

Instruction Manual Book

Gladiator



SPECIFICATION

<input type="checkbox"/> Wingspan :	1537 mm	60.5 in
<input type="checkbox"/> Wing Area:	38.9 dm ²	603 sq.in
<input type="checkbox"/> Length :	1480mm	58.3in
<input type="checkbox"/> Weight :	2700 gr	5.94 lbs
<input type="checkbox"/> Engine :	46 cu.in	2 stroke
	52 cu.in	4 stroke
<input type="checkbox"/> Radio :	4 channels	
<input type="checkbox"/> Servo :	5 servos	

Made in Vietnam.

This instruction manual is designed to help you build a great flying aeroplane. Please read this manual thoroughly before starting assembly of your **GLADIATOR**. Use the parts listing below to identify all parts.

WARNING

Please be aware that this aeroplane is not a toy and if assembled or used incorrectly it is capable of causing injury to people or property. WHEN YOU FLY THIS AEROPLANE YOU ASSUME ALL RISK & RESPONSIBILITY.

If you are inexperienced with basic R/C flight we strongly recommend you contact your R/C supplier and join your local R/C Model Flying Club. R/C Model Flying Clubs offer a variety of training procedures designed to help the new pilot on his way to successful R/C flight. They will also be able to advise on any insurance and safety regulations that may apply.

TOOLS & SUPPLIES NEEDED

- Thick cyanoacrylate glue.
- 30 minute epoxy.
- 5 minute epoxy.
- Hand or electric drill.
- Assorted drill bits.
- Modelling knife.
- Straight edge ruler.
- 2mm ball driver.
- Phillips head screwdriver.
- 220 grit sandpaper.
- 90° square or builder's triangle.
- Wire cutters.
- Masking tape & T-pins.
- Thread-lock.
- Paper towels.

PARTS LISTING

FUSELAGE ASSEMBLY

- (1) Fuselage.

WING ASSEMBLY

- (1) Right wing half with pre-installed aileron.
- (1) Left wing half with pre-installed aileron.

Tail section assembly

- (1) Vertical stabilizer with pre-installed rudder.
- (1) Horizontal stabilizer with pre-installed elevator halves.

Some more parts.

HARDWARE PACK

COWLING
Landing gear.....

SUGGESTION

To avoid scratching your new airplane, do not wrap the pieces until they are needed for assembly. Cover your workbench with an old towel or brown paper, both to protect the aircraft and to protect the table. Keep a couple of jars or bowls handy to hold the small parts after you open the bag.

NOTE

Please trial fit all the parts. Make sure you have the correct parts and that they fit and are aligned properly before gluing! This will assure proper assembly. **GLADIATOR ARF** is hand made from natural materials, every plane is unique and minor adjustments may have to be made. However, you should find the fit superior and assembly simple.

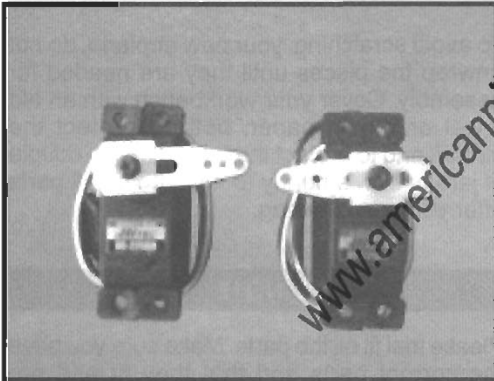
The painted and plastic parts used in this kit are fuel proof. However, they are not tolerant of many harsh chemicals including the following: paint thinner, C/A glue accelerator, C/A glue debonder and acetone. Do not let these chemicals come in contact with the colors on the covering and the plastic parts.

SAFETY PRECAUTION

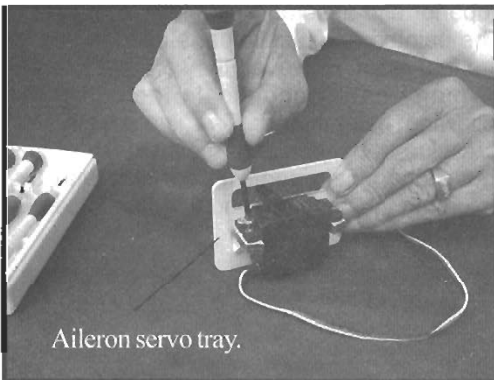
- + This is not a toy
- + Be sure that no other flyers are using your radio frequency.
- + Do not smoke near fuel
- + Store fuel in a cool, dry place, away from children and pets.
- + Wear safety glasses.
- + The glow plug clip must be securely attached to the glow plug.
- + Do not flip the propeller with your fingers.
- + Keep loose clothing and wires away from the propeller.
- + Do not start the engine if people are near. Do not stand in line with the side of the propeller.
- + Make engine adjustments from behind the propeller only. Do not reach around the spinning propeller.

INSTALLING THE AILERON SERVOS

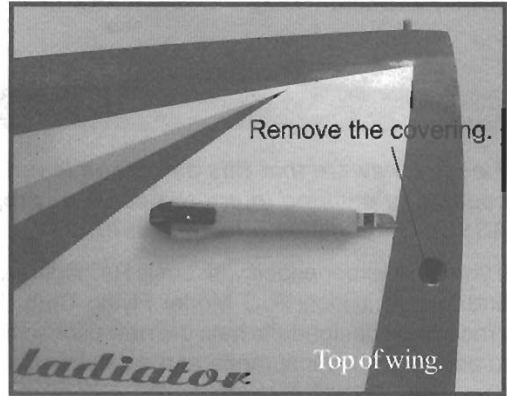
- 1) Install the rubber grommets and brass eyelets onto the aileron servo.



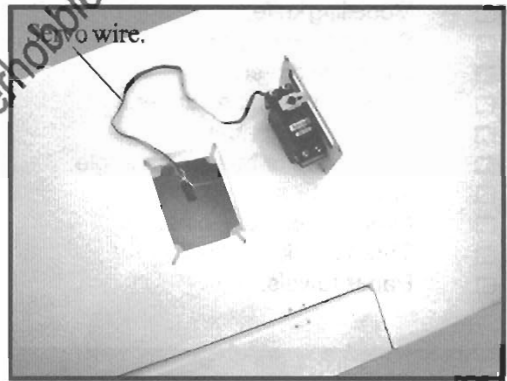
- 2) Drill 1,5mm pilot holes through the block of wood for each of the four mounting screws provided with the servo. Install servo into aileron servo tray as same as picture below:



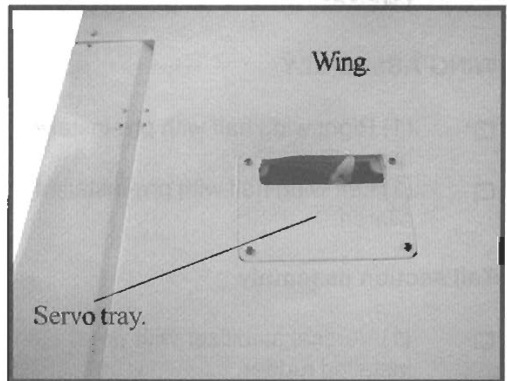
- 3) Using a modeling knife, remove the covering at position show below.



- 4) Using the thread as a guide and using masking tape, tape the servo lead to the end of the thread: carefully pull the thread out. When you have pulled the servo lead out, remove the masking tape and the servo lead from the thread.



