

HANGAR 9

WE GET PEOPLE FLYING

J-3 PIPER CUB

ASSEMBLY MANUAL



Specifications

Wingspan: 80-1/8"

Wing Area: 850 sq. in.

Weight (Approx.): 6.5-7.0 lbs.

Recommended Engines:

.40-.46 2-Cycle

.45-.60 4-Cycle

Raising the Standard of Quality in Almost Ready-To-Fly Aircraft

- Ultra Covering
- Pre-finished Fiberglass Cowl
- Highest Quality Craftsmanship
- 90% Pre-Built
- IMAA-Legal 80-1/8" Wingspan

90%
PRE-BUILT **ARF**

ALMOST READY-TO-FLY

Table of Contents

Introduction	3
Additional Equipment Required	4
Tools and Supplies Required	4
Section 1: Hinging The Aileron	5
Section 2: Joining the Wing Halves	6
Section 3: Installing the Aileron Servos	8
Section 4: Installing the Aileron Linkage	12
Section 5: Mounting The Wing	14
Section 6: Installing The Tail	17
Section 7: Hinging The Rudder	20
Section 8: Installing The Engine	22
Section 9: Landing Gear Assembly and Installation	25
Section 10: Assembling and Installing the Fuel Tank	26
Section 11: Installing The Radio	28
Section 12: Installing The Linkages	29
Section 13: Attaching The Cowl	34
Section 14: Installing The Windows	35
Section 15: Scale Detailing	35
Section 16: Balancing the J-3 Piper Cub	38
Section 17: Control Throw Recommendation	39
Section 18: Flying the J-3 Piper Cub	39
Pre-Flight Check	40
Pre-Flight at the Field	41
AMA Safety Code	42
Cowl Template (for Saito .50 or .56)	43

Introduction

Throughout aviation history, select few aircraft have achieved such a level of popularity that they transcend their eras. Such is the case of the J-3 Piper Cub. This timeless classic is perhaps even more famous today than when it was first introduced to the army (then known as an L-4) in the late '30s. 4 out of 5 pilots in the Second World War are claimed to have gotten their initial flight training behind the stick of the Cub.

Hangar 9's J-3 Piper Cub offers traditional scale appearance in an IMAA-legal size that can be powered with any standard .40-.46 size 2-cycle engine. Or, for enhanced scale realism, a .45-.55 4-cycle engine can be used to power this Cub.

Hangar 9's J-3 Piper Cub comes 90% pre-built to a high level of craftsmanship and is pre-covered and trimmed in Ultra covering. This means you can have a large (80-1/8" span), high quality scale J-3 Piper Cub, showing it to your friends at the field in 20 hours or less. Best of all, they'll never know it's an ARF, and chances are they'll compliment you on your building and finishing skill. Don't worry . . . we won't tell!

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)
- 5 Standard Servos
- Standard 450-650 mAh Receiver Battery Pack
- Y-Harness
- 2 Servo Extensions



Recommended JR Systems

- JR F400 FM
- JR XF642FM/PCM
- JR XP783
- JR XP8103 FM/PCM

Engine Recommendations

- .40-.46 2-Cycle Engines
- .45-.55 4-Cycle Engines



Recommended 2-Cycle Engines

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

Recommended 4-Cycle Engines

- Saito .50GK
- Saito .50
- Saito .56GK
- Saito .56

Tools and Supplies Required

Adhesives

- Instant thin CA (cyanoacrylate) glue
- Thick CA glue
- CA remover/debonder
- White canopy glue (e.g., R/C 56 or Formula 560)
- 6 minute epoxy
- 12 minute epoxy
- 30 minute epoxy
- Blue Locktite 242

Tools

- Drill
- Drill bits: 1/4", 1/8", 1/16", 3/32"
- Small and medium Phillips screwdrivers
- Z-bend pliers
- Needle nose pliers
- Pliers
- Small round file
- Adjustable wrench
- Razor saw
- Heat gun
- Moto-Tool with sanding drum
- Hobby knife with #11 blade
- Mixing stick
- Epoxy brush
- 1/16" x 36" music wire
- Medium sandpaper
- Masking tape
- Straight edge
- Measuring device (e.g., ruler, tape measure)
- Scissors
- Paper towels
- Wax paper
- Rubbing alcohol
- Pencil
- Felt tipped pen
- Fuel tubing (optional)
- Hobby enamel paint: black, silver

Section 1: Hinging The Ailerons

Parts Needed

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

Tools And Adhesives Needed

Instant thin CA glue
CA remover/debonder
Paper towels

Note: The control surfaces, including the ailerons, elevators and rudder, are pre-hinged with the hinges installed, but **the hinges are not glued in place**. It is imperative that you properly adhere the hinges and ailerons in place per the steps below using high quality thin CA.

1. Carefully remove the aileron from one of the wing panels. Note the position of the hinges. The J-3 Piper Cub comes with high quality CA-type hinges, which are manufactured in the USA.
2. Replace the aileron, making sure the hinges slide in place. Deflect the aileron and apply a few drops of thin CA glue directly to the center of each of the hinges. The aileron's front surface should lightly contact the wing during this procedure. Ideally, when the hinge is glued in place, a 1/32" gap or less will be maintained throughout the length of the aileron. The hinge is constructed of a special material that allows the CA to wick or penetrate and distribute throughout the hinge, securely bonding it to the wood structure.



3. Turn the wing panel over and deflect the aileron in the opposite direction and from the opposite side. Apply several drops of thin CA glue to each aileron hinge, making sure that the CA penetrates into both the aileron and the wing.



4. Using CA remover/debonder and a paper towel, remove any excess CA glue that may have accumulated on the wing or in the aileron hinge area.



5. Repeat this process with the other wing panel, securely hinging the aileron in place.

Section 1: Hinging The Ailerons

CONTINUED

- ❑ 6. After both ailerons are securely hinged, firmly grasp the wing and aileron to check that the hinges are immovable. Do this by applying medium pressure, trying to separate the aileron from the wing.



Section 2: Joining the Wing Halves

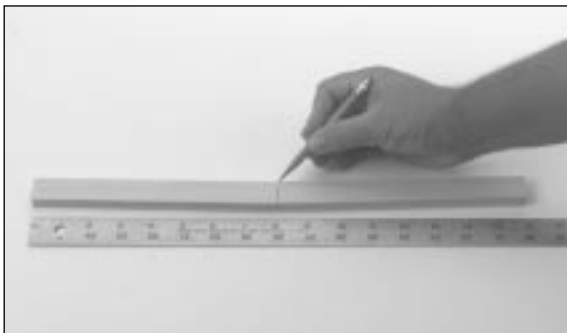
Parts Needed

Right wing panel from Section One
Left wing panel from Section One
Dihedral brace
Trim Tape

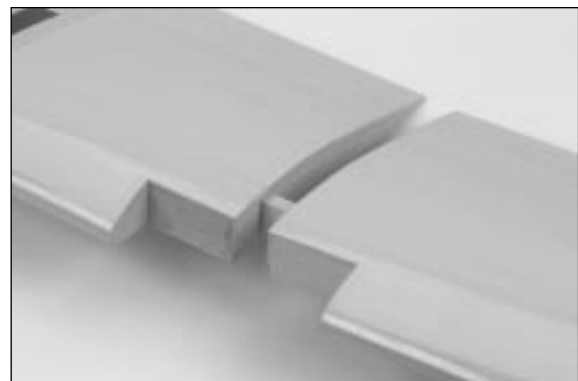
Tools And Adhesives Needed

30 minute epoxy	Rubbing alcohol	Pencil
Masking tape	Wax Paper	Medium sandpaper
Paper towels	Ruler	Mixing stick

- ❑ 1. Locate the dihedral brace (also called the wing joiner). Using a ruler, mark the exact center of the brace with a pencil as shown in the photo below.



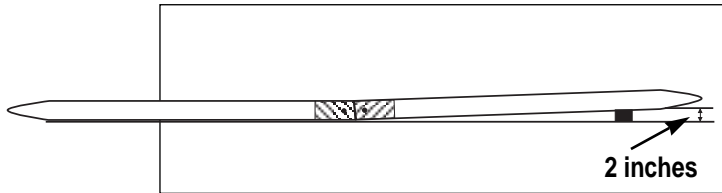
- ❑ 2. Trial fit the dihedral brace into one of the wing panels. It should insert smoothly up to the center line marked in Step 1. Now slide the other wing half onto the dihedral brace until the wing panels meet. If the fit is overly tight, it may be necessary to lightly sand the dihedral brace.



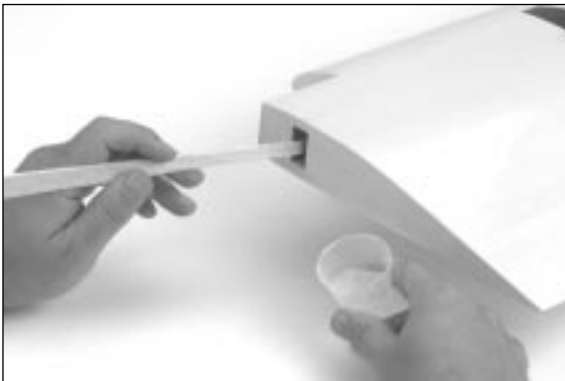
Section 2: Joining the Wing Halves

CONTINUED

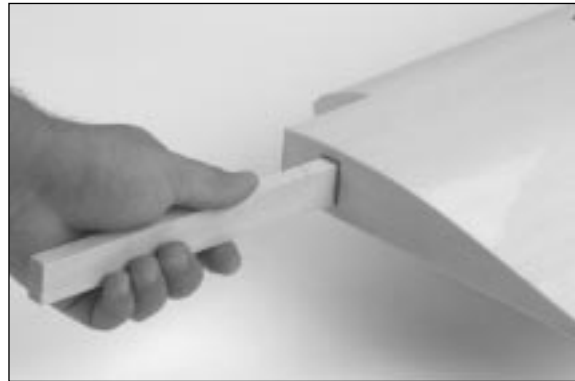
- 3. Next, check for the correct dihedral angle. Place the wing on a large, flat surface with one wing panel resting on the flat surface. The opposite wing tip should be exactly 2" from the surface (see illustration below). If necessary, sand the dihedral brace until this is achieved.



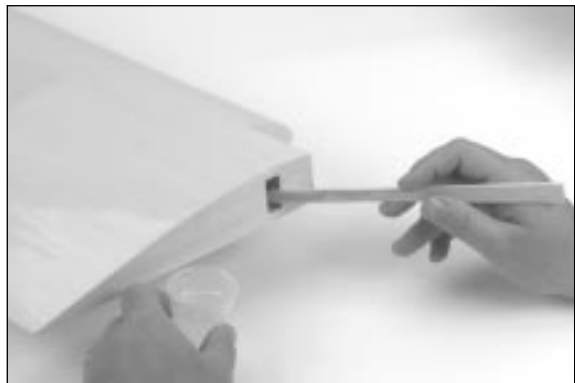
- 4. Mix up approximately three ounces of 30 minute epoxy. **Note:** It is extremely important to use plenty of epoxy when joining the wing halves.
- 5. Smear a generous amount of epoxy into the wing joiner cavity of one wing half. A scrap piece of wood or mixing stick is handy here.



