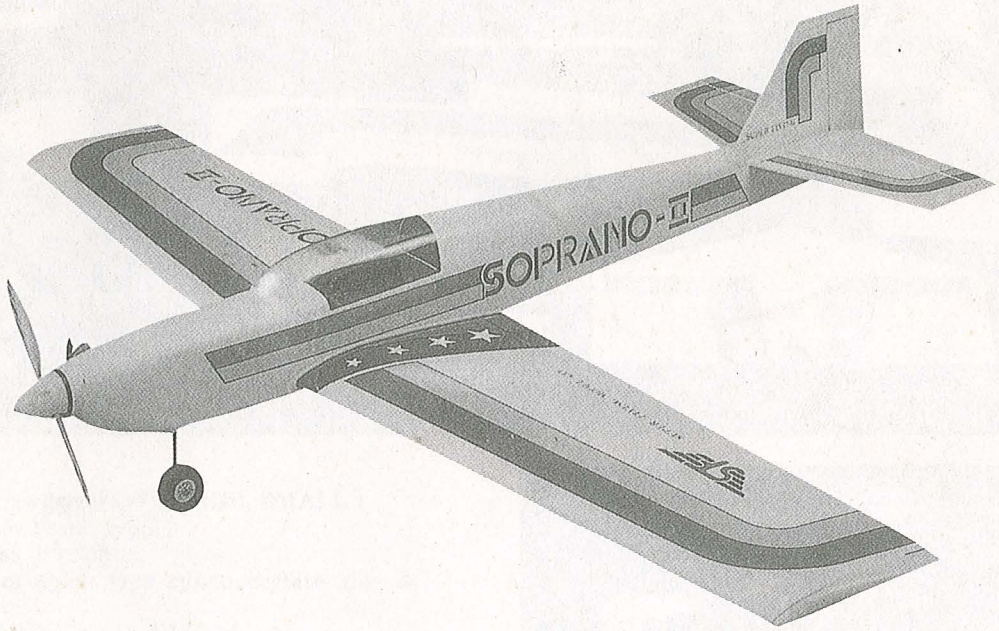
SUPER FLYING MODEL CO.