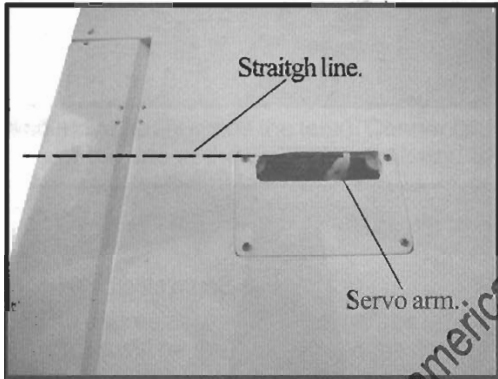
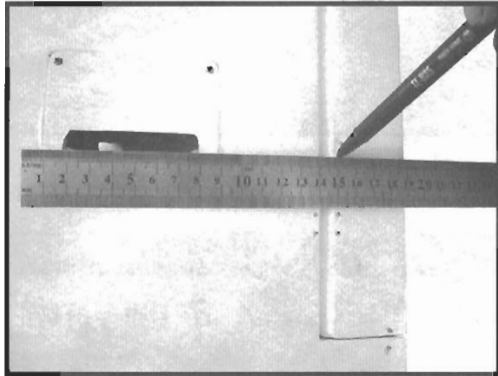
- 5) Instal servo tray with aileron servo into the wing as same as picture below.



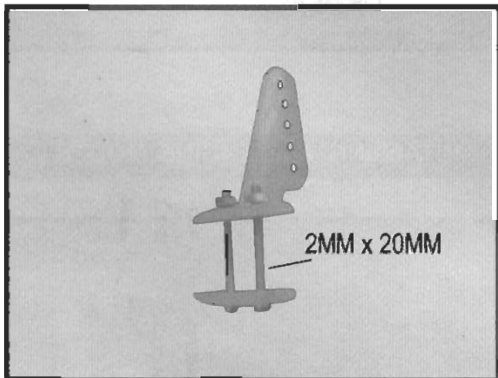
Repeat the procedure for the other wing half.

INSTALLING THE AILERON CONTROL HORN

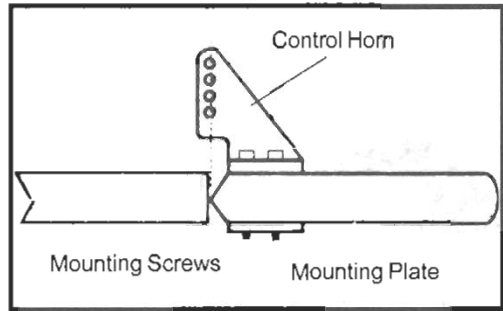
- 1) Using a ruler & pen to draw a straight line as below picture.



- 2) Locate nylon control horns, nylon control horn backplates and 2 machine screws.



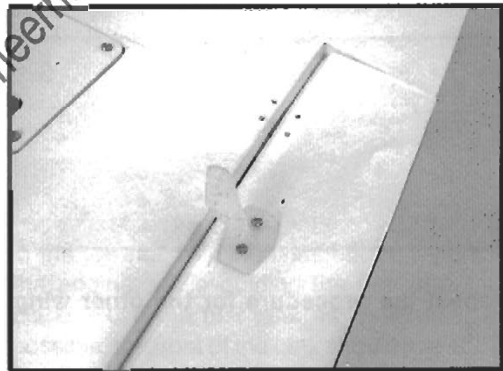
- 3) Position the aileron horn on the bottom side of aileron. The clevis attachment holes should be positioned over the hinge line as shown below.



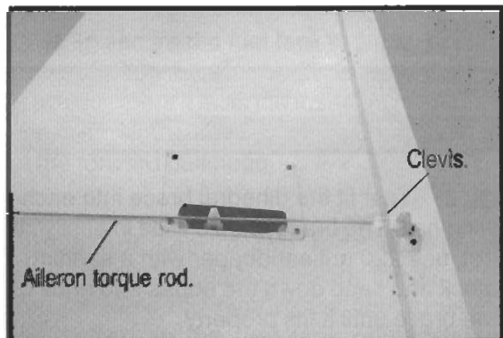
- 4) Using a 1mm drill bit and the control horns as a guide, drill the mounting holes through the aileron halves.

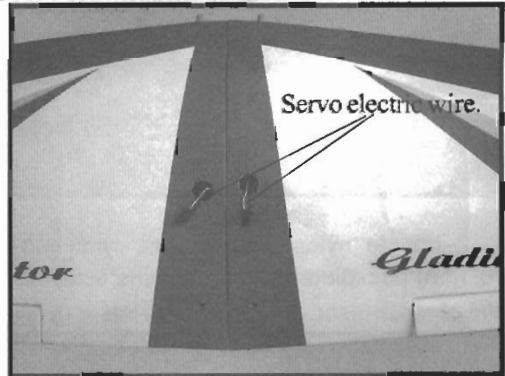
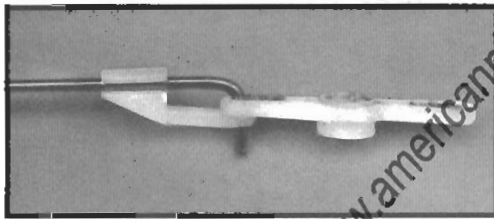
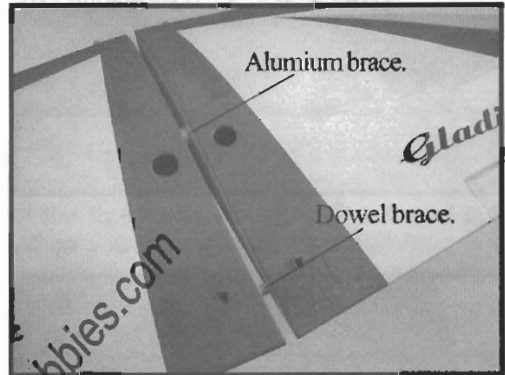
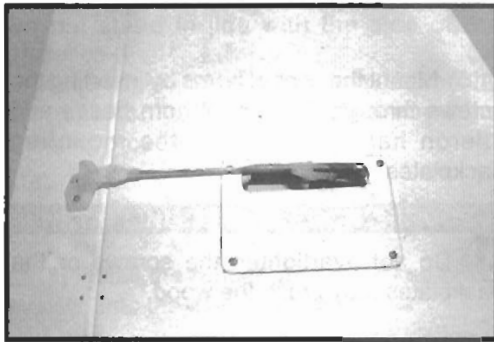
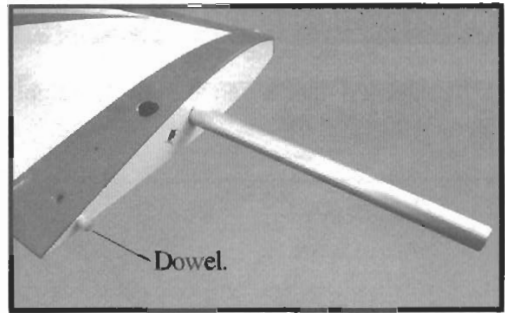
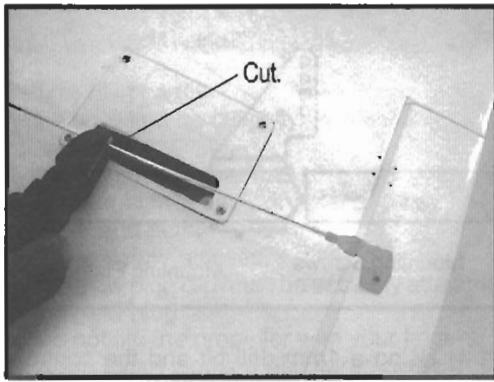
- 5) Mount the control horns by inserting the screws through the control horn bases and aileron halves, then into the mounting backplates.

