

# SK-50

## *ARF*

### ASSEMBLY MANUAL



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# Congratulations!

Kangke Industrial USA, Inc. brings you one of the finest ARF fun-fly models available. Skilled craftsmen combined with top grade materials and precision jigs have all come together to produce an aircraft with outstanding flight qualities. If you follow the directions carefully the performance of this aircraft will surely please you.

## Specifications:

Length	49 in.
Wing Span	56 in.
Area	671 sq. in.
Weight	5.5-6.0 lbs.
Engine	40-52 2 Cycle

## Kit Contents:

Fuselage	1
Wing panel	2
Ailerons	2
Cowling	1
Canopy	1
PACK 1	
Stabilizer	1
Elevator	2
Fin	1
Rudder	1
PACK 2	
Dihedral brace	1
Servo tray	1

PACK 3	
Fuel tank	1
Wheels	2
Tail gear	1
Tail wheel	1
Control horn	5
Control wire	6
Control rod	2
Motor mount	1
Hardware pack	1

Pack 4	
Manual	1
Decal kit	1
Wheel Pants	2

*The following additional items will also be needed to build the SK-50*

## HOBBY ITEMS:

4 oz. 30 min. epoxy
Popsicle sticks
Hobby knife

Thin CA .5 oz
Med. CA 1 oz.
Radio 4-channel min.
5 servos
Fuel line 10-inches
Motor (Tiger Shark .40/52)
Muffler
Spinner (Super Kraft 2.25")

## HOUSEHOLD ITEMS:

Paper towels
Alcohol
Masking tape
Ruler
Felt tip pen
Screwdrivers
Pliers
Sewing thread
5/32 drill
1/8 drill
1/16 drill

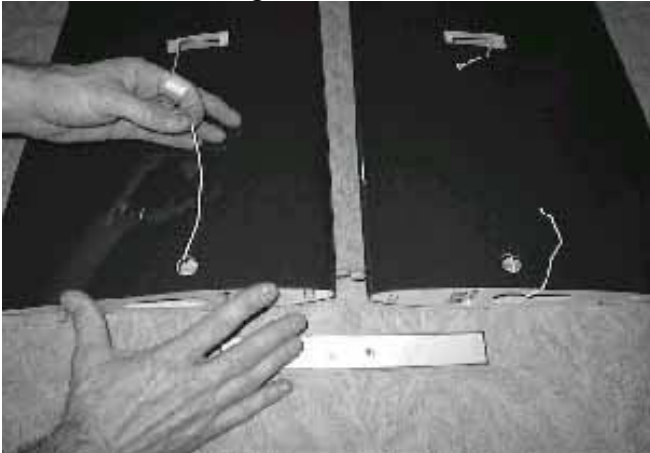
Read each step of the instructions carefully. Be sure you understand what is required and what the procedure is before you glue or cut anything. How well you assemble this model will have a direct effect on its flight characteristics.

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**Warranty:** Kangke Industrial USA Inc. guarantees the kit to be free of defects in both material and workmanship at the date of purchase. This warranty does not cover any parts damaged by use or modifications. In no case shall Kangke Industrial's liability exceed the purchase cost of this kit. Since Kangke Industrial has no control of final assembly and material used by user for final assembly, no liability shall be assumed or accepted for any damage resulting from the use by user of final user-assembled products. This kit has been flight test for normal use. If the plane will be used for extremely high stress flying, the modeler is responsible for reinforcing the high stress points. Inspect this kit immediately after receiving it, report any missing and damaged parts within 7 business days otherwise the claim may be denied.

## WING ASSEMBLY

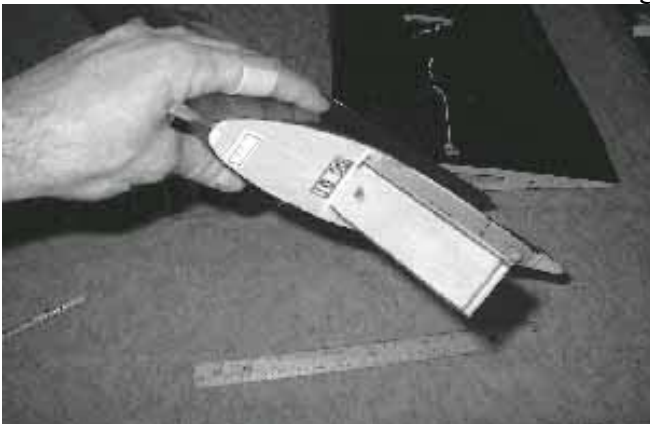
Remove the tape from the servo wire pull string at the center of the wing. Work the string through the exit hole in the wing bottom and secure.



Measure the dihedral brace, locate and mark its center.



Trial fit the dihedral brace in its box in both wing



panels. The "V" shape of the brace points down to produce positive dihedral. The brace should have a snug fit, sand lightly if necessary.

*The following steps must be done quickly before the epoxy has time to set up. Read the procedure and gather the materials before starting.*

Mix a small amount of 30-minute epoxy. Spread the epoxy in the dihedral box top, bottom, and sides about 1 inch in on both wing panels. The snug fit of the brace will push it down the box.