- 6. Coat one half of the dihedral brace with epoxy up to the pencil line drawn in Step 1. Note the orientation of the V side of the dihedral brace; the V must face up. Install the epoxy-coated side of the dihedral brace into the wing joiner cavity of the wing half up to the center line, making sure the V of the dihedral brace is positioned correctly.



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



- 8. Now apply epoxy to all sides of the exposed area of the dihedral brace and uniformly coat both wing roots with epoxy.

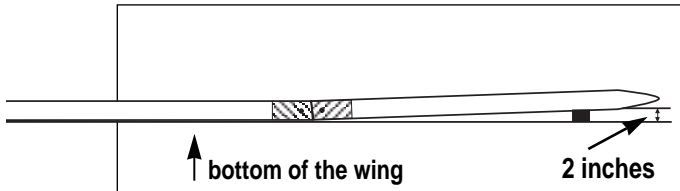


Section 2: Joining the Wing Halves

CONTINUED

- ❑ 9. Carefully slide the two wing halves together. Firmly press the 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.
- ❑ 10. Apply masking tape at the wing joint to hold the wing halves together securely. 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. Apply more masking tape to the center wing joint and recheck the 2" measurement. Allow the wing joint to dry overnight.

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



- ❑ 11. When the wing center joint is completely dry, remove the masking tape and apply the included trim tape to cover the center joint.



Section 3: Installing the Aileron Servos

Parts Needed	
Assembled wing	Servo extensions (2)
Two standard size servos w/mounting hardware	Wood servo blocks w/screws
Y-harness	Aileron covers

Tools And Adhesives Needed		
Hobby knife	1/16" drill bit	Scissors
Small Phillips screwdriver	1/16"x36" music wire	Pencil
Drill	Masking tape	Felt tipped pen
		30 minute epoxy

- ❑ 1. Hold the assembled wing up to a strong light. Note the aileron servo cut-outs on the bottom side of each wing. Using a very sharp hobby knife, carefully trim away the

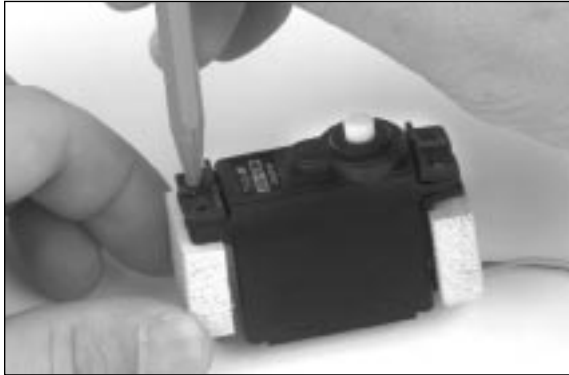
covering material where the aileron servos will be mounted.



Section 3: Installing the Aileron Servos

CONTINUED

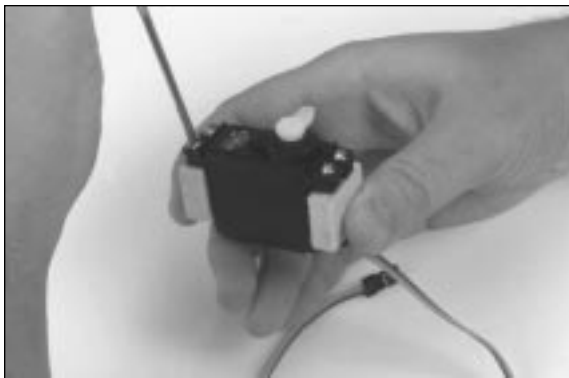
- ❑ 2. Install the grommets and eyelets on both aileron servos. Now place the servo blocks on the servo as shown and mark with a pencil where the servo screws attach the servo to the blocks.



- ❑ 3. Using a 1/16" drill bit, drill the marked location on the blocks.



- ❑ 4. Mount the blocks to the aileron servo as shown using the screws included with your servos.



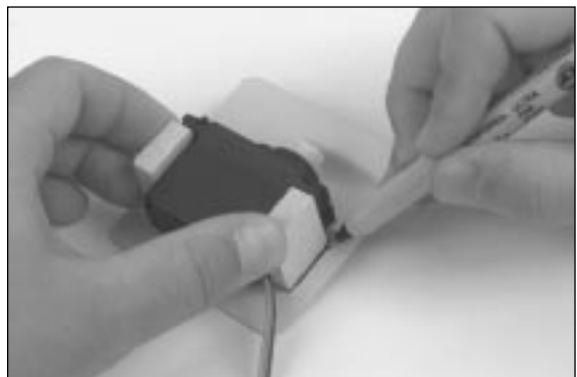
- ❑ 5. Using scissors, cut out the aileron cover. Also, using a hobby knife cut out the opening where the linkage exits the aileron cover.



- ❑ 6. Temporarily install a servo arm with a hole located between 10-12mm out from the center on the servo as shown. Now trial fit the servo on the aileron servo cover as shown with the servo arm aligned in the middle of the linkage opening in the aileron cover.



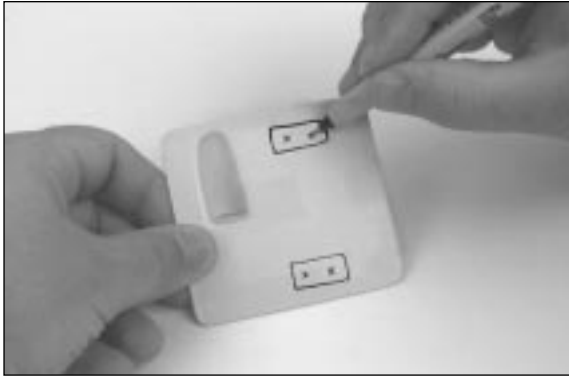
- ❑ 7. Using a felt tipped pen, trace around the wood servo blocks where it contacts the aileron cover.



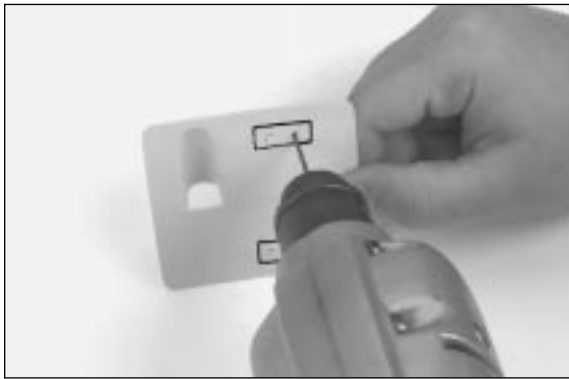
Section 3: Installing the Aileron Servos

CONTINUED

- ❑ 8. Now mark two equidistant holes as shown on the servo cover where the servo blocks are to be mounted. Two sheet metal screws, included with the J-3 Cub, will be used to mount each block to the servo cover.



- ❑ 9. Using a 1/16" drill bit, drill the servo cover at the four marked locations.



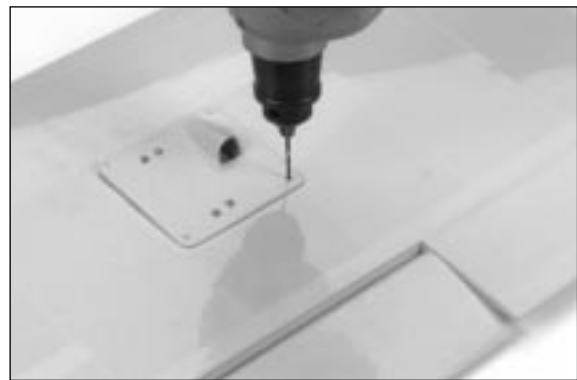
- ❑ 10. Holding the servo in place, drill four 1/16" pilot holes into the wood servo blocks.



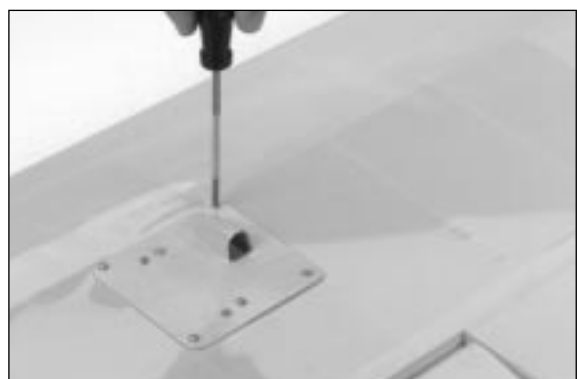
- ❑ 11. Using 30 minute epoxy, glue the servo blocks in place, then screw them into position with 4 sheet metal screws.



- ❑ 12. Center the aileron cover over the aileron cut-out in the wing and drill four 1/16" holes at each corner of the aileron cover through the wing's bottom surface.



- ❑ 13. Screw the aileron cover in place with four sheet metal screws as shown.



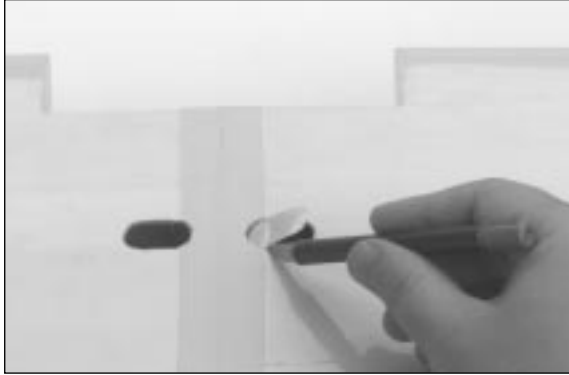
- ❑ 14. Now repeat these steps to install the servo on the other wing half.

- ❑ 15. Remove the aileron covers from the wing halves.

Section 3: Installing the Aileron Servos

CONTINUED

- ❑ 16. Near the center section on the bottom of the wing, locate the two servo lead openings and carefully cut away the covering with a sharp hobby knife.

