

HANGAR 9
WE GET PEOPLE FLYING

CESSNA

INSTRUCTION MANUAL



Specifications

Wingspan: 62-1/2"

Length: 42-1/2"

Wing Area: 720 sq. in.

Weight (Approx.): 5.25-6 lbs.

Recommended Engines:

.40-.46 2-Cycle

.45-.56 4-Cycle

-
- 90% Pre-Built
 - Extensive Hardware Included to Save \$\$\$
 - Pre-Covered Realistic Trim Scheme
 - Semi-Symmetrical Airfoil – Prefect for Sport Flying



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Introduction

Congratulations on purchasing a Hangar 9 Cessna. This is the ideal second airplane for modelers capable of flying a trainer-type aircraft. In a few short evenings this 90% pre-built beauty will be ready for its debut at the flying field.

This manual has been written to ensure that you achieve the best performance and maximum enjoyment from your Cessna. It is important to carefully read and follow the instructions in this manual prior to flying the Cessna.

Warning

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

Additional Equipment Required

Radio Equipment

4 Channels (minimum)
4 Standard Servos
Standard 450-650 mAh Receiver Battery Pack



Recommended JR Systems

JR F400 FM
JR XF622FM
JR XP783
JR XP8103

Engine Recommendations

.40-.46 2-Cycle Engines
.45-.56 4-Cycle Engines



Recommended 2-Cycle Engines

Thunder Tiger Pro .40
Thunder Tiger Pro .46
Webra Speed .40 Sport

Recommended 4-Cycle Engines

Saito .50
Saito .50GK

Tools and Supplies Required

Adhesives

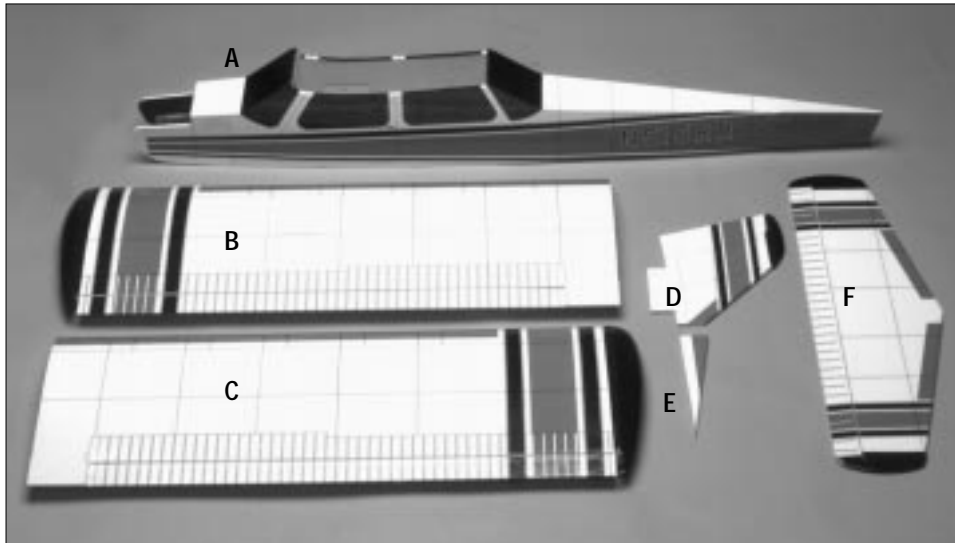
Thick CA (cyanoacrylate) glue
6-Minute Epoxy
12-Minute Epoxy
30-Minute Epoxy
Blue Locktite 242

Tools

Drill
Drill bits: 1/16", 5/32"
Small Phillips screwdrivers
Z-bend pliers
Pliers
Small round file
Razor saw
Moto-tool with sanding drum
Hobby knife with #11 blade
Mixing stick
Epoxy brush
90-degree Triangle
File

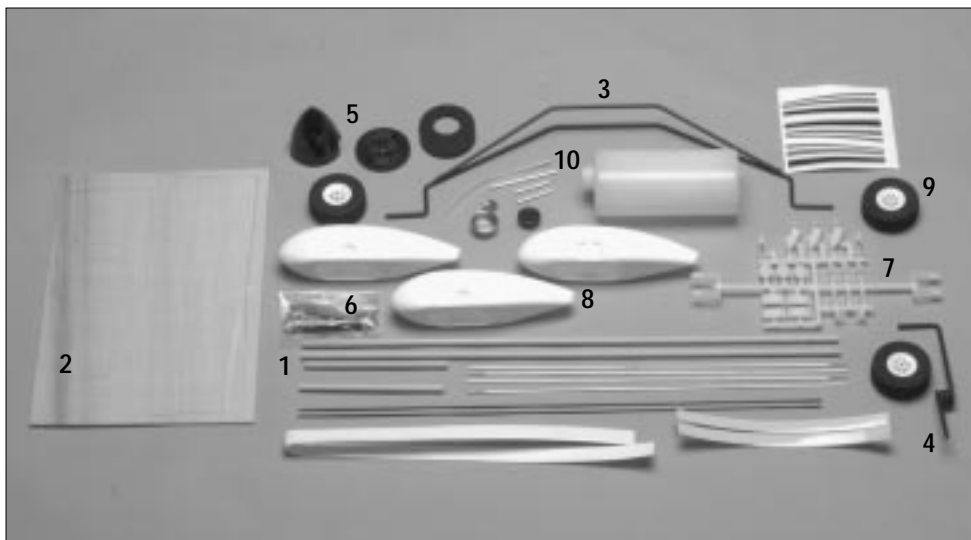
Medium sandpaper
Masking tape
Straight edge
Measuring device
(e.g. ruler, tape measure)
Scissors
Paper towels
Wax paper
Rubbing alcohol
Felt tipped pen
Fuel tubing
Clips
(clothes pins, binder clips)

Contents of Kit



Covered Parts

- | | |
|---------------------------------|--|
| A. Fuselage | D. Vertical stabilizer with rudder |
| B. Left wing half with aileron | E. Vertical stabilizer extension |
| C. Right wing half with aileron | F. Horizontal stabilizer with elevator |



Others

- | | |
|-------------------------------|----------------------------|
| 1. Pushrod & Accessories | 6. Hardware bag |
| 2. 1/8" plywood die-cut parts | 7. Plastic parts tree |
| 3. Main landing gear | 8. Wheel pants (3) |
| 4. Nose landing gear | 9. Foam wheels (3) |
| 5. Spinner | 10. Fuel tank and hardware |

Field Equipment Required



Airplane Fuel



12V Starter



Field Box



Glow Driver



Glow Plug



Power Panel



12V Sealed Battery



Long Reach Glow Plug Wrench



Manual Fuel Pump

Optional Field Equipment



4-Way Wrench



Propeller



Cleaner & Towels



Glow Plugs



Misc. Tools



After Run Engine Oil



#64 Rubber Bands

Section 1: Assembling the Wings

Parts Needed

Right wing panel with aileron and hinges
Left wing panel with aileron and hinges

Tools And Adhesives Needed

30-Minute Epoxy Mixing Stick/Epoxy Brush
Paper towels Ruler
Rubbing alcohol

- ❑ 1. Carefully remove the aileron from the right wing panel by pulling straight out with even pressure. Note the location of the hinges and the aileron torque rod. This will be of assistance when replacing the aileron onto the wing.
- ❑ 2. Remove all four hinges from the aileron. Flex the hinges accordingly so that they move freely.
- ❑ 3. Mix a small amount of 30-Minute Epoxy. Using either a mixing stick or a small piece of scrap wood, apply the epoxy sparingly inside each hinge slot on the aileron. Additionally, apply a small amount of epoxy to the top and bottom half of each hinge. Insert the hinges into the aileron accordingly until the hinge line is even with the leading edge of the aileron.

Note: Do NOT apply any epoxy into the aileron torque rod hole at this time.

- ❑ 4. Lightly coat both ends of the ailerons with epoxy. This will prevent the ailerons from becoming fuel-soaked.



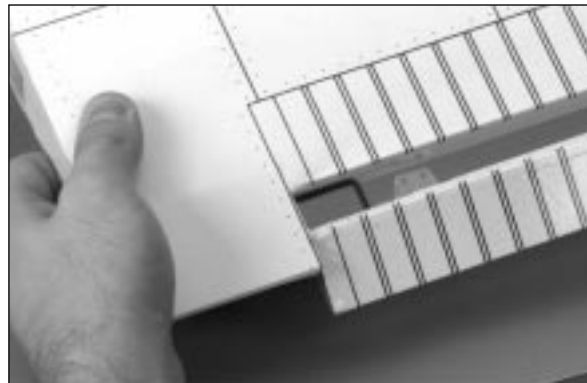
- ❑ 5. Wipe off any excess epoxy using a paper towel and rubbing alcohol.



Section 1: Assembling the Wings

CONTINUED

- ☐ 6. Mix a small amount of 30-Minute Epoxy to install the aileron onto the wing half. Apply epoxy to the top and bottom of the remaining half of each hinge as well as the aileron torque rod hole. Using either a mixing stick or a piece of scrap wood, apply epoxy inside each hinge slot on the wing.
- ☐ 7. Replace the aileron on the right wing half. Ensure that the hinges are properly aligned and that the aileron torque rod presses into its respective hole in the aileron. The gap between the aileron and the wing should remain a constant 1/16", or as tight as possible so the movement of the aileron is not impaired.
- ☐ 8. Carefully wipe off any excess epoxy using a paper towel and rubbing alcohol.
- ☐ 9. Repeat the procedures above for the left wing half.
- ☐ 10. Allow the epoxy to cure before proceeding to the next section.



Section 2: Joining the Wing Halves

Parts Needed

Right wing panel from section one
Left wing panel from section one
Three plywood wing joiners

Tools And Adhesives Needed

6-Minute Epoxy	Wax paper
30-Minute Epoxy	Ruler
Clips (e.g. clothespins, binder clips) (4)	Pencil
Rubbing alcohol	Medium sandpaper
Paper towels	Mixing stick/Epoxy brush
Masking tape	Felt tipped pen

- ☐ 1. Carefully remove the three individual wing joiners from the die-cut plywood sheet. If necessary, sand gently to remove any rough edges.



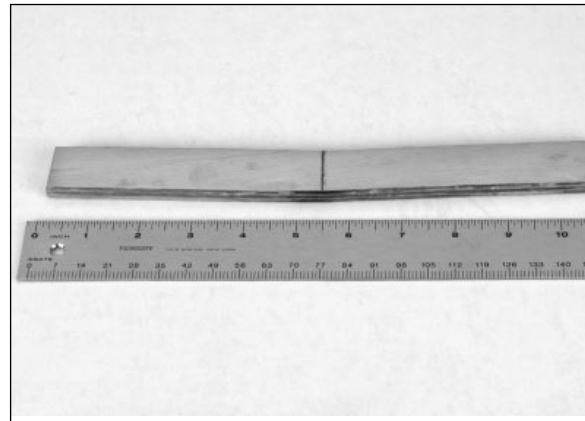
Section 2: Joining the Wing Halves

CONTINUED

- ❑ 2. Mix a small amount, approximately 1/4 oz., of 6-Minute Epoxy. Using either a mixing stick, or epoxy brush, apply the epoxy to both sides of ONE of the wing joiners. Place the epoxied wing joiner on top of one of the two remaining wing joiners. Stack the remaining wing joiner on top of the epoxied wing joiner. Align the upper and lower edges of all three wing joiners as well as the area which has the slight "V" shape.
- ❑ 4. Wipe away the excess epoxy using a paper towel and rubbing alcohol, being careful not to disturb the alignment of the wing joiners. Note: The excess epoxy should be removed before it cures.
- ❑ 5. Allow the epoxy to cure completely prior to removing the clamps.



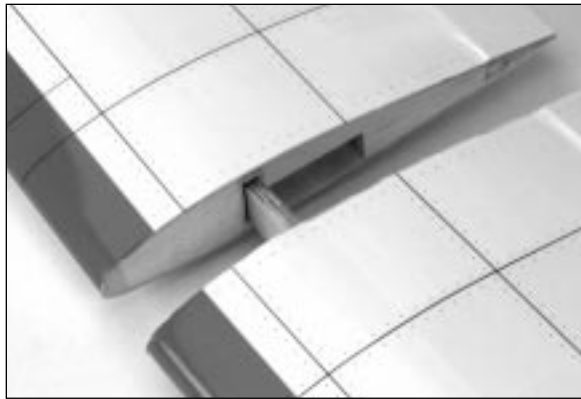
- ❑ 3. Clamp the three joiners together using four clothes pins, or clips. Ensure that the joiners remain aligned and that the clamps are firmly attached.
- ❑ 6. Using a pencil and ruler, mark the "V" section of the brace. This mark will serve as the center line when joining the wing halves.



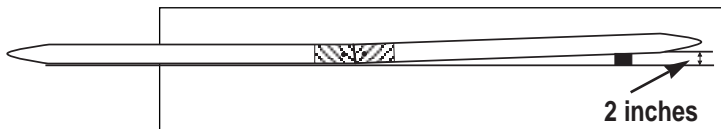
Section 2: Joining the Wing Halves

CONTINUED

- ❑ 7. Trial fit the dihedral brace, or wing joiner, into one of the wing panels. It should insert smoothly up to the center line marked in Step 6. Now slide the other wing half onto the dihedral brace until the wing panels meet. If the fit is overly tight, it may be necessary to lightly sand the dihedral brace.



- ❑ 8. Check for the correct dihedral angle. Place the wing on a large, flat surface with one wing panel resting on the surface. The opposite wing tip should be exactly 2" from the surface (see illustration below). If necessary, sand the dihedral brace until this is achieved.