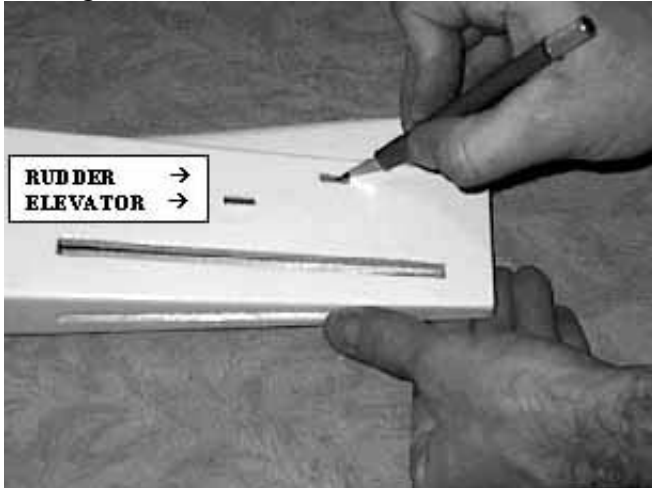
Apply epoxy to one half of the wing spar and slide it into position. Spread the epoxy that oozes out over the wing mating surface as well as the other half of the wing spar. Slide the other wing panel in place, wipe off the excess epoxy with a paper towel moistened with alcohol.



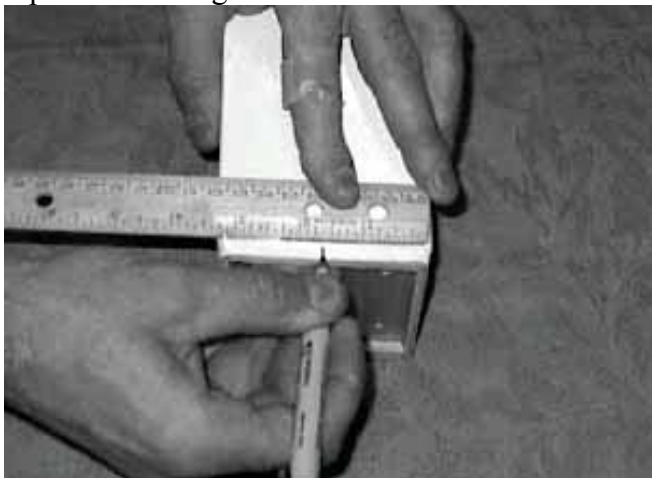
Stretch masking tape across the joint in such a way as to apply pressure to the joint. **DO NOT DISTURB THE WING UNTILL THE EPOXY HAS FULLEY CURED.**

## FUSELAGE ASSEMBLY

Open the two elevator and the right side rudder control rod slots. The slots can easily be found by shining a flashlight down the inside of the fuselage.



Locate and mark the center of the firewall on the top of the fuselage.

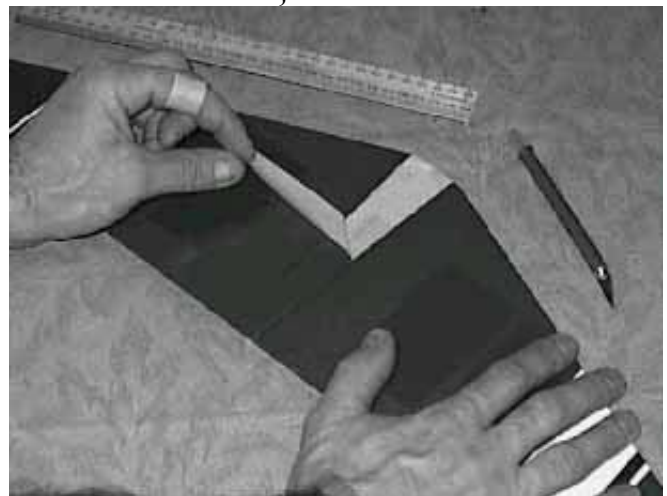


Remove the elevators from the stabilizer. Center the stabilizer in the fuselage. Insert a pin in the top of the firewall at the center mark. Using a piece of string go back and forth between the ends of the stabilizer adjusting it till it is centered and square to the fuselage. *DO NOT GLUE*

Use a felt tip pen to mark the outline of the fuselage on both the top and bottom of the stabilizer. Remove the stabilizer. Cut through the covering about 1/8-inch inside the lines and carefully remove the covering exposing the wood.



*{Be careful not to cut into the wood, as this would weaken the structure}*



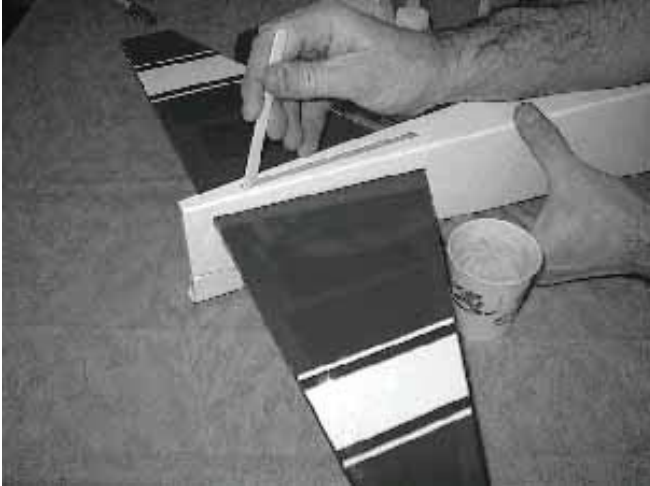
Slide the stabilizer back into the fuselage, leaving 3/8-inch of bare wood exposed. Coat the wood top



and bottom with epoxy, slide the stabilizer through the fuselage exposing the wood on the other side, and coat the wood with epoxy. Center the stabilizer and use the string as before to verify its alignment. Wipe the excess epoxy with a paper

towel moistened with alcohol. Allow to cure before proceeding.