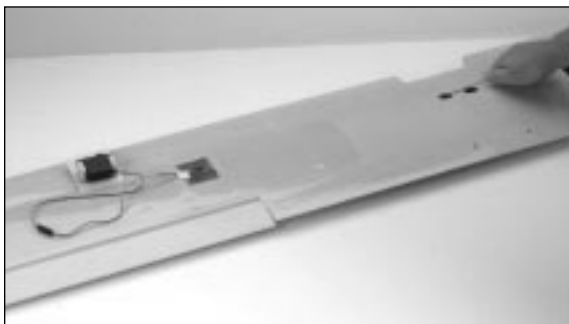
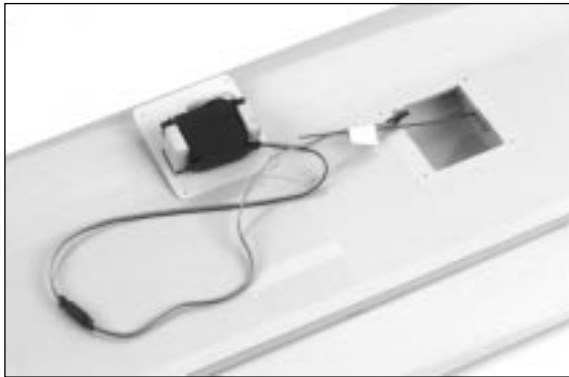


- ❑ 19. Plug both aileron servo connectors into a Y-harness and feed the excess servo lead wire back into the wing.



- ❑ 17. Carefully feed a 1/16" x 36" piece of music wire (or equivalent wire) in through the servo lead opening inside the wing toward the servo aileron opening. It may be helpful to slightly bend the music wire. Using masking tape, tape the aileron's servo connector to the end of the music wire closest to the aileron opening. Pull the music wire (or equivalent) and the servo connector through the wing until it comes out the servo lead opening.

Note: With most servos, it will be necessary to use an extension.



- ❑ 18. Repeat this procedure for the opposite aileron servo.

Section 4: Installing the Aileron Linkage

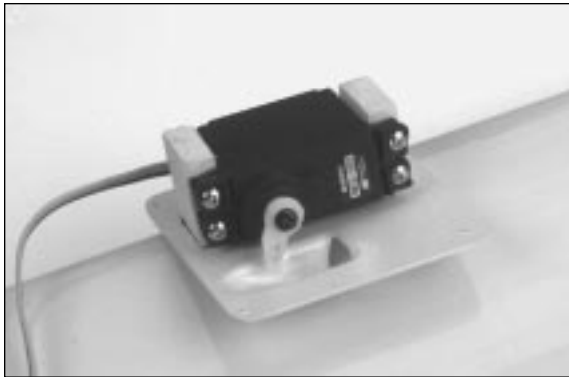
Parts Needed

Wing assembly from Section Three
Aileron linkages (2)
Control horns with linkages (2)
Clevis (2)

Tools Needed

Drill
1/16" drill bit
Z-bend pliers
Small Phillips screwdriver
Felt tipped pen
Pencil
Masking tape
Fuel tubing (optional)

- ❑ 1. Center the aileron servos by plugging the Y-harness into the aileron channel in the receiver. Turn on both the transmitter and receiver and center the aileron trim lever on the transmitter. Select a servo arm that has a hole located between 10-12 mm out from the center.
- ❑ 2. Install the arm onto the aileron servo so the arm is positioned 30° toward the leading edge of the wing. See photo below.

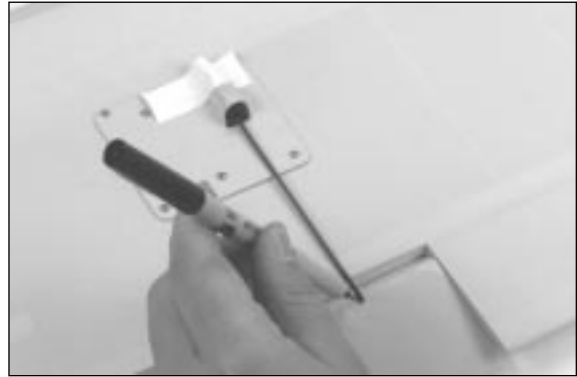


Note: The 30° control horn offset provides the necessary aileron differential (more up aileron than down) to correct adverse yaw tendencies of the J-3 Piper Cub. If your radio's system is equipped with aileron to rudder mixing, you may also want to mix approximately 25% aileron to rudder mixing to further improve the turn coordination. Interestingly, both full and scale models of the J-3 Piper Cub exhibit these flight tendencies.

- ❑ 3. Place a piece of masking tape on the top of the aileron cover so the edge of the tape lines up with the output hole on the servo arm. See the photo below.



- ❑ 4. Reinstall the aileron cover on the wing. Place an aileron linkage perpendicular to the aileron hinge so it passes directly in line with the servo arm under the aileron cover. With a felt tipped pen, mark the center location of the aileron control horn.



- ❑ 5. Center a control horn over the mark you just made. Carefully align the clevis' attachment holes (4) so they are directly in line with the aileron hinge.



- ❑ 6. Using a pencil, mark the screw hole locations (2) for the control horn.



Section 4: Installing the Aileron Linkage

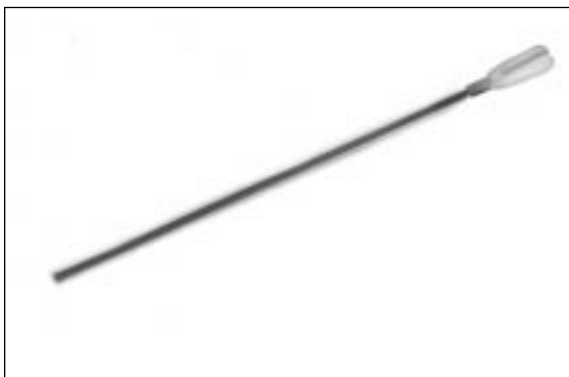
- ❑ 7. Use a 1/16" drill bit to carefully drill through the aileron at the marked locations, making sure the drill is exactly perpendicular to the aileron's surface.



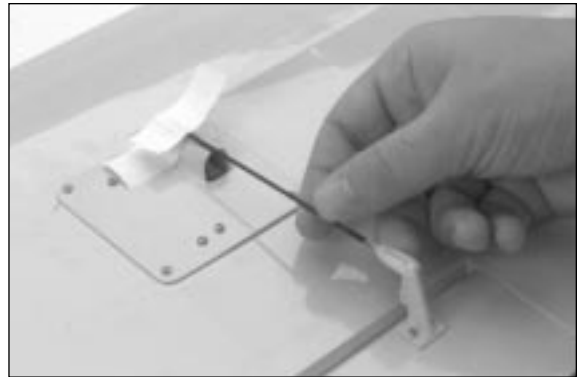
- ❑ 8. Attach the control horn to the aileron surface using the provided long 2mm Phillips head screws and the control horn back plate. The control horn back plate attaches to the opposite side of the aileron's surface, and the long 2mm screws thread into it, securing the control horn in place.



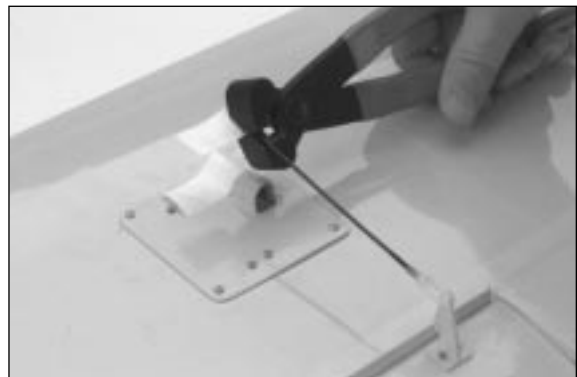
- ❑ 9. Thread a clevis onto one of the aileron linkages — 16 turns.



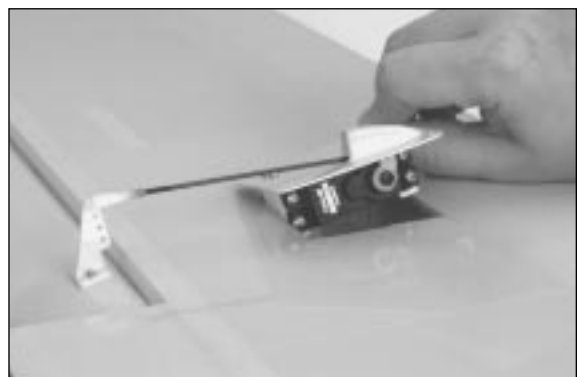
- ❑ 10. Install the clevis in the outermost hole. With the aileron in the neutral position and the servo arm 30° offset from Step 2, mark the position where the linkage will attach to the servo arm — a small piece of masking tape works well for this.



- ❑ 11. Using Z-bend pliers, make a Z-bend at the marked location. Cut off any excess linkage rod that extends past the Z-bend.



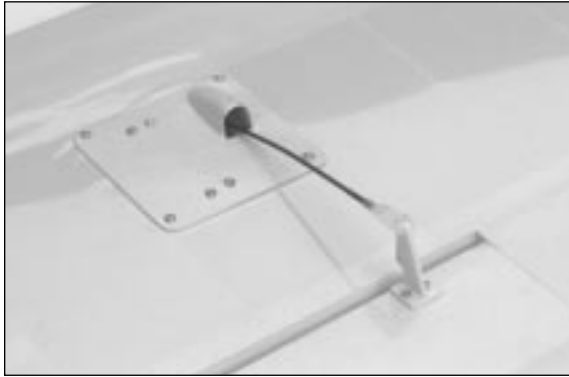
- ❑ 12. Install the Z-bend into the servo arm (10-12 mm from center).



Note: It may be necessary to slightly enlarge the hole in the servo arm.

Section 4: Installing the Aileron Linkage

CONTINUED



Adjust the length of the linkage until the aileron is exactly neutral with the trailing edge.

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



- ❑ 14. Repeat this procedure for the remaining aileron linkage.

Section 5: Mounting The Wing

Parts Needed

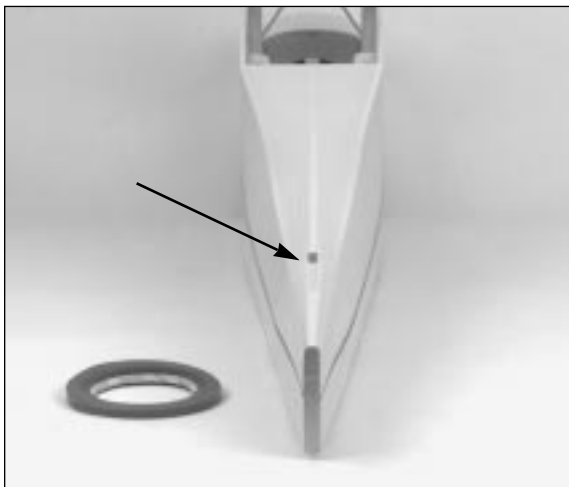
Completed wing assembly	Wing hold down plate
Wing dowel rods (2)	Wing hold down screws
Fuselage	Blind nuts (2)

Tools And Adhesives Needed

Drill	Measuring device
1/4" drill bit	(e.g., 36" ruler or tape
Medium Phillips screwdriver	measure)
Small round file	Masking tape
12 minute epoxy	Pliers

- ❑ 1. Trial fit the wing onto the fuselage. Be sure the wing properly rests on the wing seat. Place a narrow strip of masking tape at exactly the center of the top of the fuselage just ahead of where the vertical fin will be installed later. This tape will be used as a reference line in aligning the wing.

