

HANGAR 9®

Fly First Class™

Frenzy 100

ASSEMBLY MANUAL



Specifications

Wingspan..... 61 in (1549.5mm)
Wing Area 1066 sq in (6.88 sq dm)
Length..... 63.7 in (1618mm)
Weight..... 8–9.5 lb (3.6 kg–4.3 kg)

Engine..... .91–1.25 Four-Stroke
..... .61–1.00 Two-Stroke
..... Power 60–Power 110 Electric
Radio..... 4-Channel w/5 Servos (4 for electric)

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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 that the step will require repeating, such as for a right or left wing panel, two servos, etc. Remember to take your time and follow the directions.

Required Tools and Adhesives

Tools

- Rotary tool (Dremel)
- T-pins
- File
- Mixing sticks
- Ruler
- Solder
- Soldering iron
- Tape
- Phillips screwdriver
- Felt-tipped pen
- Rubbing alcohol
- Hex wrench: .05-inch, 3/32-inch
- Drill bit: 1/16-inch (1.5mm), 5/64-inch (2mm), 11/64-inch (4.5mm)
- Clamp
- Adjustable wrench
- Epoxy brushes
- Mixing cups
- Square
- Flat screwdriver
- 1/4-inch (6mm) foam
- Hobby knife
- Drill
- Paper towels

Adhesives

- Thin CA (PAAPT08)
- 30-Minute Epoxy (HAN8002)
- CA Remover/Debonder (PAAPT16)
- Medium CA (PAAPT02)
- Formula 560 Canopy Glue (PAAPT56)
- Pacer Z-42 Threadlock (PAAPT42)

UltraCote Covering Colors

- | | | | |
|----------|---------|----------------|---------|
| • Orange | HANU877 | • White | HANU870 |
| • Silver | HANU881 | • Pearl Purple | HANU847 |

Before Starting Assembly

Before beginning the assembly of the Frenzy 100, 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 sealing iron to remove them. Use caution while working around areas where the colors overlap to prevent separating the colors.



HAN101 – Sealing Iron

HAN141 – Sealing Iron Sock



HAN100 – Heat Gun

HAN150 – Covering Glove

Radio and Power Systems Requirements

- 4-channel radio system (minimum) w/receiver
- 6-Inch Servo Lead Extension (JRPA095) (2)
- 18-inch Servo Lead Extension (JRPA099) (3)
- Y-harness (Ailerons) (JSP98020) (Required when using 4-channel radio)
- DS821 Digital Sport Hi-Torque Servo (JRPS821) (2) or equivalent for elevator
- ST125 Metal Gear Servo (JSP20070) (3) or equivalent for ailerons and rudder
- 537 Standard Servo (JRPS537) (1) or equivalent for throttle
- Large Servo Arms (JRPA212) (3 pkgs)
- JR Charge Jack Switch (JRPA004)

The elevator installation will require:

Two servos and mixing through the radio

Or

Two servos and a JR® MatchBox™ (JPA0900) or a 6" standard reversing Y-harness (EXRA320)

Or

A standard rotation servo and a reverse rotation servo and a standard Y-harness

Recommended JR, JR SPORT™ and Spektrum Systems

- XP9303
- DX7
- XS600
- XP7202
- XP6102

Recommended Setup–Glow

- Saito™ 125 AAC with Muffler (SAIE125A or SAIE125AGK)
- APC Propeller 15x6 (APC15060) to 16x4 (APC16040)
- 2 1/2-inch TruTurn Spinner (TRU2502BW)
- Fuel Dot Filler (HAN115)

Recommended Setup–Electric

- E-flite® Power 110 BL Outrunner Motor (EFLM4010A)
- Castle Creations 110A ESC (CSEPHX110HV)
- 2 Thunder Power 4S or 5S Li-Po Battery Packs (THP38504SX or THP38505SX)
- APC Propeller 17x8 (APC17080E) to 18x8 (APC18080E)
- 2 1/2-inch TruTurn Spinner (TRU2502)



JR XP6102



JR XP9303



Spektrum DX7



Saito FA1.25A
SAIE125AGK



E-flite Power 110
EFLM4110A

FS One

With FS One® you get more than photorealistic fields, gorgeous skies and realistic-looking aircraft. You get incredibly advanced aerodynamic modeling that simulates every possible aspect of real-world flight.



HANS2000

Warranty Period

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

Limited Warranty

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

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

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

Damage Limits

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

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

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

Safety Precautions

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

Questions, Assistance, and Repairs

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

Inspection or Repairs

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

Warranty Inspection and Repairs

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

Non-Warranty Repairs

Should your repair not be covered by warranty the repair will be completed and payment will be required without notification or estimate of the expense unless the expense exceeds 50% of the retail purchase cost. By submitting the item for repair you are agreeing to payment of the repair without notification. Repair estimates are available upon request. You must include this request with your repair. Non-warranty repair estimates will be billed a minimum of ½ hour of labor. In addition you will be billed for return freight. Please advise us of your preferred method of payment. Horizon accepts money orders and cashiers checks, as well as Visa, MasterCard, American Express, and Discover cards. If you choose to pay by credit card, please include your credit card number and expiration date. Any repair left unpaid or unclaimed after 90 days will be considered abandoned and will be disposed of accordingly. **Please note: non-warranty repair is only available on electronics and model engines.**

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

Horizon Service Center
4105 Fieldstone Road
Champaign, Illinois 61822

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

Horizon Product Support
4105 Fieldstone Road
Champaign, Illinois 61822

Please call 877-504-0233 with any questions or concerns regarding this product or warranty.

Safety, Precautions, and Warnings

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 advisable 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 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.) that 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.

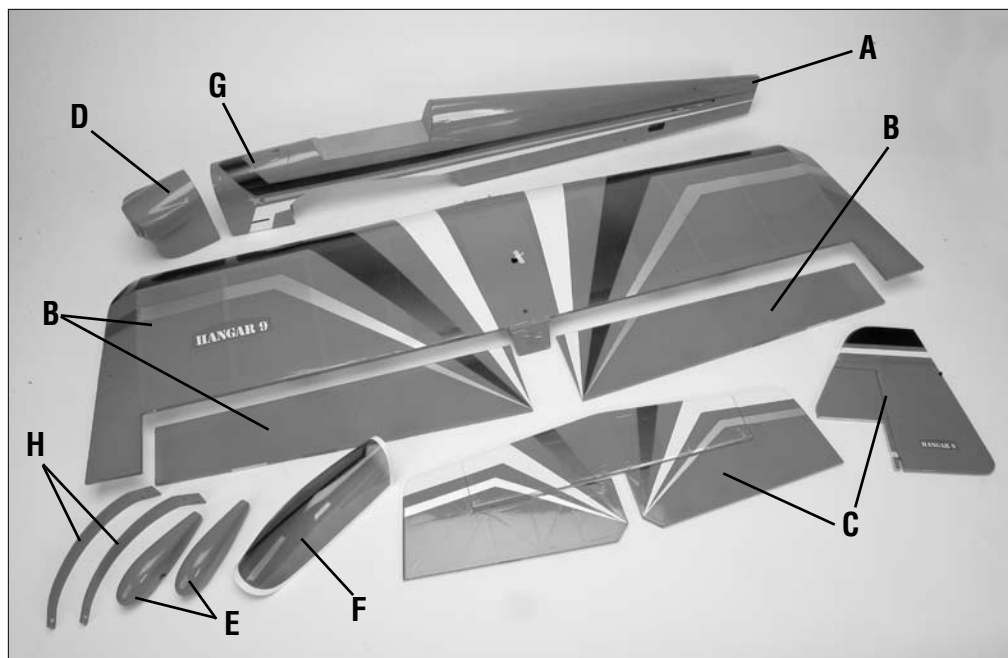
Contents of Kit

Replacement Parts

A. HAN4701	Fuselage w/Hatch
B. HAN4702	Wing w/Ailerons
C. HAN4703	Tail Set
D. HAN4704	Cowl
E. HAN4705	Wheel Pants
F. HAN4706	Canopy
G. HAN4707	Hatch
H. HAN4708	Landing Gear w/o Wheels

Items Not Shown

HAN4709	Tail Wheel Set
HAN4710	Decal
HAN4711	Pushrod set
HAN4712	Painted Fiberglass Pilot Figure



Stabilizer and Fin Installation

Required Parts

- Fuselage
- Stabilizer
- 1/4-20 x 2-inch nylon bolt
- Wing
- Fin

Required Tools and Adhesives

- 30-minute epoxy
- Mixing stick
- Ruler
- Square
- Hobby knife
- Rubbing alcohol
- Epoxy brush
- Mixing cup
- Felt-tipped pen
- Flat screwdriver
- Paper towels

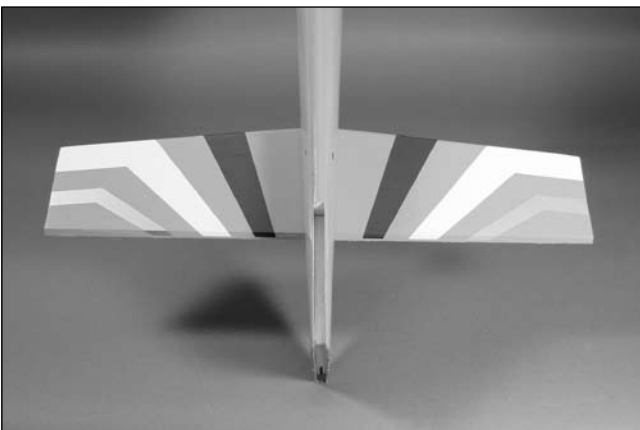
□ Step 1

Attach the wing to the fuselage using the 1/4-20 x 2-inch nylon bolt.



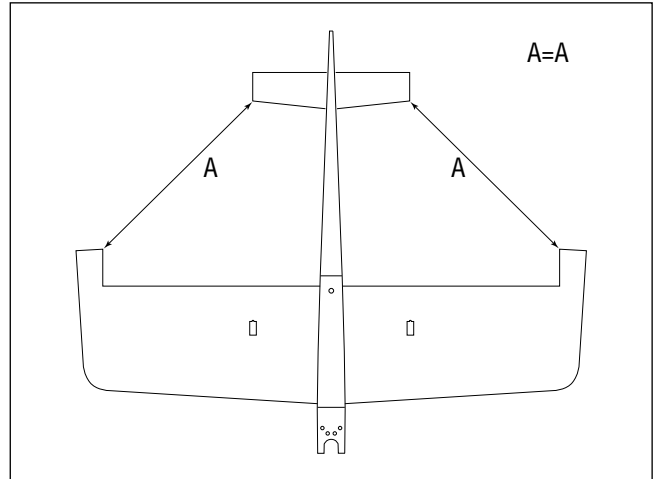
□ Step 2

Slide the stabilizer into the slot in the fuselage. Measure each side to center the stabilizer in the slot.