Remove the rudder from the fin. Coat the inside of the fin slot, as well as the top of the stabilizer in the slot with epoxy.

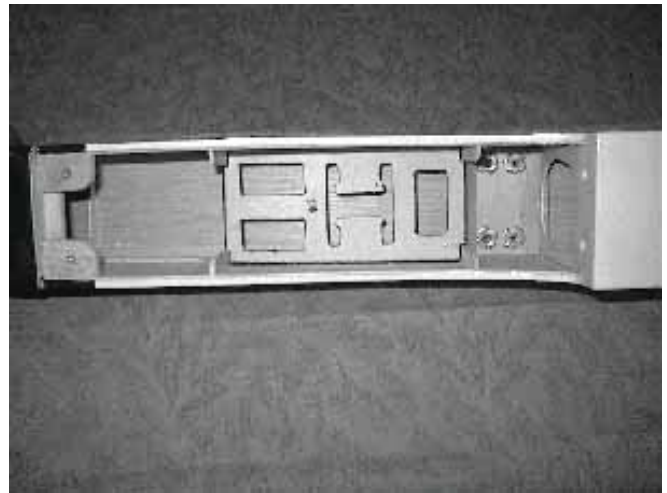


Push the fin in the slot until it bottoms against the fuselage. Wipe off excess epoxy with a paper towel moistened with alcohol.



Test fit the servos in the mounting tray, do not mount them at this time.

Fit the servo-mounting tray to the inside of the fuselage, sand if necessary for a snug fit between the fuselage sides as well as the fuselage bulkheads. Be sure the single servo hole is to the front.



Sand the last inch of the throttle wire outer casing just enough to roughen the surface. Coat the surface of the casing with epoxy and slide it through its hole in the firewall, as well as the fuel tank opening inside the fuselage leaving 3/8-inch exposed.



Install the motor mount beams using the supplied 2.5mm screws.



Trim and sand the mating edge of the cowl for best fit. Tape the cowl securely to the fuselage. Using a 1/16-inch drill, make two holes on each side 1/2-inch in from the corners and 1/8-inch forward of the rear edge.



Before removing the cowl use a ruler to measure the distance from the firewall to the front of the cowl. Record this number for use later.



Remove the cowl.



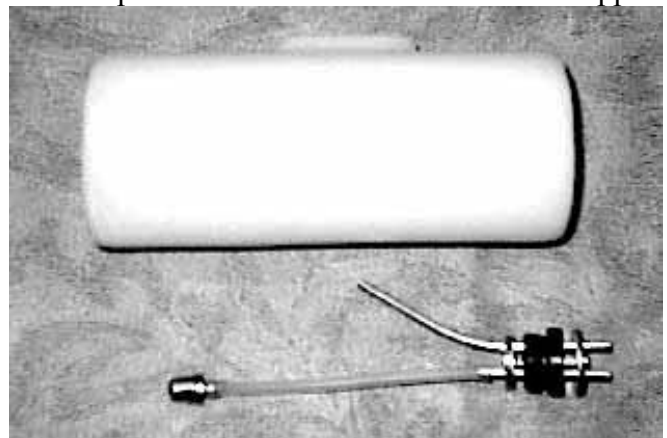
Using a 1/8-inch drill enlarge the holes in the *cowl only*.

Temporarily install the spinner on the front of your motor. Add 1/4-inch to the measurement taken before, this is the distance to the back of the spinner. Set the motor on the mount making sure the distance to the firewall is correct, and the motor is centered and straight between the rails. When satisfied mark the motor mounting locations, remove the motor and drill the mounting holes using a 1/8-inch drill.



## FUEL TANK

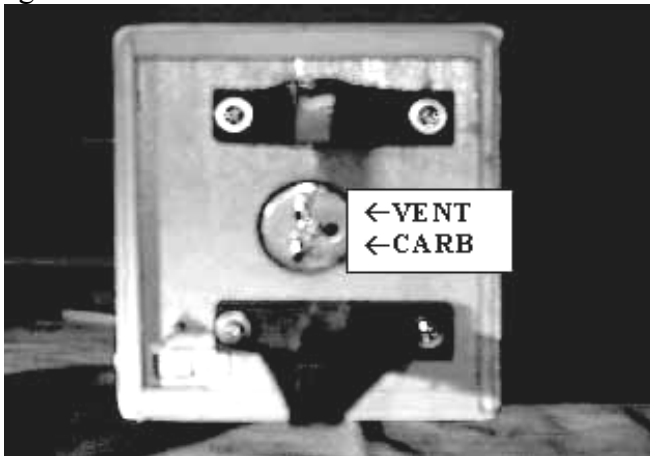
Pass the two metal tubes through the silicone stopper. Place the large endplate on the outside and the small endplate on the inside. Press the screw through the outer plate and through the silicone stopper, screw it into the inner plate *do not tighten*. Slide the metal tubes so 1/2-inch extends past the outer side of the silicone stopper.