- ❑ 2. With the wing trial fitted in place, measure the distance from the back of the wing tip where it meets the aileron to the tape mark. Compare the right and left distances and adjust the wing until both are the same.



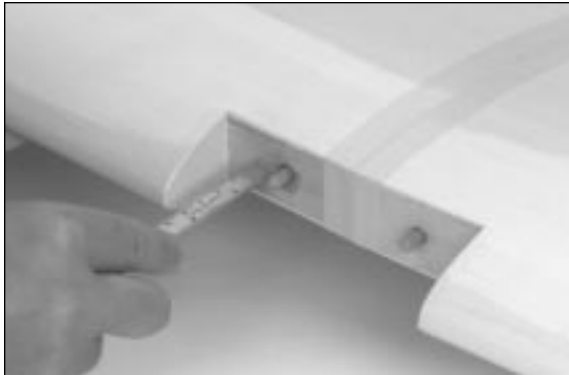
Section 5: Mounting the Wing

CONTINUED

- ❑ 3. Using a 1/4" drill bit, drill through the front face of the wing using the holes in the front fuselage former as a guide. Be sure the wing is securely held in the correct position when drilling (see below photo) — a second set of hands to hold the wing in place makes this task easier.



- ❑ 4. Remove the wing and glue both wing dowels in place using 12 minute epoxy. The dowel rods should extend 3/8" out of the wing.



- ❑ 5. Press the blind nuts into position below the rear wing hold down plate in the fuselage. Use pliers to squeeze the blind nuts so the "teeth" penetrate the wood and stay in place. **Note:** It may be helpful to place a piece of wood on the top side of the hold down plate before squeezing the pliers. This will keep the pliers from "crushing" the rear wing hold down plate. Additionally, a small amount of epoxy or thick CA will permanently attach the blind nut to the rear wing hold down plate.



- ❑ 6. Thread the wing hold down screws into the bottom side of the blind nuts so that the ends of the screws extend 1/8" of an inch above the wing seat.



Section 5: Mounting The Wing

CONTINUED

- ❑ 7. Fit the wing back into position on the fuselage, carefully sliding the leading edge dowel rods into the front bulkhead. Align the wing by measuring the distance from the wing tip to the center mark as in Step 2 of this section. When the wing is properly aligned, press downward firmly on the rear center section of the wing. The wing bolts will make an indentation in the covering of the wing at the proper location to drill.



- ❑ 8. Using a 1/4" drill bit, drill the exact center of the marked locations on the bottom of the wing. Be careful that the drill bit doesn't tear the covering when it exits through the top surface of the wing.



- ❑ 9. Trial fit the wing into position on the fuselage. Thread the wing hold down bolts into the wing and loosely tighten. Check the alignment of the wing by measuring from a fixed point on each wing tip to the narrow strip of tape on the fuselage as you did in Step 2. It may be necessary to slightly enlarge the holes with a small round file to obtain proper alignment.



- ❑ 10. Remove the wing. Using 12 minute epoxy, glue the wing hold down plate in place. Reattach the wing to the fuselage. The wing hold down bolts will assist in holding the wing hold down plate in position until dry. Also, use masking tape around the edges of the wing hold down plate to help hold it in place until the epoxy dries.



Section 6: Installing The Tail

Parts Needed

Fuselage and wing from Section 5
Horizontal stabilizer with elevators
Vertical stabilizer with rudder

Tools And Adhesives Needed

Instant thin CA glue	Razor saw
CA remover/debonder	Straight edge
30 minute epoxy	Pencil
Hobby knife with #11 blade	Masking Tape

- ❑ 1. Hinge the horizontal stabilizer and elevators using the same techniques as in Section 1, Hinging The Ailerons. Be sure to apply thin CA to both sides of the hinge. After the hinges are dry, check that they are securely in place by trying to pull the elevator from the horizontal stabilizer.

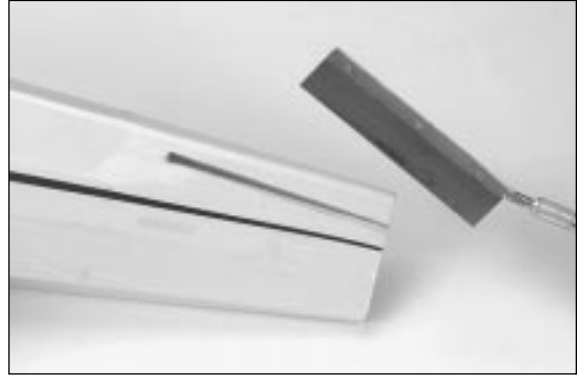
Note: Do not glue the hinges into the vertical stabilizer/rudder at this time.



- ❑ 2. 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 hobby knife with a sharp #11 blade, carefully cut away the covering at the openings for the horizontal stabilizer.



- ❑ 3. 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.



- ❑ 4. Hold up the horizontal stabilizer to a strong light and note the cut-out notch on the leading edge of the stabilizer. The vertical fin keys into this notch when the tail is assembled. Using a hobby knife, carefully trim the covering from this notch.



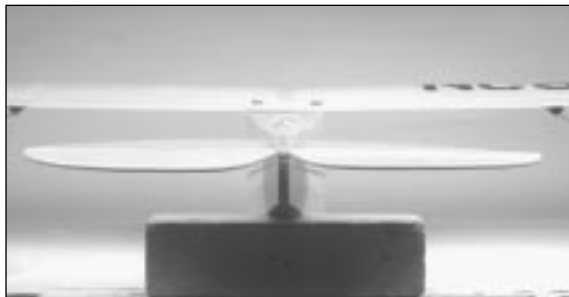
- ❑ 5. Using a hobby knife, trim the covering on the top rear of the fuselage where the vertical fin inserts into the fuselage.



Section 6: Installing The Tail

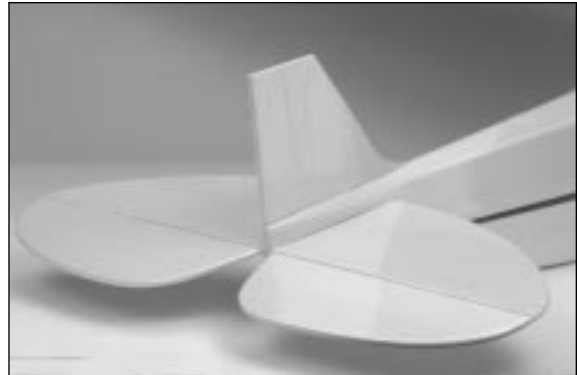
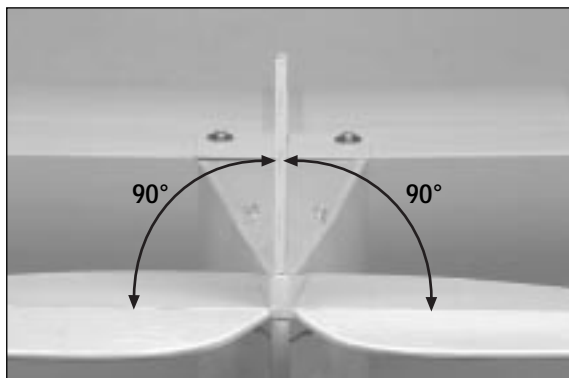
CONTINUED

- ❑ 6. Trial fit the horizontal stabilizer in place in the fuselage. With the wing installed, check the alignment of the horizontal stabilizer by measuring from a fixed point on the wing to the hinge line at the tip of the horizontal stabilizer. Both right and left dimensions should be the same. Then sight the stabilizer alignment from the rear of the airplane, making sure the stabilizer is exactly level with the wing.



- ❑ 7. Trial fit the vertical fin in position, making sure the base of the fin keys into the notch in the leading edge of the horizontal fin. Then carefully check the fin to be sure it is aligned 90° to the horizontal stabilizer.

Note: The back of the vertical fin and the back of the horizontal stabilizer must be even with the back of the fuselage.



- ❑ 8. Double check the horizontal stabilizer and vertical fin alignment. It may be necessary to slightly trim the balsa wood on the fuselage with a sharp hobby knife to achieve exact alignment.



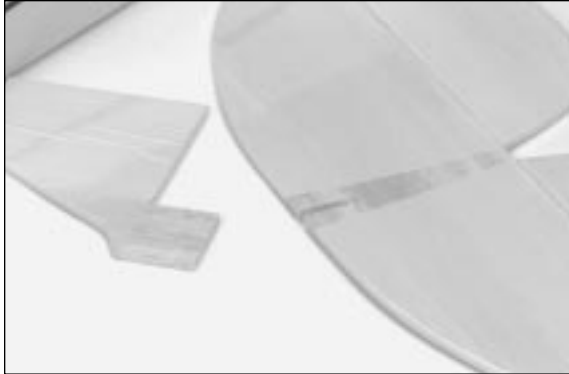
- ❑ 9. When you are satisfied with the alignment, carefully mark the position with a pencil at the junction where the horizontal stabilizer meets the fuselage top and bottom and where the vertical fin meets the fuselage. The pencil should leave a light indentation in the covering.



Section 6: Installing The Tail

CONTINUED

- ❑ 10. Remove the horizontal stabilizer and the vertical fin and carefully cut away the covering with a sharp hobby knife inside the lines you marked in Step 9. Be careful not to cut into the wood — this will weaken the structure. A straight edge is helpful here.



- ❑ 11. Mix up approximately 1/4 ounce of 30 minute epoxy and apply it to the top and bottom of the horizontal stabilizer where the fuselage comes in contact with the stabilizer.



- ❑ 12. Insert the horizontal stabilizer into the fuselage and position it in the approximate location. Wipe away any excess epoxy with a paper towel and rubbing alcohol.



- ❑ 13. Apply 30 minute epoxy to the vertical fin where the fuselage contacts the fin. Also apply epoxy to the base of the fin where it keys into the horizontal stabilizer. Insert the fin into the fuselage in approximately the correct position and wipe away any excess epoxy.



- ❑ 14. Precisely align the horizontal stabilizer and vertical fin as before, using masking tape to hold the stabilizer and fin in correct alignment. Double check the alignment and allow to fully cure over night.

Note: Be sure the back of the vertical fin lines up with the back surface of the fuselage.



Section 7: Hinging The Rudder

Items Needed

Fuselage from Section 6
Rudder
Rudder hinges (4)
Tail wheel assembly

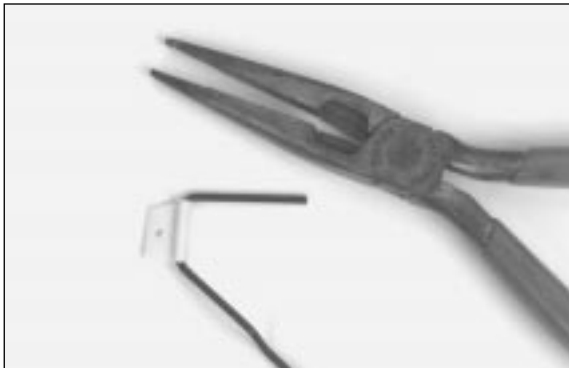
Tools And Adhesives Needed

Instant thin CA glue	Drill	Felt tipped pen
CA remover/debonder	3/32" drill bit	CA remover
Blue Locktite 242	Needle nose pliers	Paper towels
30 minute epoxy	Hobby knife	Rubbing alcohol

- ❑ 1. Trial fit the rudder in position with the four hinges in place. Note that the three hinges attach to the fin, while one hinge attaches the rudder to the fuselage.



