

# Instruction book

# DIABLO



## SPECIFICATION

- |                                     |                                                     |
|-------------------------------------|-----------------------------------------------------|
| <input type="checkbox"/> Wingspan:  | 1270 mm - 50" in                                    |
| <input type="checkbox"/> Wing Area: | 41.91 dm <sup>2</sup> - 647 Sq.in                   |
| <input type="checkbox"/> Length :   | 1400 mm - 55.1" in                                  |
| <input type="checkbox"/> Weight :   | 1800gr                                              |
| <input type="checkbox"/> Engine :   | Electric power : Hacker B40, 4,4:1<br>Mega mini 7E. |
|                                     | Gas power : 40 - 2 stroke.<br>52 - 4 stroke.        |
| <input type="checkbox"/> Radio :    | 4 channels                                          |
| <input type="checkbox"/> Servo :    | 5 mini servos                                       |

This instruction manual is designed to help you build a great flying aeroplane. Please read this manual thoroughly before starting assembly of your **DIABLO**. 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 unwrap 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. **DIABLO** 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.

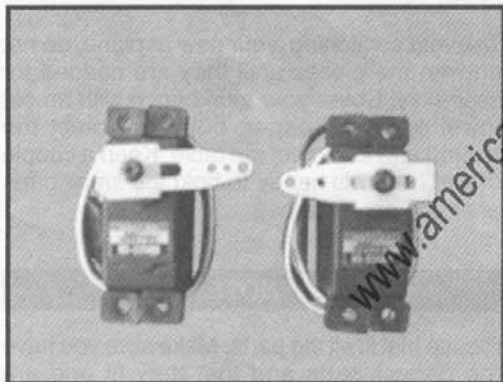
The painted and plastic parts used in this kit are fuel proof. However, they are not tolerant of many harsh chemicals including the following: paint thinner, C/A glue accelerator, C/A glue debonder and acetone. Do not let these chemicals come in contact with the colors on the covering and the plastic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

**SAFETY PRECAUTION.**

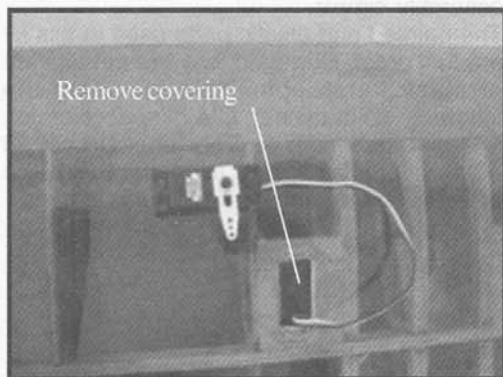
- + This is not a toy
- + Be sure that no other flyers are using your radio frequency.
- + Do not smoke near fuel
- + Store fuel in a cool, dry place, away from children and pets.
- + Wear safety glasses.
- + The glow plug clip must be securely attached to the glow plug.
- + Do not flip the propeller 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.

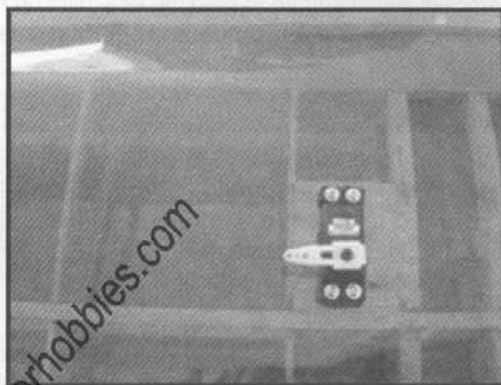


- ⇒ 2. Turn the wing panel right side up. Using a modeling knife, remove the covering at servo tray.



- ⇒ 3. 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.

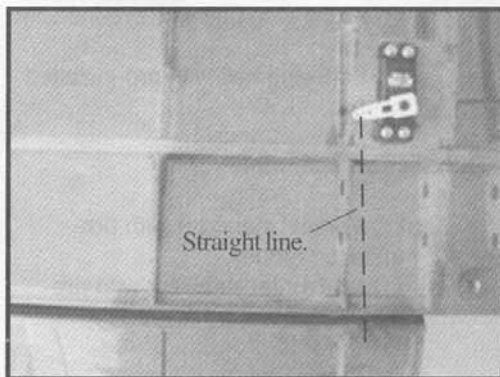
- ⇒ 4. Drill 1,6mm pilot holes through the block of wood for each of the four mounting screws provided with the servo.