- ❑ 9. Place the wing halves on the flat surface so the white side (bottoms) are facing upward. Using a felt tipped pen, place a mark at the leading and trailing edge of the servo bay on each wing half. These marks will be utilized as a guide when cutting the holes for the aileron servo and the aileron servo tray.



- ❑ 10. Mix up approximately three ounces of 30-Minute Epoxy.

Note: When joining the wing halves it is extremely important to use plenty of epoxy.

- ❑ 11. Use a mixing stick or scrap piece of wood to apply a generous amount of epoxy into the wing joiner cavity of one wing half. Ensure that the epoxy is applied to all sides of the cavity wall.



- ❑ 12. Coat one half of the dihedral brace with epoxy up to the center line drawn in Step 6. Install the epoxy-coated side of the dihedral brace into the wing joiner cavity up to the center line, making sure that the "V" of the dihedral brace is positioned correctly.



Section 2: Joining the Wing Halves

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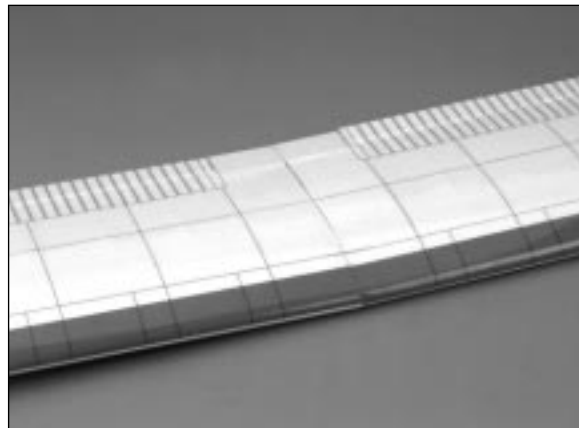
- ❑ 13. Apply a generous amount of epoxy into the wing cavity of the other wing half.



- ❑ 14. Smear epoxy on all sides of the exposed area of the dihedral brace and uniformly coat both wing roots with epoxy.

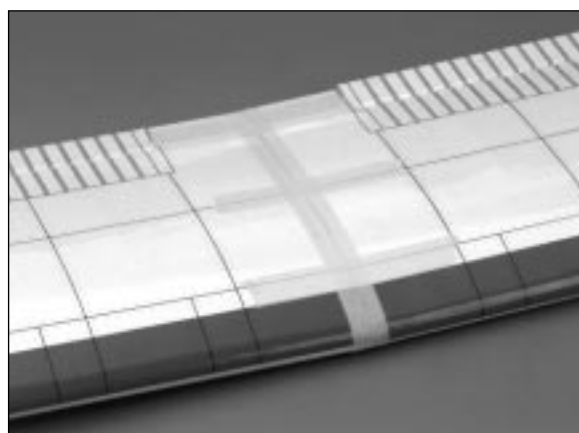


- ❑ 15. Carefully slide the two wing halves together ensuring that they are accurately aligned. Firmly press the two halves together, allowing the excess epoxy to run out. Using rubbing alcohol and a paper towel, clean off the excess epoxy. There should not be any gap between the wing halves.



- ❑ 16. Apply masking tape at the wing joint to hold the wing together securely while the epoxy cures. Place the wing on a large, flat surface. With one wing panel lying flat on the surface, the opposite wing tip should be propped up exactly 2" from the surface. Allow the wing joint to dry overnight.

Note: It is a good idea to place a sheet of waxed paper under the center joint of the wing so that any excess epoxy doesn't adhere to the surface of the work area.



Section 3: Installing the Aileron Servo Tray

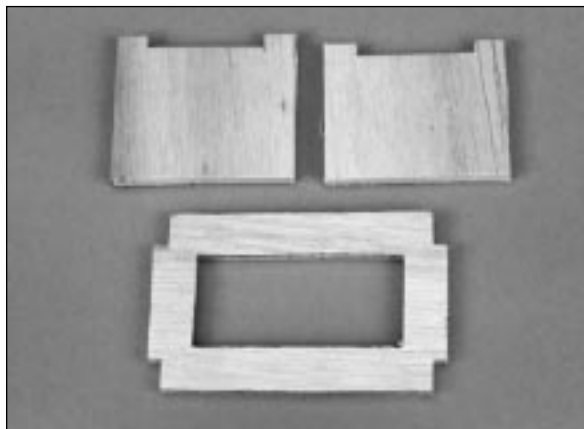
Parts Needed

Plywood aileron tray
Plywood aileron tray supports
Aileron servo
Wing center tape

Tools And Adhesives Needed

Masking tape
Hobby knife
Felt tipped pen
6-Minute Epoxy
/Thick CA glue
Epoxy brush
Rubbing alcohol
Paper towels
Scissors

- ❑ 1. After the wing joint has completely cured, remove the masking tape.



- ❑ 2. Remove the aileron servo tray and the two aileron tray supports from the 1/8" die-cut plywood sheet.

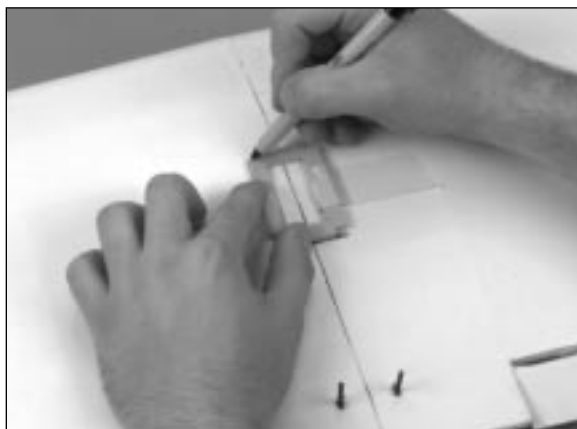
Note: One of the aileron support trays is slightly shorter than the other. The shorter support will be situated toward the trailing edge of the wing.

- ❑ 3. Turn the wing upside down and place the aileron servo tray between the marks that were made previously in Section 2, Step 9. Center the tray across the seam between the wing halves.

- ❑ 4. Tape the tray in place with two pieces of masking tape, ensuring that the alignment is not disturbed.



- ❑ 5. Trace around the outside upper and lower parallel edges of the servo tray using a felt tipped pen. These marks will serve as the guides for cutting the servo tray support slots later in this section. Additionally, place a mark along each of the outside vertical edges of the tray. These marks will be the outer edges of the servo tray support slots.



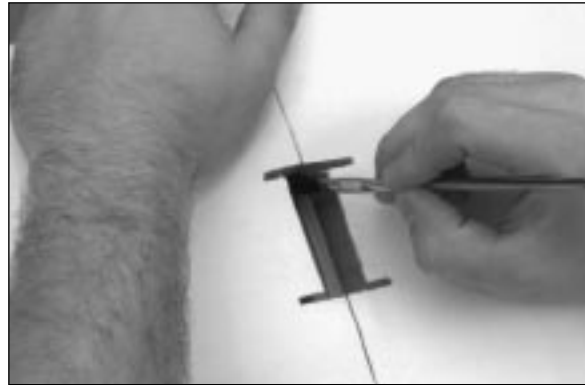
Section 3: Installing the Aileron Servo Tray

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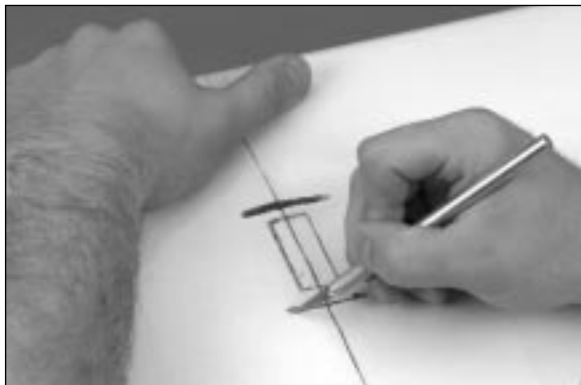
- ❑ 6. Using the felt tipped pen, trace around the inside edge of the aileron servo tray and then remove it from the wing.



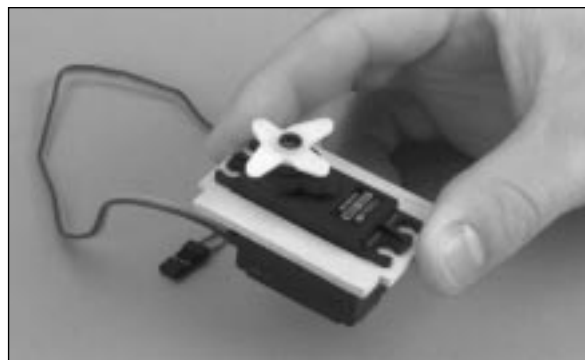
- ❑ 9. Using the sharp hobby knife, carefully cut through the balsa wood and the covering along the lines that were drawn in Step 6 of this section. Remove the excess balsa from the hole.



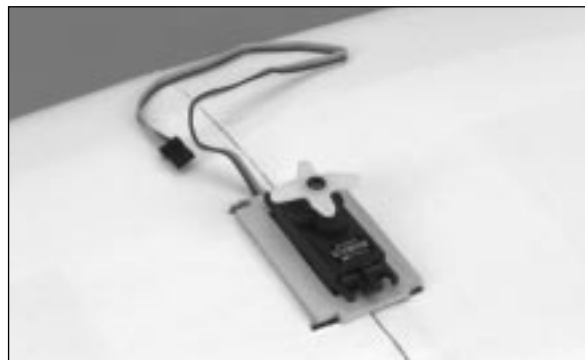
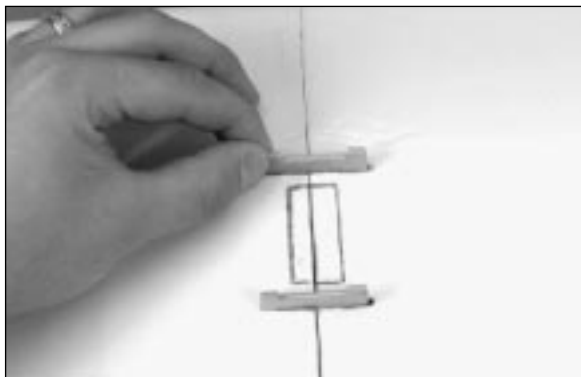
- ❑ 7. With a sharp hobby knife carefully cut a 1/8" wide slot which is 1-5/8" in length through both the covering and the balsa wood along the lines which were drawn in Step 5 of this section. Remove the excess balsa from the slots.



- ❑ 10. Trial fit the aileron servo into the servo tray as well as the hole which was cut in the previous step. It may be necessary to enlarge either the servo tray or the servo hole slightly depending upon the dimensions of the aileron servo.



- ❑ 8. Trial fit the aileron tray supports into the slots. It may be necessary to enlarge the slot slightly to accommodate the support.



Section 3: Installing the Aileron Servo Tray

CONTINUED

- ❑ 11. Mix a small amount of 6-Minute Epoxy and apply it to one of the aileron servo supports between the two tabs. Position the aileron servo tray in place as shown, and lightly spread epoxy along the joint between the aileron servo tray and the aileron servo support.

Note: Thick CA may be utilized rather than epoxy for this procedure if so desired.



- ❑ 12. Repeat this procedure for the opposite aileron servo support. Ensure that the aileron servo supports and the servo tray remain perpendicular to one another. Allow the epoxy, or CA, to dry completely before proceeding to the next step.

- ❑ 13. Mix a small amount of 6-Minute Epoxy to glue the servo tray into the wing. Using an epoxy brush, apply the epoxy to the aileron servo supports. Insert the assembled unit into its receptacle in the wings. Remove any excess epoxy with a paper towel and rubbing alcohol and allow the epoxy to cure.

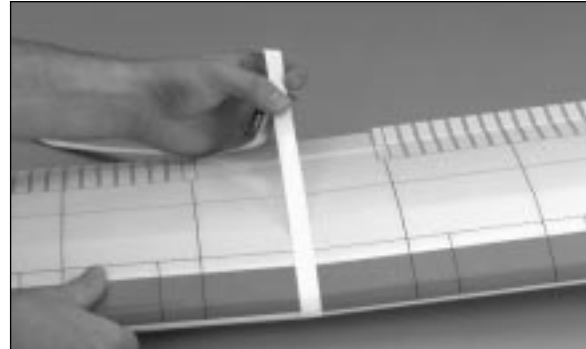
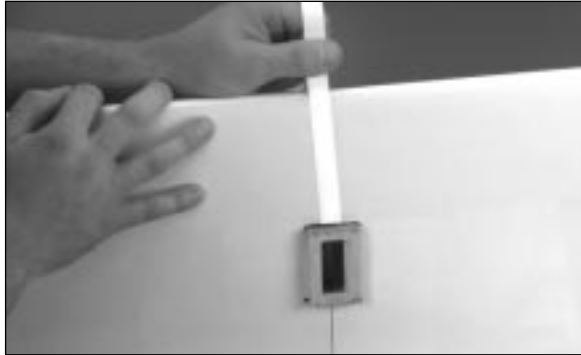
Note: It is important that the shorter aileron support is located closest to the trailing edge of the wing.



Section 3: Installing the Aileron Servo Tray

CONTINUED

- ❑ 14. Locate the wing center tape and remove the adhesive backing. Starting at the front of the aileron servo tray wrap the tape completely around the wing joint seam to the rear of the servo tray. Gently pulling on the tape



while pressing it down onto the wing will provide a smooth seam. Cut any excess tape with a pair of scissors.