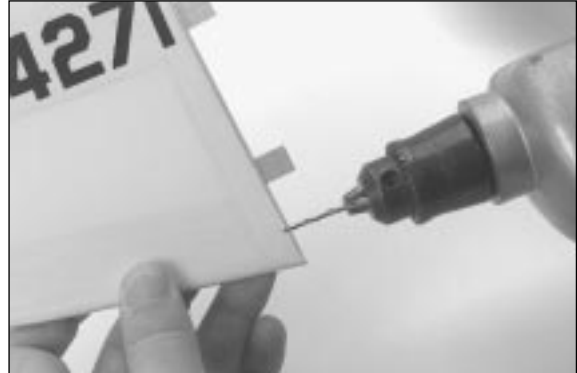
- ❑ 2. Insert the tail wheel wire into the pivot bushing. With the pivot bushing resting against the bend in the tail wheel wire, use needle nose pliers to make a 90° bend in the direction shown, 1/8" above the top of the pivot bushing.



- ❑ 3. Hold the tail wheel assembly up to the fuselage in the correct position. Temporarily mark, with a felt tipped pen, the position where the hole is to be drilled into the rudder. Also mark the position of the slot where the pivot bushing will fit into the back of the fuselage.



- ❑ 4. Remove the rudder. Using a 3/32" drill bit, drill into the exact center of the rudder to accept the tail wheel wire as shown.



- ❑ 5. Using a hobby knife, cut a slot in the back of the fuselage as marked to accept the tail wheel pivot bushing.



- ❑ 6. Trial fit the tail wheel assembly and rudder in place. Deflect the rudder, making sure the tail wheel wire turns freely with the rudder.



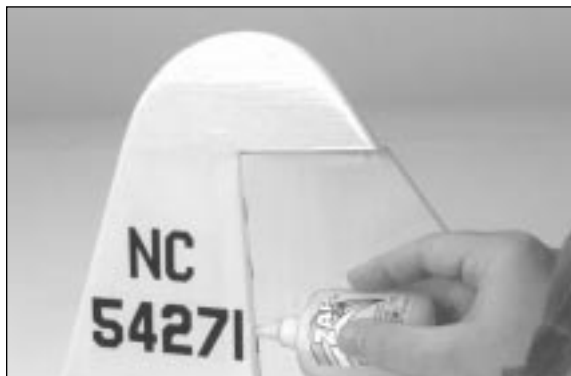
Section 7: Hinging The Rudder

CONTINUED

- ❑ 7. When you are satisfied with the fit, disassemble the rudder and tail wheel assembly. Apply 30 minute epoxy to the pivot bushing where it glues into the fuselage and apply epoxy into the hole in the rudder. With the hinges in place, reassemble the tail wheel assembly and the rudder, wiping away any excess epoxy with rubbing alcohol and a paper towel.



- ❑ 8. With the rudder properly aligned (up and down), apply thin CA to the hinges on both sides, using the same hinging techniques learned in Section 1, Hinging The Ailerons. After the hinges are dry, check to be sure they are securely in place by trying to pull the rudder from the vertical stabilizer. There should be a minimal gap between the rudder and the fin. Wipe away any excess CA with CA remover.



- ❑ 9. Work the rudder right and left. Check for free movement and ensure that the tail wheel wire tracks accordingly.
- ❑ 10. Once you are satisfied that the tail wheel wire tracks accordingly, slide the tail wheel itself onto the wire. Next, slide the wheel collar onto the wire and tighten the screw in the wheel collar. Use Locktite to secure the collar in place. **Note:** The wheel must rotate freely with only a small amount of side play.



Section 8: Installing The Engine

Items Needed

.40-.46 2-cycle or .45-.60 4-cycle engine (not included)
Fuselage motor mount with hardware

Tools And Adhesives Needed

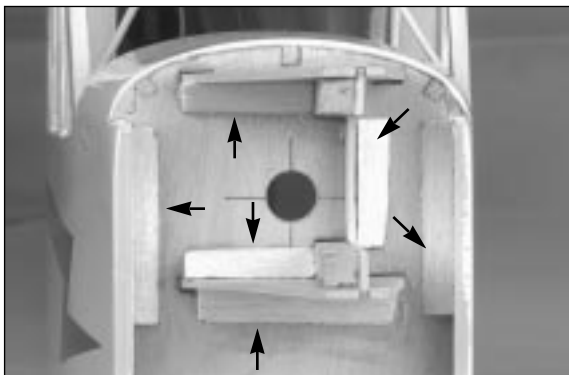
30 minute epoxy
Drill
1/8" drill bit
Pencil
Measuring device
Epoxy brush

Note: The Hangar 9 J-3 Piper Cub is designed for .40-.46 size 2-cycle or .45-.60 size 4-cycle engines. For the ultimate in scale sound and realism, we recommend and fly the 4-cycle Saito .50GK. With its black finish, gold heads, realistic scale sound, reliability and long life, the Saito .50GK is, in our opinion, the best choice available for the Cub. Consequently, the following instructions illustrate the installation of the Saito .50GK. Other 4-cycle and 2-cycle engines are installed in a similar manner.

- 1. Trial fit the motor mount to the firewall on the fuselage. Note that the proper orientation mounts the engine with the engine's cylinder head to the right of the airplane (as viewed from the pilot's perspective when sitting in the cockpit). When you are satisfied with the fit, use a generous amount of 30 minute epoxy to glue the motor mount into position on the firewall. Be sure the motor mount is firmly pressed against the firewall. Set this assembly aside to dry.



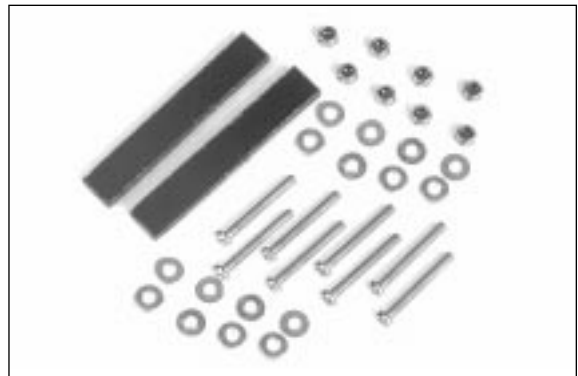
- 2. Locate the six balsa triangle stock pieces. These are used to reinforce the motor mount and firewall. Using 30 minute epoxy, glue these triangular pieces in place as shown in the photo.



- 3. Mix approximately 1/2 ounce of 30 minute epoxy. Using an epoxy brush, coat the firewall and the entire motor mount with epoxy. This will fuel-proof the engine area. Allow the epoxy to fully cure.



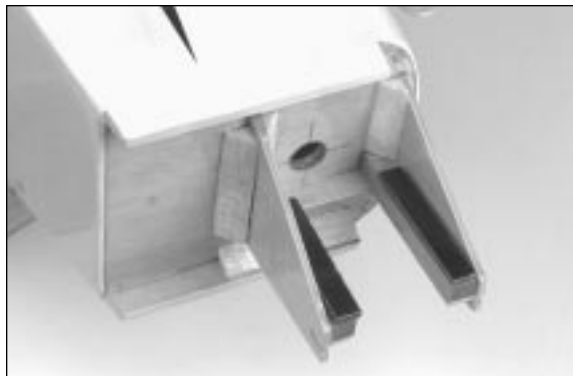
- 4. Locate the engine mounting hardware included in the bag with the motor mount. You should find eight 3mm screws, eight 3mm locknuts, sixteen washers and two motor plates. This system gives you the greatest versatility, allowing you to mount many brands and sizes of engines.



Section 8: Installing The Engine

CONTINUED

- ❑ 5. Rest the fuselage on its side with the right side of the fuselage facing up. Place the motor mount plates on the motor mount as shown in the picture below.



- ❑ 8. Remove the engine and mount plates. Now drill four 1/8" diameter holes at the points on the engine mounting plates marked in Step 7.



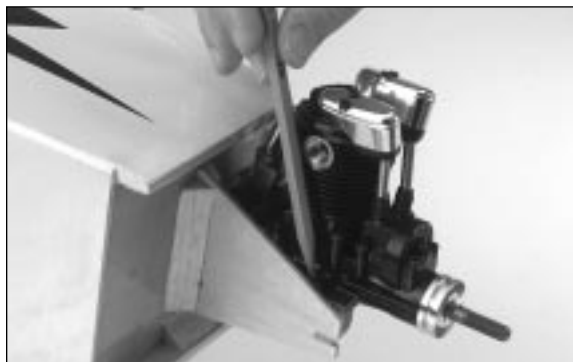
- ❑ 6. Set the engine on the motor mount plates and align the plates to properly line up with the engine flanges. The distance from the face of the prop hub to the firewall should be 4-1/4" inches. Move the engine fore or aft until this distance is achieved.



- ❑ 9. Mount the engine plates to the engine mount with four screws, eight washers and four locknuts.
- ❑ 10. Now place the engine back on the engine plates. Again measure the distance from the firewall to the prop hub and adjust the engine position until a distance of 4-1/4" is achieved.



- ❑ 7. With the engine plates properly aligned and the prop hub to firewall distance at 4-1/4" mark the location for the mount holes (4 places). Four holes (one in each corner of the engine plates) will attach the plates to the engine mount, while the other four holes attach the engine to the engine plates. A sharp pencil is recommended to mark the correct position.



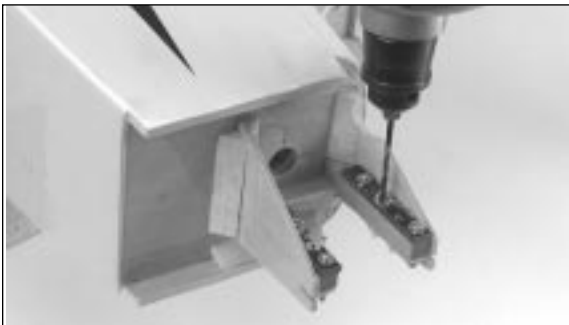
Section 8: Installing The Engine

CONTINUED

- ❑ 11. Using a pencil, mark the engine mounting plate where the four holes are to be drilled. (Mark through the engine mount flanges.)



- ❑ 12. Remove the engine and drill the engine mount where the marked holes are with a 1/8" drill bit.



