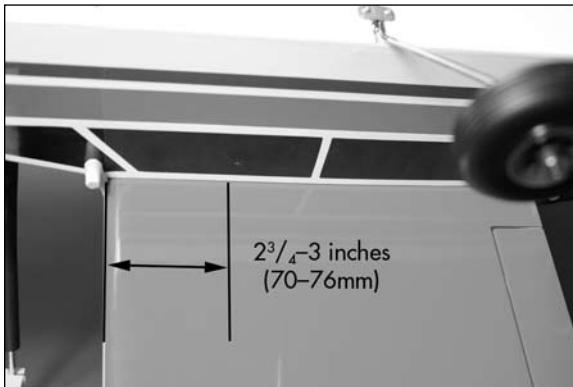


## Balancing Your Alpha ARF

In order for your Alpha 40 ARF to fly correctly, you will need to check the balance of the plane with the fuel tank empty. This is done by supporting the aircraft either using your fingers or by using a balancing stand. Not checking the balance can result in an aircraft that is difficult to fly, which can lead to the possibility of crashing your model.

### Marking the Balance Point

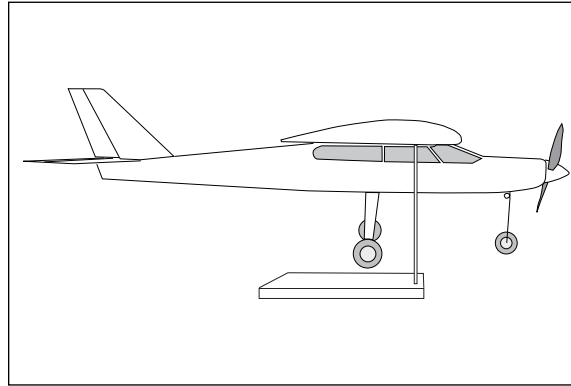
The first step in balancing your Alpha 40 ARF is to mark the location for the balance point. The ideal balance point for the Alpha ARF is  $2\frac{3}{4}$ -3 inches (70-76mm) back from the leading edge against the fuselage. If your plane is only slightly out of balance, try placing the balancing stand towards the nose or tail by 1/8-inch (3mm) and recheck the balance. If it looks good and sits level, then you're good to go.



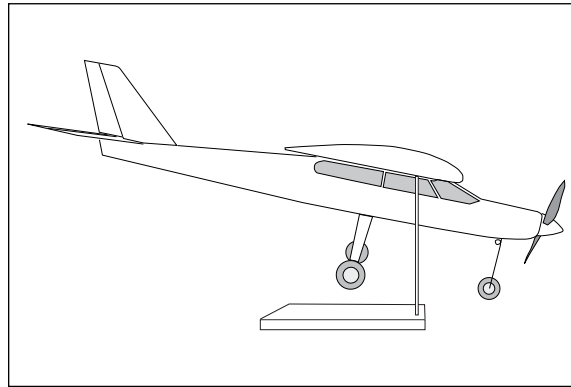
### Lifting the Model and Observations

Make sure the Alpha ARF is balanced using either your fingers or a balancing stand. Place or lift the airplane so it is supported at the marks made in the previous step. The plane will rest level when balanced correctly. If not, weights must be added to correct any balancing problems.