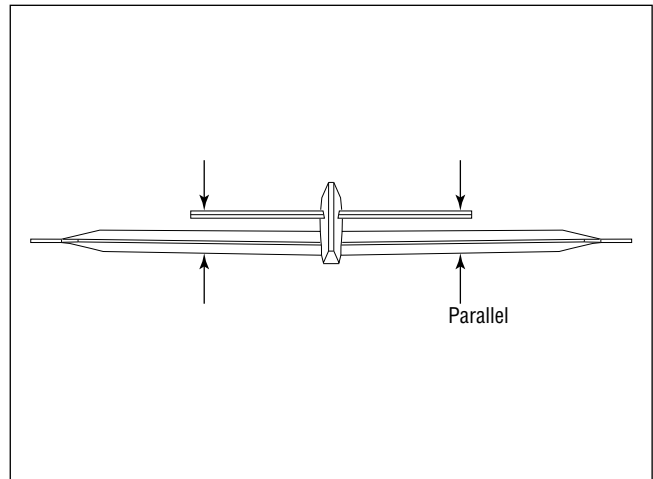
□ Step 3

Measure from each wing tip to the tips of the stabilizer. The stabilizer is aligned when both measurements are equal as shown.



□ Step 4

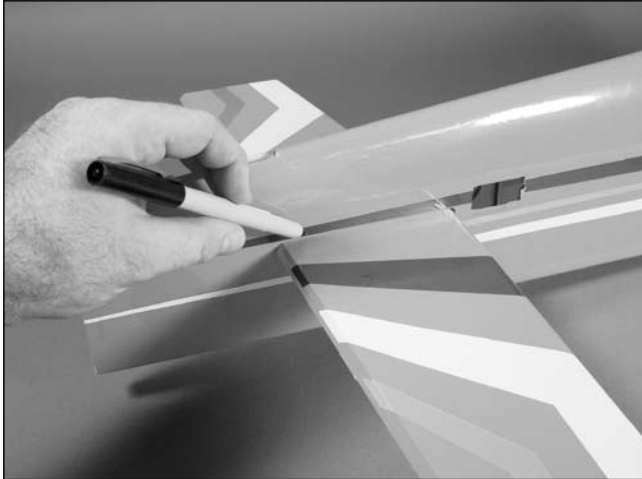
Check that the stabilizer is parallel to the wing. If not, lightly sand the slot in the fuselage until the stabilizer rests parallel to the wing.



Stabilizer and Fin Installation

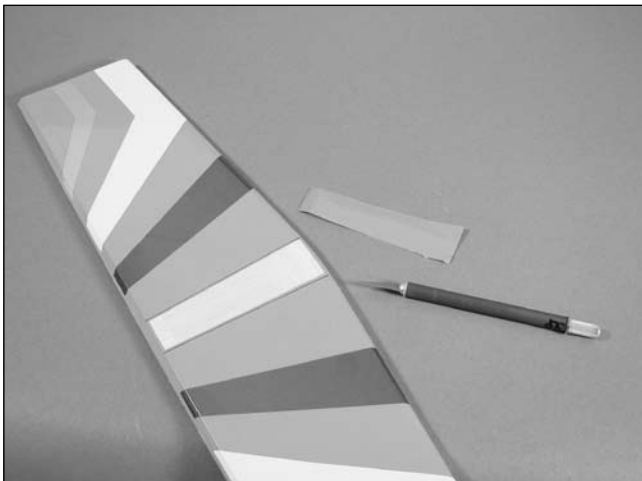
□ Step 5

Double-check the alignment of the stabilizer as described in Steps 1 through 4. Use a felt-tipped pen to trace the outline of the fuselage onto the stabilizer.



□ Step 6

Use a hobby knife with a new #11 blade to cut inside the lines drawn in the previous step. Use care not to cut into the underlying wood of the stabilizer.



Note: You can also use a soldering iron or hot knife to help in preventing cutting into the underlying wood and weakening the stabilizer.

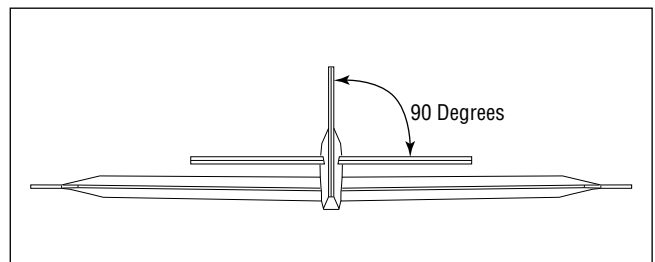
□ Step 7

Mix up 1/2-ounce (15ml) of 30-minute epoxy. Apply the epoxy to the exposed wood of the stabilizer on both the top and bottom. Slide the stabilizer into position and check its alignment. Use paper towels and rubbing alcohol to remove any excess epoxy from the fuselage and stabilizer.



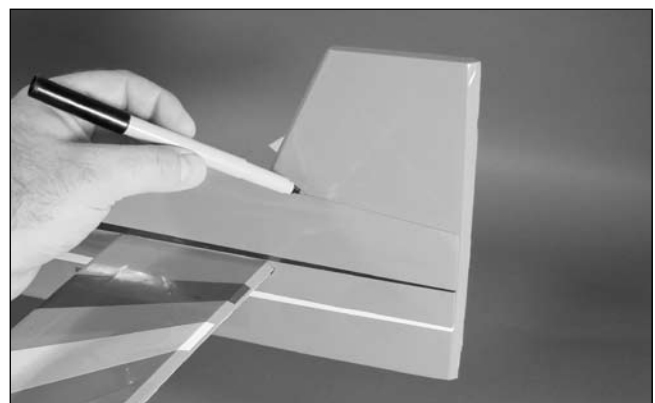
□ Step 8

Slide the fin in position and check that it is square to the wing and stabilizer. You can sand the fuselage slightly to correct any alignment problems.



□ Step 9

Prepare the fin in the same manner as the stabilizer. Use 30-minute epoxy to glue the fin to the fuselage.



Hinging the Control Surfaces

Required Parts

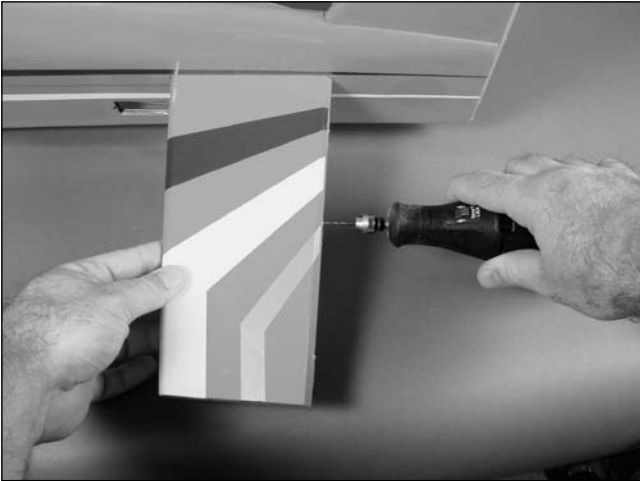
- Fuselage
- Elevator (2)
- Tail wheel assembly
- Wing
- Rudder
- CA hinge (17)

Required Tools and Adhesives

- Rotary tool
- Thin CA
- Drill bit: 1/16-inch (1.5mm)
- T-pins
- Steady hands

□ Step 1

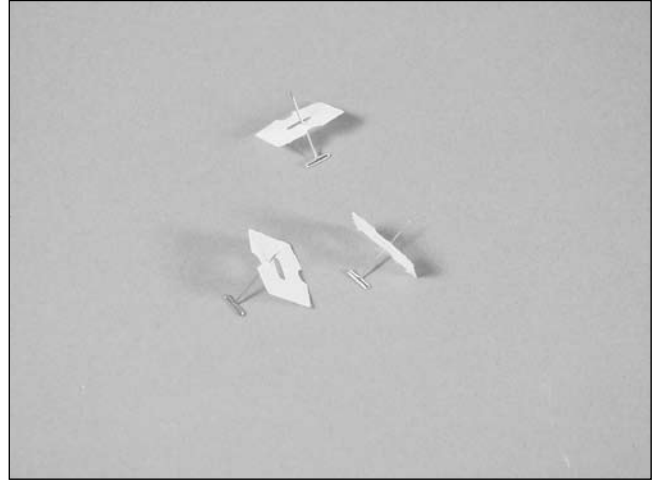
Use a rotary tool and a 1/16-inch (1.5mm) drill bit to drill a hole in the center of each hinge slot. There are three slots for the stabilizer/elevator, three for the rudder/fin and four for each aileron/wing combination.



Note: The hole will create a tunnel for the CA which allows the CA to penetrate farther into the hinge, providing a better bond than if the hole was not drilled.

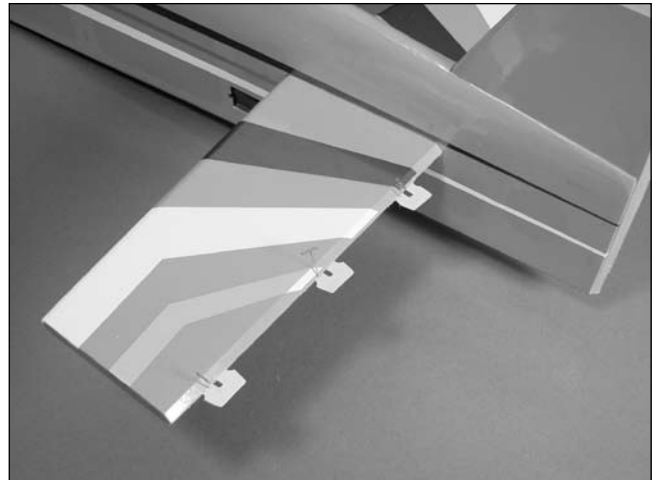
□ Step 2

Place a T-pin in the center of three of the hinges.



□ Step 3

Slide the hinges into the stabilizer as shown.