Section 4: Assembling the Fuselage

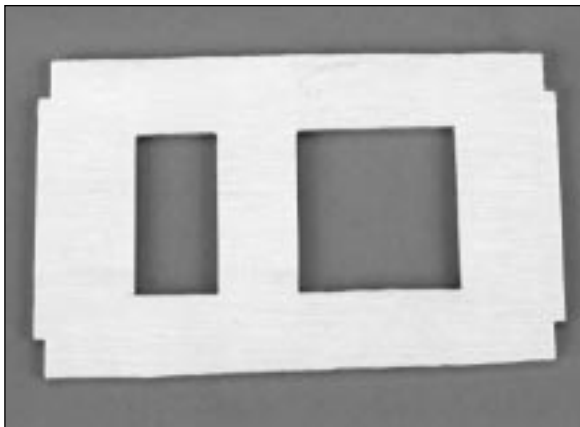
Parts Needed

Fuselage
Plywood servo tray

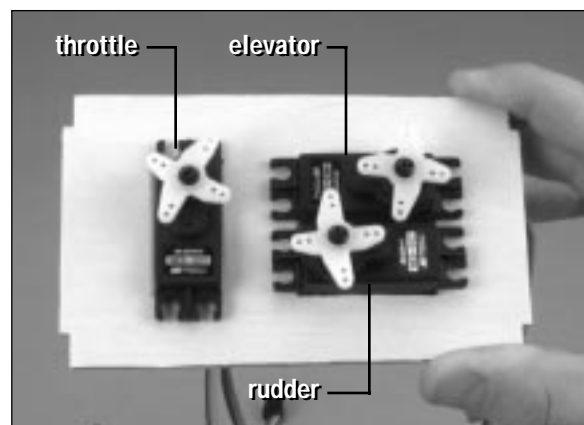
Tools And Adhesives Needed

Hobby Knife or File
Epoxy Brush
6-Minute Epoxy

- ❑ 1. Remove the plywood servo tray from the die-cut plywood sheet.



- ❑ 2. Trial fit the throttle, elevator and rudder servos in the servo tray. Depending upon the servos utilized, it may be necessary to enlarge the openings in the tray slightly. To do so, use a file or sharp hobby knife accordingly.

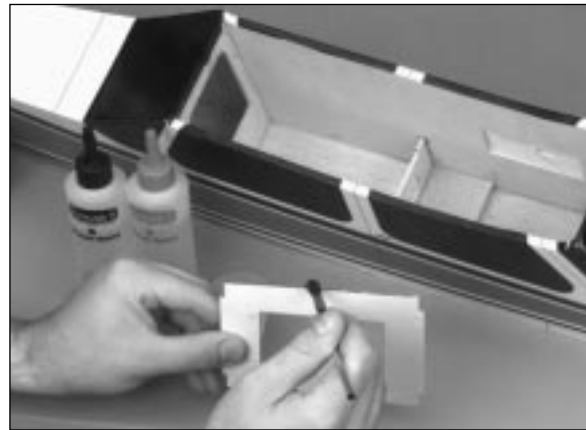
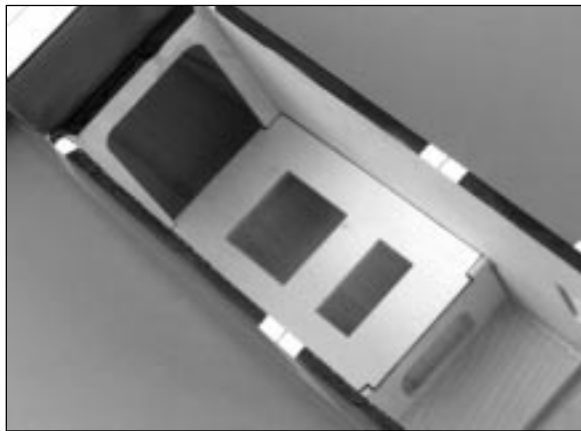


Section 4: Assembling the Fuselage

CONTINUED

- ❑ 3. After the proper servo fit has been achieved, remove the three servos from the servo tray. Trial fit the servo tray into the fuselage, noting the correct orientation. The single servo cut-out should be closest to the front of the fuselage.
- ❑ 4. Mix a small amount, approximately 1/8 oz., of 6-Minute Epoxy. Using an epoxy brush apply epoxy to the servo tray in the areas that will come in contact with the servo tray support and the fuselage sides. Install the servo tray into the fuselage, noting the correct orientation as described in Step 3 of this section.

Note: The tray should seat snugly into the notches in the servo tray support and fuselage former. If it doesn't, remove a small portion of the tab from the servo tray using a file or sharp hobby knife.



Section 5: Installing the Wing Dowels

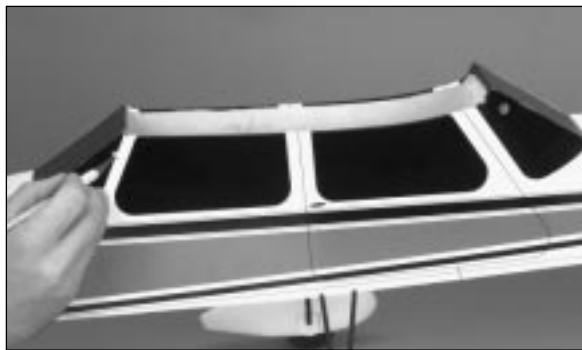
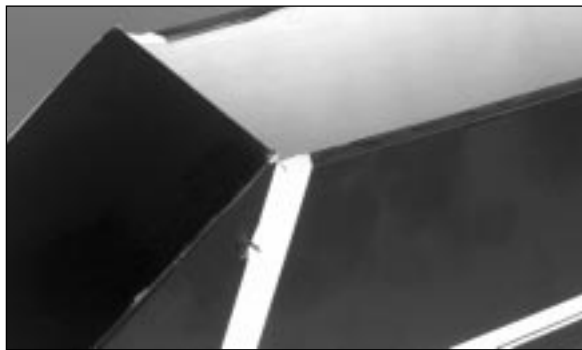
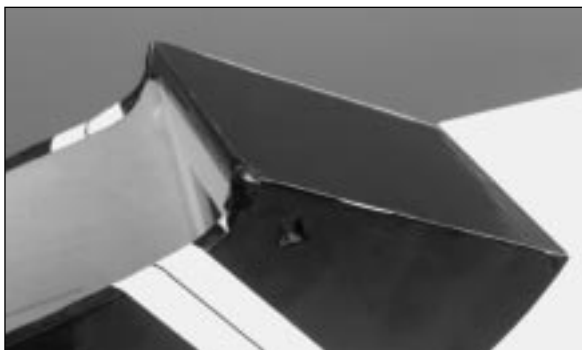
Parts Needed

Fuselage
Wing dowels (2)

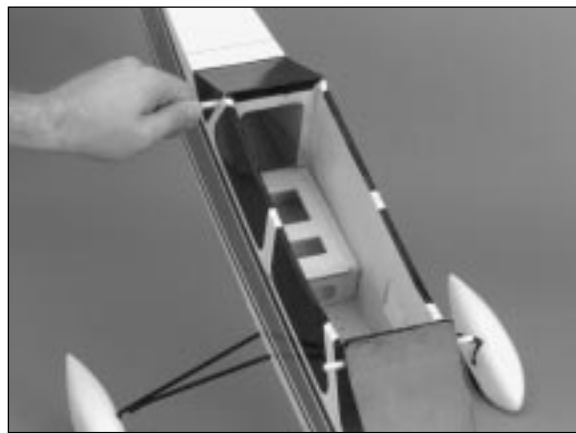
Tools And Adhesives Needed

6-Minute Epoxy
Epoxy brush
Hobby Knife
Paper towel
Rubbing alcohol

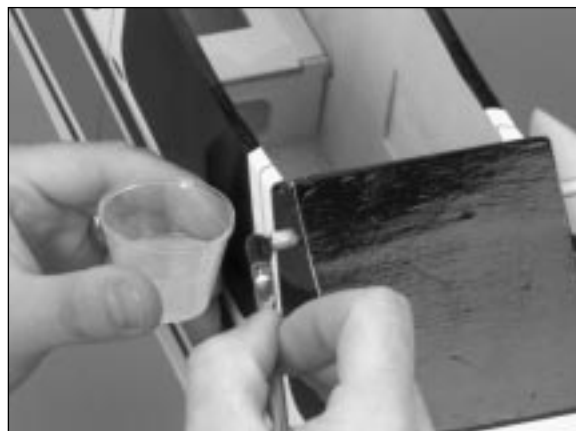
- ❑ 1. Locate the four pre-drilled wing dowel holes, two on either side of the fuselage. Using a sharp hobby knife, carefully cut the covering away from each of the holes as shown.



- ❑ 2. Insert one of the wooden dowels into each of the wing dowel holes. Ensure that an equal amount of dowel extends from each side of the fuselage.



- ❑ 3. Mix a small amount, approximately 1/4 oz., of 6-Minute Epoxy. Using an epoxy brush, apply a thin coat of epoxy to the wing dowels as shown. This will prevent the dowels from becoming fuel-soaked during flight.



- ❑ 4. If necessary, wipe away the excess epoxy using a paper towel and rubbing alcohol, being careful not to disturb the alignment of the wing dowels.

Section 6: Assembling the Vertical Stabilizer

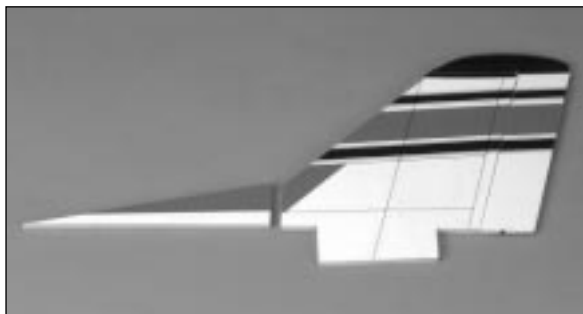
Parts Needed

Vertical stabilizer
Vertical stabilizer extension

Tools And Adhesives Needed

6-Minute Epoxy
Epoxy brush
or mixing stick
Rubbing alcohol
Paper towel
Masking tape

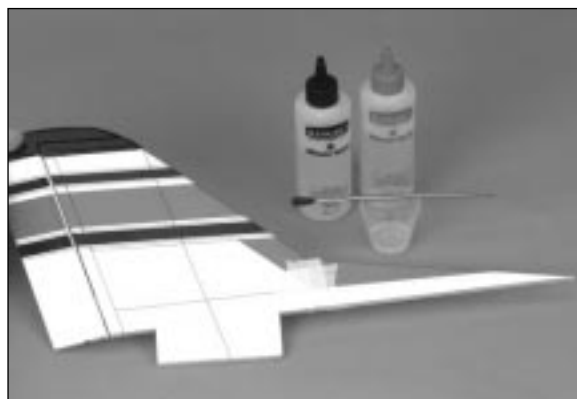
- ❑ 1. Locate the vertical stabilizer and the vertical stabilizer extension.



- ❑ 2. Mix a small amount, approximately 1/8 ounce, of 6-Minute Epoxy. Using a mixing stick, or epoxy brush, spread a light coat of epoxy on the exposed wood in the forward section of the vertical stabilizer where it will come into contact with the extension.



- ❑ 3. Firmly press the two pieces together, ensuring that they are accurately aligned, allow any excess epoxy to run out. Using rubbing alcohol and a paper towel, clean off the excess epoxy.
- ❑ 4. Apply masking tape at the joint of the vertical stabilizer and vertical stabilizer extension while the epoxy cures.



Section 7: Installing the Tail

Parts Needed

Horizontal stabilizer with elevator
Fuselage
Vertical stabilizer with rudder

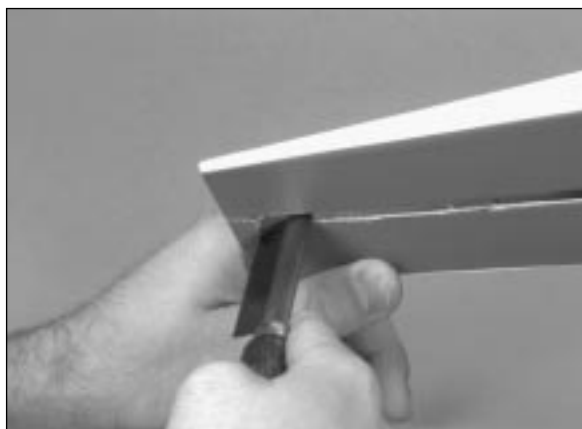
Tools And Adhesives Needed

Hobby knife	Masking tape	Paper towels
Ruler	Pencil	Epoxy brush
Felt tipped pen	30-Minute Epoxy	Mixing stick
Razor saw	Rubbing alcohol	90-Degree triangle

- ❑ 1. On the rear of the fuselage, slots are pre-cut in the wood structure for the horizontal and vertical stabilizers. The covering, however, must be carefully cut away. Using a sharp hobby knife, cut away the covering at the openings for the horizontal stabilizer.



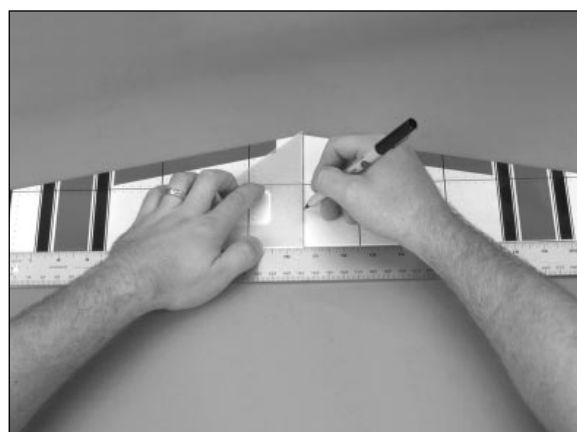
- ❑ 2. Using a razor saw, carefully cut out the area rearward of the horizontal stabilizer slots in the fuselage and extend the slots to the rear of the fuselage.