Gently bend the long tube up to point into the "bubble" at the top of the tank. Push the flop weight into one end of the silicone tube. Cut the tube so that when the other end is pushed on the short metal tube the flop weight will be approximately 3/8-inch from the back of the tank. Slide the assembly into the tank, making sure to

get the vent tube in or near the “bubble”. Tighten the screw until the stopper is tight in the opening. It is best to label the vent and carb lines with a felt tip marker on the outer plate to avoid confusion later.

Place a 1/4-inch bead of RTV type silicone around the tank stopper. Carefully slide the tank into position through the fuselage. Press it gently against the back of the firewall



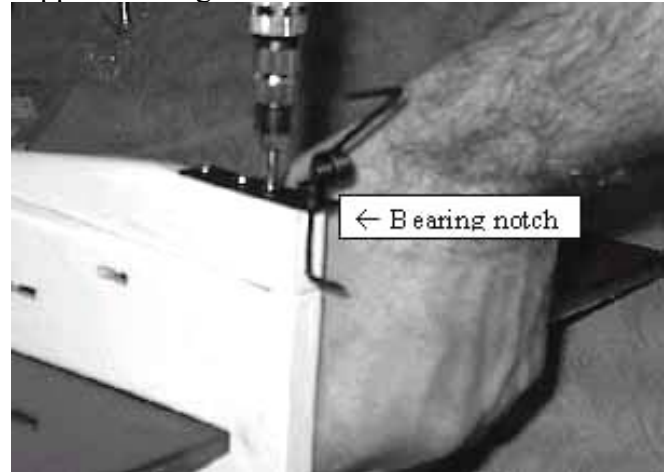
Apply a small amount off RTV silicone around the tank at the fuselage bulkhead. Do not make one continuous bead, as the silicone is used as a vibration absorber. Several small spots will work better and be lighter.



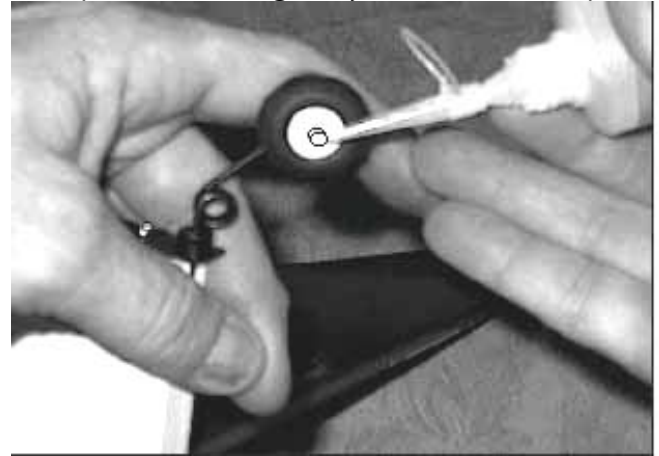
## LANDING GEAR

Install the tail wheel bracket using the three supplied screws. Make sure the control arm is on the centerline of the rear of the fuselage. A small

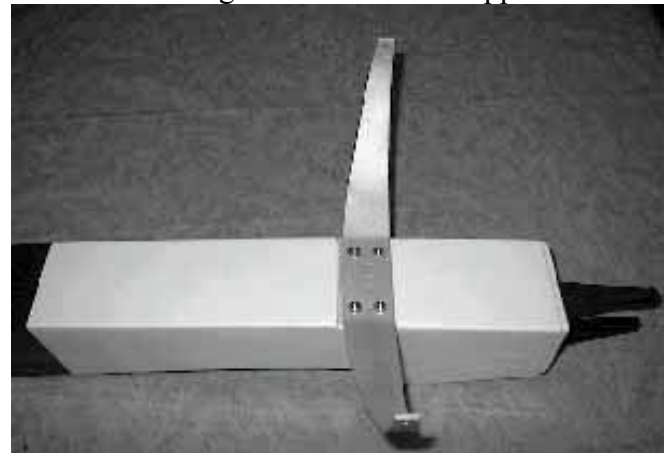
notch will need to be cut to allow space for the support bearing.



Slide on the tail wheel. Press the retaining tube on the axle and secure with one small drop of thin CA. {Be sure not to get any CA on the wheel}

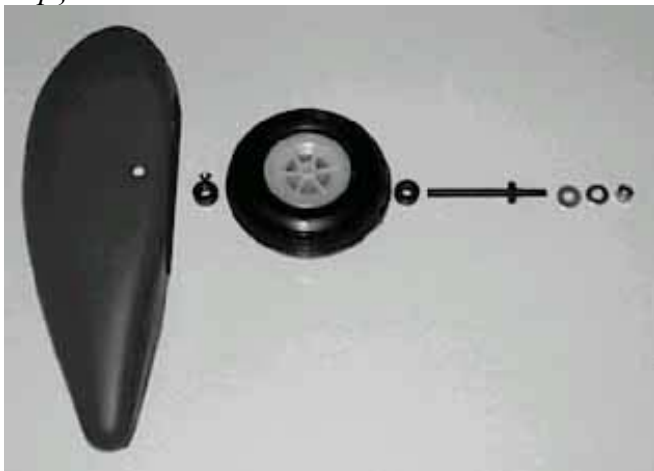


Install the main gear with the four supplied screws



and washers. Be sure when the gear is installed the straight edge is to the front.