⚠ Do not overtighten the screws or the backplates may crush the wood.



- 6) Thread one clevis control horn onto each aileron torque rod. Thread the clevis on until they are flush with the ends of the torque rods.



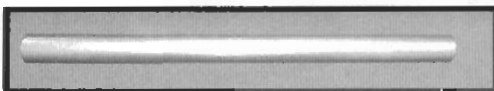


Repeat the procedure for the other wing half.

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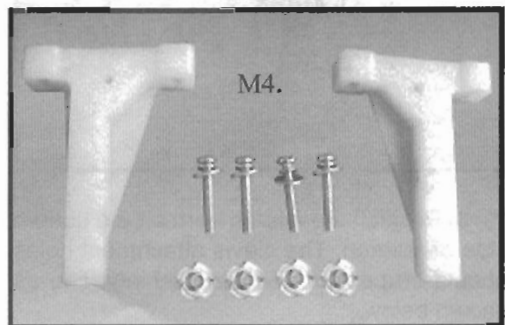
JOINING THE WING HALVES

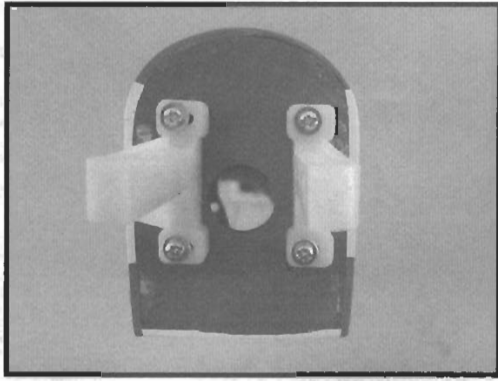
- 1. Locate the aluminium wing dihedral brace.



- 2. Test fit the dihedral brace into each wing half. The brace should slide in easily. If not, use 220 grit sandpaper with a sanding block and sand down the edges and ends of the brace until it fits properly.

INSTALLING THE ENGINE MOUTH

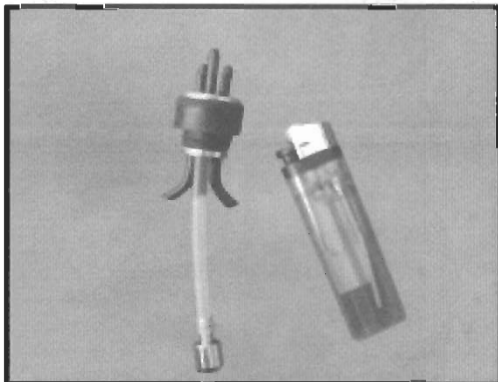




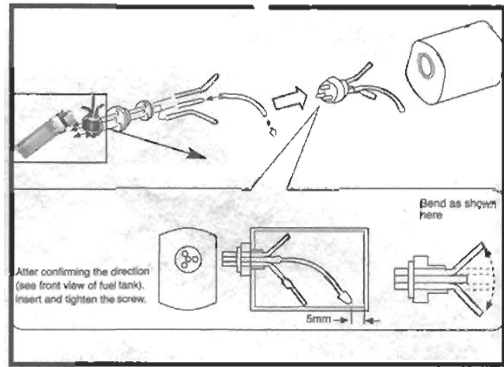
FUEL TANK

INSTALLING THE STOPPER ASSEMBLY

- 1. The stopper has been pre-assembled at the factory.
- 2. Using a modeling knife, cut one length of silicon fuel line (the length of silicon fuel line is calculated by how the weighted clunk should rest about 8mm away from the rear of the tank and move freely inside the tank). Connect one end of the line to the weighted clunk and the other end to the nylon pick up tube in the stopper.
- 3. Carefully bend the second nylon tube up at a 45 degree angle (using a cigarette lighter). This tube will be the vent tube to the muffler.
- 4. Carefully bend the third nylon tube down at a 45 degree angle (using a cigarette lighter). This tube will be vent tube to the fueling valve.



When the stopper assembly is installed in the tank, the top of the vent tube should rest just below the top surface of the tank. It should not touch the top of the tank.

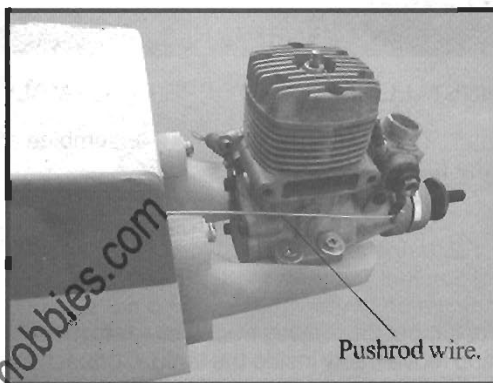
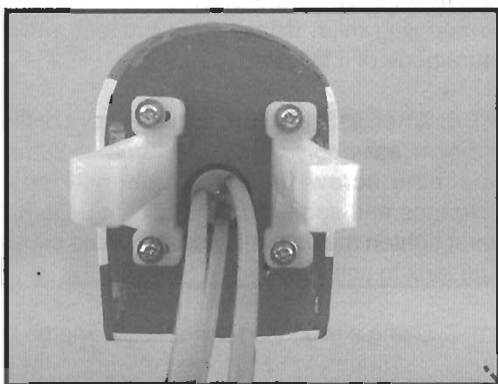
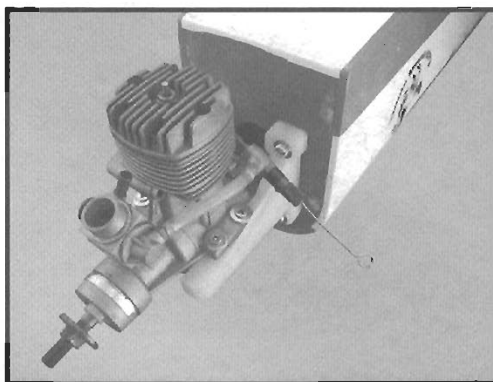
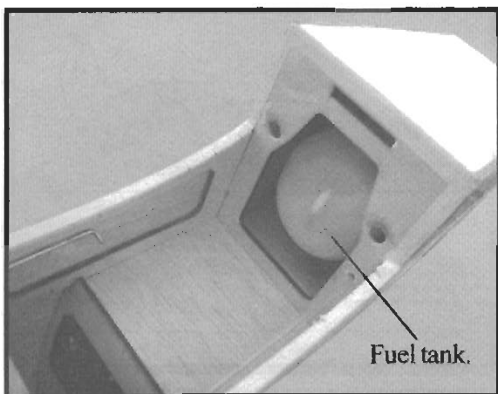


- 5. Test fit the stopper assembly into the tank. It may be necessary to remove some of the flashing around the tank opening using a modeling knife. If flashing is present, make sure none of it falls into the tank.
- 6. When satisfied with the alignment of the stopper assembly, tighten the 3mm x 20mm machine screw until the rubber stopper expands and seals the tank opening. Do not over tighten the assembly as this could cause the tank to split.
- 7. Using a modeling knife, cut 3 lengths of fuel line 150mm long. Connect 2 lines to the 2 vent tubes and 1 line to the fuel pickup tube in the stopper.
- 8. Feed three lines through the fuel tank compartment and through the pre-drilled hole in the firewall. Pull the lines out from behind the engine, while guiding the fuel tank into place. Push the fuel tank as far forward as possible, the front of the tank should just about touch the back of the firewall.