- ❑ 3. Using a sharp hobby knife, cut away the covering on the top rear of the fuselage where the vertical fin inserts into the fuselage.



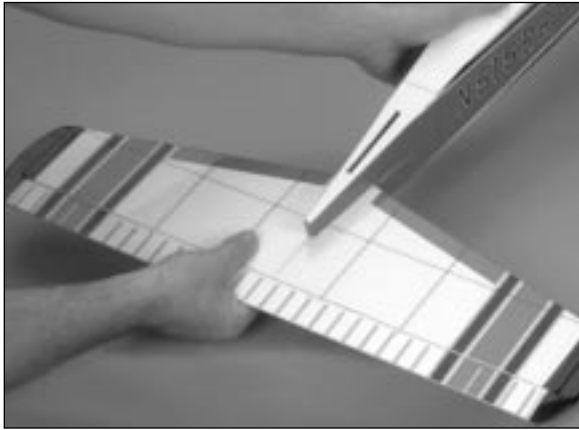
- ❑ 4. Locate the horizontal stabilizer. Using a ruler, mark the exact center on the top of the stab using a felt tipped pen.



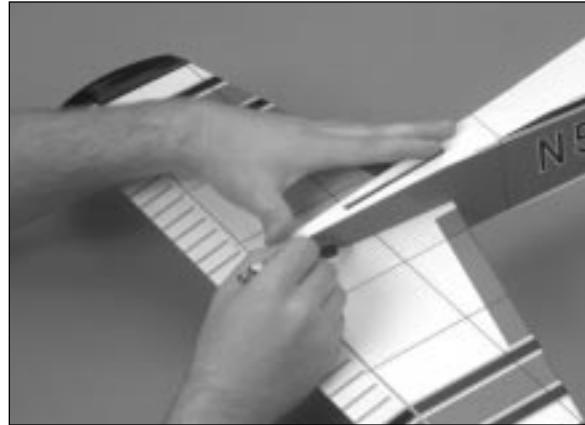
Section 7: Installing the Tail

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- ❑ 5. Insert the horizontal stabilizer into the fuselage until the center line drawn in the previous step can be seen through the center of the slot for the vertical stab.

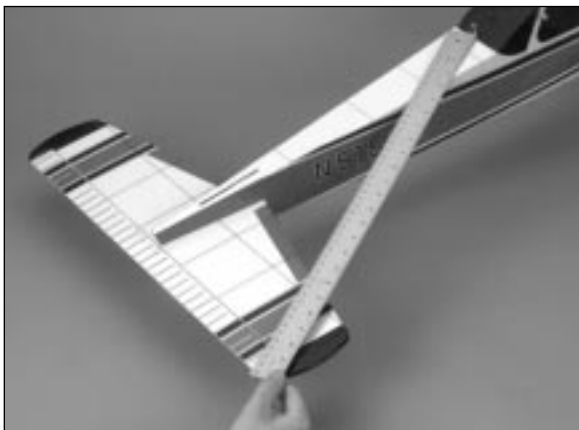


- ❑ 7. When you are satisfied with the alignment, use a pencil to trace around the top and bottom of the stabilizer where it meets the fuselage. The pencil should leave a light indentation in the covering.

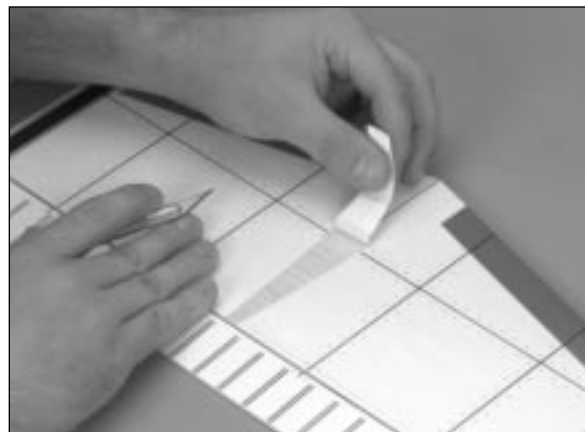


- ❑ 6. Check the alignment of the horizontal stabilizer by measuring from a fixed point along the center line of the fuselage to the leading edge on each side of the horizontal stabilizer. The distance must be equal on both sides. If not, adjust the stabilizer accordingly until the measurements are the same.

Note: It is important to be sure the horizontal fin is correctly aligned.



- ❑ 8. Remove the horizontal stabilizer from the fuselage. Using a straight edge and a sharp hobby knife, carefully cut away the covering inside the lines which were marked in the previous step. Be careful not to cut into the wood— this will weaken the structure.



Section 7: Installing the Tail

CONTINUED

- ❑ 9 Mix approximately 1/4 ounce of 30-Minute Epoxy to install the horizontal stabilizer. Using an epoxy brush or mixing stick, spread the epoxy onto the top and bottom of the horizontal stabilizer where it comes into contact with the fuselage.



- ❑ 10. Insert the horizontal stabilizer into the fuselage and position it in the approximate location. Adjust the alignment as described in Step 6 of this section.
- ❑ 11. Wipe off any excess epoxy using a paper towel and rubbing alcohol. Allow the epoxy to cure fully before proceeding to the next step.

- ❑ 12. Trial fit the vertical fin in position. Using a pencil, trace around the vertical stabilizer where it meets the fuselage. Again, the pencil should leave a light indentation in the covering of the vertical stabilizer.



- ❑ 13. Remove the vertical stabilizer from the fuselage. Using a straight edge and a sharp hobby knife, carefully cut away the covering below the lines which were drawn in the previous step. Do NOT cut into the wood as this will affect the structural integrity of the stabilizer.



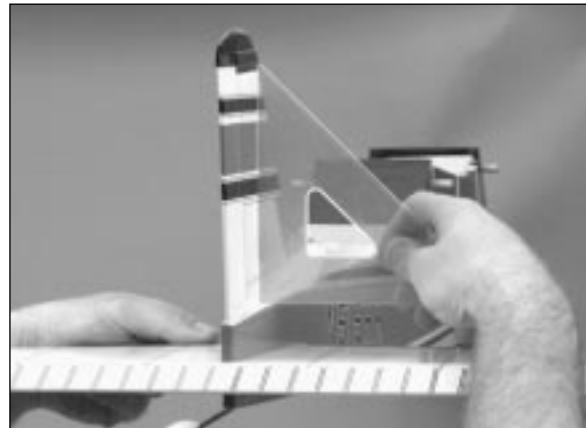
Section 7: Installing the Tail

CONTINUED

- ❑ 14. Mix approximately 1/4 ounce of epoxy to install the vertical stabilizer. Using an epoxy brush, or mixing stick, spread the epoxy on the vertical stabilizer where it contacts the fuselage and to the bottom of the stabilizer where it will seat on the horizontal stabilizer. Additionally, apply epoxy through the vertical stabilizer slot onto the horizontal stabilizer. Do NOT apply epoxy to the rudder itself.



- ❑ 15. Insert the vertical fin into the fuselage, ensuring that it is seated properly on the horizontal stabilizer. Using a 90-degree triangle, check to make sure that the vertical stabilizer is perpendicular to the horizontal stabilizer.



- ❑ 16. Wipe off any excess epoxy with a paper towel and rubbing alcohol, being cautious not to disturb the alignment of the vertical stabilizer.
- ❑ 17. Secure the vertical stabilizer in place using masking tape and allow the epoxy to cure completely.



Section 8: Hinging the Vertical & Horizontal Stabilizers

Parts Needed

Fuselage

Tools And Adhesives Needed

30-Minute Epoxy
Mixing stick

Paper towels
Rubbing alcohol

- ☐ 1. Carefully remove the rudder from the vertical stabilizer by pulling straight out with even pressure.
- ☐ 2. Remove the 3 hinges from the rudder. Flex the hinges accordingly so that they move freely.
- ☐ 3. Mix a small amount of 30-Minute Epoxy. Using either a mixing stick or scrap wood, apply the epoxy sparingly inside each hinge slot on the rudder. Additionally, apply a small amount of epoxy to the top and bottom one-half of each hinge. Insert the hinges into the rudder until the hinge line is even with the leading edge of the aileron.
- ☐ 4. Apply epoxy to the remaining half of each hinge and into the hinge slots in the vertical stabilizer as well. Replace the rudder onto the vertical stabilizer.

- ☐ 5. Carefully wipe away any excess epoxy using a paper towel and rubbing alcohol.
- ☐ 6. Repeat this procedure to install the elevator to the horizontal stabilizer.



Section 9: Installing the Control Horns

Parts Needed

Control horns (2)
Control horn backplates (2)
Control horn screw (4)
Fuselage

Tools And Adhesives Needed

Drill
1/16" Drill Bit
Felt tipped pen

Medium Phillips Screwdriver
Ruler

- ☐ 1. Turn the fuselage upside down, measure over 1/2" to the left from the center of the tail section on the fuselage. Mark the elevator as shown with a felt tipped pen. This mark will be the center of the elevator control horn.

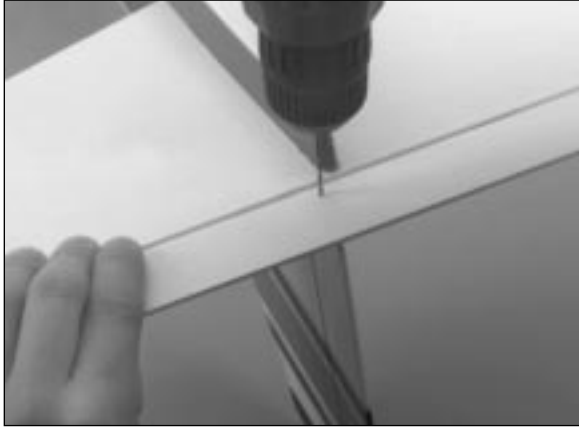
- ☐ 2. Place the center of the control horn on the elevator at the mark made in the previous step. Using a felt tipped pen, mark the hole positions of the control horn.



Section 9: Installing the Control Horns

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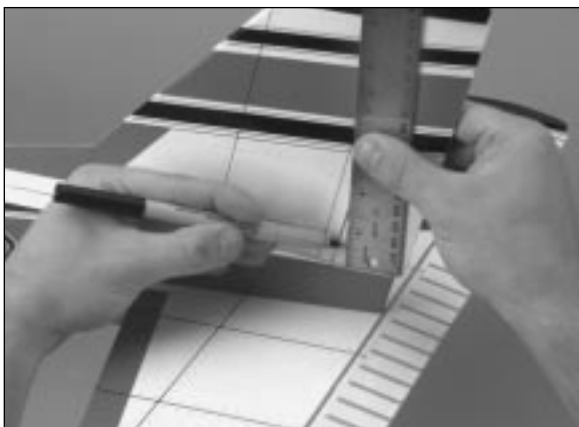
- ❑ 3. Remove the control horn and drill two 1/16" holes through the elevator as marked.



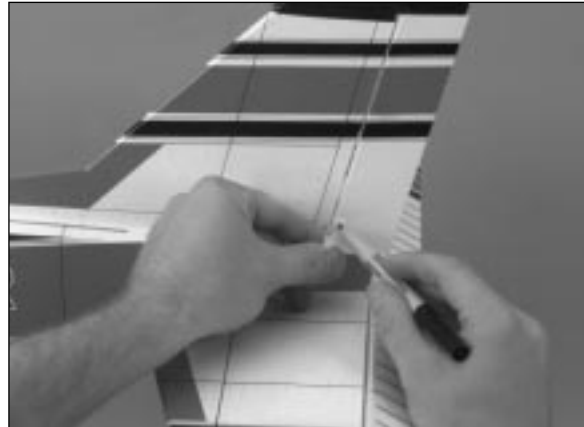
- ❑ 4. Attach the elevator control horn using the hardware provided (two screws and backplate) and fasten in place using a Phillips screwdriver.



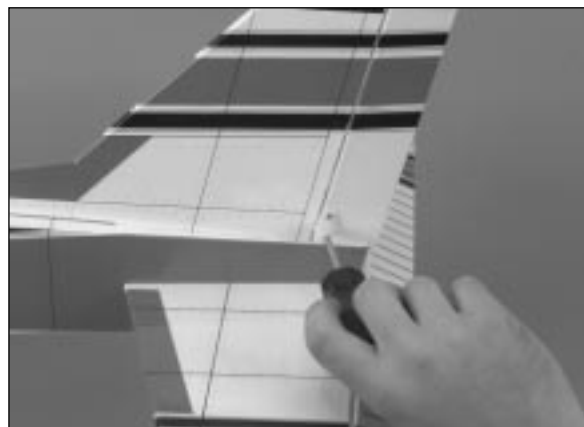
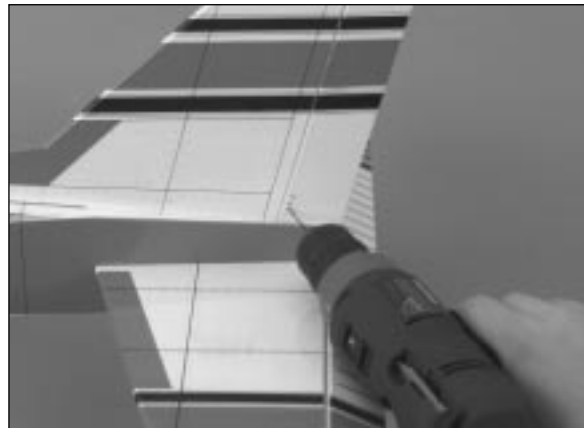
- ❑ 5. Turn the fuselage over once again, so that it is resting upright. Measure up 1/2" from the fuselage on the left side of the rudder. Mark this location using a felt tipped pen. This mark will serve as the center for the rudder control horn.