Drill one of the axle holes in each wheel pant {*be sure to make a right and left side*}. Slide a wheel collar on the axle followed by the wheel and a second collar. Tighten the lock screw in the outside collar. Place a washer on the threaded portion of the axle and install the assembly in the wheel pant. {*The wheel pant is made from a very flexible material and will not break during this step*}



Slide the axle through the gear, install a washer followed by the supplied lock nut. Hold the axle with pliers, align the wheel pant and tighten the lock nut.

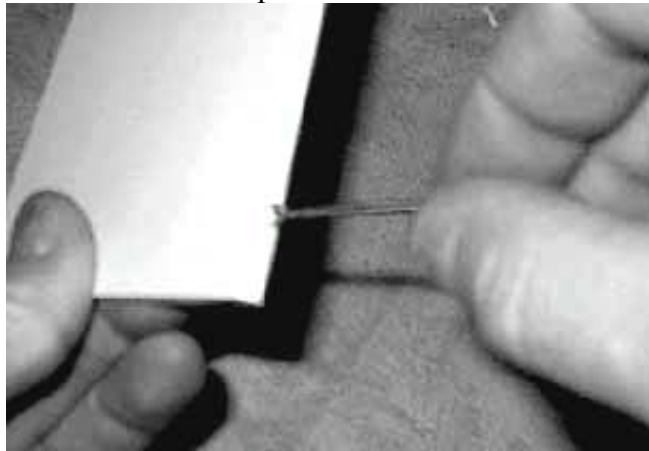


## CONTROL SURFACES

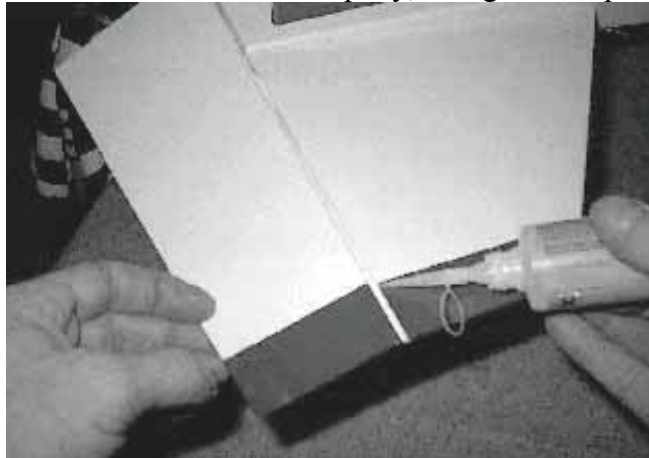


Set the fuselage on its wheels. Align the top of the rudder with the top of the fin. Mark the leading edge of the rudder at the tail wheel steering arm.

At the mark drill a 1/16-inch hole straight into the rudder 3/4-inch deep.



Mix a small amount of epoxy, using a toothpick



work the epoxy into the hole. Slide the tail wheel steering arm, rudder and hinges into place. Apply one drop of thin CA to each side of the hinges.

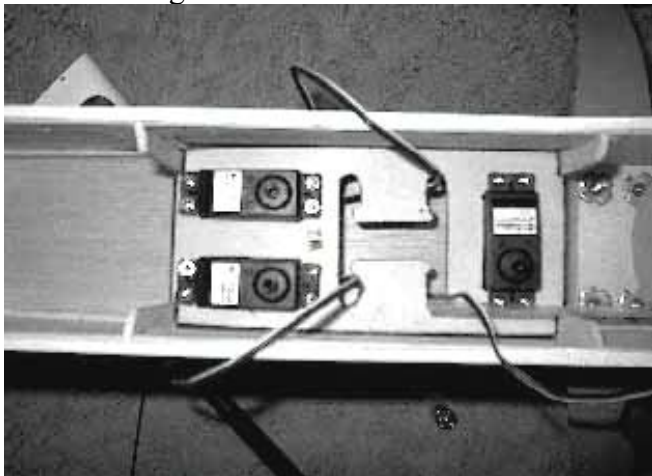
The CA will “wick” into the wood and secure the hinge, only one drop is necessary.

Use the same procedure for all the remaining control surfaces. Line up the edges carefully and apply one drop of thin CA to each side of the hinges.



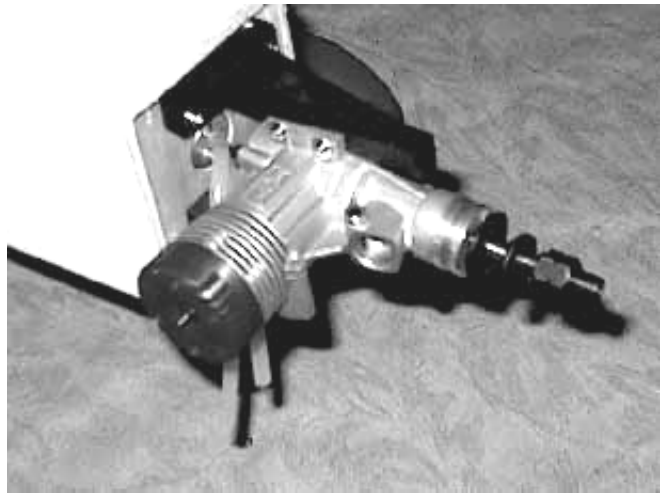
## SERVOS / CONTROLS

Install the servos in the servo tray following the radio manufactures instructions. Cut the throttle control casing 1/2-inch behind the fuel tank.