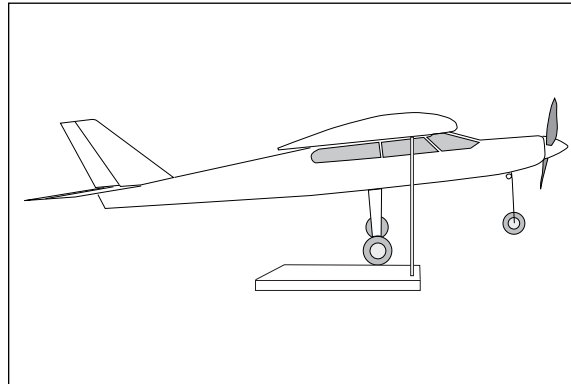
### Balanced Correctly



### Nose Heavy – Add Weight to Tail

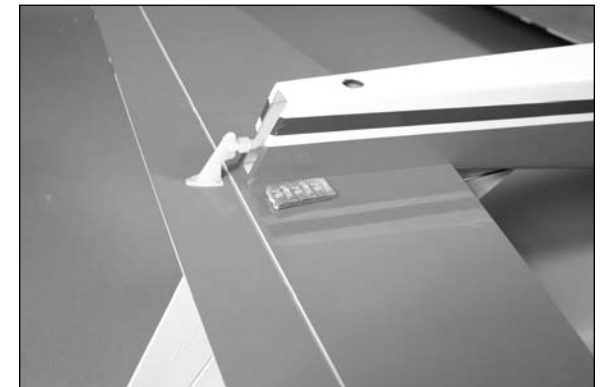


### Tail Heavy – Add Weight to Nose



### Adding Weights to Correct the Balance

Due to manufacturing differences, it is possible that the Alpha 40 ARF may not be balanced properly. Weights can be added to either the tail or the nose of your Alpha ARF if it does not balance properly. Stick-on weights (Self Stick Weight, 6 oz HAN3626) available at your local hobby store are the easiest to use, and come in sizes that are easily placed on your plane. Add just enough weight as necessary to balance your plane. Once the weight has been added, make sure it is secure and will not fall off in flight.





## Control Throws

### Step 1

Check the battery voltage on both the transmitter and the receiver battery packs. Do not fly below 4.3V on the transmitter if you are using a Spektrum transmitter that uses 4-cells to power the transmitter. Do not fly below 9.5V on the transmitter if you are using a JR or Spektrum transmitter that uses 8-cells to power the transmitter. Do not fly if the receiver pack is at or below 4.7V. To do so may crash your aircraft.

### Step 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.

### Step 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.

### Step 4

Use a ruler to adjust the throw of the elevator, ailerons and rudder.

### Aileron High Rate

Up	3/8-inch	(10mm)	(14 degrees)
Down	3/8-inch	(10mm)	(14 degrees)

### Aileron Low Rate

Up	1/4-inch	(6mm)	(8 degrees)
Down	1/4-inch	(6mm)	(8 degrees)

### Elevator High Rate

Up	1/2-inch	(13mm)	(16 degrees)
Down	1/2-inch	(13mm)	(16 degrees)

### Elevator Low Rate

Up	5/16-inch	(8mm)	(10 degrees)
Down	5/16-inch	(8mm)	(10 degrees)

### Rudder High Rate

Left	7/8-inch	(22mm)	(20 degrees)
Right	7/8-inch	(22mm)	(20 degrees)

### Rudder Low Rate

Left	1/2-inch	(13mm)	(11 degrees)
Right	1/2-inch	(13mm)	(11 degrees)

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

These are general guidelines measured from our own flight tests. You can experiment with higher rates to match your preferred style of flying.

**Note:** Travel Adjust, Sub-Trim and Dual Rates are not listed and should be adjusted according to each individual model and preference.

**Once all control throws are set, make sure the safety tubing is slid over the forks of the clevises to prevent them from opening accidentally in flight.**

## Maintaining Your Model

The following is a check list you should follow every time you have completed a flying session with your model. Doing so will keep your aircraft in the best flying condition.

### Clean Up

After a long flying session with your model, you will want to clean it up before loading it into your vehicle to head home. Use cleaner and a paper towel to wipe down the exterior of your plane, removing the fuel residue. Remember, a clean plane will last longer since the fuel won't be allowed to soak into any exposed wood.

### Checking the Propeller

Check to make sure the propeller is tightly secured to the engine. If not, remove the spinner and use a crescent wrench to tighten it back down. If you have had any not-so-great landings, you will want to inspect the propeller for any damage. Small nicks and scratches can quickly become fractures, causing the propeller to be unsafe for flight. Always carry a few spare propellers so a damaged propeller can be replaced at the field, increasing your flying time per trip to the field.