- ❑ 6. Center the control horn over the mark you have just made and using a felt tipped pen, mark the mounting hole locations through both holes onto the rudder.



- ❑ 7. Drill these holes with a 1/16" drill bit and install the rudder control horn using the two screws and backplate provided.



Section 10: Assembling & Installing the Fuel Tank

Parts Needed

Fuel tank	Aluminum tube, long (vent)
Fuel tubing (not supplied)	Silicone tubing
Fuel clunk	Rubber stopper
Aluminum tube, short (pickup)	Fuel tank cap
	2.6mm self tapping screws (2)
	Fuselage

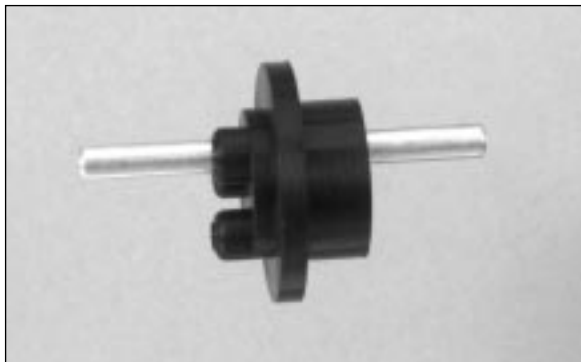
Tools And Adhesives Needed

Hobby knife
Drill
1/16" drill bit
6-Minute Epoxy

- ❑ 1. Locate the fuel tank and the fuel tank accessory bag.



- ❑ 2. Insert the short aluminum tube into one of the open holes in the black rubber stopper so that an equal amount of the tube extends from either side. This tube will be used as the fuel tank pickup tube.

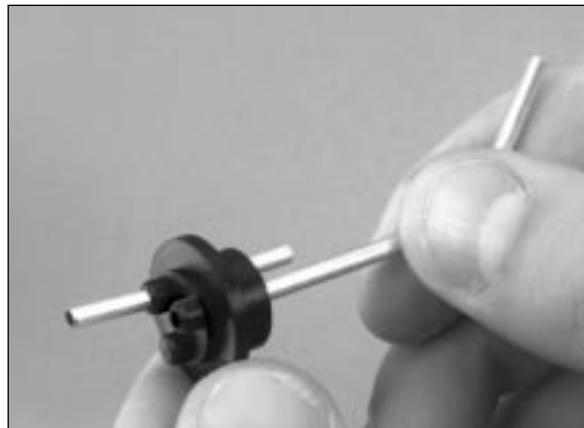


- ❑ 3. Locate the longer aluminum tube and bend it using your fingers as shown. This tube will be the fuel tank vent tube.



- ❑ 4. Slide this tube into the remaining hole in the black rubber stopper. It is easier if the tube is inserted through the rear of the stopper, with the straight portion first.

Note: the orientation of the tubes in the fuel tank stopper. The portion of the stopper with the three "pegs" is the front (facing outwards). The smooth surface is the rear (inside the fuel tank) of the stopper.



Section 10: Assembling & Installing the Fuel Tank

CONTINUED

- ❑ 5. Insert the black rubber stopper into the fuel tank as shown.



- ❑ 6. Locate the silicone fuel tubing and the metal fuel clunk. Insert the fuel clunk into one end of the fuel tubing. This assembly will be used for the fuel pickup inside the fuel tank.



- ❑ 7. Install the open end of the fuel tubing on the shorter aluminum tubing.



- ❑ 8. Carefully insert the assembly into the fuel tank and screw the fuel tank cap on firmly. Note the position of the vent tube. To function properly the vent tube must be positioned at the top of the tank.

Note: It is important to ensure that the fuel tank clunk does not touch the rear of the fuel tank. If it does, simply cut a small portion of the silicone fuel tubing until the clunk no longer reaches the rear of the tank.



- ❑ 9. It is important to note that the stopper is mounted closer to one edge of the fuel tank than the other. This "closer edge" is the top of the fuel tank.

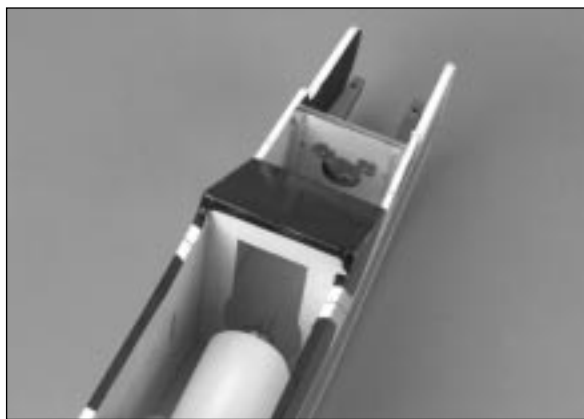


Section 10: Assembling & Installing the Fuel Tank

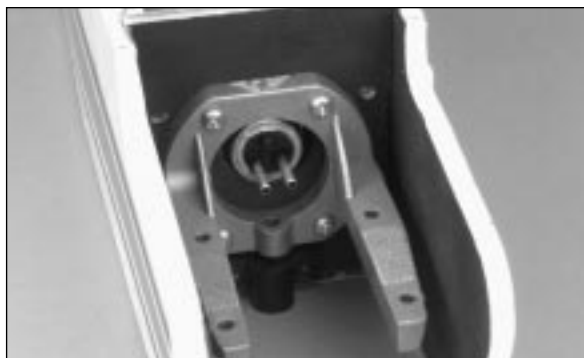
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- ❑ 10. Using a sharp hobby knife cut the tape which secures the hatch to the fuselage. Insert the fuel tank through the former, stopper first, until the neck of the fuel tank protrudes into the hatch, as shown.

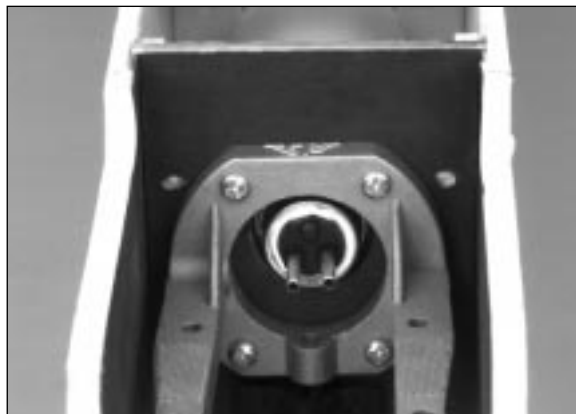
IMPORTANT: Remember which tube is the fuel tank pickup and which is the vent so you will properly connect the fuel tank to the engine.



- ❑ 11. Place the foam fuel tank collar around the neck of the fuel tank and press the fuel tank firmly against the firewall.



- ❑ 12. Cut the fuel tubing (not supplied) into a 2-1/2" piece and a 4-1/2" piece. Attach the 4-1/2" section of fuel tubing to the vent tube. The 2-1/2" piece should be connected to the fuel tank pickup tube.



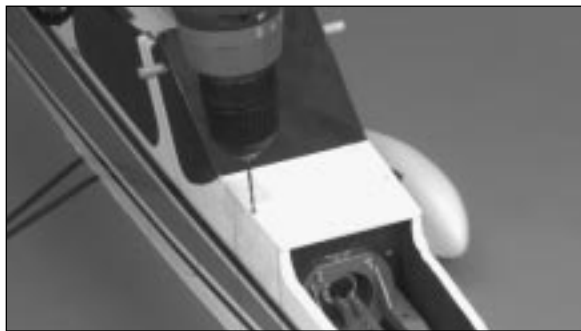
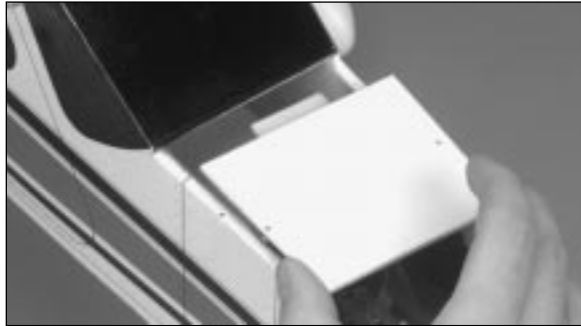
- ❑ 13. Mix a small amount, approximately 1/8 oz., of 6-Minute Epoxy and attach a scrap piece of plywood (from the 1/8" die-cut plywood parts sheet) to the rear of the hatch.



Section 10: Assembling & Installing the Fuel Tank

CONTINUED

- ❑ 14. Reposition the hatch on the fuselage. Drill one hole through each side of the hatch cover into the sidewall of the fuselage using a 1/16" drill bit, as shown.
- ❑ 15. Using two of the 2.6mm self tapping screws, attach the hatch cover to the fuselage.



Section 11: Installing the Landing Gear

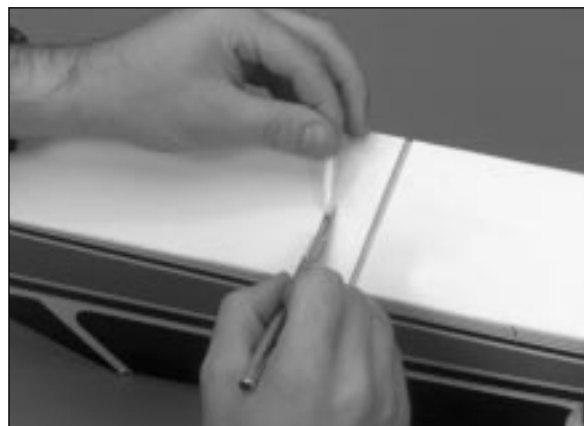
Parts Needed

Main landing gear
Landing gear straps (4)
2.6mm self tapping screws (8)

Tools And Adhesives Needed

Epoxy brush	Drill
Felt tipped pen	1/16" drill bit
6-Minute Epoxy	Small Phillips screwdriver
Hobby knife	

- ❑ 1. Locate the main landing gear slots in the bottom of the fuselage by running your hand along the underside of the fuselage. The first slot should be located approximately 10" aft of the engine compartment. The second is 1" behind the first. Using a sharp hobby knife, remove the covering from each of the slots.



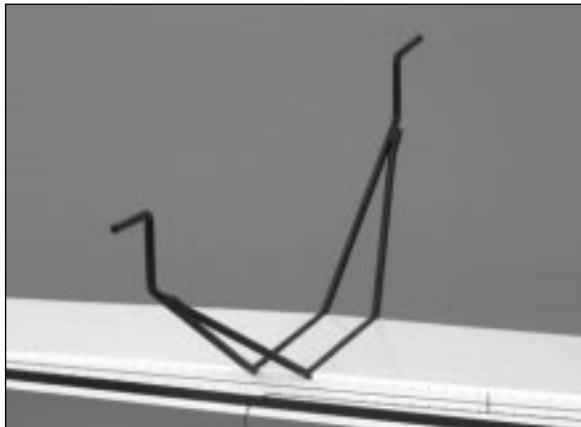
Section 11: Installing the Landing Gear

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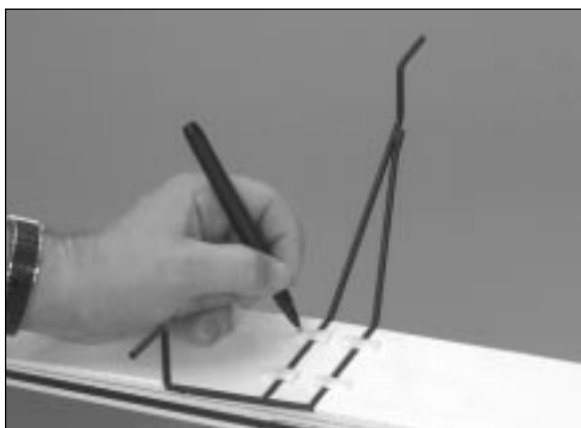
- ❑ 2. Mix a small amount, 1/8 ounce, of 6-Minute Epoxy. Using an epoxy brush, lightly coat the exposed wood in each of these slots. This will prevent the wood from becoming fuel soaked.



- ❑ 3. After the epoxy has cured completely, place the main landing gear into the channels as shown.



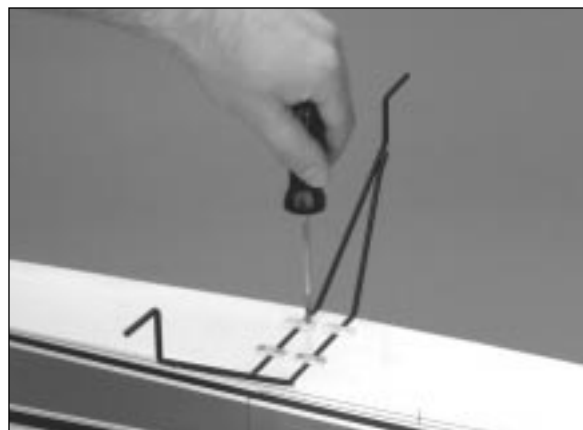
- ❑ 4. Remove the four landing gear straps from the plastic parts tree and place them across the landing gear struts. Using a felt tipped pen, mark the location of the eight landing gear mounting strap holes.



- ❑ 5. Remove the landing gear mounting straps and the landing gear from the fuselage. Drill the eight mounting holes as marked in the previous step using a 1/16" drill bit.