- ❑ 13. Now install the engine using the four screws, eight washers and 4 locknuts. **Note:** On some engines it may be necessary to remove a small section of engine mount side rail to allow clearance for the needle valve.



Section 9: Landing Gear Assembly and Installation

Items Needed	
Aluminum landing gear	Yellow covering for landing gear
Wheels	
Landing gear hardware	

Tools And Adhesives Needed	
Medium Phillips screwdriver	Hobby knife
Small adjustable wrench	Blue Locktite 242
Heat gun or Iron	

- ❑ 1. Cover the aluminum landing gear using the provided covering material. When it is in position, apply heat with a heat gun or iron to set the adhesive.



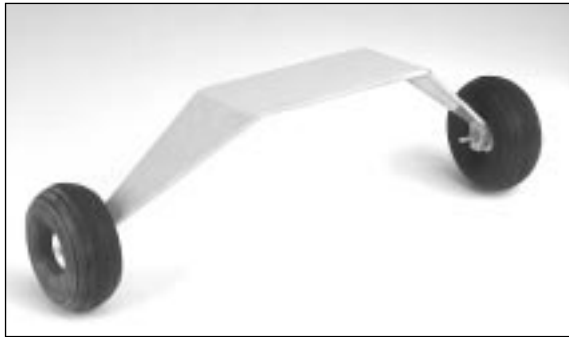
- ❑ 2. Attach the wheels to the aluminum landing gear using the long 4mm screws. Note that each screw passes through

the wheel and then through a 4mm nut, a 4mm washer, the landing gear and finally into a second 4mm nut. Apply Blue Locktite 242 to the 4mm nuts and tighten securely. **Note:** The wheel must rotate freely with only a small amount of side play.



Section 9: Landing Gear Assembly and Installation

CONTINUED



- ❑ 3. Turn the fuselage upside down. Use a ruler to measure rearward approximately 5-1/4" from the firewall and make a mark on the fuselage with a pencil. The pencil should leave a light indentation in the covering.



Note: In order to prevent interference with the former inside the fuselage, it is imperative that the measurement is from the front edge of the firewall and not the edge of the fuselage itself.

- ❑ 4. Using a pencil and a straight edge, draw a line perpendicular to the fuselage through the mark made in the previous step. This line will serve as an alignment guide for the aluminum landing gear.



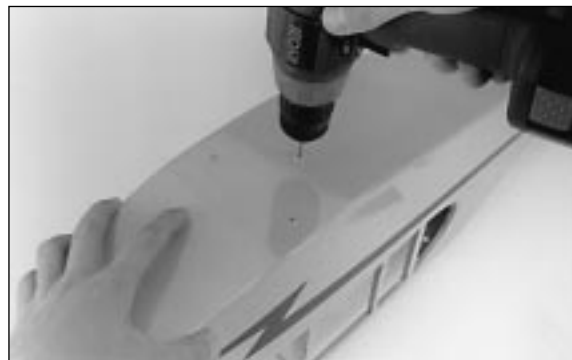
- ❑ 5. Precisely align the landing gear so that the front edge of the gear is even with the alignment guide drawn previously. Once you are satisfied with the alignment of

the landing gear, mark the mounting hole locations through the landing gear onto the fuselage and remove the gear from the fuselage.



Note: It is imperative to the ground handling characteristics of the aircraft that the landing gear is straight.

- ❑ 6. Using a 1/8" drill bit, drill the three mounting holes as marked. Prior to drilling the mounting holes it is important to ensure that the mounting hardware will not interfere with the fuselage former or the triangular braces within the fuselage.



- ❑ 7. Attach the landing gear with the remaining 4mm screws and nuts. Use Blue Locktite 242 to secure the nuts in place and tighten.



Section 10: Assembling and Installing the Fuel Tank

Parts Needed

Brass Clunk (fuel pickup)	Plastic cups (2)
Copper tube, long (vent)	Rubber stopper
Copper tube, short (pickup)	3mm screw and 3mm locknut
Fuel tubing, small	
Fuel tank	

Tools Needed

Hobby Knife
Small Phillips Screwdriver

- ❑ 1. Locate the black rubber stopper. Insert the short copper tube into one of the open holes in the stopper so an equal amount of tube extends from each side. This tube will be the fuel tank pickup tube.



- ❑ 2. Locate the long copper tube and bend it using your fingers, as shown. This tube will be the fuel tank vent tube.



- ❑ 3. Slide this tube into the other open hole of the stopper, as shown.



- ❑ 4. Slide the two white plastic caps over the copper tubes as shown. Note the orientation of the caps. The small inside cap and the three "pegs" face away from the black rubber stopper. The large outside cap and the "raised center" face away from the black rubber stopper.



- ❑ 5. Locate the small diameter fuel tubing and cut it to 3" in length. This tubing will be used for the fuel pickup inside the fuel tank. Insert the brass clunk into one end of the fuel tubing.



Section 10: Assembling and Installing the Fuel Tank

CONTINUED

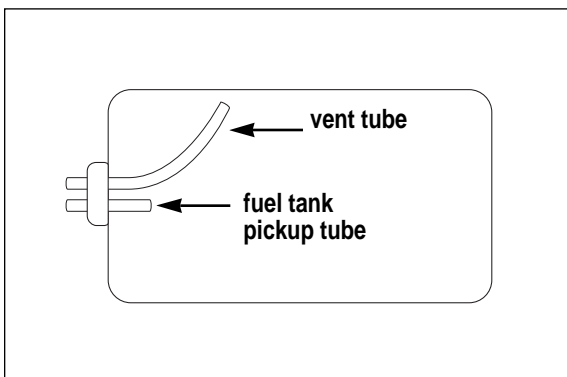
- ❑ 6. Install the open tube end of the clunk and tubing assembly on the short copper tubing.



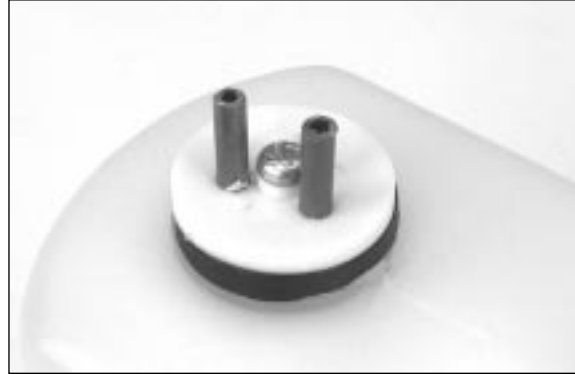
- ❑ 7. Press the 3mm nut between the three pegs on the inside white plastic cap as shown.



- ❑ 8. Carefully insert the assembly into the fuel tank. Note the position of the vent tube. It must be at the top of the fuel tank to function properly.



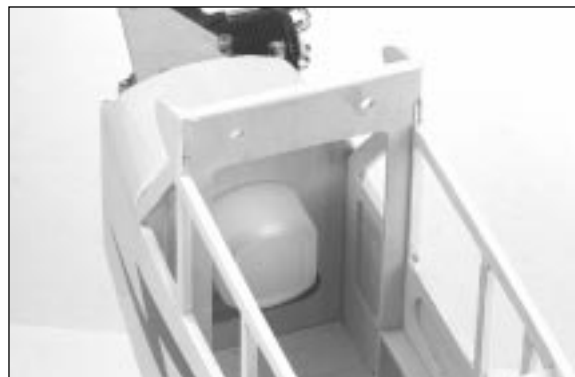
- ❑ 9. Insert a 3mm screw into the center hole of the stopper and tighten.



Important: Remember which tube is the fuel pickup and which is the vent so that you can properly connect the fuel tank to the engine.

- ❑ 10. Note that the fuel stopper is mounted closer to one edge of the tank than the other. This "closer edge" is the top of the tank. Slide the tank into the fuselage stopper first. Make sure that the top of the tank is positioned toward the top of the fuselage.

- ❑ 11. Press the tank into position until the stopper inserts into the hole in the firewall.



- ❑ 12. Plumb the fuel tank and the engine accordingly. Connect the vent tube from the fuel tank to the muffler pressure fitting. The remaining tube should be attached to the carburetor fitting.

Section 11: Installing the Radio

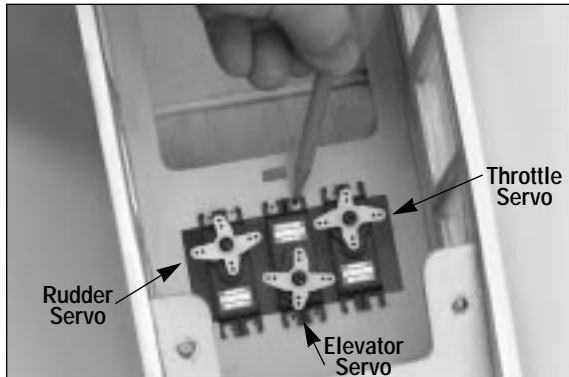
Parts Needed

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

Tools Needed

Drill	Hobby Knife
1/16" drill bit	Pencil
Small Phillips screwdriver	

- 1. Locate the remaining three servos and install the grommets and eyelets in all three per the instructions included with the radio. Place the servos in the servo tray in the fuselage as shown, noting the position of the output horns. Using a pencil, mark the 12 servo mounting hole positions.

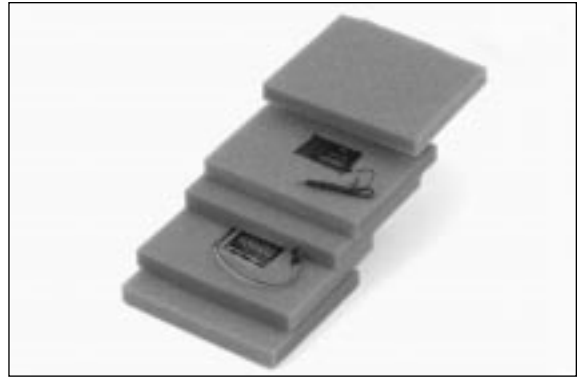


- 2. Remove the servos and drill twelve 1/16" holes where marked. Re-install the servos noting the position of the output horns. Screw in place using twelve screws included with the servos.



- 3. 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 the same size — only this time cut out an open area in the center to accept a battery pack. Place another solid layer of foam on top. Cut an open area in the next layer of foam to accept the receiver.

Top off with a final solid layer of foam that holds everything in place.



- 4. Place the pre-cut layers of foam with the battery and receiver in place in the front compartment of the fuselage. Route the antenna back through the fuselage using an antenna tube (not included) or route it outside the fuselage back to the vertical fin.



Section 11: Installing The Radio

CONTINUED

- ❑ 5. The switch can be installed in the left side of the fuselage (typical installation). Or a cut-out is provided in the radio tray, allowing you to mount the switch internally and permitting a small wire to extend through the fuselage side for an improved scale appearance.
- ❑ 6. Hook up the servos and switch harness to the receiver and the battery pack as per the instructions included with your radio system. Turn on your transmitter and receiver and center the trims on your transmitter. Turn off the receiver and then turn off the transmitter, in that order.