### Checking the Clevises

Inspect the aileron, elevator and rudder clevises to make sure they are connected and in good working order. If you find a clevis is showing signs of wear or broken, replace it with a new clevis. Also check the nylon connectors at the servo for any wear or damage. If they look worn or in bad shape, replace them as well.

### Checking the Control Horns

Inspect the control horns to make sure they have not crushed the wood of the control surface. If so, remove the control horn screws to remove the control horn. Place 2–3 drops of thin CA into each of the screw holes. In addition, use a T-pin to poke small holes in the covering in the area where the control horn mounts, then saturate the area with thin CA. This will harden the wood and give the control horns a solid surface to be mounted to.

### Checking the Wheel Collars

Check the setscrews on the wheel collars for the main and tail wheel to make sure they are not loose. Use a 1.5mm hex wrench to tighten the setscrews. It is suggested if they loosen frequently to remove them, apply threadlock to the setscrews, then secure the wheel collars back into position. The threadlock and hex wrench are included in the kit for this purpose.

## Check the Muffler Bolts

Use a 2.5mm hex wrench (Evolution 2-stroke) or box wrench (Saito 4-stroke) to make sure the hardware holding the muffler onto the engine is tight and has not vibrated loose during flight.

## Check the Engine Mount Bolts

Remove the spinner and propeller from the engine. Remove the exhaust stacks from the fuselage, then remove the cowling from the fuselage. Remove the muffler from the engine, and then use a Phillips screwdriver to make sure the four bolts securing the engine to the mount are tight.

## Flight Preparations

Flight preparations must be checked each time you travel to the flying field. Because your model will encounter a variety of situations, it is best to keep an eye on the various components of your model to keep it in the best flying condition.

### Checking the Frequency

When using a 2.4GHz radio system, follow the guidelines for use of these radio systems at your particular field.

### Checking the Controls

Before starting your engine, check to make sure the controls are operating in the correct directions and the linkages and surfaces are not binding anywhere. Also look at the clevises and clevis retainers to make sure they are secure and will not come loose or fail in flight.

### Fueling your Model

Fill the fuel tank with the proper fuel. Fill the tank by connecting the fuel pump to the line going to the needle valve or to the fuel dot on the side of the cowling. Disconnect the fuel line attached to the pressure fitting of the muffler; your tank is full when fuel begins to run out of the pressure line. Reconnect the fuel lines to the needle valve assembly or insert the plug into the fuel dot and connect the line to the muffler.

**Note:** It is very important to reconnect the lines to the correct place. If they are reconnected incorrectly, the engine will not run properly.

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

- Ensure your batteries have been properly charged prior to your initial flight.
- Keep track of the time the system is turned on so you will know how long you can safely operate your system.
- Consult local laws and ordinances before choosing a location to fly your aircraft.
- Perform a ground range check prior to the initial flight of the day. See the "Daily Flight Checks Section" for information.
- 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 point the transmitter antenna directly toward the model. The radiation pattern from the tip of the antenna is inherently low.
- 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.

## Dual Rate Recommendations

- We recommend that the rudder dual rate be set to Low for takeoff to help minimize overcorrection during the takeoff roll.
- We recommend the rudder dual rate be set to High for landing to help maintain heading as the model transitions from flying speed to taxi speeds.
- Elevator and Aileron dual rates should be adjusted for personal feel and also if there is any unusual wind conditions.

## Daily Flight Checks

### Step 1

Check the battery voltage on both the transmitter and the receiver battery packs. Do not fly below 4.3V on the transmitter if you are using a Spektrum transmitter that uses 4-cells to power the transmitter. Do not fly below 9.5V on the transmitter if you are using a JR or Spektrum transmitter that

uses 8-cells to power the transmitter. Do not fly if the receiver pack is at or below 4.7V. To do so may crash your aircraft.

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

### Step 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.

### Step 3

Ensure that all surfaces are moving in the proper manner.

### Step 4

Perform a ground range check before each day's flying session.