- ❑ 6. Reposition the landing gear and straps as described previously. Using the eight 2.6mm self tapping screws located in the hardware bag, fasten the landing gear to the bottom of the fuselage as shown.



Section 12: Installing the Nose Gear

Parts Needed

Nose gear
Nose gear control horn with 3mm screw
Wheel collar with 3mm screw (2)

Tools And Adhesives Needed

Medium Phillips screwdriver
Blue Locktite 242

- ❑ 1. Locate the nose gear, nose gear control horn, one 5/32" wheel collar, and two 2.6mm screws.



- ❑ 2. With the screw hole facing forward, slide the nose gear control horn onto the straight end of the nose gear so the control horn is situated in the flat spot on the gear next to the coil.



- ❑ 3. Place a 5/32" wheel collar between the nose gear mount and the motor mount. Insert the nose gear assembly up through the nose gear mount until the coil is just below the bottom of the fuselage.



- ❑ 4. Adjust the nose gear control horn until the arm is parallel with the firewall. Apply Blue Locktite 242 to a 3mm screw and secure the steering arm in place.



- ❑ 5. Secure the remaining wheel collar using Blue Locktite 242 and a 3mm screw.



Section 13: Assembling & Mounting the Wheel Pants

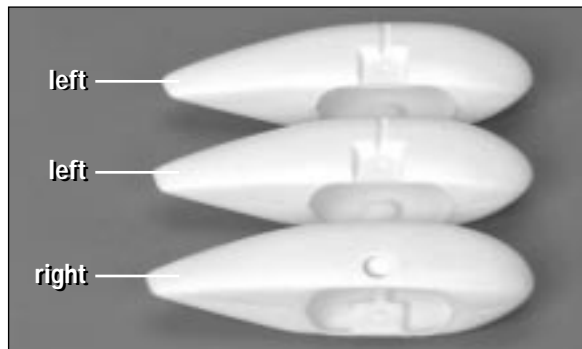
Parts Needed

Wheel pants (3)
2" foam wheels (3)
Wheel collars with screws (3)
Wheel pant decal sheet

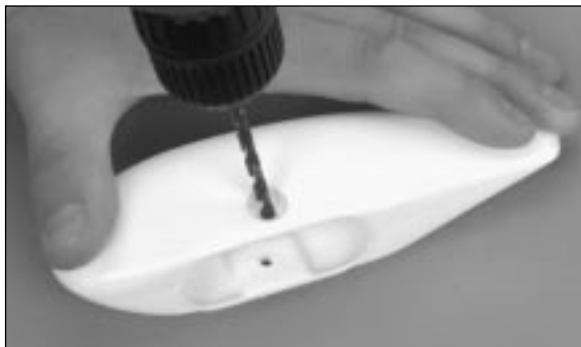
Tools And Adhesives Needed

Drill
5/32" drill bit
Medium Phillips Screwdriver
Blue Locktite 242

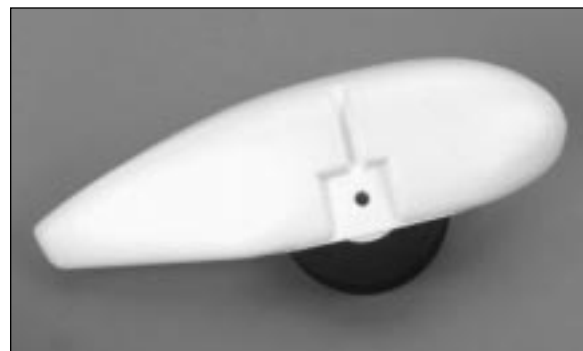
- ❑ 1. Locate the three wheel pants. Note that there are two left side wheel pants and one right side wheel pant.



- ❑ 2. There is a "dimple" in each side on each of the wheel pants. Use these "dimples" as a guide to drill a hole completely through each of the wheel pants using a 5/32" drill bit.



- ❑ 3. Insert one of the 2" foam wheels into the left wheel pant, aligning the landing gear hole in the foam wheel with the one drilled in the previous step.

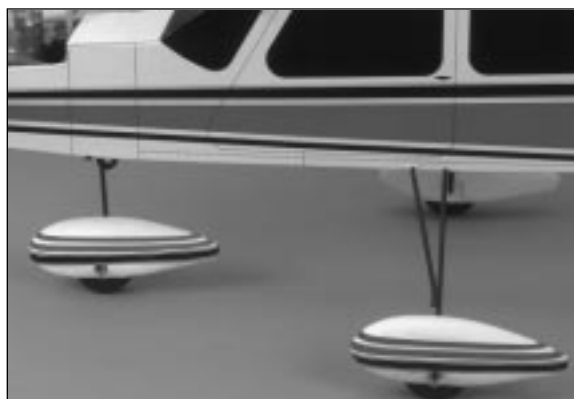


Section 13: Assembling & Mounting the Wheel Pants

CONTINUED

- ❑ 4. Slide the wheel pant assembly onto the left landing gear strut until the strut is seated firmly against the slot in the wheel pant. Secure the wheel and wheel pant to the strut using a 5/32" wheel collar. The wheel collar should be pressed against the wheel pant so that it remains seated in the landing gear strut. Apply Blue Locktite 242 to the 3 X 6mm wheel collar screw and securely tighten. It may be necessary to gently "squeeze" the wheel pant when tightening the wheel collar screw.
- ❑ 5. Repeat this procedure for the right side of the landing gear.
- ❑ 6. Remove the wheel pant decals from the decal sheet and attach to the wheel pants as per the photo.

Note: The wheel must rotate smoothly.



Section 14: Installing the Engine

Parts Needed

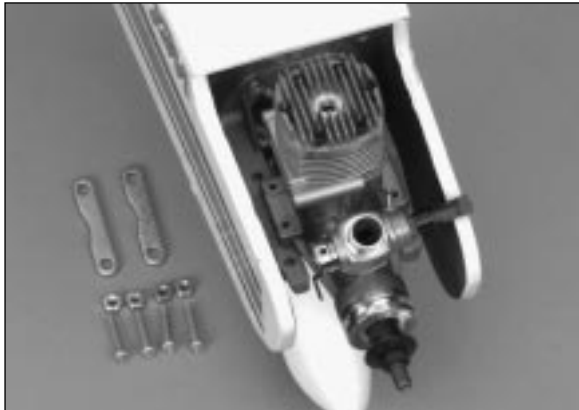
Engine
Engine mounting bracket (2)
Engine mounting screws and nuts (4 each)
Fuselage

Tools And Adhesives Needed

Medium Phillips screwdriver
Blue Locktite 242

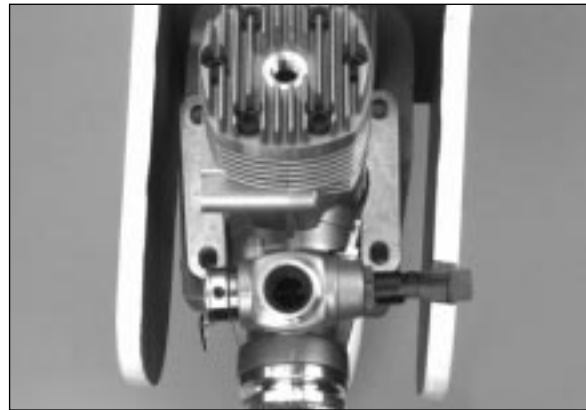
- ❑ 1. Remove the two engine mounting brackets, four 4 x 20mm screws and four 4mm nuts from the hardware bag.
- ❑ 2. Position the engine on the motor mount so the center line of the engine is in line with the centerline of the fuselage.

Note: On some engines it may be necessary to remove a small section of the fuselage sidewall to allow clearance for the needle valve.

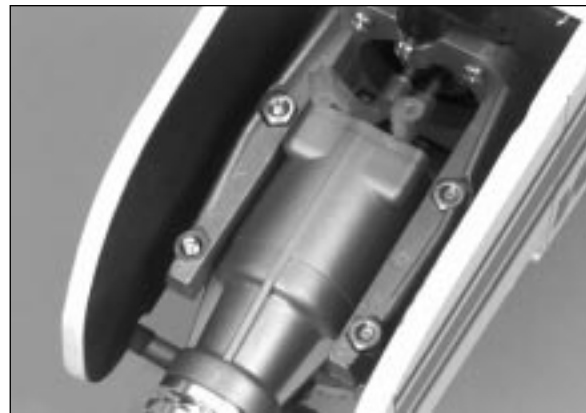


- ❑ 3. Place one engine mounting bracket, across each of the engine mounting lugs as shown.

Note: the "dimpled" side of the engine mounting bracket is the bottom. As such, the smooth surface should face upward.



- ❑ 4. Insert one 4 x 20mm screw into each of the engine mounting bracket holes. Press one of the 4mm nuts into the corresponding receptacle on the bottom of the motor mount. Apply Blue locktite 242 to secure the nut in place and firmly tighten the screw.



Section 15: Installing the Spinner

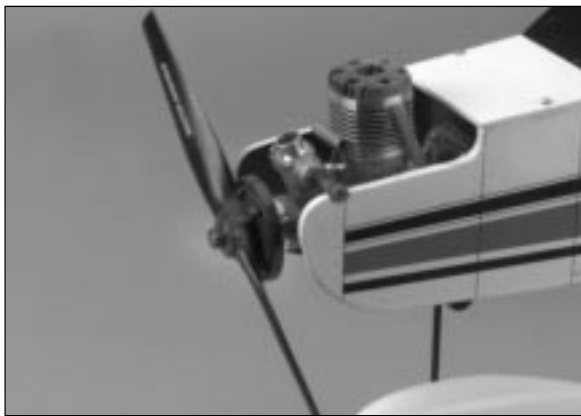
Parts Needed

Spinner
Spinner back plate
Spinner screws (2)
Fuselage

Tools And Adhesives Needed

Medium Phillips screwdriver

- ☐ 1. Remove the propeller nut and prop washer from the engine. Install the spinner back plate on the crankshaft, as shown.



- ☐ 2. Place the propeller onto the crankshaft so it seats correctly against the spinner back plate. Next, install the washer and the prop nut onto the crankshaft and tighten securely.



- ☐ 3. Attach the spinner to the spinner back plate using the two screws provided in the hardware bag.



Section 16: Installing the Radio

Parts Needed

4-channel radio system with 4 servos and hardware (not included)
Fuselage
Radio packing foam (not included)
Antenna tube (optional, not included)

Tools And Adhesives Needed

Drill
1/16" drill bit
Small Phillips Screwdriver
Hobby knife
Pencil
Felt tipped pen

Aileron Servo Installation

- 1. Install the rubber servo grommets and eyelets in the aileron servo and place the servo into the aileron mount as shown. Using a pencil, mark the position of the four servo mounting holes.



- 2. Remove the servo from the aileron tray. Drill the four mounting holes as marked in the previous step using a 1/16" drill bit.



- 3. Place the aileron servo back in its mount and secure it in place using the four screws included with the servo.

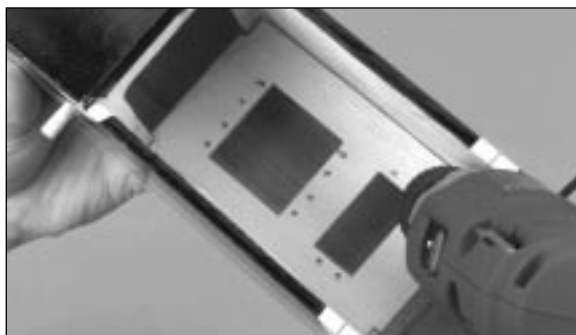


Rudder, Elevator, and Throttle Servo Installation

- 1. Install the rubber grommets and eyelets in the three remaining servos. Position the servos in the fuselage servo tray as shown, noting the location of the output horns. Using a pencil, mark the 12 servo mounting hole positions.



- 2. Remove the servos and drill the 12 mounting holes as marked. Re-install the servos, again noting the position of the output horns. Screw the servos in place using 12 servo screws, which are included with the servos.

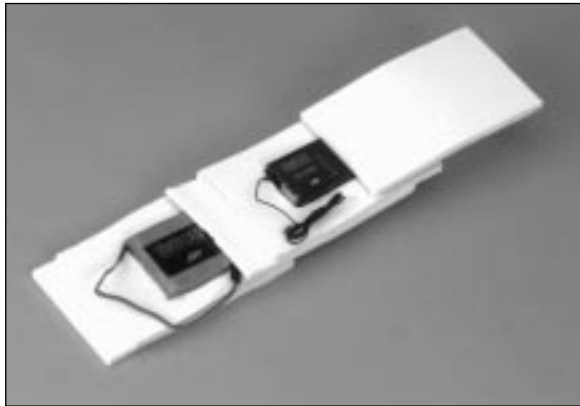


Section 16: Installing the Radio

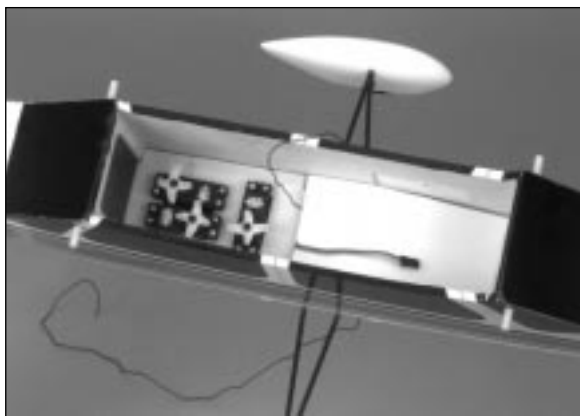
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Installing the Receiver and Battery Pack

- 1. Use radio packing foam (available at your local hobby dealer) when you install the receiver and battery. With a sharp hobby knife, cut a solid layer of foam the size of the compartment that is in front of the servo tray. Cut out another layer of foam that is identical in size, however, cut an opening in the center of this foam so it will accept the receiver battery pack. Place another solid layer of foam on top of this layer. Cut another layer of foam to accept the receiver. The final layer of foam should be solid.