Blow through one of the lines to ensure the fuel lines have not become kinked inside the fuel tank compartment. Air should flow through easily.

- 9. To secure the fuel tank in place, apply a bead of silicon sealer to the forward area of the tank, where it exits the fuselage behind the engine mounting box and to the rear of the tank at the forward bulkhead.

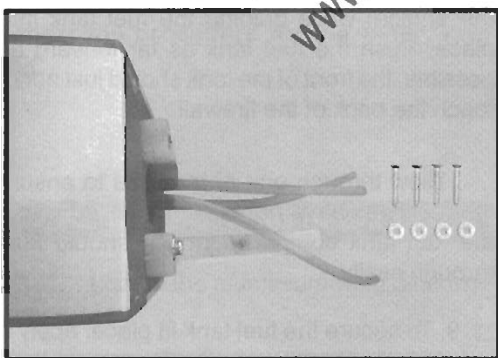
Do not secure the tank into place permanently until after balancing the airplane. You may need to remove the tank to mount the battery in the fuel tank compartment



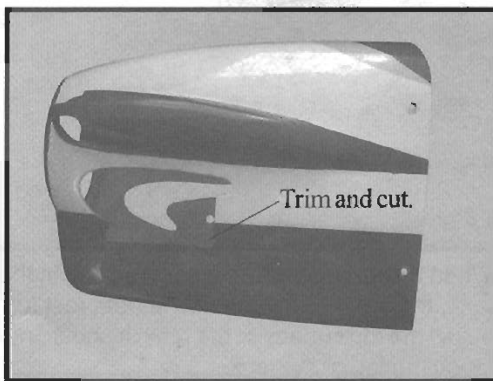
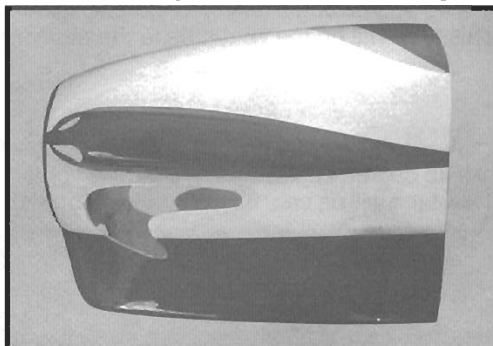
COWLING

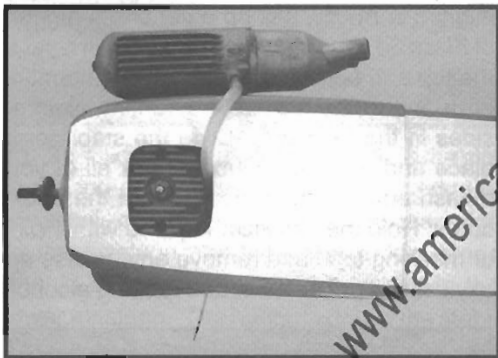
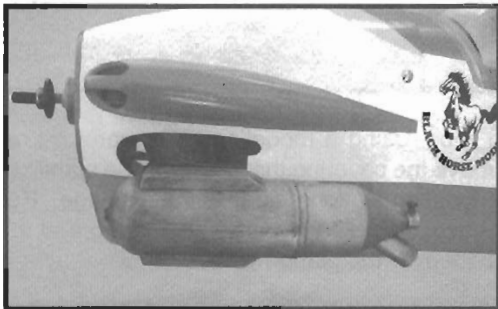
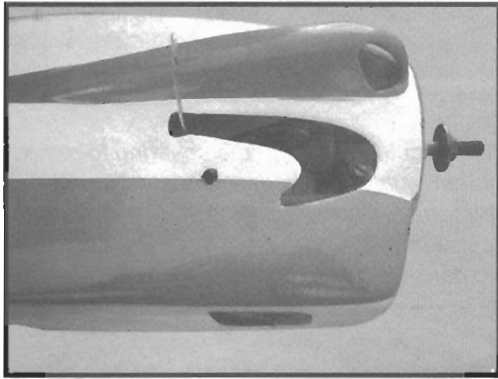
□ 1) Slide the fiberglass cowl over the engine and line up the back edge of the cowl with the marks you made on the fuselage.

INSTALLING THE ENGINE-THROTTLE



Locate the long piece of wire used for the throttle pushrod. One end of the wire has been pre-bend in to a "Z" bend at the factory. This "Z" bend should be inserted into the throttle arm of the engine when the engine is fitted onto the engine mount. Fit the engine to the engine mount using the screws provided.

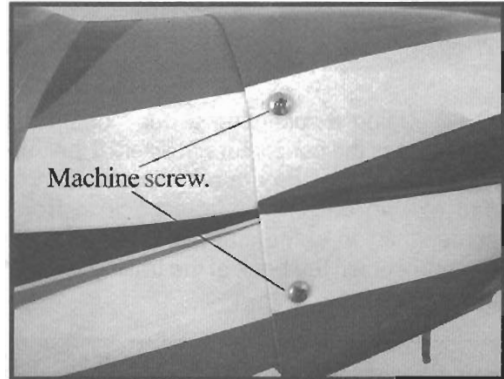




□ 2) While keeping the back edge of the cowl flush with the marks, align the front of the cowl with the crankshaft of the engine. The front of the cowl should be positioned so the crankshaft is in **nearly** the middle of the cowl opening. Hold the cowl firmly in place using pieces of masking tape.

□ 3) Slide the cowl back over the engine and secure it in place using four wood screws. See picture below.

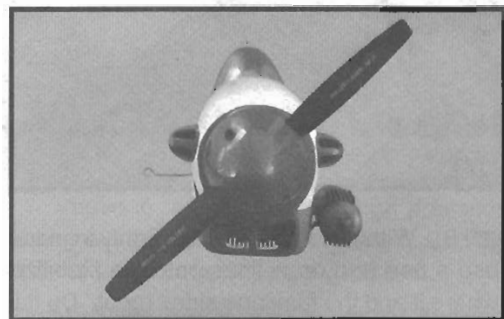
□ 4) Install the muffler and muffler extension onto the engine and make the cutout in the cowl for muffler clearance. Connect the fuel and pressure lines to the carburetor, muffler and fuel filler valve.



Machine screw.

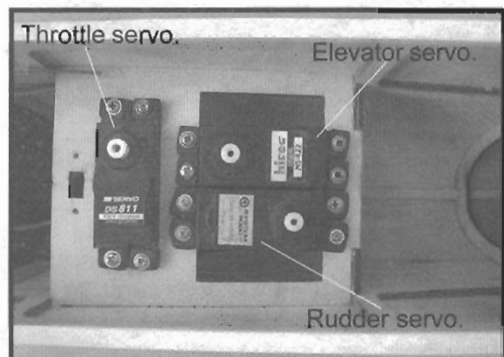
INSTALLING THE SPINNER

Install the spinner backplate, propeller and spinner cone. The spinner cone is held in place using two 3mm x 12mm wood screws.