### Step 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 warn you at this time.

### Step 6

Check that all trim levers are in the proper location.

### Step 7

All servo pigtailed 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 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 this aircraft.)

**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 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.

## **Safety, Precautions and Warnings**

As the user of this product, you are solely responsible for operating it in a manner that does not endanger yourself and others or result in damage to the product or the property of others.

Carefully follow the directions and warnings for this and any optional support equipment (chargers, rechargeable battery packs, etc.) you use.

This model is controlled by a radio signal that is subject to interference from many sources outside your control. This interference can cause momentary loss of control so it is necessary to always keep a safe distance in all directions around your model, as this margin will help to avoid collisions or injury.

- Always operate your model in an open area away from cars, traffic or people.
- Avoid operating your model in the street where injury or damage can occur.
- Never operate the model out into the street or populated areas for any reason.
- Never operate your model with low transmitter batteries.
- Carefully follow the directions and warnings for this and any optional support equipment (chargers, rechargeable battery packs, etc.) you use.
- Keep all chemicals, small parts and anything electrical out of the reach of children.
- Moisture causes damage to electronics. Avoid water exposure to all equipment not specifically designed and protected for this purpose.

## **Warranty and Repair Policy**

### **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.

Horizon reserves the right to change or modify this warranty without notice and disclaims all other warranties, express or implied.

(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 all warranty claims.

(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 Product 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 principals).

### WARRANTY SERVICES

### 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 Product Support representative. You may also find information on our website at [www.horizonhobby.com](http://www.horizonhobby.com).

### INSPECTION OR REPAIRS

If this Product needs to be inspected or repaired, please use the Horizon Online Repair Request submission process found on our website or call Horizon to obtain a Return Merchandise Authorization (RMA) number. 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. An Online Repair Request is available at [www.horizonhobby.com](http://www.horizonhobby.com) <http://www.horizonhobby.com> under the Repairs tab. If you do not have internet access, please contact Horizon Product Support to obtain a RMA number along with instructions for submitting your product for repair. When calling Horizon, you will be asked to provide your complete name, street address, email address and phone number where you can be reached during business hours. When sending product into Horizon, please include your RMA number, a list of the included items, and a brief summary of the problem. A copy of your original sales receipt must be included for warranty consideration. Be sure your name, address, and RMA number are clearly written on the outside of the shipping carton.

Notice: Do not ship batteries to Horizon. If you have any issue with a battery, please contact the appropriate Horizon Product Support office.

### 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.

### 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 ½ hour of labor. In addition you will be billed for return freight. Horizon accepts money orders and cashiers checks, as well as Visa, MasterCard, American Express, and Discover cards. By submitting any item to Horizon for inspection or repair, you are agreeing to Horizon's Terms and Conditions found on our website under the Repairs tab.

Country of Purchase	Horizon Hobby	Address	Phone Number/ Email
United States	Horizon Service Center (Electronics and engines)	4105 Fieldstone Rd Champaign, Illinois 61822 USA	877-504-0233 <a href="mailto:productsupport@horizonhobby.com">productsupport@horizonhobby.com</a>
	Horizon Product Support (All other products)	4105 Fieldstone Rd Champaign, Illinois 61822 USA	877-504-0233 <a href="mailto:productsupport@horizonhobby.com">productsupport@horizonhobby.com</a>
United Kingdom	Horizon Hobby Limited	Units 1-4 Ployters Rd Staple Tye Harlow, Essex CM18 7NS United Kingdom	+44 (0) 1279 641 097 <a href="mailto:sales@horizonhobby.co.uk">sales@horizonhobby.co.uk</a>
Germany	Horizon Technischer Service	Hamburger Str. 10 25335 Elmshorn Germany	+49 4121 46199 66 <a href="mailto:service@horizonhobby.de">service@horizonhobby.de</a>
France	Horizon Hobby SAS	14 Rue Gustave Eiffel Zone d'Activité du Réveil Matin 91230 Montgeron	+33 (0) 1 60 47 44 70



## **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.

## **2010 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.









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