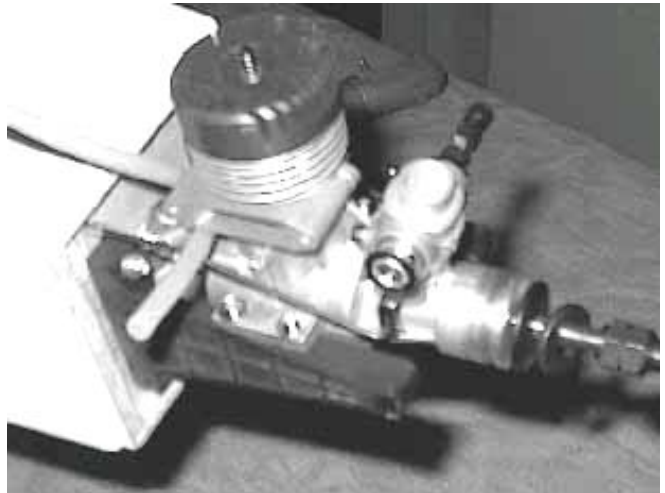


Install two 6-inch pieces of fuel line on the tank carburetor and vent tubes. Install the motor using the four supplied screws washers and lock nuts.

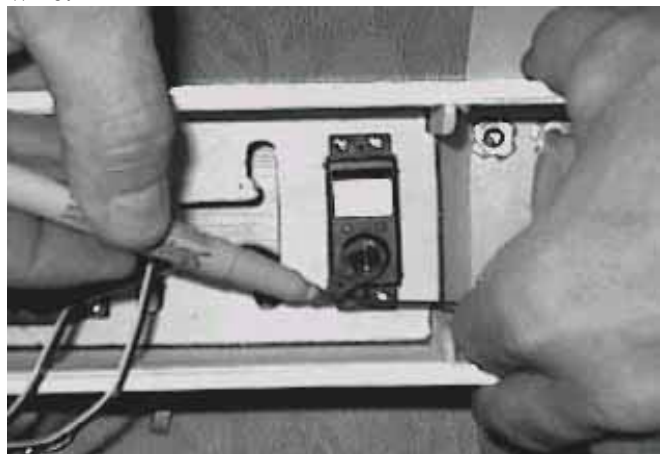
Make a “Z” bend at one end of the throttle control wire. Install the “Z” bend in the carburetor. Slide the other end of the throttle



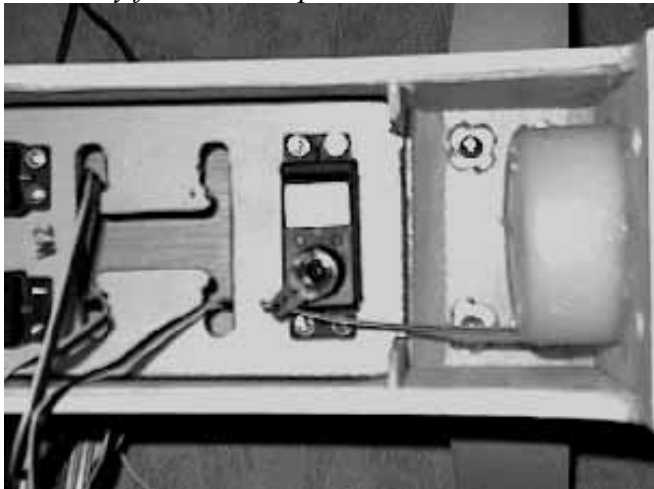
control wire through the outer casing and place the carburetor on the motor. *Do not tighten.* Bend the wire slightly till throttle operation is smooth and does not bind.



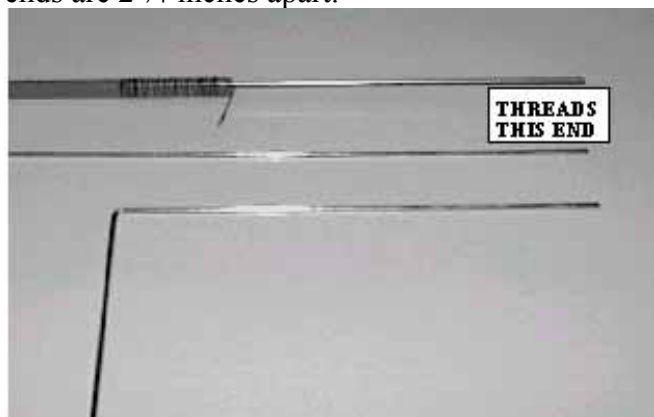
Temporarily hook up the receiver and battery, power everything up and center all the servos. Pull the throttle trim to the off position and the throttle stick to idle. With the carburetor fully closed mark the location of the servo arm hole on the control wire.