SERVO INSTALLATION

See picture below



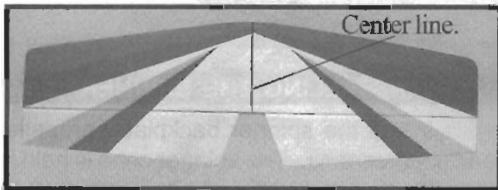
Throttle servo.

Elevator servo.

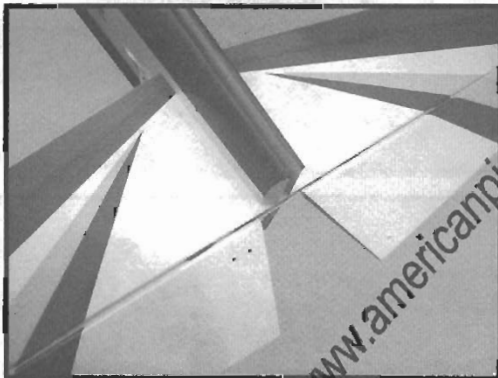
Rudder servo.

HORIZONTAL STABILIZER INSTALLATION

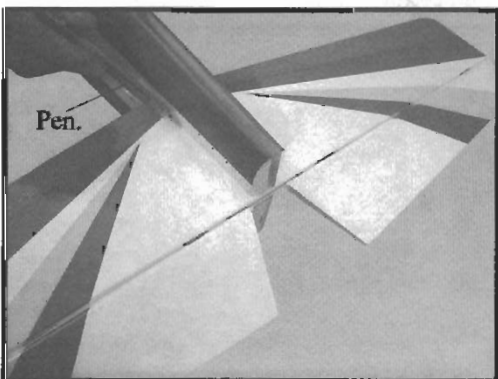
□ 1) Using a ruler and a pen, locate the centerline of the horizontal stabilizer, at the trailing edge, and place a mark. Use a triangle and extend this mark, from back to front, across the top of the stabilizer. Also extend this mark down the back of the trailing edge of the stabilizer.



□ 2) Slide the stabilizer into place in the pre-cut slot in the rear of the fuselage. The stabilizer should be pushed firmly against the front of the slot.

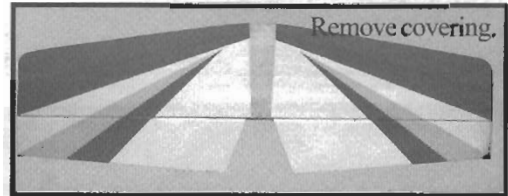


□ 3) With the stabilizer held firmly in place, use a pen and draw lines onto the stabilizer where it and the fuselage sides meet. Do this on both the right and left sides and top and bottom of the stabilizer.



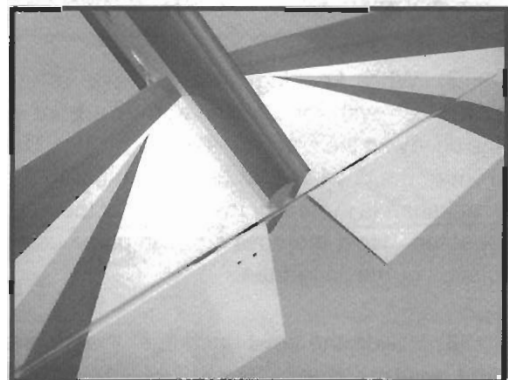
□ 4) Remove the stabilizer. Using the lines you just drew as a guide, carefully remove the covering from between them using a modeling knife.

When cutting through the covering to remove it, cut with only enough pressure to only cut through the covering it's self. Cutting into the balsa structure may weaken it. This could lead to possible failure during flight



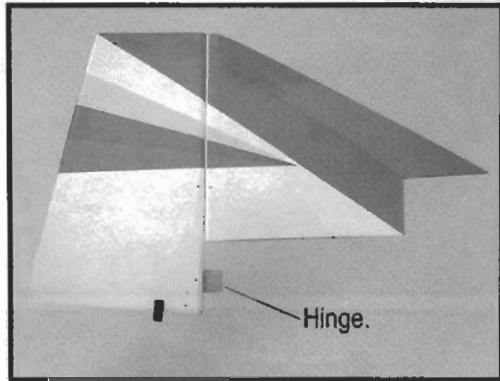
□ 5) Using a modeling knife, carefully remove the covering that overlaps the stabilizer mounting platform sides in the fuselage. Remove the covering from both the top and the bottom of the platform sides.

□ 6) When you are sure that everything is aligned correctly, mix up a generous amount of Flash 30 Minute Epoxy. Apply a thin layer to the top and bottom of the stabilizer mounting area and to the stabilizer mounting platform sides in the fuselage. Slide the stabilizer in place and realign. Double check all of your measurements once more before the epoxy cures. Hold the stabilizer in place with T-pins or masking tape and remove any excess epoxy using a paper towel and rubbing alcohol.

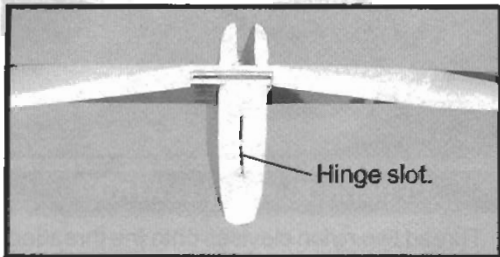


□ 7) After the epoxy has fully cured, remove the masking tape or T-pins used to hold the stabilizer in place and carefully inspect the glue joints. Use more epoxy to fill in any gaps that were not filled previously and clean up the excess using a paper towel and rubbing alcohol.

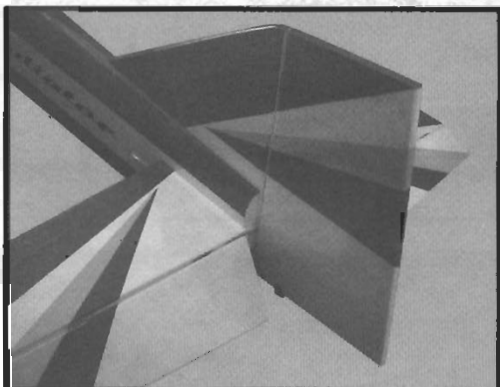
VERTICAL STABILIZER INSTALLATION



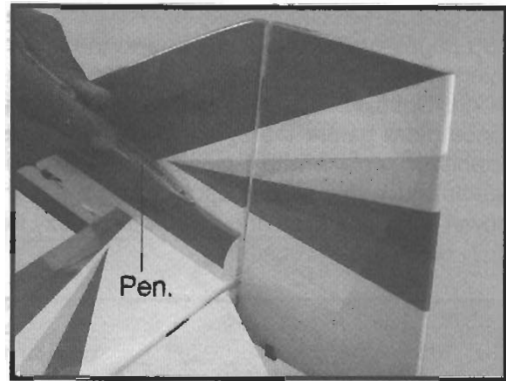
□ 1) Using a modeling knife, remove the covering from over the precut hinge slot cut into the lower rear portion of the fuselage. This slot accepts the lower rudder hinge.