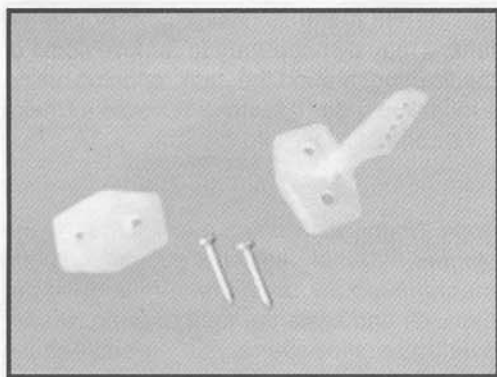
- Repeat the procedure for the other wing half.

**INSTALLING THE AILERON LINKAGE**

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

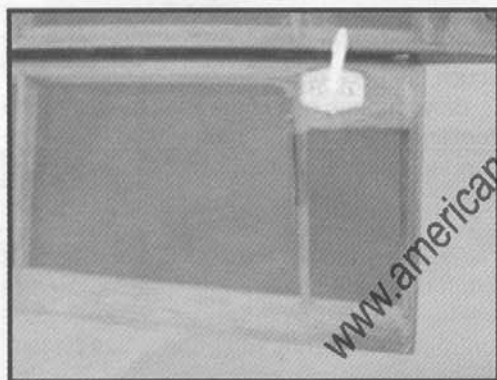






⇒ 2) Locate nylon control horns, nylon control horn backplates and 2 machine screws.

⇒ 3) Drill two 2mm holes through the aileron using the control horn as a guide and screw the control horn in place.



#### INSTALLING THE AILERON LINKAGES.

⇒ 1. Working with the aileron linkage for now, thread one nylon clevis onto one of the threaded wires.

⇒ 2. Attach the clevis to the outer hole in the control horn. Install a silicone tube on the clevis

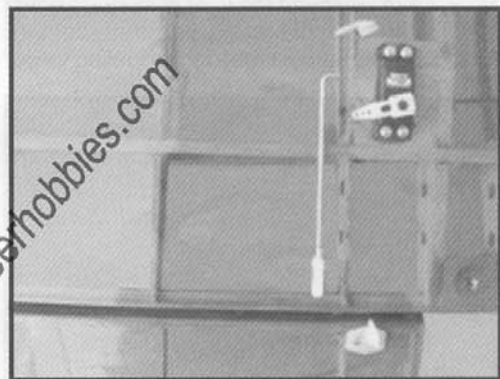
⇒ 3. Locate one nylon servo arm, and using wire cutters, remove all but one of the arms. Using a 2mm drill bit, enlarge the third hole out from the center of the arm to accommodate the aileron pushrod wire.

⇒ 4. Plug the aileron servo into the receiver and center the servo. Install the servo arm onto the servo. The servo arm should be perpendicular to the servo and point toward the middle of the wing.

⇒ 5. Center the aileron and hold it in place using a couple of pieces of masking tape.

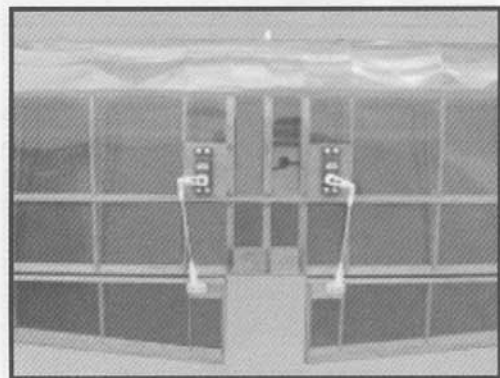
⇒ 6. With the aileron and aileron servo centered, carefully place a mark on the aileron pushrod wire where it crosses the hole in the servo arm.

⇒ 7. Using pliers, carefully make a 90 degree bend down at the mark made. Cut off the excess wire, leaving about 4mm beyond the bend.



⇒ 8. Insert the 90 degree bend down through the hole in the servo arm. Install one nylon snap keeper over the wire to secure it to the arm. Install the servo arm retaining screw and remove the masking tape from the aileron.