Make a “Z” bend in the control wire and install the servo arm. Adjust as necessary for proper operation. *A slight bend in the control wire may be necessary for smooth operation.*

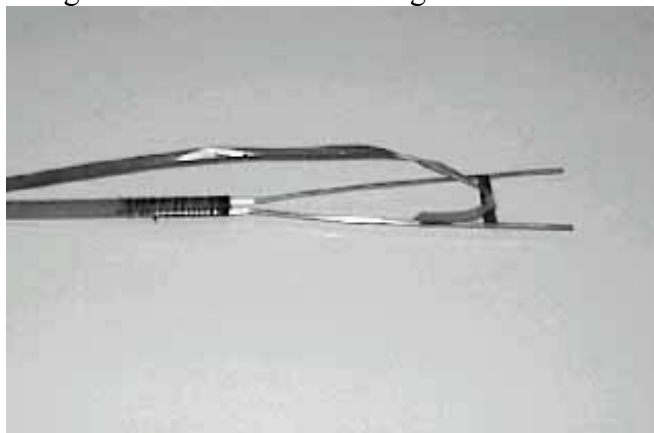


Locate the two control rods. The one for the elevator has two holes in one end, one hole in the other. The one for the rudder has one hole in each end. Make a 90-degree bend in three of the control wires 6 ½-inches from the threaded end. Cut the wires just past the bend leaving 1/8-inch. Press two of these wires into one end of the elevator control rod squeeze gently with pliers then wrap tightly with thread. Soak the thread with CA. Repeat this process in one end of the rudder control rod. Bend one more wire 6 ¼-inches and cut in the same manner as before. Install this wire in the other end of the elevator control rod. For the other end of the rudder control rod make the wire 10 inches. The two wires on the elevator control rod now need to be spread apart. Make two equal bends, one in each wire 3/8-inch from the end of the wood rod. Bend the wire until the threaded ends are 2 ¾-inches apart.



To insert the control rod into the fuselage, tie a string around the fork and pull the ends together as

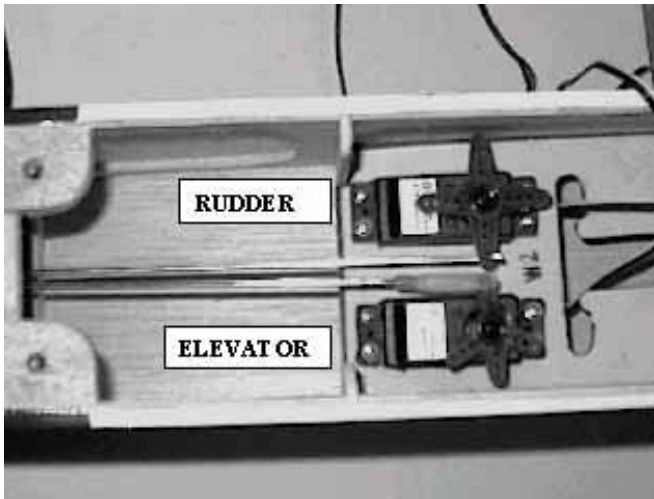
shown. Slide the control rod into the fuselage, line the wires up with the fuselage slots and pull the string to release the wires through the slots.



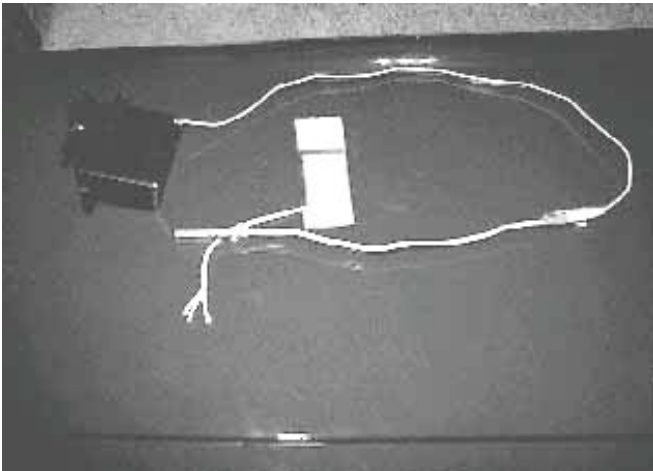
Screw a clevis on each wire of the elevator till about 1/8-inch of thread remains exposed. Place a control horn in the clevis and with the control surface straight locate the control horn so the adjustment holes are inline with the leading edge of the control surface. Install the control horn in this location using the provided screws and backing plates. Repeat this procedure for the rudder



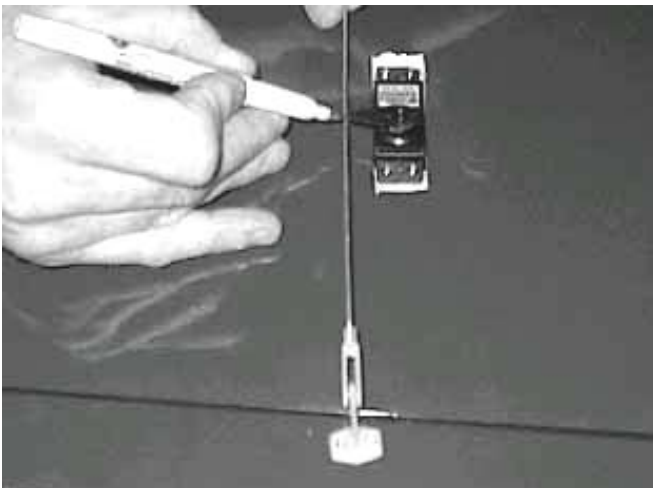
Screw a clevis on the servo end of the elevator control rod. With the servos centered and the control surfaces straight adjust the clevis and install on the servo arm. Mark the rudder wire and install in the same manner using a “Z” bend.