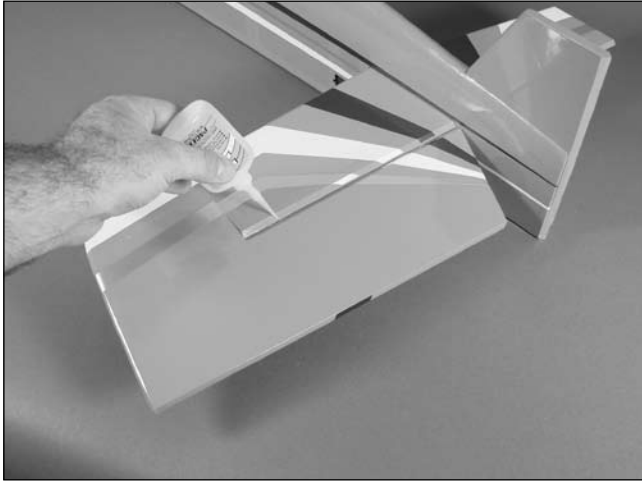


Hint: You can use a hobby knife to enlarge the slot ever so slightly if you are having difficulty getting the hinge into the slot.

Hinging the Control Surfaces

□ Step 4

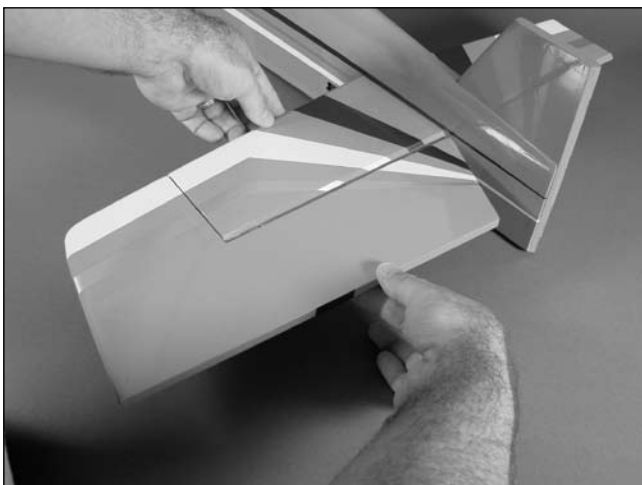
Slide the elevator into position on the hinges. The elevator should be tight against the hinge line. Also check that the balance tab of the elevator does not bind at the stabilizer. Use thin CA to soak each hinge, both top and bottom. Allow the CA to fully cure before proceeding.



Note: Do not use accelerator when installing the hinges. The CA must be allowed to soak into the hinge to provide the best bond between the hinge and surrounding wood.

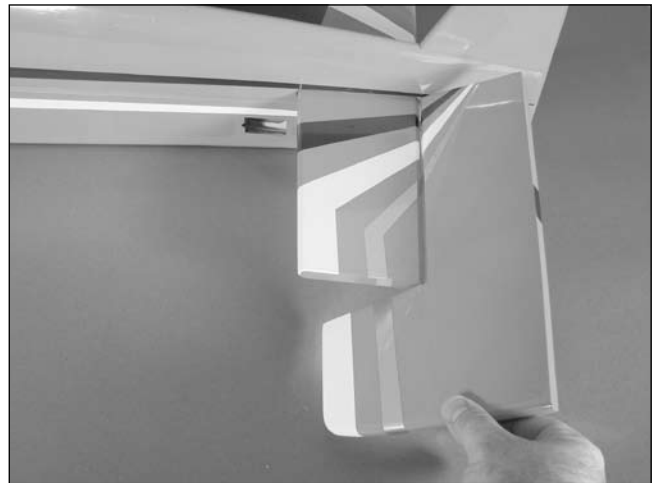
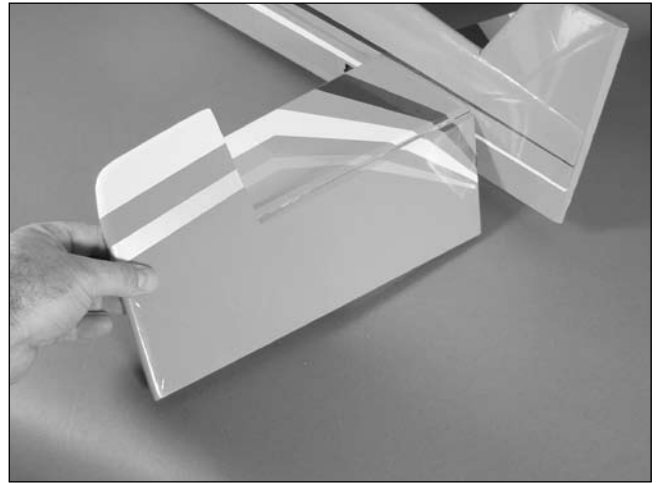
□ Step 5

Once the CA is fully cured, pull on the stabilizer and elevator to make sure the hinges are secure.



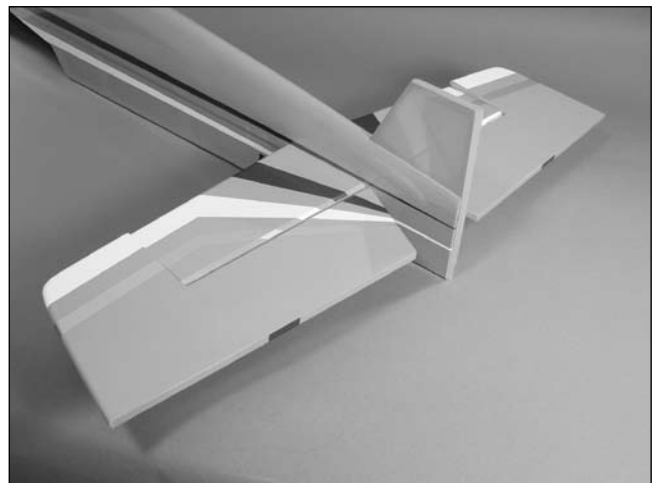
□ Step 6

Move the elevator through its range of motion, both up and down, to break in the hinges.



□ Step 7

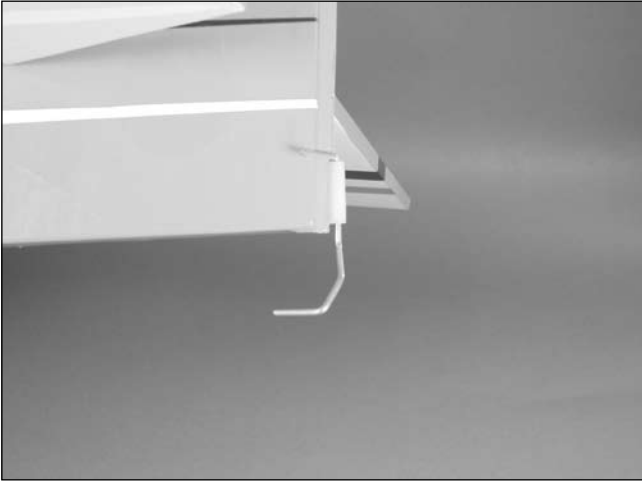
Use three more hinges to attach the remaining elevator to the stabilizer as shown.



Hinging the Control Surfaces

Step 8

Use 30-minute epoxy to secure the tail wheel assembly to the fuselage as shown.



Hint: A small amount of petroleum jelly at the top and bottom of the nylon bushing where the wire enters and exits will help in preventing the epoxy from entering the bushing and gluing the wire to the bushing.

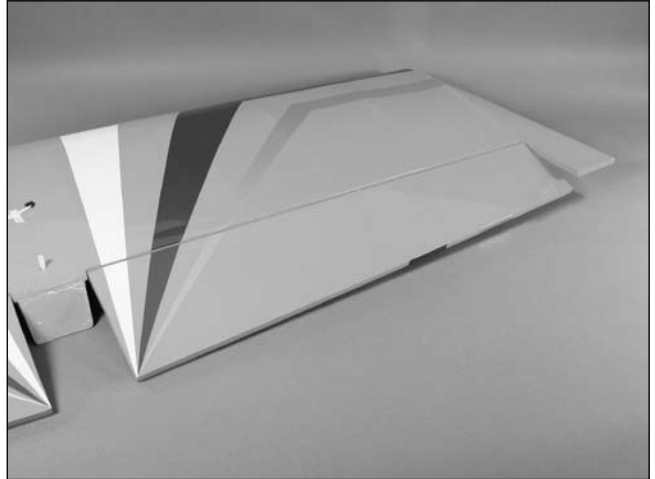
Step 9

Follow the same procedure as the elevators to secure the rudder to the fin. You will need to use 30-minute epoxy to glue the wire from the tail wheel assembly into the rudder.



Step 10

All that remains is to hinge the ailerons. They each use four hinges, and the only item to watch for is binding of the aileron at the wing tip.



Landing Gear Installation

Required Parts

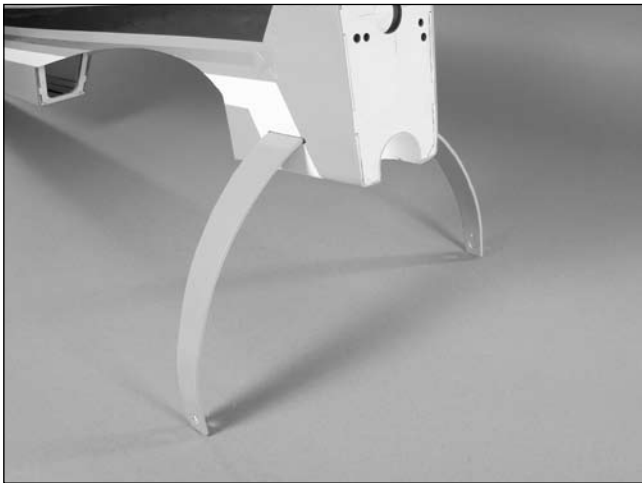
- Fuselage
- #8 washer (4)
- 5/32-inch wheel collar (4)
- #4 washer (2)
- Landing gear axle w/nut (2)
- Tail wheel
- Main wheel (2)
- 4-40 setscrew (2)
- Main landing gear (right and left)
- Wheel pant (right and left)
- 4-40 x 3/8-inch socket head screw (2)
- 3mm x 8mm machine screw (4)
- 1/16-inch wheel collar (2)
- 8-32 x 3/4-inch machine screw (4)

Required Tools and Adhesives

- Phillips screwdriver
- File
- Adjustable wrench
- Hex wrench: .050-inch, 3/32-inch

□ Step 1

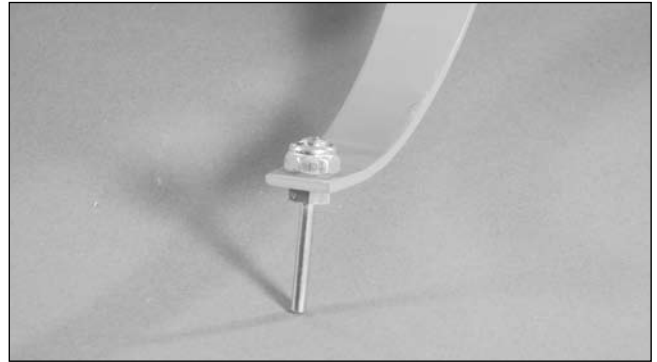
Attach the landing gear to the fuselage using four 8-32 x 3/4-inch machine screws and four #8 washers. The gear can only be installed in one direction.