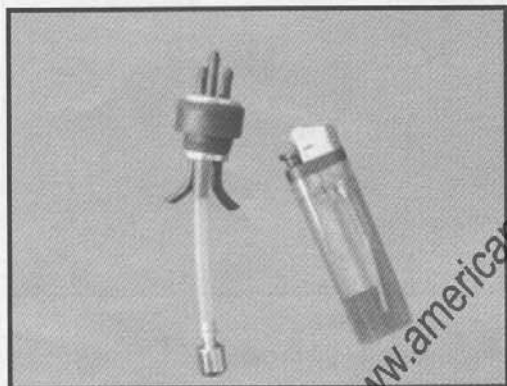
**Repeat the procedure for the other wing half.**



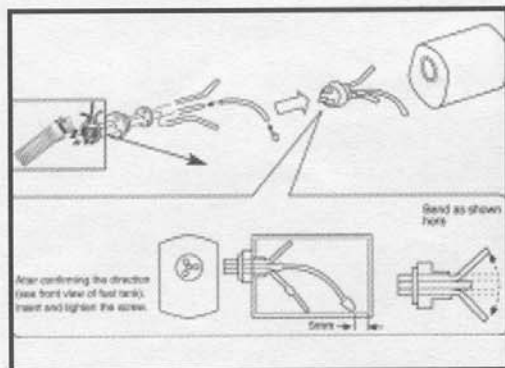
## FUEL TANK

## 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) and 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.

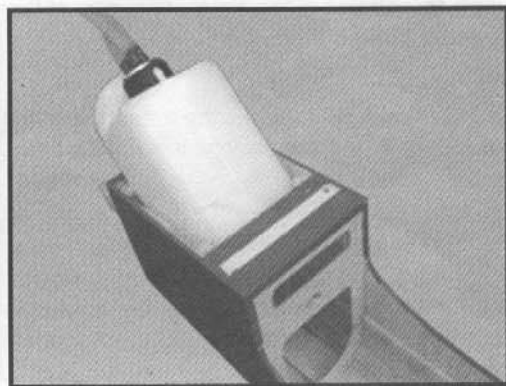
- ⇒ 7. Using a modeling knife, cut 3 lengths of fuel line 150mm long. Connect 2 lines to the 2 vent tubes and 1 line to the fuel pickup tube in the stopper.

- ⇒ 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.

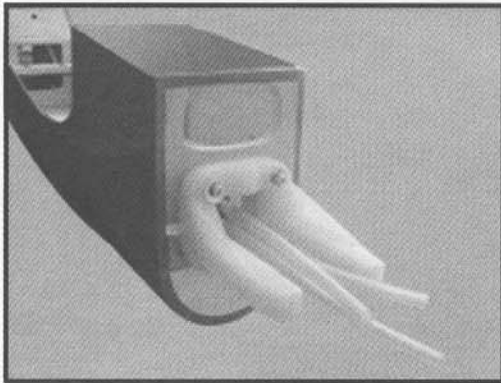
Blow through one of the lines to ensure the fuel lines have not become kinked inside the fuel tank compartment. Air should flow through easily.

- ⇒ 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*

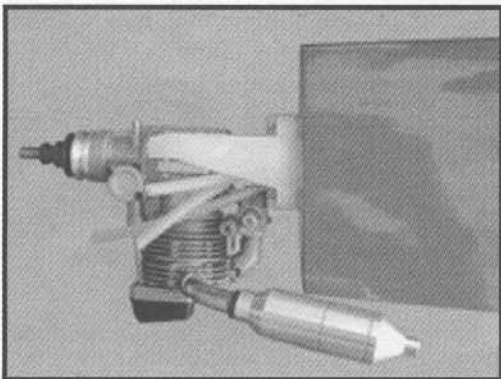
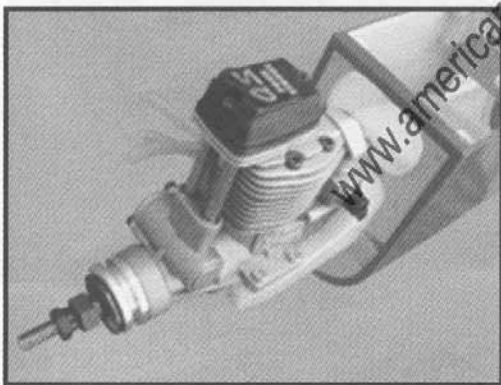


## INSTALLING THE ENGINE MOUTH.



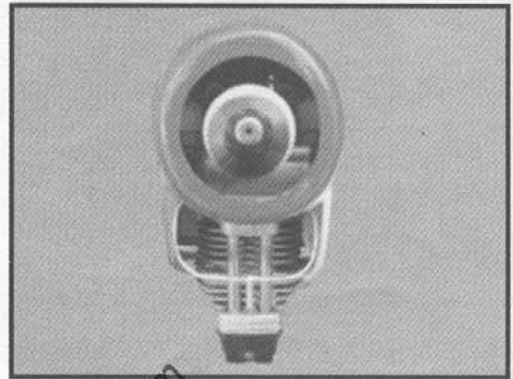
## INSTALLING THE ENGINE-THROTTLE.