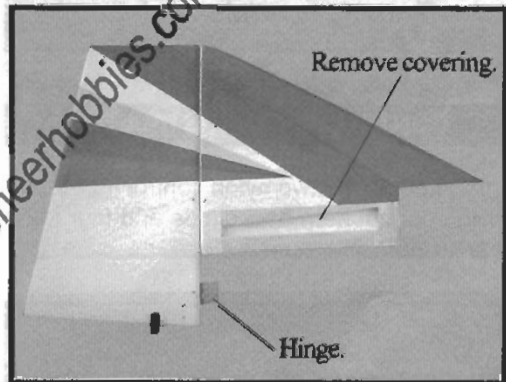
□ 2) Slide the vertical stabilizer into the slot in the top of the fuselage. The rear edge of the stabilizer should be flush with the rear edge of the fuselage and the lower rudder hinge should engage the precut hinge slot in the lower fuselage. The bottom edge of the stabilizer should also be firmly pushed against the top of the horizontal stabilizer.



□ 3) While holding the vertical stabilizer firmly in place, use a pen and draw a line on each side of the vertical stabilizer where it meets the top of the fuselage.

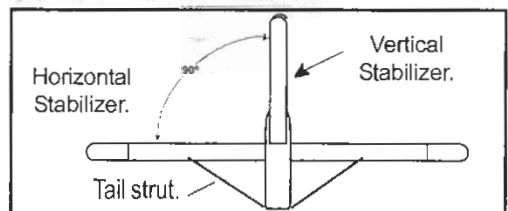


□ 4) Remove the stabilizer. Using a modeling knife, remove the covering from below the lines you drew. Also remove the covering from the bottom edge of the stabilizer and the bottom and top edges of the filler block. Leave the covering in place on the sides of the filler block.



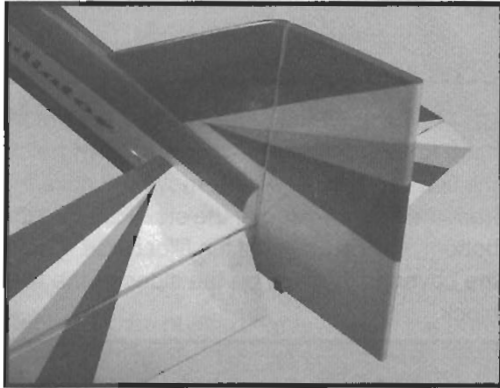
⚠ When cutting through the covering to remove it, cut with only enough pressure to only cut through the covering itself. Cutting into the balsa structure may weaken it.

□ 5) Slide the vertical stabilizer back in place. Using a triangle, check to ensure that the vertical stabilizer is aligned 90° to the horizontal stabilizer.



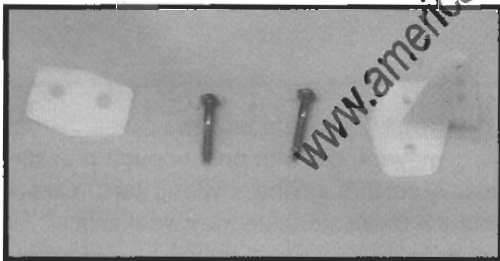
□ 6) When you are sure that everything is aligned correctly, mix up a generous amount of Flash 30 Minute Epoxy. Apply a thin layer to the mounting slot in the top of the fuselage and to the sides and bottom of the vertical stabilizer

mounting area. Apply epoxy to the bottom and top edges of the filler block and to the lower hinge also. Set the stabilizer in place and re-align. Double check all of your measurements once more before the epoxy cures. Hold the stabilizer in place with T-pins or masking tape and remove any excess epoxy using a paper towel and rubbing alcohol. Allow the epoxy to fully cure before proceeding.

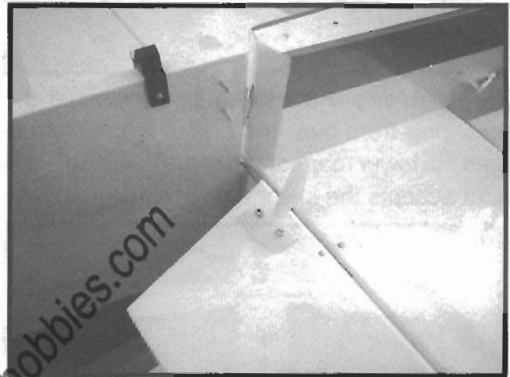
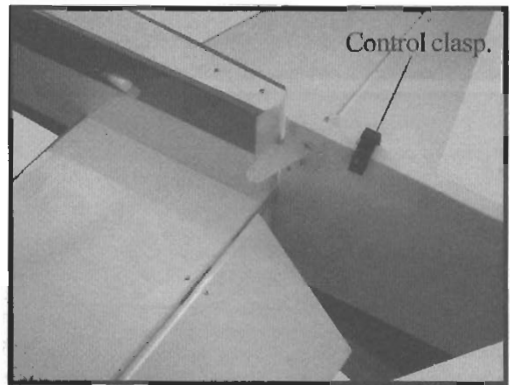
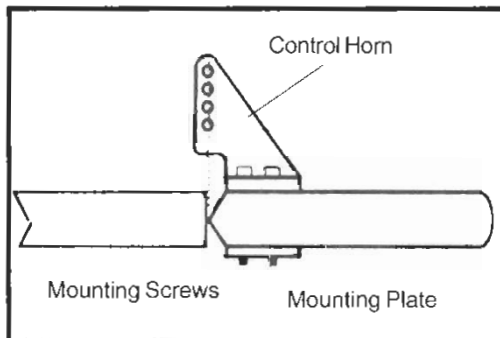


CONTROL HORN INSTALLTION

- 1) Locate the two nylon control horns, two nylon control horn backplates and four M2 x 12mm machine screws.

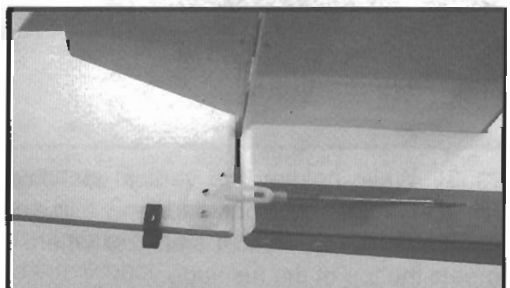
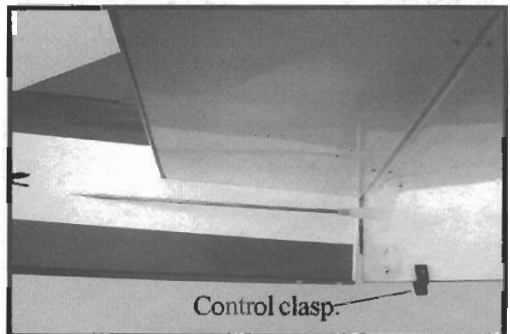


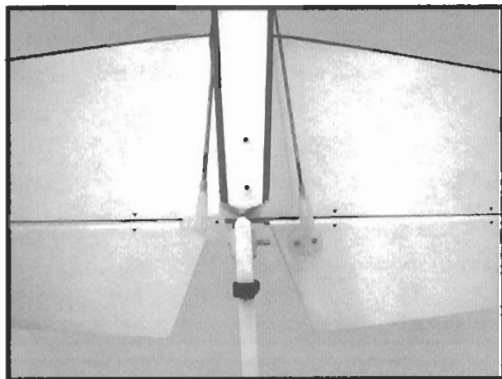
- 2) Position the elevator horn on the bottom side of elevator. The clevis attachment holes should be positioned over the hinge line.