Note: Use threadlock on the screws to prevent them from vibrating loose in flight.

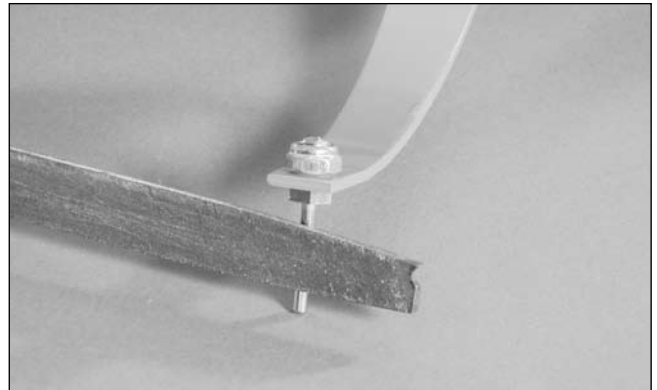
□ Step 2

Attach the landing gear axles to the landing gear.



□ Step 3

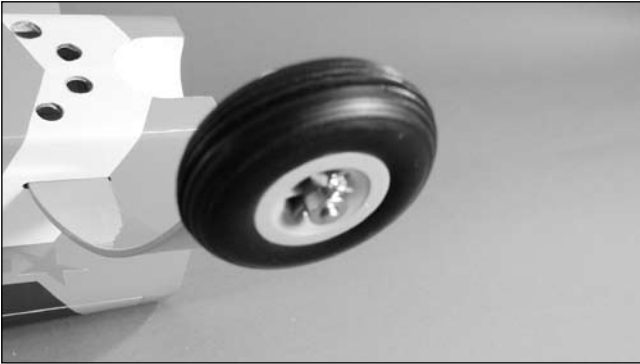
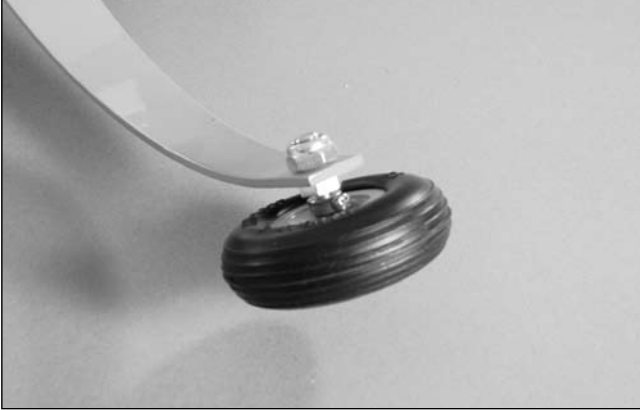
Use a file to create a flat on the bottom of each axle. This will give the screws holding the wheel collars an area to tighten onto and will aid in preventing vibrations from loosening the wheel collar screws.



Landing Gear Installation

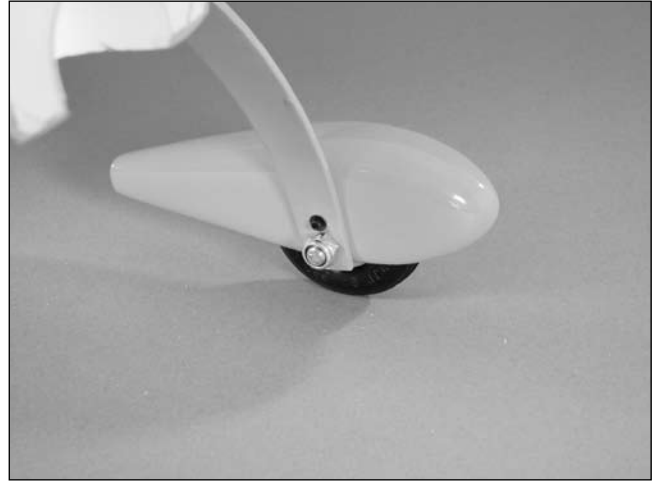
□ Step 4

Attach the wheel to the axle using two 5-32-inch wheel collars and two 3mm x 8mm screws. A wheel collar is placed on each side of the wheel.



□ Step 5

Attach the wheel pant to the landing gear using a 4-40 x 3/8-inch socket head screw and a #4 washer.



Note: Use threadlock on the screws to prevent them from vibrating loose in flight.

□ Step 6

Complete the landing gear installation by installing the tail wheel using two 1/16-inch wheel collars and two 4-40 setscrews.



Note: Use threadlock on the setscrews to prevent them from vibrating loose in flight.

Servo and Linkage Installation

Required Parts

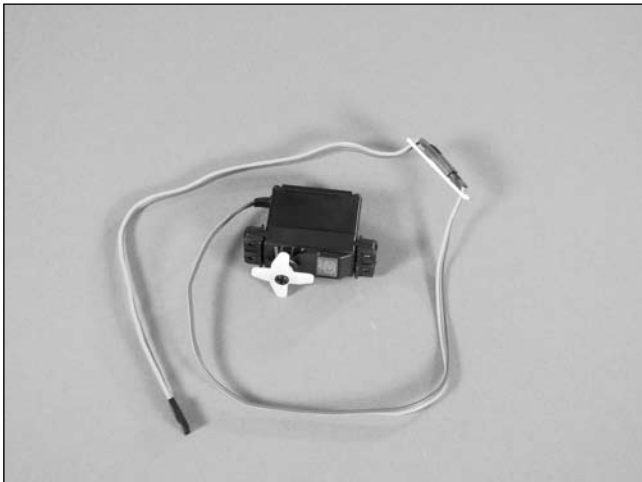
- Fuselage
- Pushrod connector
- 4-40 nut (8)
- 10 1/4-inch (260mm) pushrod
- 5 1/2-inch (140mm) pushrod
- 4-inch (102mm) pushrod (2)
- 3 1/4-inch (83mm) pushrod
- Control horn w/backplate (5)
- 2-56 x 5/8-inch machine screw (15)
- Rudder
- Metal clevis (8)
- Clevis retainer (8)

Required Tools and Adhesives

- Drill
- Drill bit: 1/16-inch (1.5mm), 5/64-inch (2mm)
- 18-inch (458mm) servo extension (3)
- Painters tape
- Long servo arm (5)

□ □ Step 1

Secure an 18-inch (458mm) servo extension to the rudder servo lead. Use string or a commercially available connector to make sure the extension will not unplug from the servo lead.



Hint: Use painters tape to secure the control surfaces and keep them in neutral while installing the linkages.

□ □ Step 2

Use the hardware provided with the servo to secure it in the fuselage as shown. You will want to drill 1/16-inch (1.5mm) holes for the servo screws and harden them with thin CA to help in preventing the screws from pulling out. Attach a large servo arm to the servo.



□ Step 3

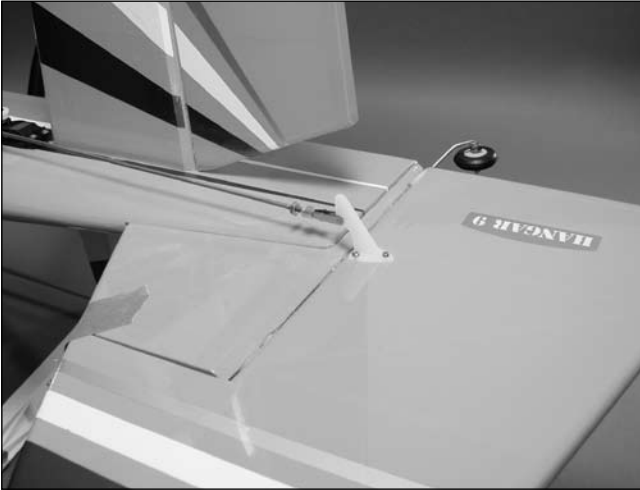
Enlarge the outer hole of the servo arm using a 5/64-inch (2mm) drill bit. Attach the 10 1/4-inch (260mm) pushrod to the servo arm using the pushrod connector.



Servo and Linkage Installation

□ Step 4

Remove the backplate from the rudder control horn and attach the clevis to the horn. Secure the control horn to the rudder using three 2-56 x 5/8-inch machine screws and the control horn backplate. The holes for the control horn have been pre-drilled in the rudder for the horn.



Hint: Before installing the horn, apply a few drops of thin CA into each of the three holes to harden the underlying wood.

□ Step 5

Follow Steps 1 and 2 to install the elevator servos. The output of the servos will face toward the front of the fuselage.

□ Step 6

Use three 2-56 x 5/8-inch machine screws and the control horn backplate to secure the elevator control horn to the elevator. Install both control horns at this time.



Servo and Linkage Installation

□ Step 7

Assemble the left elevator linkage by placing a clevis retainer onto four of the metal clevises. Thread 4-40 nuts and the clevises onto the 5 1/2-inch (140mm) pushrod. Turn on the radio and center the elevator stick and trim. Install the servo arm so it is perpendicular to the elevator servo. Connect the linkage between the control horn and servo. With the radio still on, adjust the length of the linkage to center the control surface.