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.



## COWLING

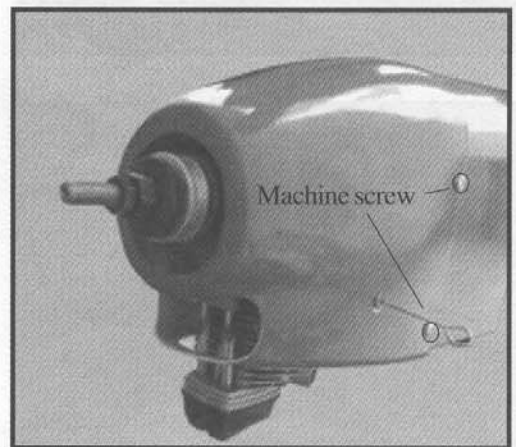
⇒ 1) Slide the fiberglass cowl over the engine and line up the back edge of the cowl with the marks you made on the fuselage.



⇒ 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.

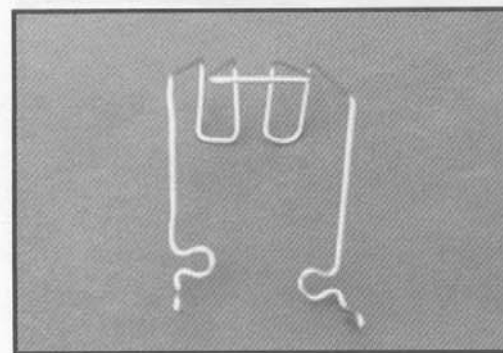


**INSTALLING THE SPINNER**

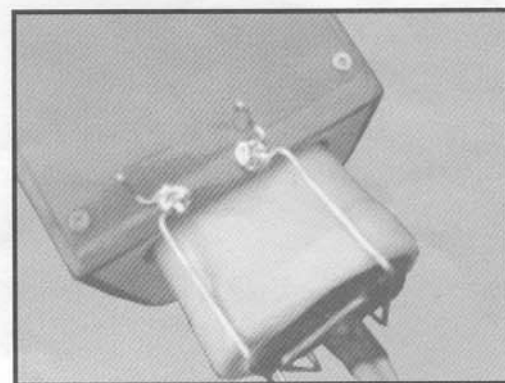
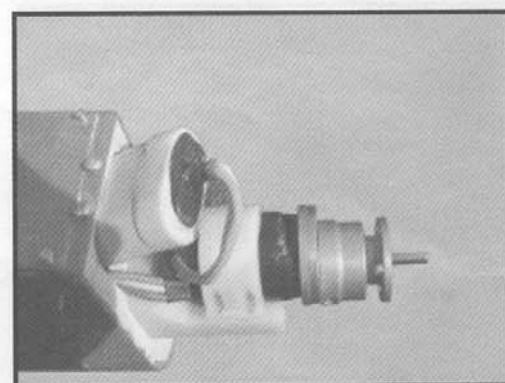
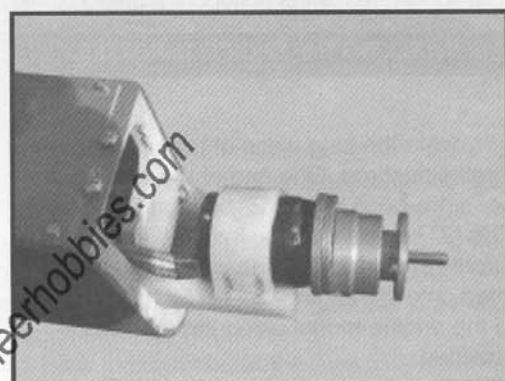
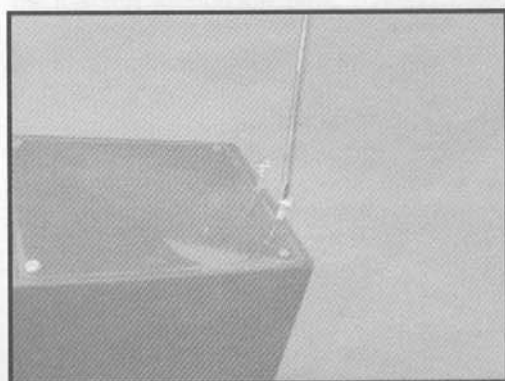
Install the spinner backplate, propeller and spinner cone. The spinner cone is held in place using two 3mm x 12mm wood screws.