PUSHROD INSTALLATION

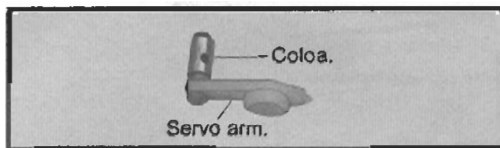
Thread two nylon clevises onto the threaded wires at least 10 turns. Attach the clevises to the elevator and rudder control horns. You may find it necessary to make slight bends in the wires so they will align with the control horns without binding.



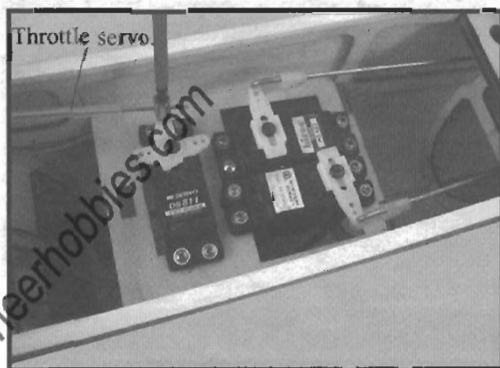
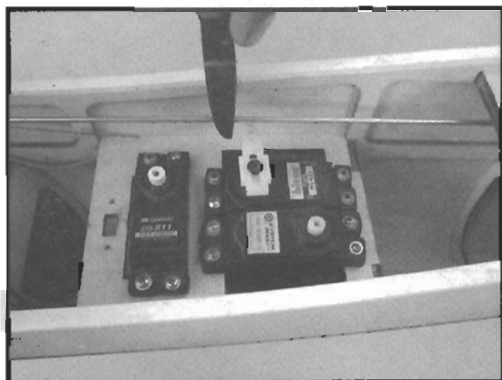


INSTALLING THE THROTTLE PUSHROD

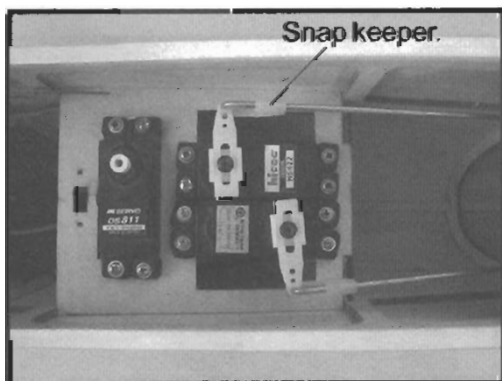
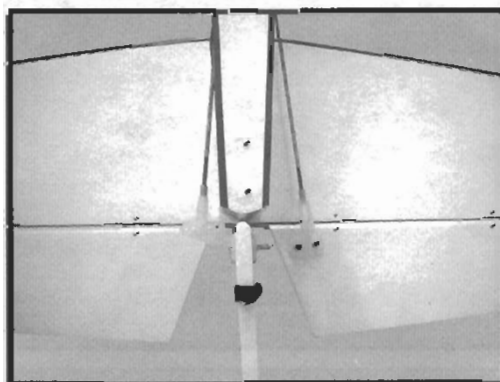
- 1) Install one adjustable metal connector through the third hole out from the center of one servo arm, enlarge the hole in the servo arm using a 2mm drill bit to accommodate the servo connector. Remove the excess material from the arm.



After installing the adjustable metal connector apply a small drop of thin C/A to the bottom nut. This will prevent the connector from loosening during flight.



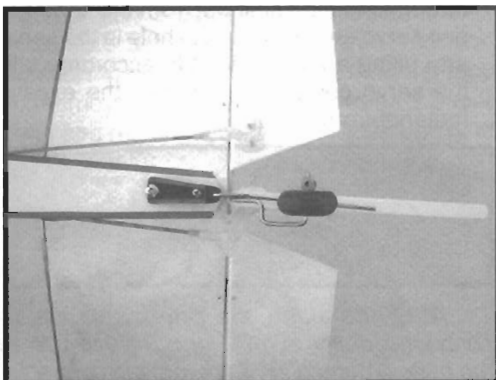
MOUNTING THE TAIL WHEEL BRACKET



- 1) Set the tail wheel assembly in place on the plywood plate. The pivot point of the tail wheel wire should be even with the rudder hinge line and the tail wheel bracket should be centered on the plywood plate.

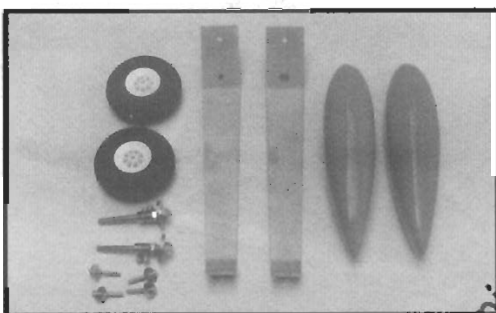
- 2) Using a pen, mark the locations of the two mounting screws. Remove the tail wheel bracket and drill 1mm pilot holes at the locations marked.

- 3) Secure the tail wheel bracket in place using three 3mm x 15mm wood screws. Be careful not to overtighten the screws.

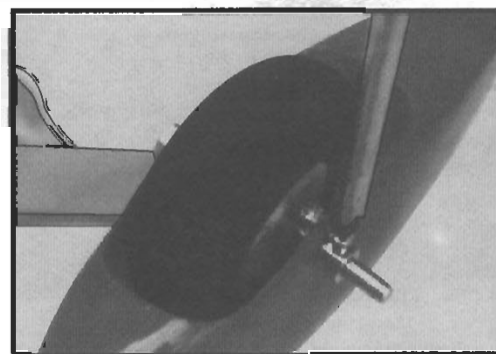
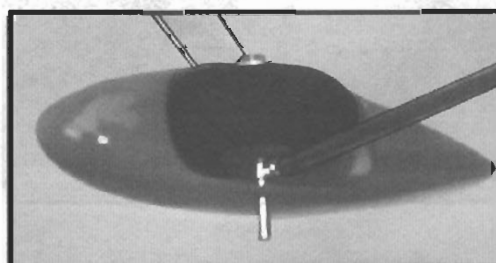
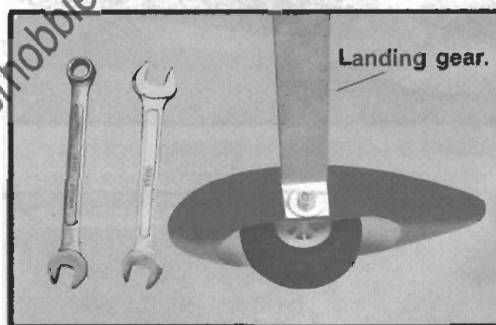
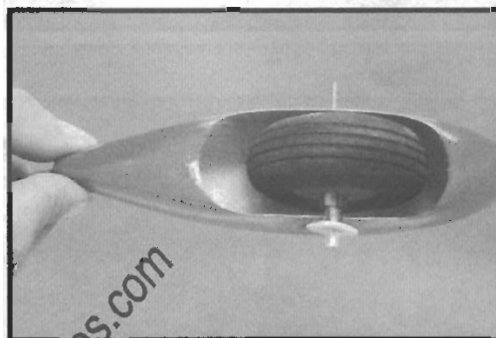
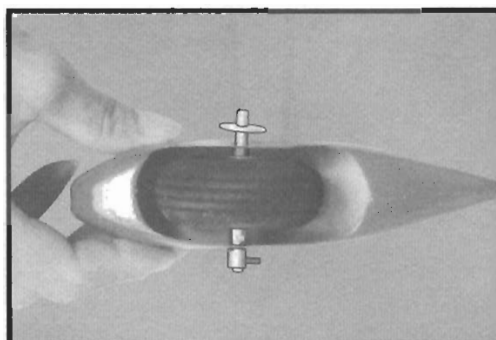
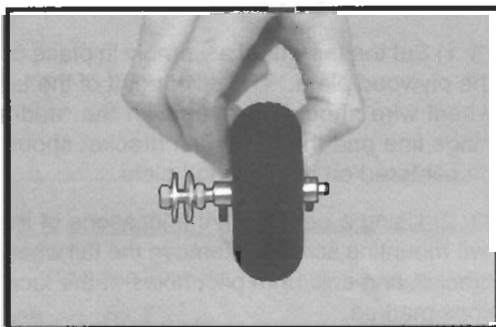
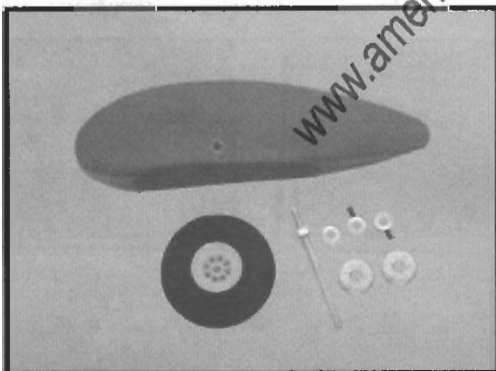