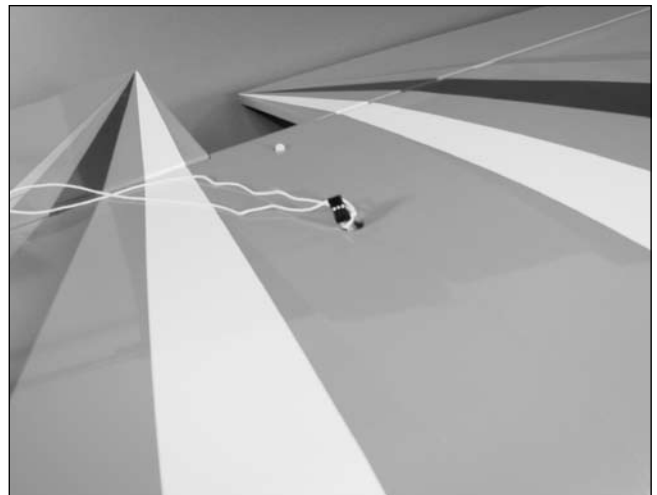
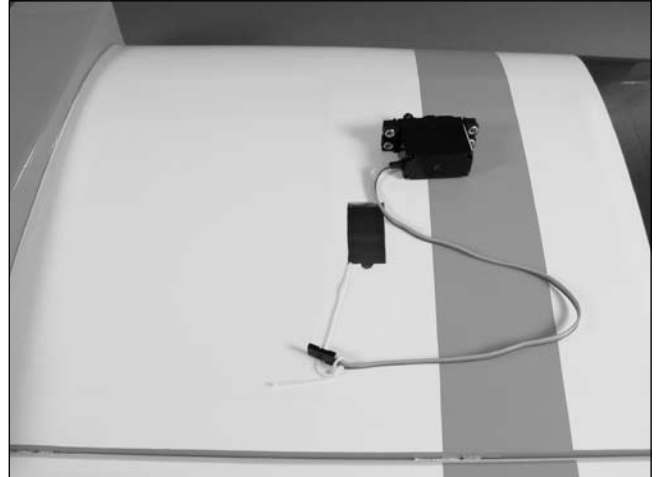
□ Step 8

Assemble the right elevator linkage by placing a clevis retainer onto four of the metal clevises. Thread 4-40 nuts and the clevises onto the 3 1/4-inch (83mm) pushrod. Turn on the radio and center the elevator stick and trim. Install the servo arm so it is perpendicular to the elevator servo. Connect the linkage between the control horn and servo. With the radio still on, adjust the length of the linkage to center the control surface.



□ □ Step 9

Tie the string to the servo lead for the aileron servo. Use the string to pull the servo lead out of the hole at the center of the wing.



Servo and Linkage Installation

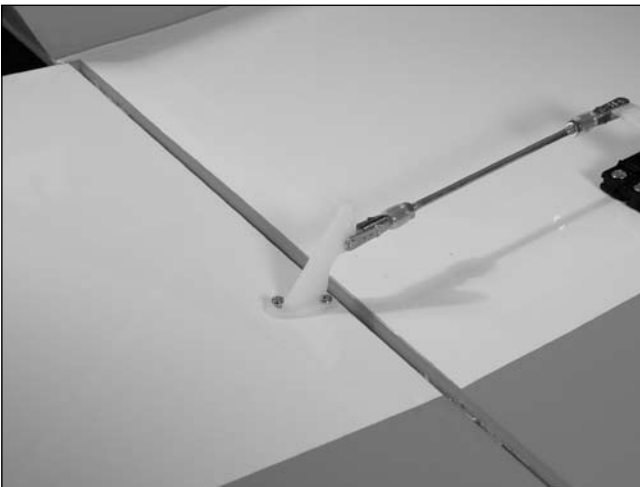
Step 10

Use the hardware provided with the servo to secure it in position in the wing.



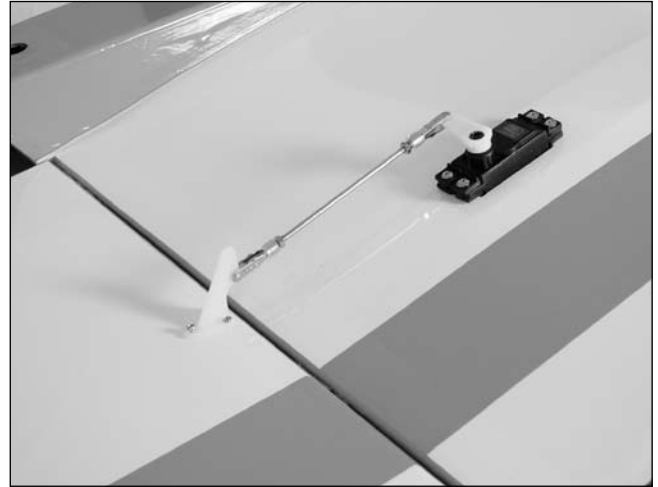
Step 11

Follow the same procedure as the elevator and rudder linkages to install the aileron control horn and linkage. The only difference is you will be using a 4-inch (102mm) linkage for the aileron.



Step 12

With the radio on, align the aileron servo horn parallel to the hinge line. Connect the linkage between the servo and control horn. Adjust the length of the linkage so the aileron is centered.



Step 13

Repeat Steps 9 through 12 for the remaining aileron linkage.

Glow Engine Installation

Required Parts

- Fuselage
- #8 washer (8)
- 12-inch (305mm) pushrod
- #4 x 3/8-inch sheet metal screw (5)
- 17 3/4-inch (450mm) pushrod tube
- #8 x 1-inch machine screw (8)
- Engine mount (2)
- 8-32 locknut (4)
- 8-32 blind nut (4)

Required Tools and Adhesives

- Drill
- C-clamp
- Drill bit: 11/64-inch (4.5mm)
- Felt-tipped pen
- Fuel filler dot

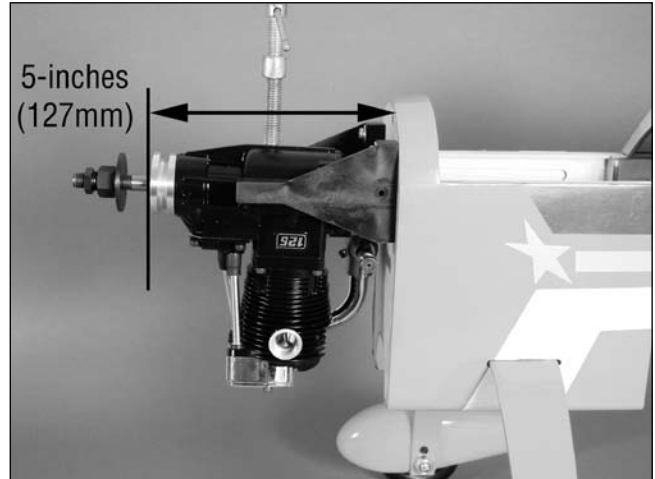
□ Step 1

Attach the engine mounts to the fuselage using four 8-32 x 1-inch machine screws, four 8-32 blind nuts and four #8 washers.



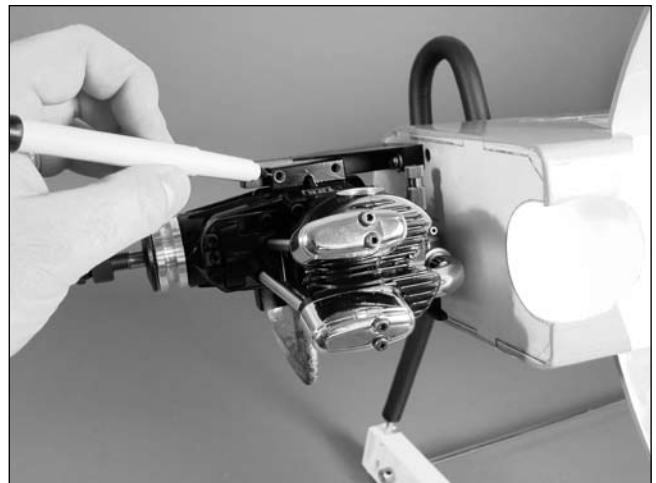
□ Step 2

Position the engine on the mount so the drive washer is 5-inches (127mm) forward of the firewall. Use a clamp to hold the engine in position.



□ Step 3

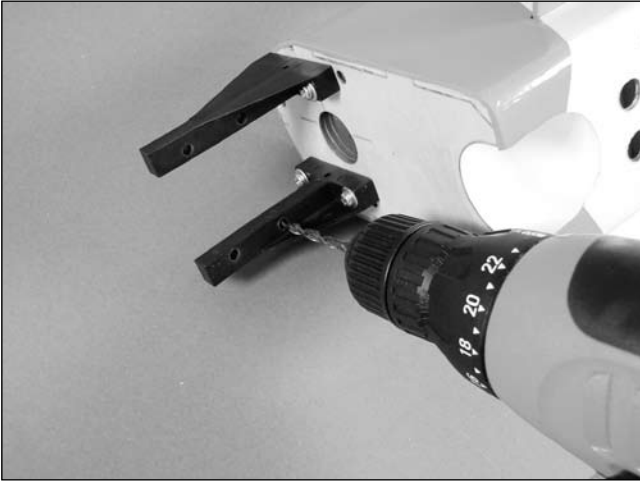
Use a felt-tipped pen to mark the location of the mounting holes onto the engine mount rails.



Glow Engine Installation

□ Step 4

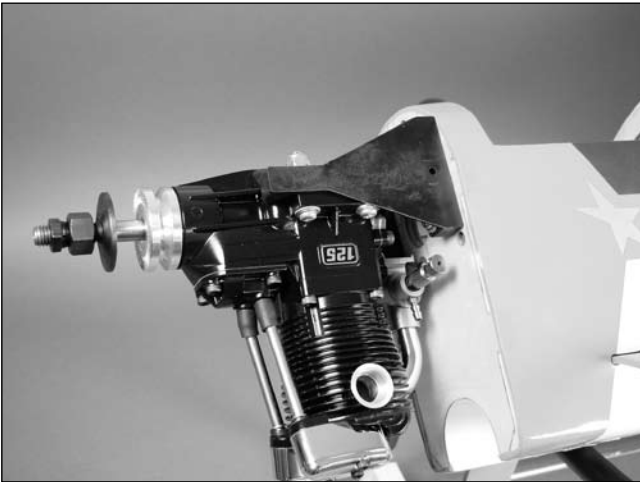
Drill the locations marked in the previous step using a drill and 11/64-inch (4.5mm) drill bit.



Hint: It is best to use a drill press to guarantee the holes are straight in the mount.