**INSTALLING ELECTRIC MOTOR - SPEED CONTROL.**

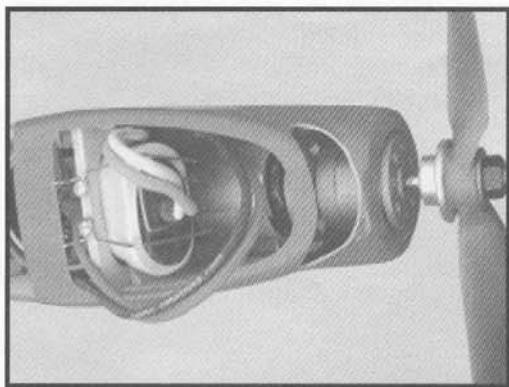
⇒ 1) Install the motor mount as same as picture bellow.



⇒ 2) Install battery and speed control as same as picture bellow.

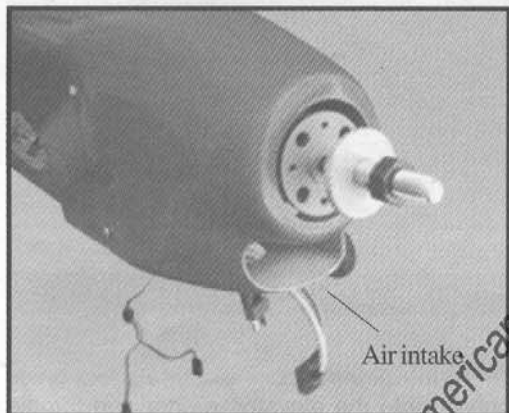






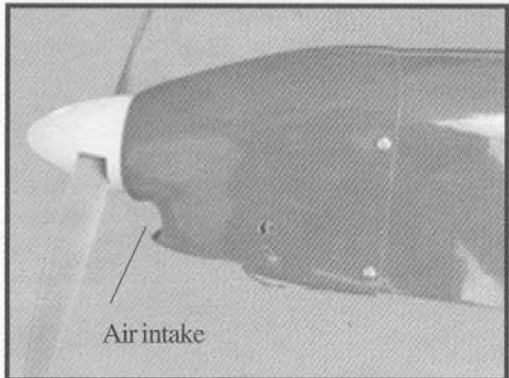
### COWLING

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



⇒ 2) While keeping the back edge of the cowl flush with the marks, align the front of the cowl with the crankshaft of the motor. 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.

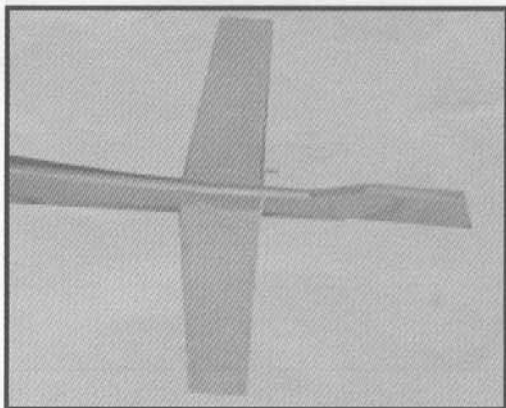
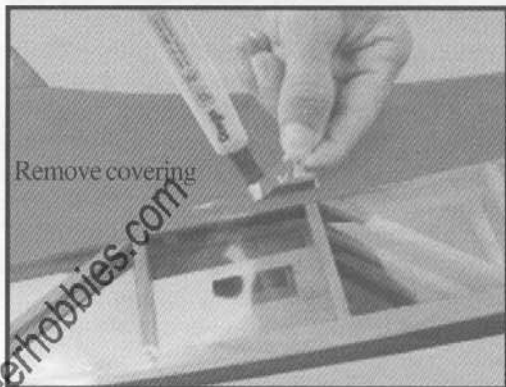
⇒ 3) Slide the cowl back over the motor and secure it in place using four wood screws.



### ALIGNING THE HORIZONTAL STABILIZER

⇒ 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.