WHEEL PAN INSTALATION

PARTS REQUIRED



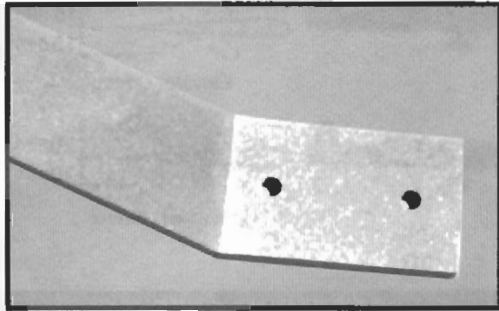
- 1) Assemble and mounting the wheel parts as shown in the following pictures.



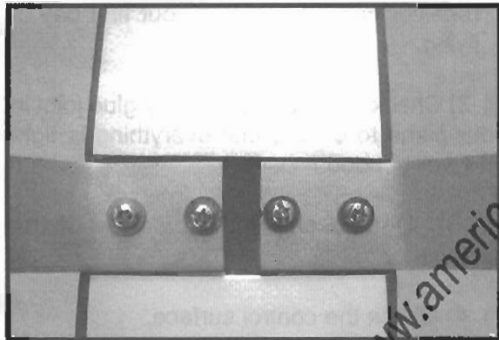
- 2) A drop of C/A glue on the wheel collar screws will help keep them from coming loose during operation.
Repeat the process for the other wheel.

INSTALLING THE MAIN LANDING GEAR

- 1) The blind nuts are already mounted inside the fuselage.
- 2) The holes in the landing gear should be to accept the mounting bolts.



- 3) Using the hardware provided, mount the main landing gear to the fuselage.



INSTALLING THE RECEIVER AND BATTERY

- 1) Plug the servo leads and the switch lead into the receiver. You may want to plug an aileron extension into the receiver to make plugging in the aileron servo lead easier when you are installing the wing. Plug the battery pack lead into the switch.
- 2) Wrap the receiver and battery pack in the protective foam to protect them from vibration. Use a rubber band or masking tape to hold the foam in place.
- 3) Position the battery pack and receiver behind the fuel tank. Use the two light plywood pieces, placed over the battery and receiver and glue to the fuselage sides to hold the battery and receiver securely in place. Use 15mm triangle pieces glued between the fuselage sides and the plywood pieces to reinforce the joints.

Do not permanently secure the receiver and battery until after balancing the model.

- 4) Using a 2mm drill bit, drill a hole through the side of the fuselage, near the receiver, for the antenna to exit.

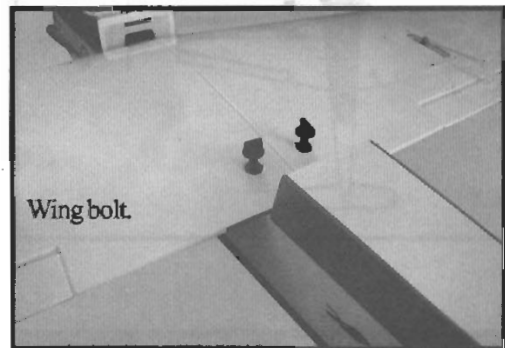
INSTALLING THE SWITCH

- 1) Cut out the switch hole using a modeling knife. Use a 2mm drill bit and drill out the two mounting holes through the fuselage side.
- 2) Secure the switch in place using the two machine screws provided with the radio system.



WING ATTACHMENT

See picture wing attach to fuselage.



Installing the belly pan as same as picture below.



Installing the canopy hatch as same as picture below.

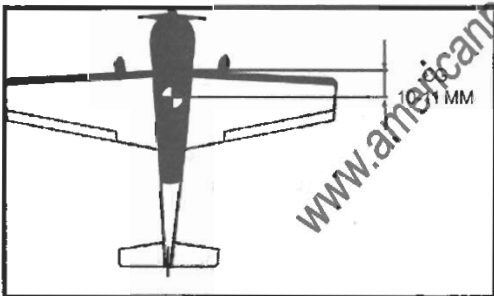


BALANCING

- 1) It is critical that your airplane be balanced correctly. Improper balance will cause your plane to lose control and crash.

THE CENTER OF GRAVITY IS LOCATED 10-11mm BACK FROM THE LEADING EDGE OF THE WING.

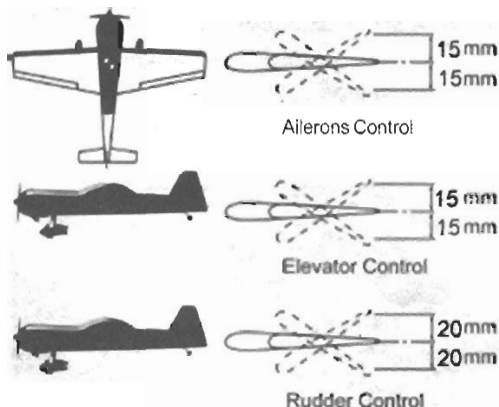
- 2) Turn the airplane upside down. Place your fingers on the masking tape and carefully lift the plane .



CONTROL THROWS

- 1) We highly recommend setting up a plane using the control throws listed.
- 2) The control throws should be measured at the widest point of each control surface.
- 3) Check to be sure the control surfaces move in the correct directions.

- Ailerons : 15mm up 15mm down
- Elevator : 15mm up 15mm down
- Rudder : 20mm right 20mm left



PRE-FLIGHT CHECK

- 1) Completely charge your transmitter and receiver batteries before your first day of flying.
- 2) Check every bolt and every glue joint in your plane to ensure that everything is tight and well bonded.
- 3) Double check the balance of the airplane.
- 4) Check the control surface.
- 5) Check the receiver antenna . It should be fully extended and not coiled up inside the fuselage.
- 6) Properly balance the propeller.

We wish you enjoy.