Section 12: Installing The Linkages

Parts Needed

Balsa dowels	1/16" plain rod (2)
Fuselage	Plastic clevis (4)
Heat shrink tubing	Control horns w/hardware (3)
1/16" threaded rod (4)	

Tools And Adhesives Needed

Thick CA glue	Hobby knife	Pencil
Drill	Needle nose pliers	Small Phillips screwdriver
1/16" drill bit	Z-bend pliers	Measuring device
Heat gun	Felt tipped pen	

- ❑ 1. Turn the fuselage upside down, measure over 3/4" from the rudder and make a mark on the elevator with a felt tipped pen (as shown). Mark the other elevator half in the same way, 3/4" from the rudder. This marks the center position of the elevator control horn.
- ❑ 2. Place the control horn on the elevator at the mark from Step 1 exactly in the center of the control horn. Mark the hole positions of the control horn with a pencil and drill two 1/16" holes in each elevator half.



Section 12: Installing The Linkages

CONTINUED

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



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



- ❑ 4. Attach the other control horn to the opposite elevator half using the same method.



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



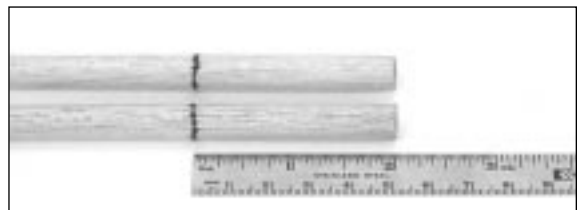
- ❑ 5. Next, install the rudder control horn on the left side of the rudder. Place a mark with a felt tipped pen 3/4" from the bottom of the rudder (left side) as shown. This mark represents where the center of the control horn will be located.



- ❑ 8. Locate the two balsa dowel pushrods and cut them both to 19-1/2" in length.



- ❑ 9. Using either a pencil or felt tipped pen, mark 2" from each end of both balsa dowel rods (4 places).



Section 12: Installing The Linkages

CONTINUED

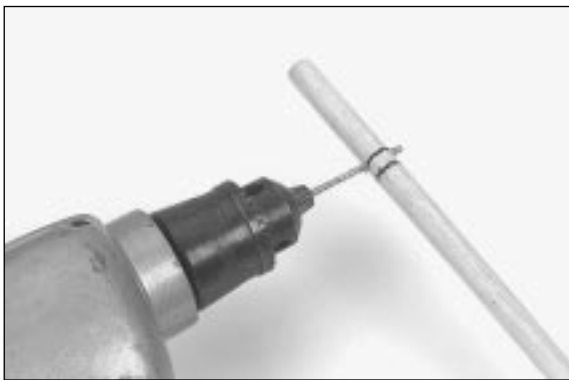
- ❑ 10. Drill a 1/16" hole through the balsa dowel at the four marked positions as shown.



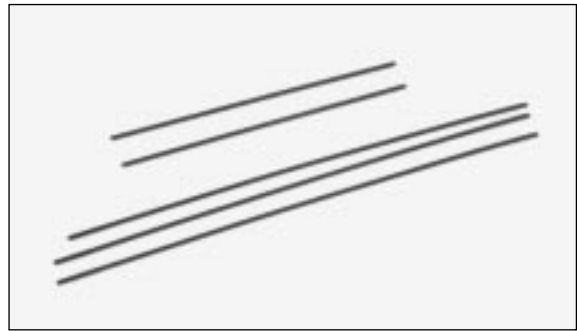
- ❑ 11. Select one of the dowels and at one end make a second mark 1-3/4" from the end.



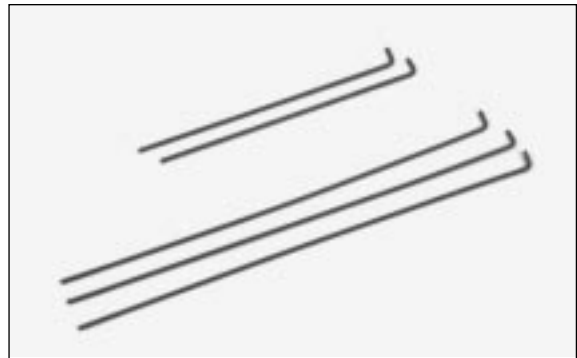
- ❑ 12. Drill a 1/16" hole at this mark. This end of the dowel will be used as the pushrod for the split elevator and will require two threaded rods to be installed in this end.



- ❑ 13. Locate the three threaded rods and two unthreaded rods. Cut 1/4" off one of the threaded rods on the unthreaded end. This rod will be used in the hole you drilled in Step 12. It is cut so that it will match the length of the other threaded rod when it is installed in the balsa pushrod.



- ❑ 14. Using needle nose pliers, bend a 90° angle 1/4" from the unthreaded end of each of the threaded rods. Also bend a 90° angle in one end of each of the two unthreaded rods.



- ❑ 15. Locate the end of the pushrod that has two holes drilled in it. Find the shorter threaded rod (from Step 13) and insert the 90 degree bend into the hole closest to the end of the rod (1-3/4" from the end). Insert a standard length threaded rod into the hole drilled 2" from the end.



Section 12: Installing The Linkages

CONTINUED

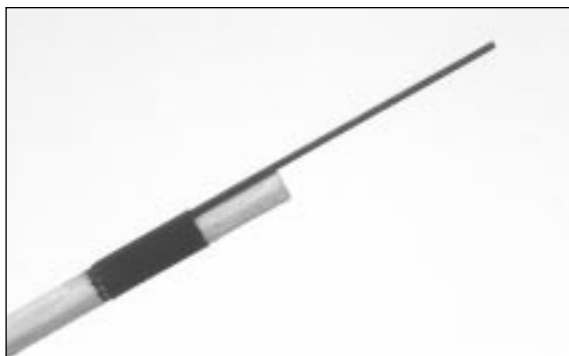
- ❑ 16. Saturate the balsa with thick CA glue where the threaded rods contact the balsa pushrod.



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



- ❑ 18. Locate one of the unthreaded rods and insert the 90° angle into the opposite end of the balsa dowel. Using thick CA, adhere the rod to the balsa dowel and heat shrink it in place.



- ❑ 19. Repeat this process to complete the other pushrod. Note that only one threaded rod is necessary.



- ❑ 20. Carefully cut away the covering at the tail of the fuselage where the pushrods exit. Note there are two cut-outs on the left side (top cut-out for elevator, bottom cut-out for rudder) and one cut-out on the right side (elevator).



- ❑ 21. Spread the two threaded pushrods apart about 2". Insert the elevator pushrod into the fuselage so that each threaded rod comes out the elevator pushrod exit. Thread a clevis onto each of the threaded rods 16 turns. Attach the clevis to the second outer-most holes in the elevator control horns.

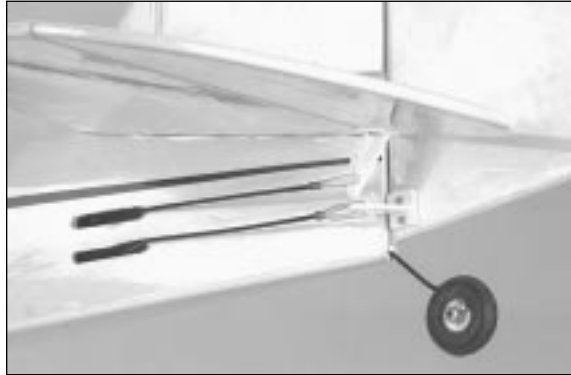


Note: As extra insurance, it is a good idea to place a piece of fuel tubing over the clevis to prevent the clevis from accidentally coming open.

Section 12: Installing The Linkages

CONTINUED

- ❑ 22. Insert the rudder pushrod into the fuselage, threaded end first. The threaded rod exits the fuselage at the lower left opening in the fuselage. Thread a clevis onto the threaded rod 16 full turns. Then attach the clevis to the rudder control horn at the second to the outer-most hole.



- ❑ 23. Center the elevators and rudder and, using a felt tipped pen, place a mark on the unthreaded end of the pushrods where they pass the respective servo arms.



- ❑ 24. Using Z-bend pliers, make a Z-bend at the marked locations on both the elevator and rudder pushrods. Cut off the excess rod.



- ❑ 25. Insert the Z-bend into the servo arm as shown. It may be necessary to enlarge the holes in the servo arm slightly to accept the Z-bend.



- ❑ 26. Install the throttle pushrod using the same method.
Note: It will be necessary to drill a 1/8" hole in the firewall in the correct position to allow the pushrod to attach to the throttle arm. Be careful not to drill into the fuel tank when you drill this hole.



Section 13: Attaching The Cowl

Parts Needed

Fiberglass cowl
Sheet metal screws (4)
Fuselage
Engine template (for Saito .50 engines only)
Fueling valve (optional)

Tools And Adhesives Needed

Moto-Tool with sanding drum
Small Phillips screwdriver
Drill
1/16" drill bit
Masking tape
Felt tipped pen
Ruler

- ❑ 1. Using a Moto-Tool, grind out the prop and cooling openings in the front of the cowl as marked.



- ❑ 2. If you're installing a Saito .50 engine, a cut-out template is included on the last page of this instruction manual. This template will assist you in cutting out the opening for the engine. Place the template over the cowl. With a felt tipped pen, mark the area to be cut out.



- ❑ 3. Carefully cut out the marked area using a Moto-Tool.



Note: If you are using another type of engine, it will be necessary to carefully cut out the engine area in the cowl to match your particular engine.

- ❑ 4. Slide the cowl onto the fuselage. **Note:** It may be necessary to remove the muffler.
- ❑ 5. Tape the cowl securely into position and check that it fits correctly. There should be ample clearance (1/8") around the engine and muffler. Also check that the prop hub is centered in the opening in the cowl and that the prop hub extends 3/16" forward of the cowl. Drill four 1/16" holes as shown.



- ❑ 6. Remove the tape and attach the cowl to the fuselage using the four sheet metal screws provided.

Note: On some engines where the carburetor is not easily accessible, a remote fueling valve can be used. Dubro's DUB334 is an excellent choice. The installation is shown below. A hole is then drilled in the cowl to access the fueler.



Section 14: Installing the Windows

Parts Needed

Windshield and windows (7 pieces total)
Fuselage

Tools And Adhesives Needed

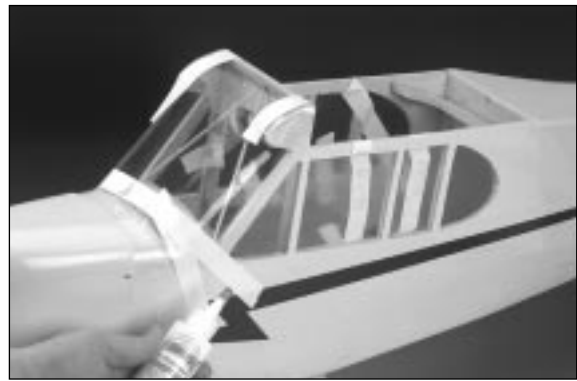
Canopy glue (e.g., R/C 56 or Pacer Formula 560)
Scissors
Masking tape

- ❑ 1. Trim on the cut line etched in the windshield with scissors



- ❑ 2. Trial fit the windshield and windows in place. It may be necessary to slightly trim the edges of the windows so

they fit properly. When you are satisfied with the fit, run a small bead of canopy glue around the windows and windshield. Tape them in place until dry.