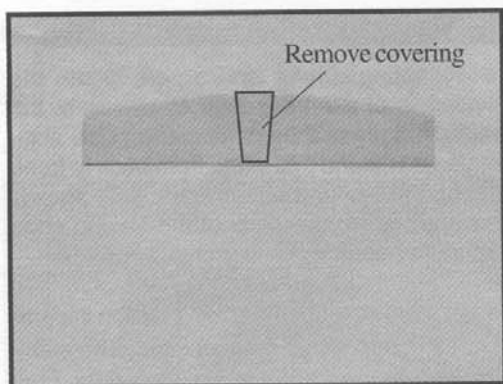
⇒ 2) Slide the stabilizer into place in the pre-cut slot in the rear of the fuselage. The stabilizer should be pushed firmly against the front of the slot.



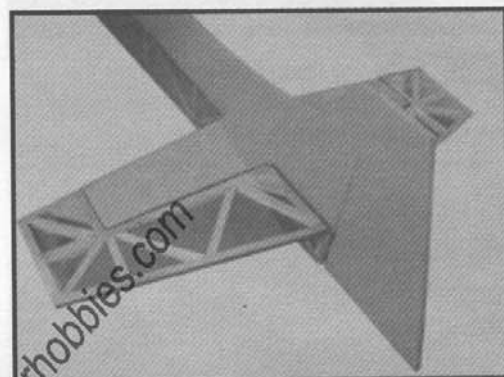
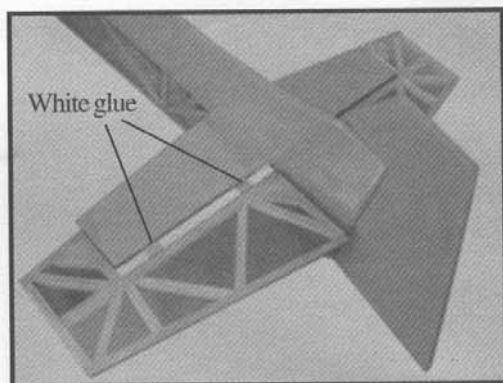
⇒ 3) With the stabilizer held firmly in place, use a pen and draw lines onto the stabilizer where it and the fuselage sides meet. Do this on both the right and left sides and top and bottom of the stabilizer.

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

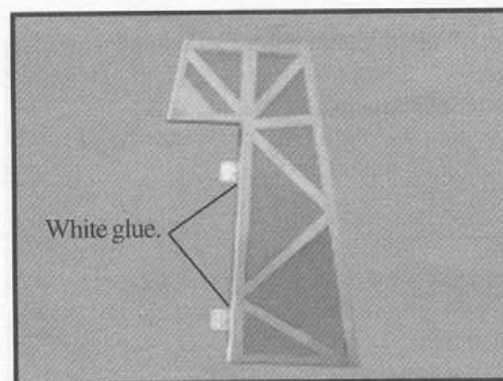
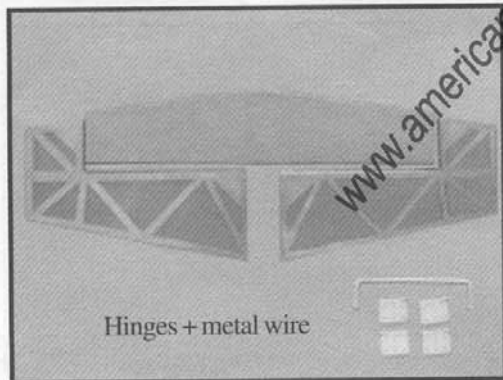




5) When you are sure that everything is aligned correctly, mix up a generous amount of Flash 30 Minute Epoxy. Apply a thin layer to the top and bottom of the stabilizer mounting area and to the stabilizer mounting platform sides in the fuselage. Slide the stabilizer in place and realign. Double check 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.



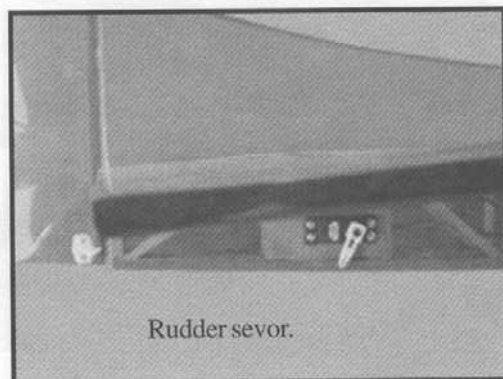
#### INSTALLING ELEVATOR.