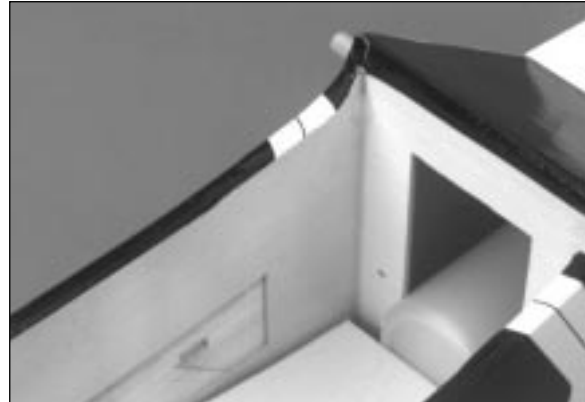


- 2. Place the layers of foam with the battery and receiver in their respective locations in the front compartment of the fuselage as shown. Route the antenna back through the fuselage using an antenna tube (not included) or route it outside the fuselage back to the vertical stabilizer.



Installing the Switch

- 1. The switch should be mounted on the left side of the fuselage, away from the potentially harmful exhaust gases. Locate the pre-cut switch mounting hole on the inside of the fuselage. Using a sharp hobby knife, carefully remove the covering from this slot.



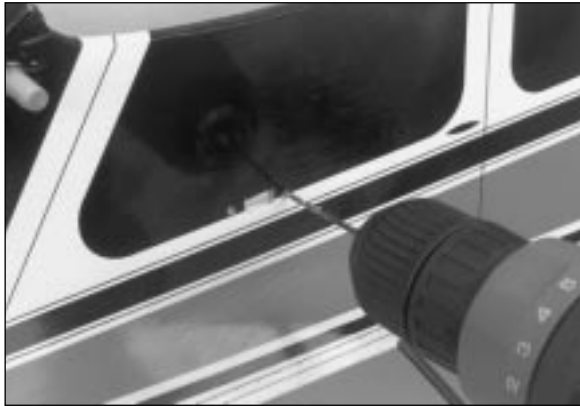
- 2. Detach the switch plate from the receiver switch harness. Center the switch plate over the hole which was cut in the previous step. Using a felt tipped pen, mark the screw hole on either end of the switch plate.



Section 16: Installing the Radio

CONTINUED

- ❑ 3. Remove the switch plate from the fuselage. Drill the two mounting holes as marked using a 1/16" drill bit.



- ❑ 4. Reposition the switch plate as shown and place the switch on the inside of the fuselage. Using the two screws supplied with the switch, attach the switch to the fuselage.



Section 17: Installing the Linkages

Parts Needed

Aileron horns (2)
Long threaded rods (2)
Wing
Heat shrink tubing
Clevises (5)
Short threaded rods (4)

Tools And Adhesives Needed

Z-bend pliers
Ruler
Thick CA glue
Hobby knife
Heat gun

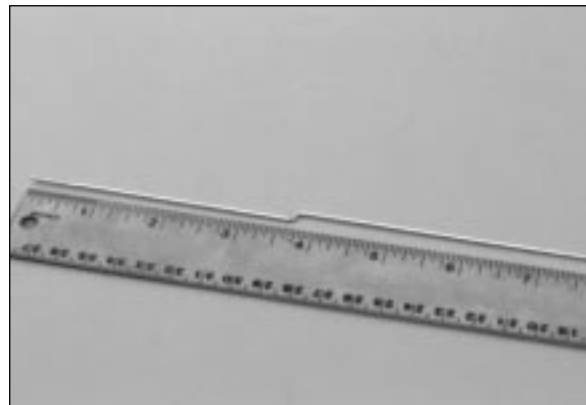
Installing the Aileron Linkage

- ❑ 1. Remove the two aileron horns from the plastic parts tree. Thread the aileron horns onto the aileron torque rod until the rod is flush with the aileron horn.



- ❑ 2. Locate two of the shorter threaded rods.

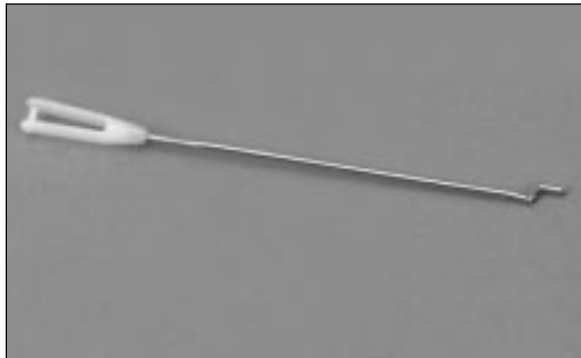
Note: The shorter rods are silver in color. Using the Z-bend pliers, make a Z-bend 3-5/8" from the threaded end of both rods. Carefully, remove the extra length of rod. Set the extra length of rod aside for now. It will be used in the construction of the elevator and aileron pushrods.



Section 17: Installing the Linkages

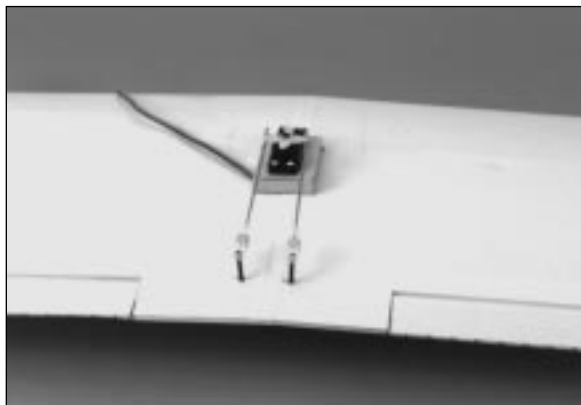
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- ❑ 3. Screw a clevis onto the threaded end of each rod.



- ❑ 4. Center the servo horn and install the Z-bend into the outer-most hole on either side of the servo arm.
- ❑ 5. Attach the clevises onto their respective aileron horns.

Note: It is a good idea to place a piece of fuel tubing over the clevises as shown. This will provide extra insurance against the clevises accidentally coming open.



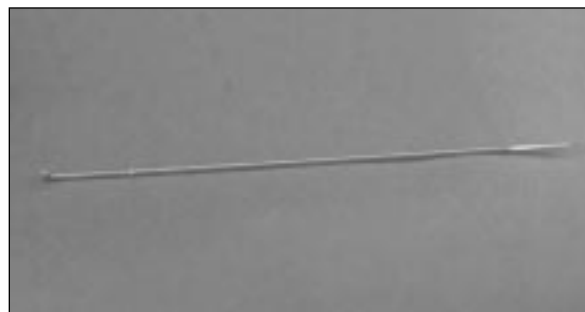
- ❑ 6. Adjust the aileron torque rod length by screwing in or out until the aileron is exactly in the neutral position when the servo is centered and the clevis is in the aileron horn. Adjust both sides.



Assembling the Pushrods

Rudder Pushrod

- ❑ 1. Locate one of the short threaded rods, one piece of the extra length of rod from Step 2 in the previous section, one piece of the yellow heat shrink tubing, one clevis and one of the balsa pushrod dowels.
- ❑ 2. Cut the heat shrink into two equal pieces with a sharp hobby knife or a pair of scissors.
- ❑ 3. Cut 7" off the threaded rod from the unthreaded end. This rod will be utilized to attach the clevis to the rudder control horn.

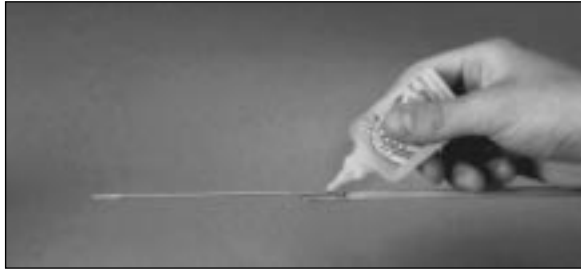


Section 17: Installing the Linkages

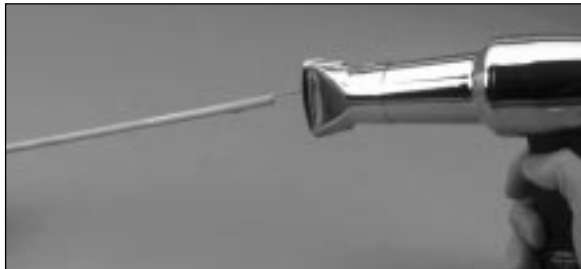
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- ❑ 4. Using needle nose pliers, bend a 90-degree angle 1/4" from the unthreaded end of the threaded rod.

- ❑ 5. Insert the 90-degree bend into the hole of the balsa dowel and saturate the balsa with thick CA glue where the rod contacts the balsa.



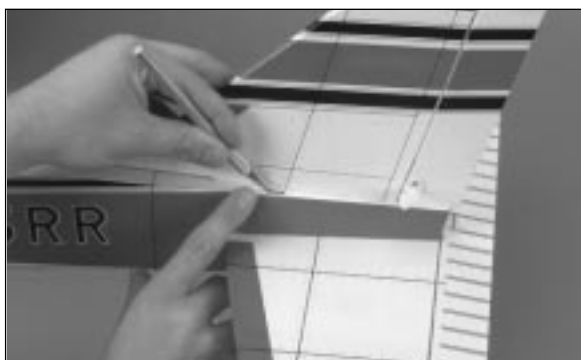
- ❑ 6. Slide a piece of heat shrink tubing over the end of the balsa dowel and shrink it in place using a heat gun.



- ❑ 7. Locate the extra length of rod from Step 2 in the previous section. Using a pair of needle nose pliers, make a 90-degree bend 1/4" from one end of this rod.

- ❑ 8. Insert the 90-degree bend into the remaining hole of the balsa dowel and saturate it with thick CA glue where the rod contacts the balsa.

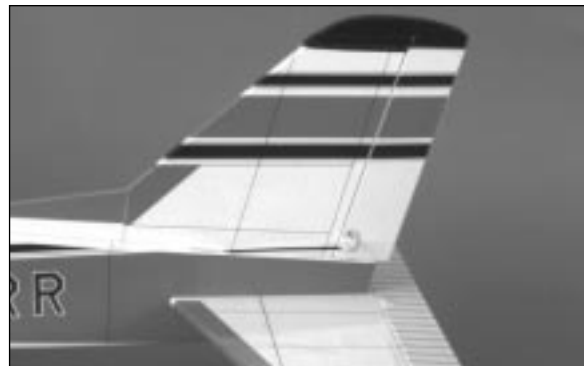
- ❑ 9. Carefully cut away the covering on the left side at the tail of the fuselage where the pushrod will exit.



- ❑ 10. Slide a piece of heat shrink tubing over the end of the balsa dowel and shrink it in place using a heat gun.

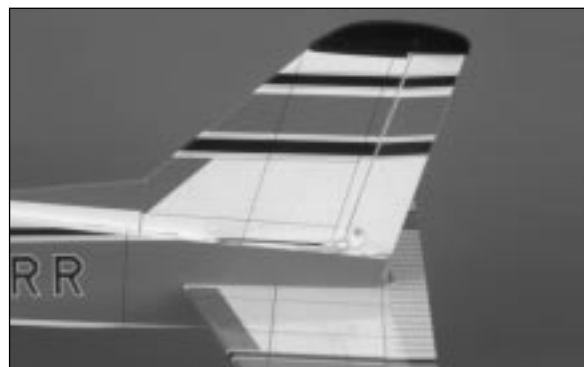


- ❑ 11. Insert the pushrod assembly, threaded rod first, into the fuselage so the threaded rod exits the rudder pushrod hole.



- ❑ 12. Screw on a clevis 12 complete turns. Fasten the clevis in the third hole from the inside of the rudder control horn.

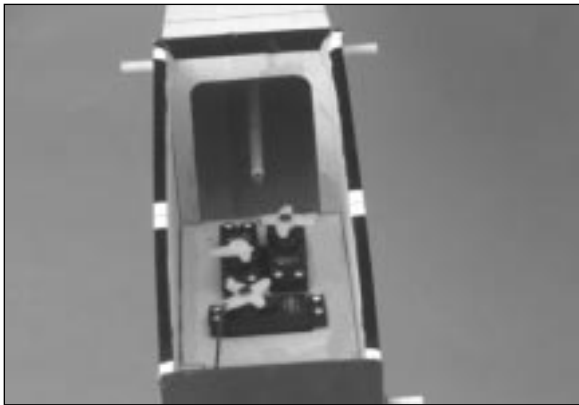
Note: It is a good idea to place a piece of fuel tubing over the clevis (as shown) as extra insurance to prevent the clevis from accidentally coming open.



Section 17: Installing the Linkages

CONTINUED

- ❑ 13. Center the rudder servo, and using a felt tipped pen, place a mark on the unthreaded end of the pushrod where it passes the respective servo.
- ❑ 14. Using Z-bend pliers, make a Z-bend at the marked location on the rod. Cut off the excess rod.
- ❑ 15. Insert the Z-bend into the servo arm. It may be necessary to enlarge the servo arm slightly to accept the Z-bend.



Elevator Pushrod

- ❑ 1. Carefully cut away the covering on the right side of the fuselage where the elevator pushrod will exit.