Begin the wing servo installation by checking the length of the servo wire; add an extension if necessary. *Be sure to tape the connectors for the extension to prevent them from unplugging in the wing.* Using the servo wire pull string, work the wire through the wing. Mount the servo following the manufacture instructions.



Center the servo and install a control arm. Mount a



control horn on the aileron so the control wire is

parallel to the center seam of the wing. Mark the wire and install with a "Z" bend as before. Repeat the process for the other wing servo.

## FINAL ASSEMBLY

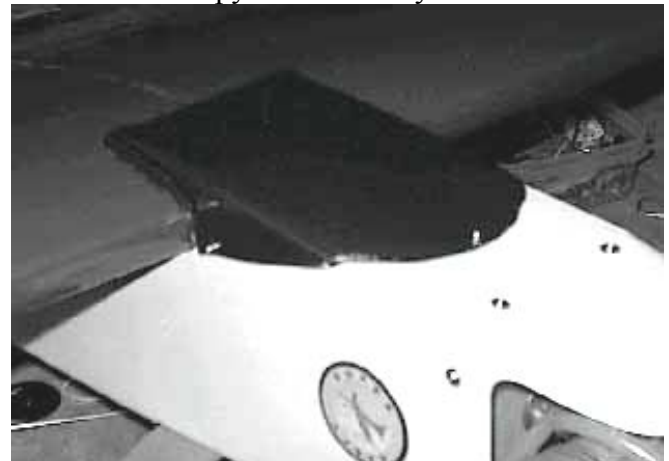
Tighten the carburetor and install the cowl, propeller and spinner.

Hook up the fuel and vent lines.



Install the receiver and switch following the manufacture instructions. Hook up the wing servo leads and install the wing.

Trim and install the canopy. The canopy may be held on with the provided screws or as an alternative canopy adhesive may be used.



## BALANCE

The center of gravity must be located from 2.3/4 to 3.1/4-inches behind the leading edge of the wing. Moving it to the forward side of the range will increase the stability of the aircraft, moving it

aft will increase control response. We recommend the forward position for initial flight tests.

## CONTROL THROWS

Double check all controls move in the proper direction

With your radio on, center all trims and adjust the clevises so all control surfaces are straight. Measure the control surface movement at the widest part of each surface. Use the servo horns and bell crank holes to adjust the control throw. For your first flights the control throws should be set to the following:

Elevator 1/2-inch up / down

Rudder 1 1/2- inch right / left

Aileron 1/4-inch up / down

## MOTOR SET UP

Be sure the motor is properly broken in using the manufacture instructions. Set the throttle throw to shut the motor off when the trim is pulled down and idles reliably with the trim up.

After the motor is set, run one tank of gas at full throttle, measure how much time it takes to run the tank dry.

*CONGRADULATIONS you are now ready for test flights.*

Before leaving for the field be sure your batteries are fully charged and you have all the required support equipment {fuel, starter, glow driver, ect.}. Although the SK-50 will fly well in wind, wait for a nice day.

At the field have a helper hold the airplane, following the radio manufactures instructions perform a range check of the radio. Do this with the motor off, start the motor and do it again. **Perform this test EVERY TIME YOU GO TO FLY!**

## TRIMING BASIC FLIGHT

*The SK-50 is NOT a trainer. A true aerobatic aircraft, it goes only where you point it and will not recover to level flight without control input. If*

*you do not have high performance experience seek the help of someone who does.*

Line up on the center of the runway and slowly open the throttle, using the rudder to maintain directional control. Once the tail is up apply a little up elevator and allow the plane to gently lift off the runway. Keep the climb angle and turns shallow until you reach a safe altitude. Reduce the throttle to about 60% power. With the airplane flying away from you adjust the radio aileron trim tab till the wing stays level. Turn and line up the plane with the runway. Adjust the elevator trim till the plane maintains level flight. Once again with the airplane flying away from you adjust the rudder trim till the fuselage tracks straight {it may be necessary to correct the aileron trim after this procedure}. Continue to fly and trim until the aircraft is tracking well, land before the fuel runs out. Carry a little power on final approach until over the end of the runway, then cut power to idle, hold the plane just off the runway till the airspeed bleeds off and the plane settles on. If the landing is too long add power go around and try again, don't try to force it to the ground.

Now its time to zero out the trims. To do this measure the control location, center the trim tab on the radio and adjust the servo horn for large changes, the control clevis for small changes. For example if after the flight the rudder is 3/16 inch to the right, center the radio trim and adjust the clevis till the rudder once again measures 3/16 right. By doing this whenever you fly, setting the radio trims at center will result in a well-trimmed plane. Increase the control travel, as you become more familiar with the flight characteristics until loops take about 50 feet and knife edge can be maintained with 80% stick deflection. Final roll rate should be 300-360 degrees per second.

*If you have followed the procedures in this Manuel you will now be rewarded with one of the finest flying sport models available. All primary aerobatic maneuvers are at your fingertips and the aircraft will perform them with ease.*