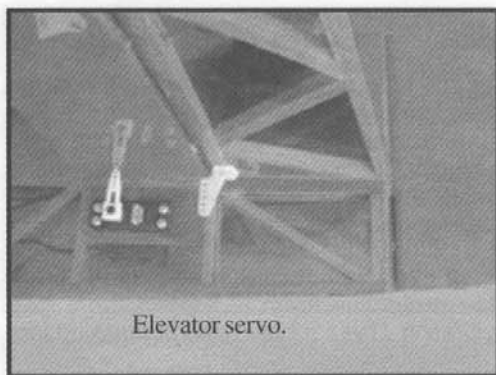


#### INSTALLING THE SERVOS

1) Install the rubber grommets and brass collets onto the elevator, rudder and throttle servos. Test fit the servos into the preinstalled servo tray. Because the size of servos differ, you may need to adjust the size of the pre-cut openings in the tray.

2) Position the servos into the servo tray with the output shafts orientated as shown below. Drill 1/16" pilot holes through the tray for each of the mounting screws.

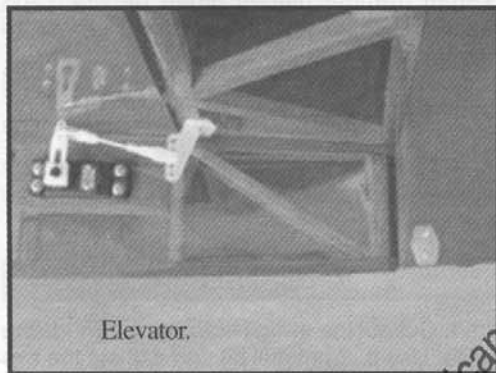




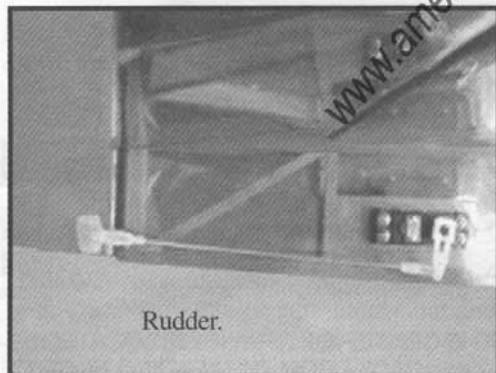
Elevator servo.

#### PUSHROD INSTALLATION

Control horns and pushrod install as same as method of aileron wing.



Elevator.



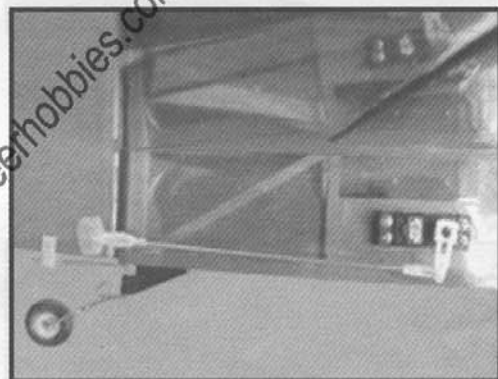
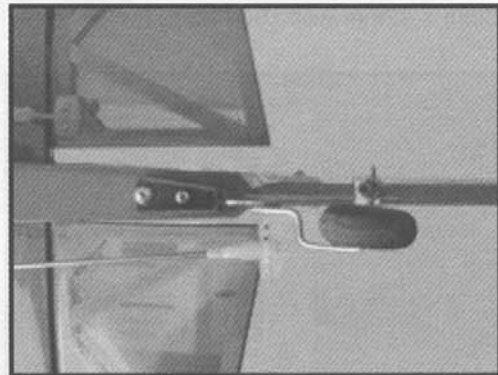
Rudder.

#### MOUNTING THE TAIL WHEEL BRACKET

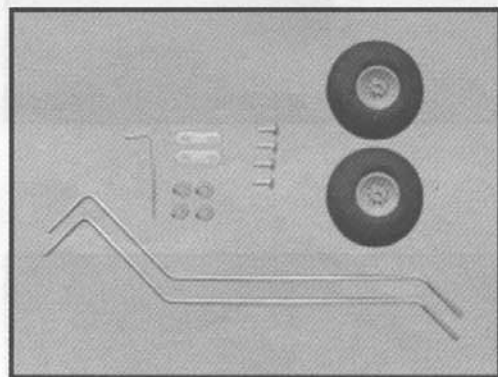
1) Set the tail wheel assembly in place on the plywood plate. The pivot point of the tail wheel wire should be even with the rudder hinge line and the tail wheel bracket should be centered on the plywood plate.