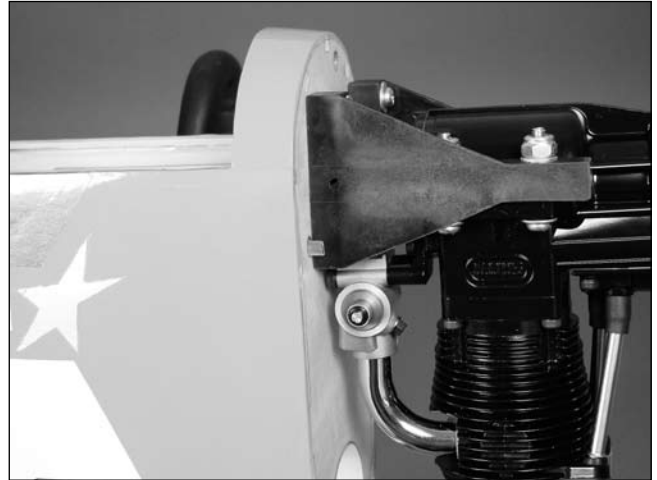
□ Step 5

Attach the engine to the engine mount using four 8-32 x 1-inch machine screws, four #8 washers and four 8-32 locknuts.



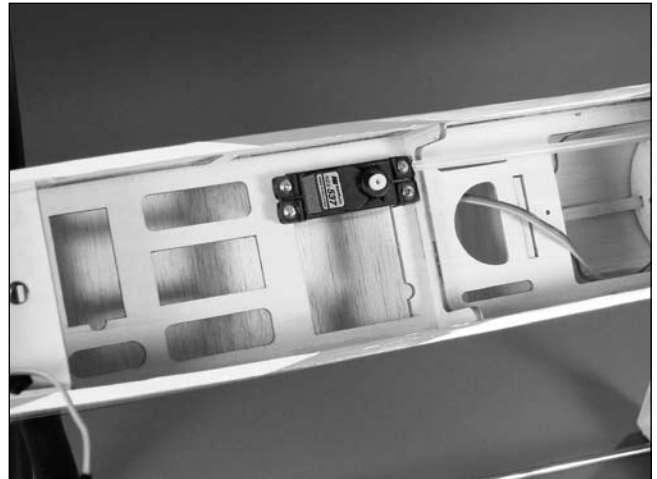
□ Step 6

Slide the 17 3/4-inch (450mm) pushrod tube into the fuselage. Use medium CA to secure the tube to the firewall with roughly 1/16-inch (1.5mm) of the tube exposed forward of the firewall.



□ Step 7

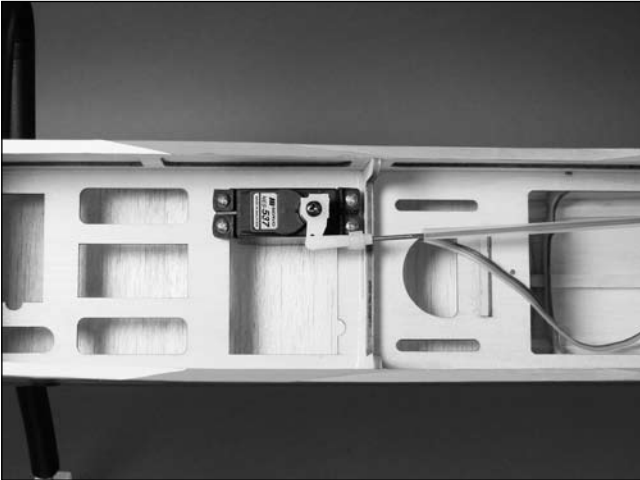
Secure the throttle servo in the fuselage using the hardware provided with the servo.



Glow Engine Installation

□ Step 8

Slide a clevis retainer onto the nylon clevis and thread the clevis on the 12-inch (305mm) pushrod. Pass the pushrod into the tube and attach the clevis to the throttle servo horn.



□ Step 9

Use a felt-tipped pen to mark where the pushrod wire crosses the carburetor arm.



□ Step 10

Make a Z-bend in the pushrod at the location marked in the previous step. Attach the bend to the carburetor arm.



□ Step 11

Use the radio system to check the operation of the throttle. Make any adjustments necessary to the attachment of the clevis at the servo arm, at the carburetor arm, or at the radio to prevent binding of the linkage at low and high throttle.

□ Step 12

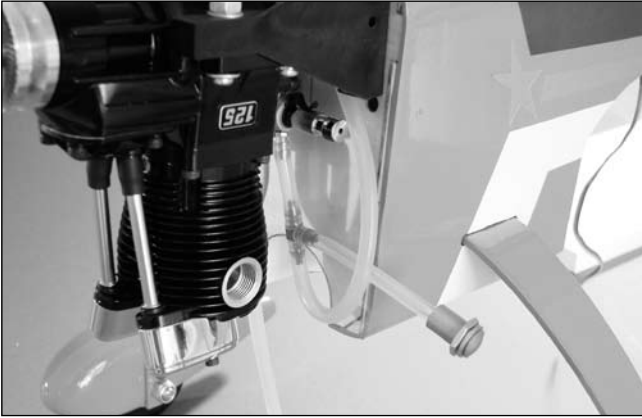
Hold the fuel tank up to a strong light to determine which line is the vent line. This will face up towards the top of the fuselage when the tank is installed. Once the vent has been determined, slide the fuel tank into the fuselage.



Glow Engine Installation

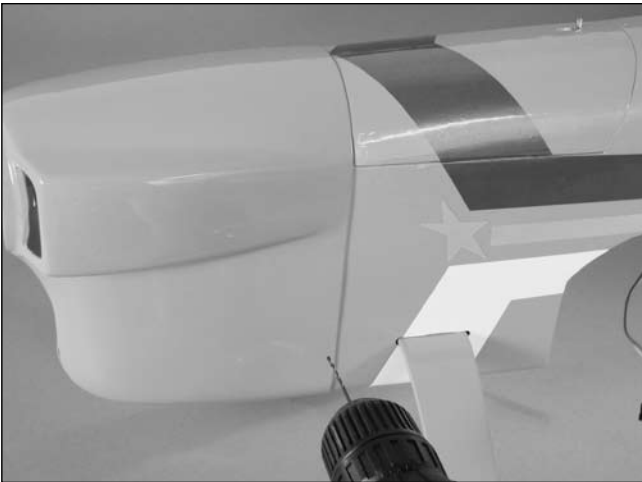
□ Step 13

Attach the fuel line to the carburetor. We used a fuel dot to allow fueling of the tank from outside the cowling.



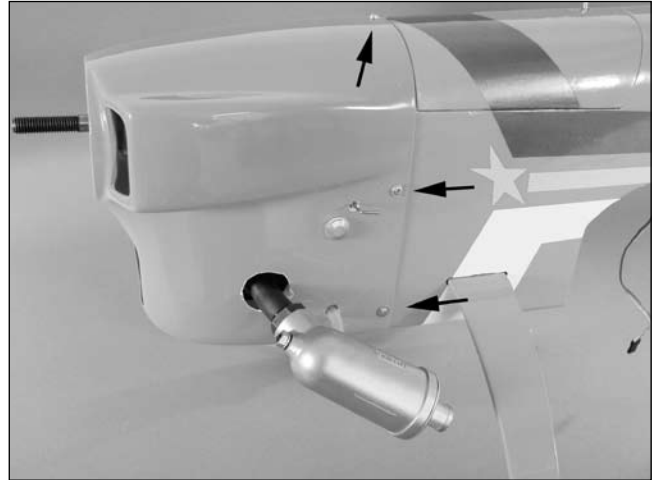
□ Step 14

Slide the cowling onto the fuselage. Allow the drive washer to extend roughly 1/8-inch (3mm) forward of the cowling. Use a 1/16-inch (1.5mm) drill to drill two locations on each side of the cowl and one on the top for the cowl screws.



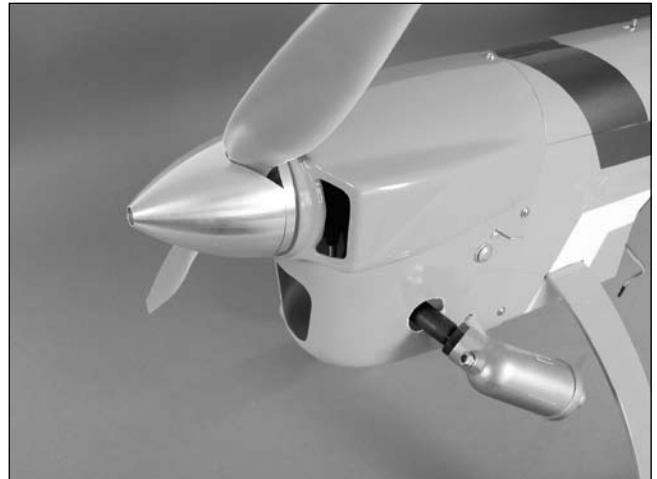
□ Step 15

Make any necessary holes in the cowling to clear the muffler, needle valve and to install the fuel dot. Attach the cowl to the fuselage using five #4 x 3/8-inch sheet metal screws.



□ Step 16

Attach the propeller and spinner to complete the engine installation.



Electric Motor Installation

Required Parts

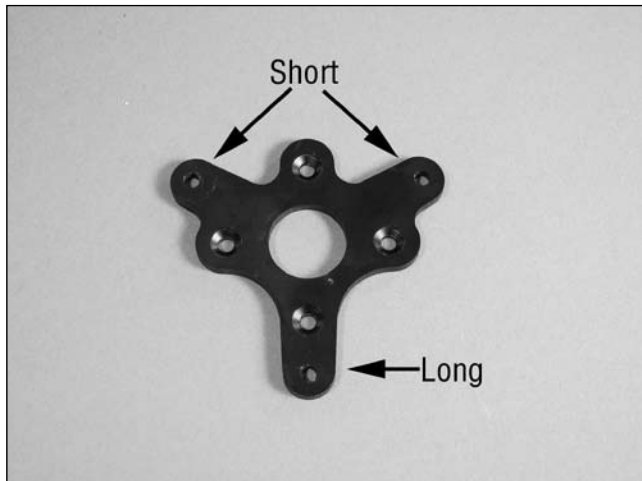
- Fuselage
- #4 washer (2)
- 8-32 blind nut (2)
- Plywood ESC mount
- Hook and loop strap (2)
- 8-32 blind nut (trimmed)
- 8-32 x 3-inch machine screw (3)
- 7 ⁷/₈-inch 65mm standoff (3)
- #4 x 3/8-inch sheet metal screw (5)
- 4-40 x 1/2-inch socket head screw (2)
- 3-point motor mount
- 4-40 blind nut (2)
- Battery tray

Required Tools and Adhesives

- Hex wrench: 3/32-inch
- 30-minute epoxy
- Phillips screwdriver

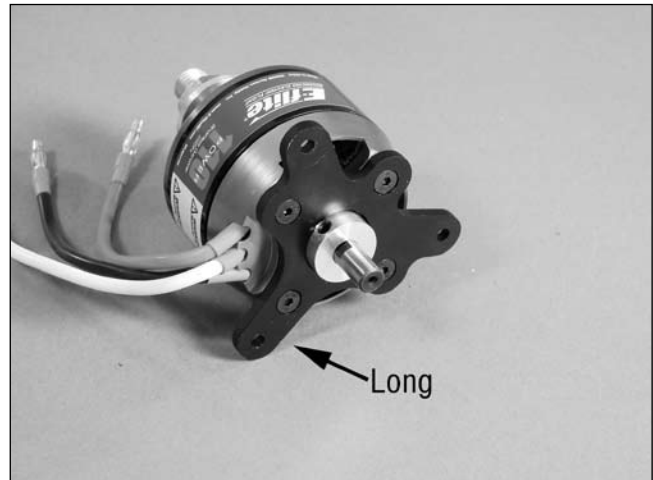
□ Step 1

Look at the 3-point mount to determine which of the mounting tabs is the longer of the three. This will face down and to the right of the fuselage when installed.