- ❑ 2. Repeat Steps 1-10 in the section above to assemble the elevator pushrod.

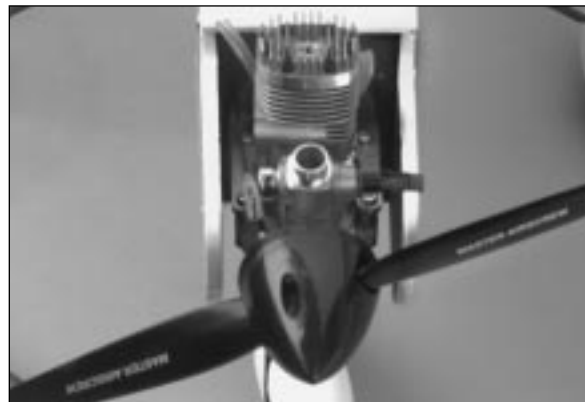
- ❑ 3. Insert the pushrod assembly, threaded rod first, into the fuselage so the threaded rod exits the elevator pushrod slot.
- ❑ 4. Screw on a clevis 20 complete turns. Fasten the clevis in the third hole from the inside of the elevator control horn.

Note: It is a good idea to place a piece of fuel tubing over the clevis as extra insurance to prevent the clevis from accidentally coming open.

- ❑ 5. Center the elevator servo, and using a felt tipped pen, place a mark on the pushrod where it passes the respective servo.
- ❑ 6. Using Z-bend pliers, make a Z-bend at the marked location on the rod. Cut off the excess rod.

Throttle Linkage

- ❑ 1. Locate one of the longer threaded rods and one clevis.
- ❑ 2. Screw the clevis onto the threaded end of the rod approximately 20 turns.



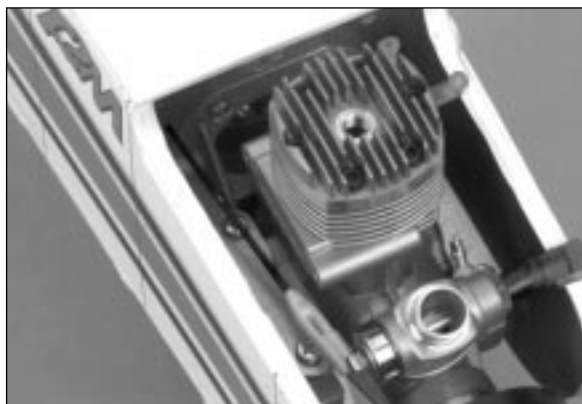
Section 17: Installing the Linkages

CONTINUED

- ❑ 3. Insert the threaded rod, unthreaded end first, through the 1/16" throttle linkage hole in the firewall. The rod should exit through the radio tray compartment.



- ❑ 4. Attach the clevis to the throttle lever of the carburetor, opening the carburetor half way.



- ❑ 5. Center the throttle servo. Using a felt tipped pen, mark the rod where it passes the respective servo arm.

Note: It is important to be sure that the carburetor remains half open when the throttle servo is centered.

- ❑ 6. Using Z-bend pliers, make a Z-bend at the marked spot on the rod. Remove the excess rod.

Nose Wheel Linkage

- ❑ 1. Locate the remaining long threaded rod and clevis.



- ❑ 2. Carefully cut away the covering on the bottom of the fuselage where the pushrod will exit.

- ❑ 3. Insert the threaded rod, threaded end first, through the nose wheel linkage slot and into its respective 1/16" guidance holes in the fuselage.

- ❑ 4. Screw on a clevis 20 full turns. Fasten the clevis in the outermost servo arm hole opposite of the rudder servo Z-bend.



Section 17: Installing the Linkages

CONTINUED

- ☐ 5. Be sure that the rudder servo is centered. Using a felt tipped pen, place a mark on the unthreaded end of the pushrod where it passes the respective servo arm.
- ☐ 6. Using Z-bend pliers, make a Z-bend at the marked location on the rod. Cut off the excess rod.
- ☐ 7. Insert the Z-bend into the outermost hole on the nose gear control horn. It may be necessary to loosen the nose gear assembly during installation of the Z-bend.



Section 18: Plumbing the Engine

Parts Needed

4-channel radio system with 3 servos and hardware (not included)
Fuselage
Radio packing foam (not included)
Antenna tube (optional, not included)

Tools And Adhesives Needed

Drill
1/16" drill bit
Small Phillips screwdriver
Hobby knife
Pencil
Felt tipped pen

- ☐ 1. Install the muffler per the instructions included with the engine.



- ☐ 2. Connect the vent tube from the fuel tank to the nipple, or pressure fitting, on the muffler.
- ☐ 3. The remaining tube should be attached to the carburetor nipple.

Section 19: Control Throw Recommendation

The following control throws offer the most positive response and are a good place to begin. After you've become more familiar with the flight characteristics, adjust the control throws to meet your style of flying.

Aileron: 9/32" up, 9/32" down

Elevator: 3/8" up, 3/8" down

Rudder: 1" right, 1" left

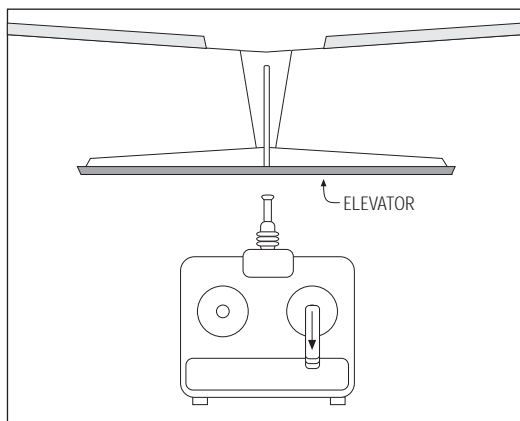
Section 20: Balancing the Cessna

An important part of preparing the aircraft for flight is properly balancing the model. Don't inadvertently neglect this step. The recommended C.G.(Center of Gravity) location for the first flights with the Cessna is 3 5/8" from the leading edge of the wing.

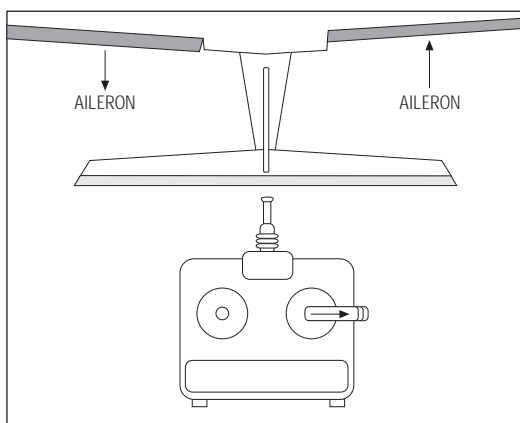
If necessary, add weight to either the tail or nose until the correct balance is achieved. Stick-on weights are available at your local hobby shop and work well for this purpose.

Pre-Flight Check

- 1. Check that all control functions move in the correct direction. If not, use the respective reversing switch to correct the direction.

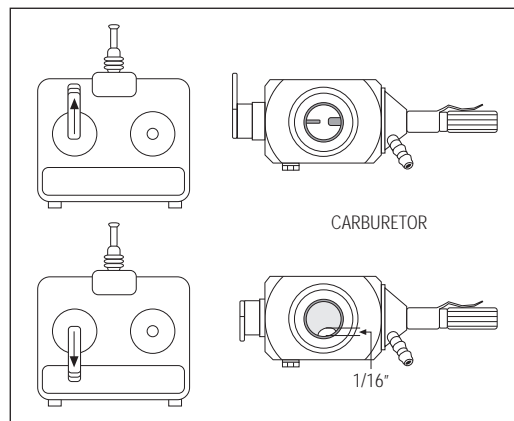


ELEVATOR

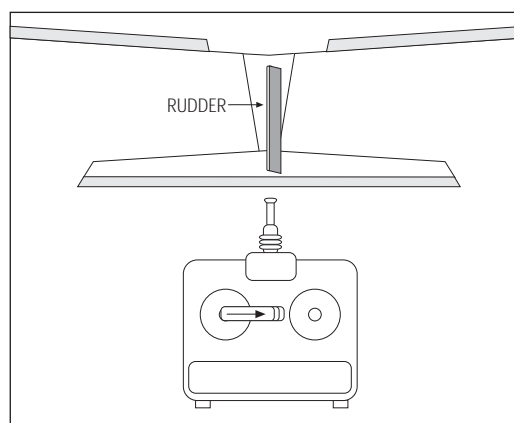


AILERON

Note: Mode II transmitter shown in diagrams.



THROTTLE



RUDDER

- 2. Check that each clevis is securely snapped into position.
- 3. Check that all servo horn screws are tight.
- 4. Charge the transmitter and receiver battery per the instructions included with the radio system.
- 5. Read and follow all the instructions included with the engine and follow the recommended break-in procedure.

Pre-Flight at the Field

Range Test Your Radio

- ❑ 1. Before each flying session be sure to range check your radio. This is accomplished by turning on your transmitter with the antenna collapsed. Turn on the radio in your airplane. With your airplane on the ground, you should be able to walk 30 paces away from your airplane and still have complete control of all functions. If not, don't attempt to fly! Have your radio equipment checked out by the manufacturer.
- ❑ 2. Double check that all controls (aileron, elevator, throttle, rudder) move in the correct direction. See page 40.
- ❑ 3. Be sure that your batteries are fully charged per the instructions included with your radio.

Adjusting the Engine

- ❑ 1. Completely read the instructions included with your engine and follow the recommended break-in procedure. 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. Before you fly be sure that your engine reliably idles, transitions and runs at all throttle settings . Only when this is achieved should any plane be considered ready for flight.

AMA Safety Code

1994 Official AMA National Model Aircraft Safety Code Effective January 1, 1994

Model flying must be in accordance with this Code in order for AMA liability protection to apply

General

1. I will not fly my model aircraft in sanctioned events, air shows, or model flying demonstrations until it has been proven to be airworthy by having been previously, successfully flight tested.
2. I will not fly my model higher than approximately 400 feet within 3 miles of an airport without notifying the airport operator. I will give right-of-way and avoid flying in the proximity of full-scale aircraft. Where necessary, an observer shall be utilized to supervise flying to avoid having models fly in the proximity of full-scale aircraft.
3. Where established, I will abide by the safety rules for the flying site I use, and I will not willfully and deliberately fly my models in a careless, reckless and/or dangerous manner.
4. At all flying sites a straight or curved line(s) must be established in front of which all flying takes place with the other side for spectators. Only those persons essential to the flight operations are to be permitted on the flying side of the line; all others must be on the spectator side. Flying over the spectator side of the line is prohibited, unless beyond the control of the pilot(s). In any case, the maximum permissible takeoff weight of the model is 55 pounds unless as stated in their official rules.
5. At air shows or model flying demonstrations a single straight line must be established, one side of which is for flying, with the other side for spectators. Only those persons accredited by the contest director or other appropriate official as necessary for flight operations or as having duties or functions relating to the conduct of the show or demonstration are to be permitted on the flying side of the line. The only exceptions which may be permitted to the single straight line requirements, under special circumstances involving consideration of site conditions and model size, weight, speed, and power, must be jointly approved by the AMA President and the Executive Director.
6. Under all circumstances, if my model weighs over 20 pounds, I will fly it in accordance with paragraph 5 of this section of the AMA Safety Code.
7. I will not fly my model unless it is identified with my name and address or AMA number, on or in the model. Note: This does not apply to models flown indoors.
8. I will not operate models with metal-bladed propellers or with gaseous boosts, in which gases other than air enter their internal combustion engine(s); nor will I operate models with extremely hazardous fuels such as those containing tetranitromethane or hydrazine.
9. I will not operate models with pyrotechnics (any device that explodes, burns, or propels a projectile of any kind) including, but not limited to, rockets, explosive bombs dropped from models, smoke bombs, all explosive gases (such as hydrogen-filled balloons), ground mounted devices launching a projectile. The only exceptions permitted are rockets flown in accordance with the National Model Rocketry Safety Code or those permanently attached (as per JATO use); also those items authorized for Air Show Team use as defined by AST Advisory Committee (document available from AMA HQ). In any case, models using rocket motors as primary means of propulsion are limited to a maximum weight of 3.3 pounds and a G series motor. Note: A model aircraft is defined as an aircraft with or without engine, not able to carry a human being.
10. I will not operate any turbo jet engine (axial or centrifugal flow) unless I have obtained a special waiver for such specific operations from the AMA President and Executive Director and I will abide by any restriction(s) imposed for such operation by them. (Note: This does not apply to ducted fan models using piston engines or electric motors.)
11. I will not consume alcoholic beverages prior to, nor during, participation in any model operations.

Radio Control

1. I will have completed a successful radio equipment ground range check before the first flight of a new or repaired model.
2. I will not fly my model aircraft in the presence of spectators until I become a qualified flier, unless assisted by an experienced helper.
3. I will perform my initial turn after takeoff away from the pit or spectator areas, and I will not thereafter fly over pit or spectator areas, unless beyond my control.
4. I will operate my model using only radio control frequencies currently allowed by the Federal Communications Commission. (Only properly licensed Amateurs are authorized to operate equipment on Amateur Band frequencies.) Further, any transmitters that I use at a sanctioned event must have a certified R/CMA-AMA gold sticker affixed indicating that it was manufactured or modified for operation at 20 kHz frequency separation (except 27 MHz and 53 MHz).
5. I will not knowingly operate an R/C system within 3 miles of a pre-existing model club flying site without a frequency sharing agreement with that club.