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.



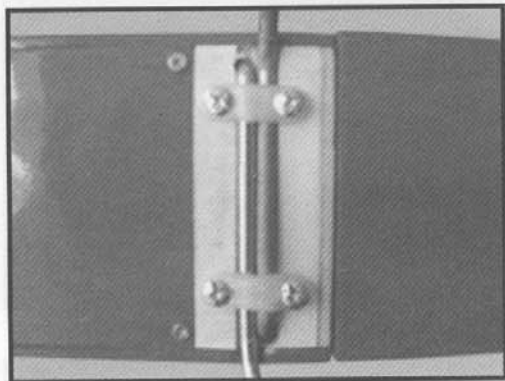
#### MAIN GEAR INSTALATION.



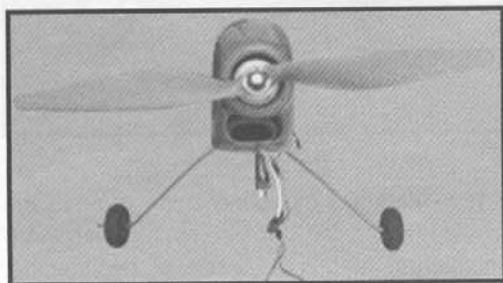
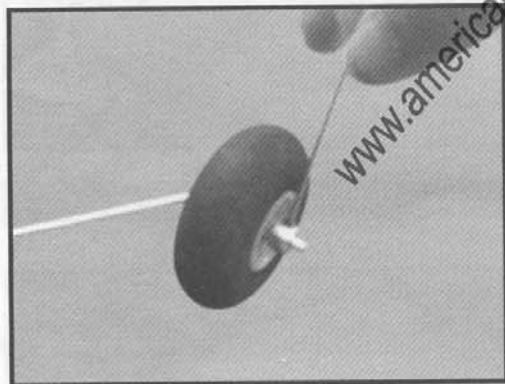
1) Using a modeling knife, remove the covering from over the two main gear mounting slots located in the bottom of the fuselage.

□ 2) Using the two landing gear straps as a guide, mark the locations of the four 3mm x 12mm mounting screws onto the fuselage surface.

□ 3) The landing gear wire is held in place using two nylon landing gear straps and four 3mm x 12mm wood screws.



□ 4) The main wheel in place using two collars.



#### 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

#### BALANCING.

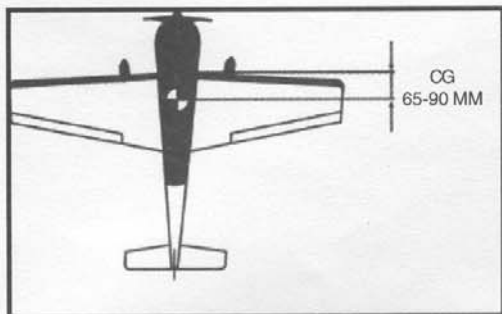
□ 1. It is critical that your airplane be balanced correctly. Improper balance will cause your plane to lose control and crash.

THE CENTER OF GRAVITY IS LOCATED 65-90mm BACK FROM THE LEADING EDGE OF THE WING.

□ 2. Mount the wing to the fuselage. Using a couple of pieces of masking tape, place them on the top side of the wing 65-90 mm back from the leading edge, at the fuselage sides.

□ 3. Turn the airplane upside down. Place your fingers on the masking tape and carefully lift the plane.





### CONTROL THROWS

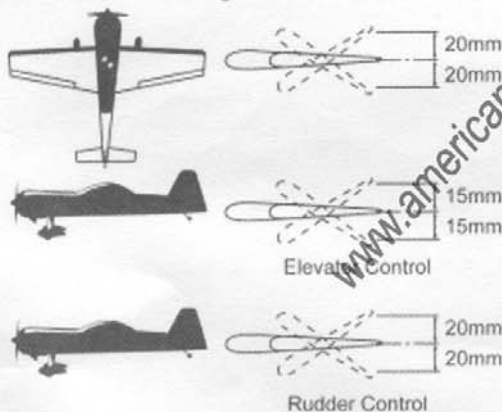
- 1. We highly recommend setting up a plane using the control throws listed.
- 2. The control throws should be measured at the widest point of each control surface.
- 3. Check to be sure the control surfaces move in the correct directions.

### CONTROL THROWS

Ailerons : 20mm up 20mm 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