Section 15: Scale Detailing

Included in the kit are several items to enhance the scale appearance of your J-3 Piper Cub. These include wing struts, shock absorbing landing gear detail, wheel inserts, vacuum-formed engine and decals.

Installing the Wing Struts

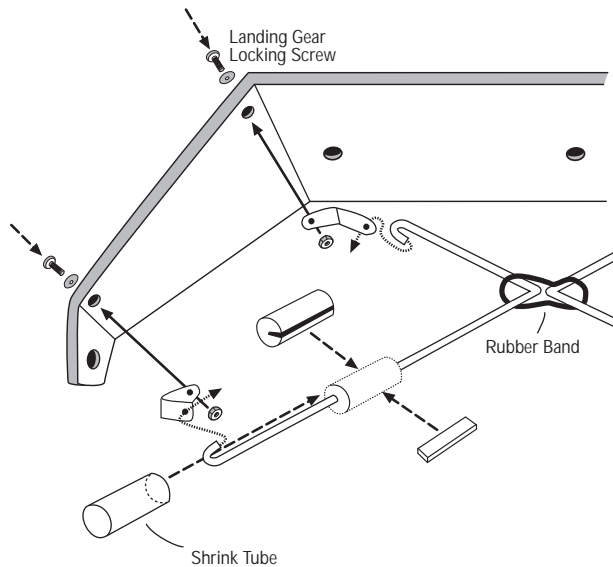
Four pre-covered wing struts are included with your J-3 Piper Cub. The struts are for aesthetics only. They are not a structural member of the airframe. You can choose to fly with them attached for a more true scale appearance, or you can choose to fly without them for convenience.



Section 15: Scale Detailing

CONTINUED

- ❑ 1. A block of hardwood is built into the wing and is used as the attachment point for the rear wing strut mounts. The front wing strut mounts are screwed into the spar. Clevises are used on this end of the struts for easy installation/removal.



- ❑ 2. Two metal straps are mounted just behind the landing gear on the fuselage with a sheet metal screw. A short piece of linkage rod is CAed into the end of the strut; a hook is bent in the rod that attaches to the straps.



- ❑ 4. Scale wheel inserts are included. When the CUB decal is attached, they provide an authentic final touch. Trim the wheel inserts slightly oversized with scissors. Then drill the center out with a 1/4" drill bit. Pull back the edge of each tire and insert the wheel inserts. The tire holds the insert in place. Attach the decals after the inserts are in place.



Landing Gear Scale Detailing

- ❑ 3. Scale landing gear detail is included to reproduce the shock absorbing system found on the full scale J-3 Piper Cub. It will be necessary to bend a hook in each end of the shock absorbing wires to attach the straps.



Section 15: Scale Detailing

CONTINUED

- ❑ 5. A vacuum-formed scale engine is included. It can be trimmed and painted with most hobby enamel type paints. Before painting, be sure to thoroughly wash the scale engine with soap and water to remove any mold release. When the paint is dry, glue a small block of balsa wood inside the scale engine. Trial fit the engine on the cowl. When you are satisfied, glue the engine in place on the cowl with epoxy. Wipe away any excess epoxy with a paper towel and rubbing alcohol.



Additional Scale Detailing

Added scale detailing can easily be accomplished with a little imagination. 1/16" black stripe tape can be used to outline the door. A door handle can be made from a short piece of music wire. A step can be bent from a scrap piece of pushrod material, and the fuel cap and float can be easily made from a short piece of 1/4" dowel and music wire. Of course, no Cub is complete without a pilot.

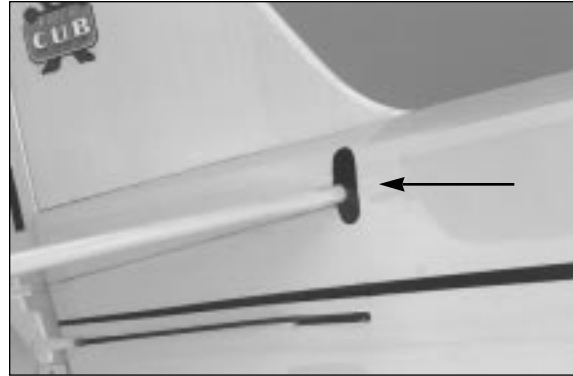
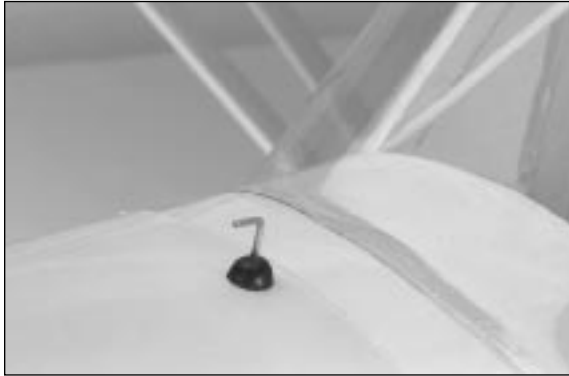
- ❑ 6. Fuel-proof self-adhesive decals are included. The following photos and the box top can be used to identify their location.



Section 15: Scale Detailing

CONTINUED

Additional Scale Detailing



Section 16: Balancing the J-3 Piper Cub

An important part of preparing any aircraft for flight is properly balancing the model. Don't inadvertently forget this crucial step. The recommended C.G. (Center of Gravity) location for the first flights with the J-3 Cub is 3-1/4" from the leading edge. With the Saito .50 installed, very little, if any, additional weight will be needed to balance the model. If you're using a lighter 2-cycle engine, expect to add weight. Stick-on weights are available at your local hobby shop and work well for this purpose.

Section 17: Control Throw Recommendation

The following control throws offer gentle response and are a good place to start. After you're more comfortable with the flight characteristics, adjust the control throws to meet your style of flying.

Aileron: 1/2" up, 1/4" down

Elevator: 5/8" up, 5/8" down

Rudder: 1-1/4" right, 1-1/4" left

Section 18: Flying the J-3 Piper Cub

If you can successfully solo a trainer-type airplane, you'll feel right at home with the J-3 Piper Cub. Its generous 850 sq. in. wing area, light wing loading and thick flat bottom airfoil offer excellent, nearly stall-proof slow speed stability. And its wide stance dural aluminum landing gear, large tires and long tail provide excellent stable ground handling even on rough grass fields. We particularly enjoy cruising around at 1/3 throttle with a 4-stroke, pattering along at scale speeds. If you're a first-time pilot, it's imperative that you seek out an experienced flier to help you with your first flights — you should do this with any R/C aircraft. Your local hobby shop should be able to suggest pilots who can assist you.

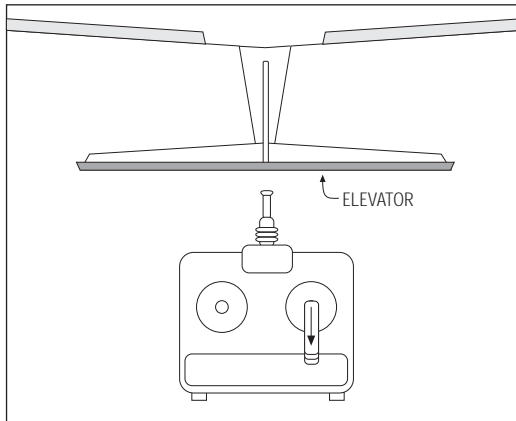
When set up as per the instructions, control response gives a gentle roll and pitch control, while the Cub's large size offers excellent visibility and presence in flight. Stalls are very soft with no tendencies to drop a tip. After you gain some experience, you'll be able to touch down for landings tail first. Mild aerobatics, such as loops, rolls and even inverted flight, are quite easy if the control throws are increased.

We hope you enjoy your J-3 Cub as much as we enjoy ours. If you have any comments or questions, feel free to contact the Horizon Service Center at:

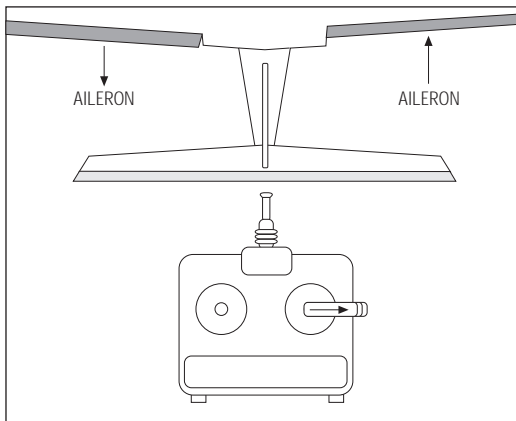
4105 Fieldstone Road
Champaign, IL 61821
217/355-9511.

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.

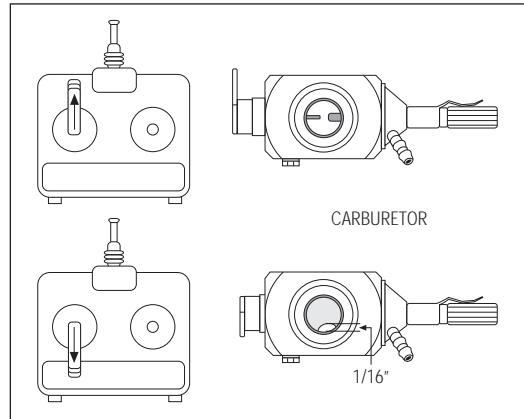


ELEVATOR

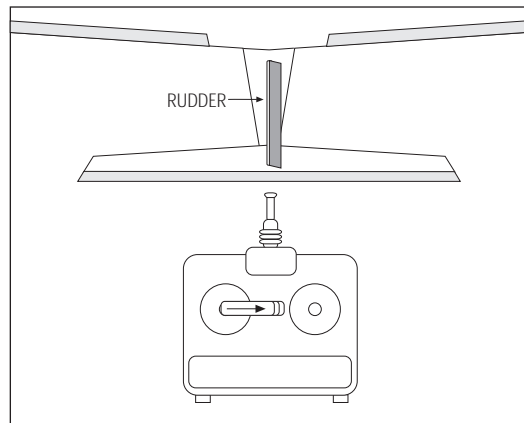


AILERON

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.

COWL TEMPLATE For Saito .50 and .56

This is the minimum size of cut-out required —
enlargement may be necessary to meet your specific needs.