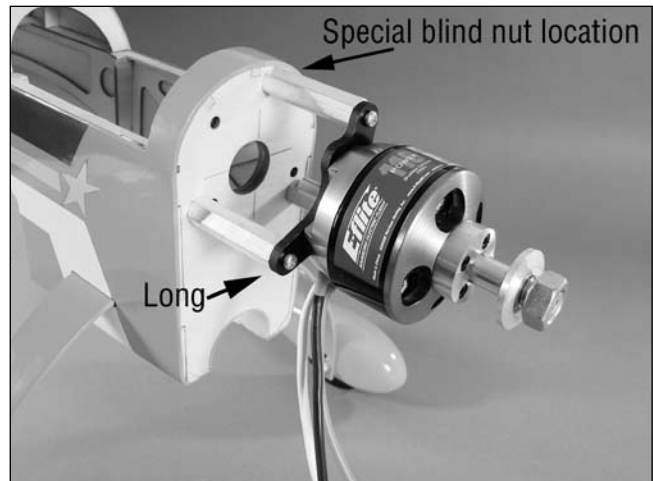
□ Step 2

Attach the 3-point mount to the motor. Make note of the position of the long tab of the mount in relationship to the motor wires. Attach any adapters to the motor following the instructions provided with the motor.



□ Step 3

Attach the motor and 3-point mount to the firewall using the three 8-32 x 3-inch machine screws. A special 8-32 blind nut has been provided that has been trimmed to fit against the inside of the fuselage in the upper right location behind the firewall.



Electric Motor Installation

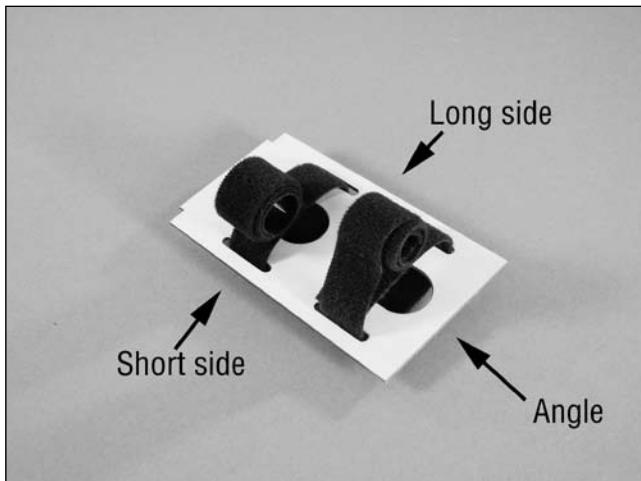
□ Step 4

Assemble and install the plywood ESC mount to the firewall using two 4-40 x 1/2-inch socket head screws, two #4 washers and two 4-40 blind nuts. Plug the motor into the ESC and secure the ESC to the mount.



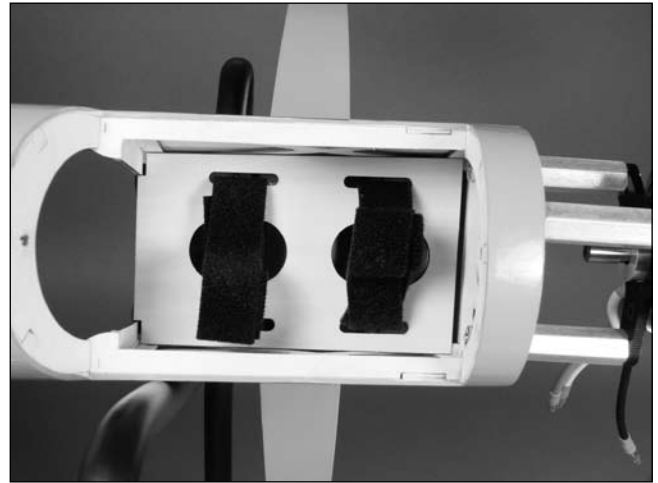
□ Step 5

Pass the hook and loop straps through the battery tray as shown. Installing them now will be much easier, rather than after the tray has been installed. Note that the tray has an angle on the front which matches the angle of the firewall.



□ Step 6

Test fit the battery tray into the fuselage. Use 30-minute epoxy to glue the battery tray in the fuselage.



□ Step 7

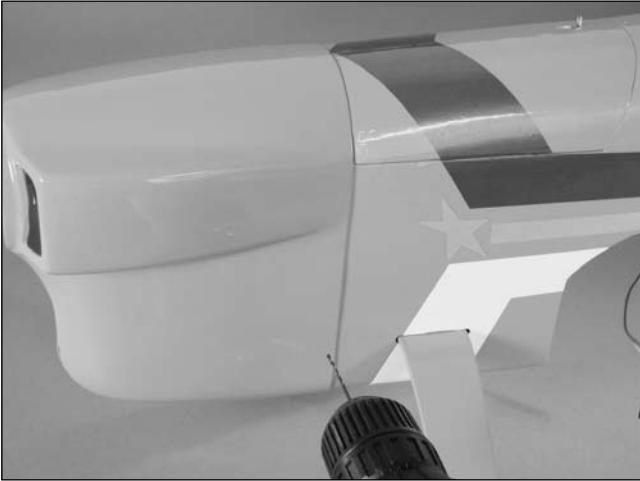
Secure the battery inside the fuselage using the straps. It is suggested to place hook and loop between the tray and battery to prevent the battery from sliding forward or rearward in flight.



Electric Motor Installation

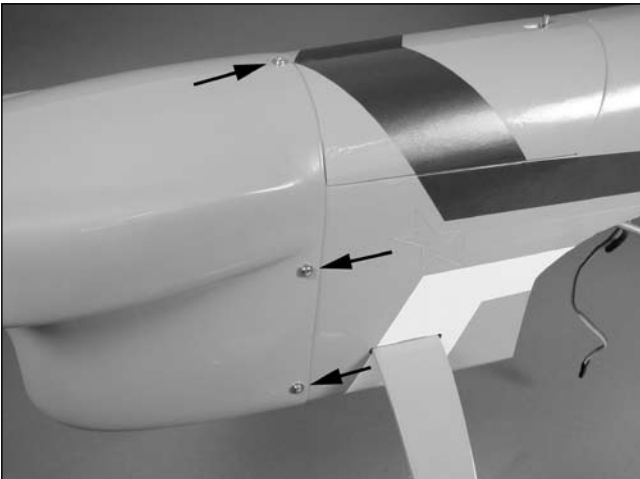
□ Step 8

Slide the cowling onto the fuselage. Allow the drive washer to extend roughly 1/8-inch (3mm) forward of the cowling. Use a 1/16-inch (1.5mm) drill to drill two locations on each side of the cowl and one on the top for the cowl screws.



□ Step 9

Secure the cowling to the fuselage using five #4 x 3/8-inch sheet metal screws.



□ Step 10

Attach the propeller and spinner to complete the engine installation.



Receiver Installation

Required Parts

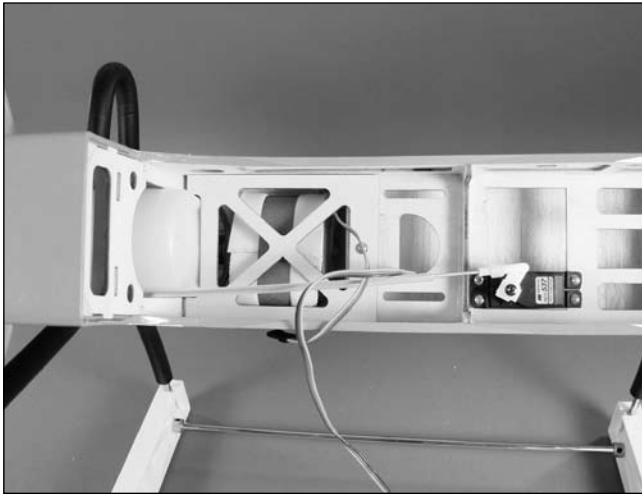
- Fuselage
- Receiver battery plate
- 4 x 3/8-inch sheet metal screw

Required Tools and Adhesives

- Phillips screwdriver
- 1/4-inch (6mm) foam
- JR charge jack switch
- 6-inch (152mm) servo extension (2)

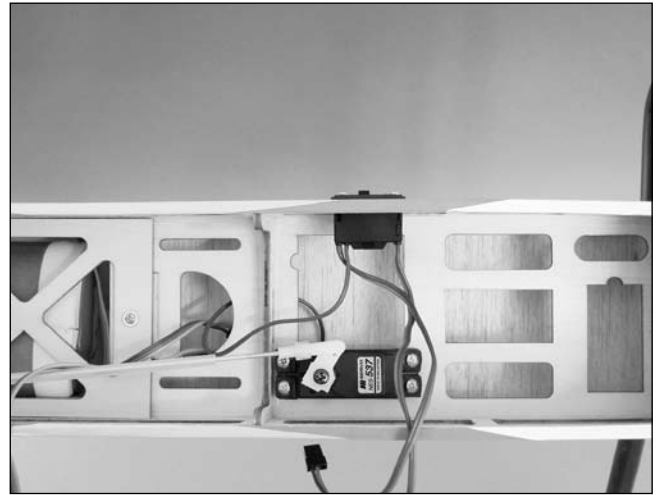
□ Step 1

Wrap the receiver battery in 1/4-inch (6mm) foam. Secure the receiver battery plate in the fuselage using a #4 x 3/8-inch sheet metal screw. Make sure the battery is unable to move in the fuselage when installed.



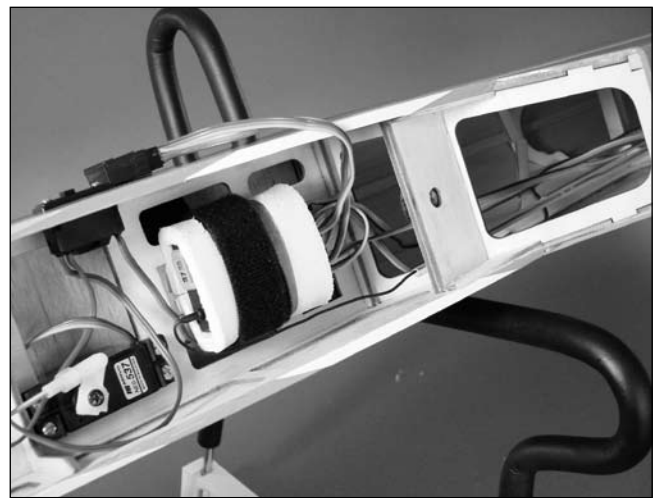
□ Step 2

Attach the switch harness to the side of the fuselage using the hardware provided with the switch.



□ Step 3

Wrap the receiver in foam and secure it in the fuselage. Plug the servos for the elevators, throttle and rudder into the receiver, as well as extensions for the aileron servos.



Note: A tube has been pre-installed to route the receiver antenna wire to the rear of your aircraft. Do not cut the antenna wire as it will greatly reduce the range of your radio system.

Canopy and Pilot Installation

Required Parts

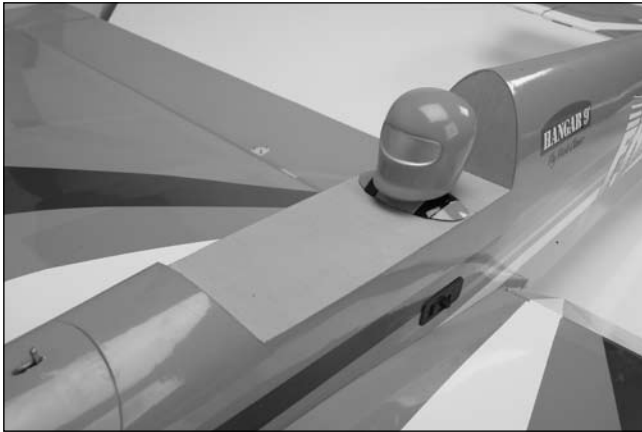
- Fuselage
- Instrument panel decal
- Canopy
- Pilot figure

Required Tools and Adhesives

- Canopy glue
- 30-minute epoxy

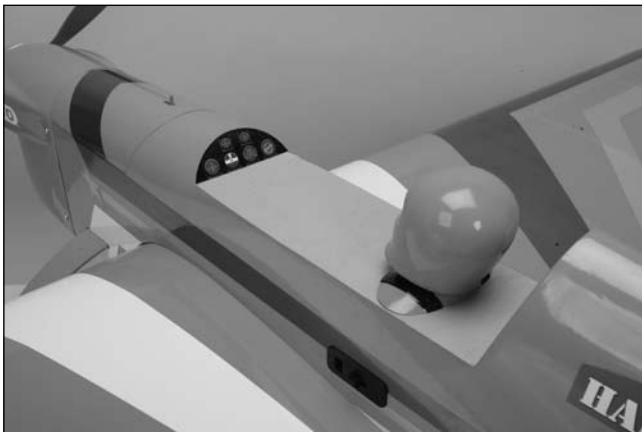
Step 1

Use 30-minute epoxy to secure the pilot figure into the cockpit.



Step 2

Trim the instrument panel decal from the decal sheet. Attach the instrument panel in position.



Step 3

Use canopy glue to secure the canopy to the fuselage.



Control Throws

The amount of control throw should be adjusted as closely as possible using mechanical means, rather than making large changes electronically at the radio. By moving the position of the clevis at the control horn toward the outermost hole, you will decrease the amount of control throw of the control surface: moving it toward the control surface will increase the amount of throw; moving the pushrod wire at the servo arm will have the opposite effect. Moving it closer to center will decrease throw, and away from center will increase throw. Work with a combination of the two to achieve the closest or exact control throws listed.

Aileron:

High Rate: 3-inch (76mm) (35 degrees) up/down
Low Rate: 1 ³/₄-inch (44mm) (20 degrees) up/down

Note: Aileron throw is measured at widest point of the aileron

Elevator:

High Rate: 2 ¹/₂-inch (63mm) (35 degrees) up/down
Low Rate: 1 ¹/₄-inch (32mm) (16 degrees) up/down

Note: Elevator throw is measured at the widest point of the elevator.

Rudder:

High Rate: 4 ¹/₄-inch (108mm) (50 degrees) left/right
Low Rate: 2 ¹/₂-inch (63mm) (25 degrees) left/right

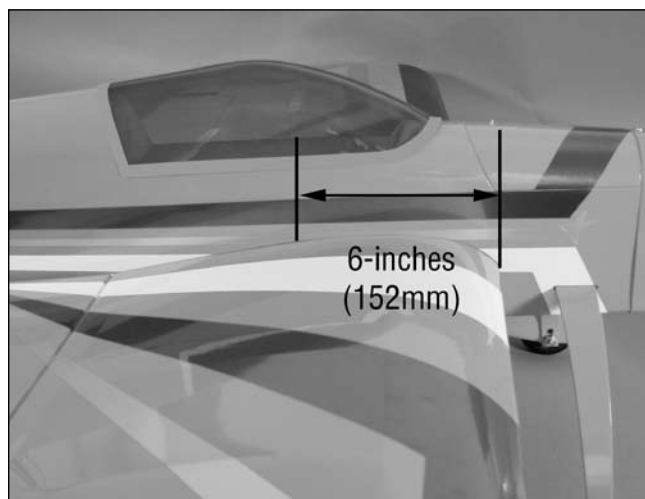
Note: Rudder throw is measured at the widest part of the rudder.

Recommended Center of Gravity (CG)

An important part of preparing the aircraft for flight is properly balancing the model. This is especially important when various engines are mounted.

Caution: Do not inadvertently skip this step!

The recommended Center of Gravity (CG) location for the Frenzy 100 is 6 inches (152mm) back from leading edge of wing at the root rib. Mark the location of the CG onto the top of the wing using a felt-tipped pen. Make sure the aircraft is inverted when checking the CG. If the nose of your aircraft hangs low, add weight to the rear of the aircraft. If the tail hangs low, add weight to the nose of the aircraft. Stick-on weights are available at your local hobby store and work well for this purpose. The Frenzy 100 can be balanced between 5 ¹/₂-inch (140mm) and 6 ¹/₂-inch (165mm) depending on your personal preference and flight skills.



Pre-Flight

Charge both the transmitter and receiver pack for your airplane. Use the recommended charger supplied with your particular radio system, following the instructions provided with the radio. In most cases, the radio should be charged the night before going out flying.

Check the radio installation and make sure all the control surfaces are moving correctly (i.e. the correct direction and with the recommended throws). Test run the engine and make sure it transitions smoothly from idle to full throttle and back. Also ensure the engine is tuned according to the manufacturer's instructions, and it will run consistently and constantly at full throttle when adjusted.

Check all the control horns, servo horns and clevises to make sure they are secure and in good condition. Replace any items that would be considered questionable. Failure of any of these components in flight would mean the loss of your aircraft.

Adjusting the Engine

Step 1

Completely read the instructions included with your engine and follow the recommended break-in procedure.

Step 2

At the field, adjust the engine to a slightly rich setting at full throttle and adjust the idle and low-speed needle so that a consistent idle is achieved.

Step 3

Before you fly, be sure that your engine idles reliably, transitions and runs at all throttle settings. Only when this is achieved should any plane be considered ready for flight.

Range Test Your Radio

Before each flying session, be sure to range check your radio. See your radio manual for the recommended range and instructions for your radio system. Each radio manufacturer specifies different procedures for their radio systems. If using a gasoline engine, check the range first with the engine not running and note the distance. Next, start the engine. With the model securely anchored, check the range again. The range test should not be significantly affected. If it is, don't attempt to fly! Have your radio equipment checked out by the manufacturer.

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.



2007 Official AMA National Model Aircraft 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.

2007 Official AMA National Model Aircraft Safety Code

Radio Control

1. All model flying shall be conducted in a manner to avoid over flight of unprotected people.
2. I will have completed a successful radio equipment ground-range check before the first flight of a new or repaired model aircraft.
3. I will not fly my model aircraft in the presence of spectators until I become a proficient flier, unless I am assisted by an experienced pilot.
4. At all flying sites a line must be established, in front of which all flying takes place. Only personnel associated with flying the model aircraft are allowed at or in front of the line. In the case of airshows demonstrations straight line must be established. An area away from the line must be maintained for spectators. Intentional flying behind the line is prohibited.
5. I will operate my model aircraft using only radio-control frequencies currently allowed by the Federal Communications Commission (FCC). Only individuals properly licensed by the FCC are authorized to operate equipment on Amateur Band frequencies.
6. I will not knowingly operate my model aircraft within three (3) miles of any preexisting flying site without a frequency-management agreement. A frequency-management agreement may be an allocation of frequencies for each site, a day-use agreement between sites, or testing which determines that no interference exists. A frequency-management agreement may exist between two or more AMA chartered clubs, AMA clubs and individual AMA members, or individual AMA members. Frequency-management agreements, including an interference test report if the agreement indicates no interference exists, will be signed by all parties and copies provided to AMA Headquarters.
7. With the exception of events flown under official AMA rules, no powered model may be flown outdoors closer than 25 feet to any individual, except for the pilot and located at the flight line.
8. Under no circumstances may a pilot or other person touch a model aircraft in flight while it is still under power, except to divert it from striking an individual.
9. Radio-controlled night flying is limited to low-performance model aircraft (less than 100 mph). The model aircraft must be equipped with a lighting system which clearly defines the aircraft's attitude and direction at all times.
10. The operator of a radio-controlled model aircraft shall control it during the entire flight, maintaining visual contact without enhancement other than by corrective lenses that are prescribed for the pilot. No model aircraft shall be equipped with devices which allow it to be flown to a selected location which is beyond the visual range of the pilot.



Fly First Class™



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