SOPRANO

40



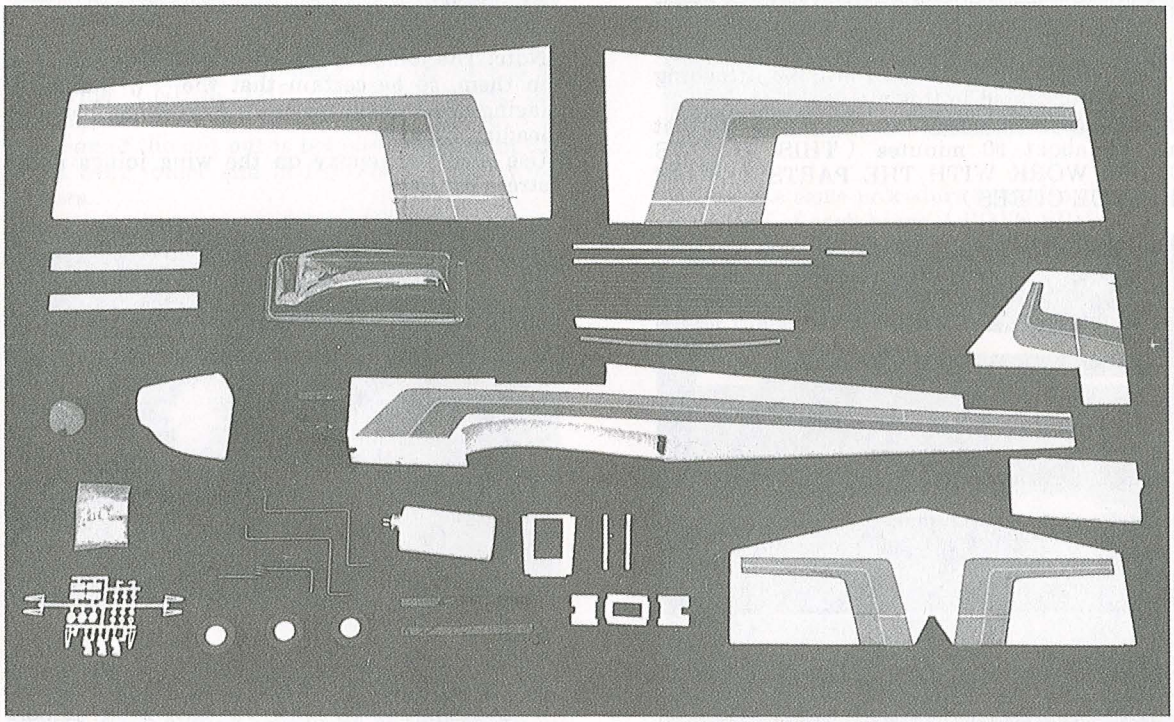
NO.883

WING SPAN – 60 IN
WING AREA – 620 SQ. IN
LENGHT – 49.8 IN
ENGINE SIZE – 40～46(2C)
60～90(4C)
R/C FUNCTION – 2 – 3CHANNEL

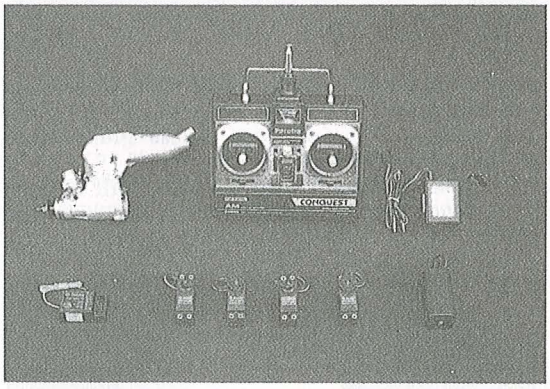
ENVERGURE(LONGUEUR DES AILES) 1538mm
SUREACE DE'AILE – 38.8 dm²
LONGUEUR – 1265mm
DIMENSION (GROSSEUR) –
6.5～7.5cc (2C)
10～15cc (4C)
TELECOMMANDE – 4 CANAUX

THANK – YOU FOR PURCHASING THIS FINE PRODUCT. WE HOPE YOU WILL HAVE MANY HOURS OF ENJOYMENT AND FUN FLYING THIS EASY TO BUILD MODEL.
THE SPORTY 40 IS A VERY SMOOTH HANDLING PLANE AND IS VERY ACROBATIC. SINCE THIS KIT IS ALMOST – READY – TO – FIY, IT WAS DESIGNED FOR EASE OF CONSTRUCTION SINCE MOST OF THE MAJOR COMPONENTS SUCH AS THE FUSELAGE, WINGS, RUDDER, AND STABILIZER ARE ALL PRE – BUILT, DRE COVERED AND PAINTED.

CAUTION:
BEFORE GLUING THE WINGS TOCETHER, MAKE SURE THAT THEY ARE DARALLEL, ONCE THEY ARE GLUED, YOU WILL NOT BE ABLE TO SEPARATE THEM. WHEN USING CYANOACRYLATE GLUES, MAKE SURE NOT TO TOUCH THE COLORED PARTS OF THE PLANE WITW THE GLUE, OR IT WILL SMEAR.
MINIMUM TOOLS REQUIRED TO COMPLETE THIS KIT THAT ARE NOT SUPPLIDE WITH THE KIT.



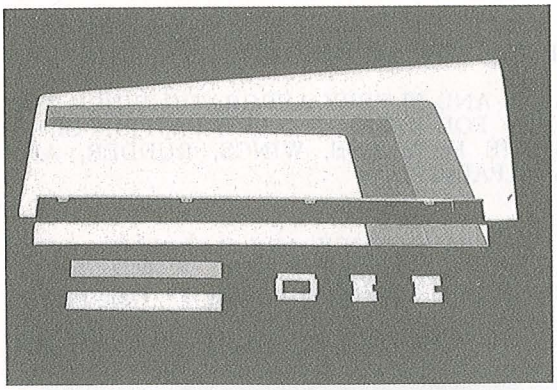
1. Philips screwdrivers, (LARGE, SMALL)
2. Razor knife, xacto type.
3. 4 way cross wrench.
4. Medium, or thick type cyanoacrylate glue & accelerator.
   (SKYWARD EPOXY GLUE)
5. Epoxy glue (30 MINUTE TYPE)
   (SKYWARD EPOXY GLUES)
6. Pliers for cutting and bending metal pushrod wires.
7. One or two sheets of medium and/or fine grit sandpaper.
8. White silicone glue.
9. Threadlock glue or locktite.



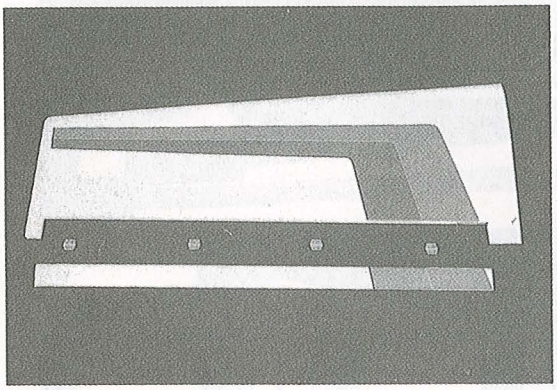
ADDITIONAL EQUIPMENT REQUIRED TO COMPLETE AND FLY YOUR NEW SPORTY 40.

1. A 4 channel radio system with 4 servos, receiver airborone battery pack, and switch harness are required.
2. ENGINE: We recommend a SKYWARD 40 – 46 with a muffler as a great economical combination.

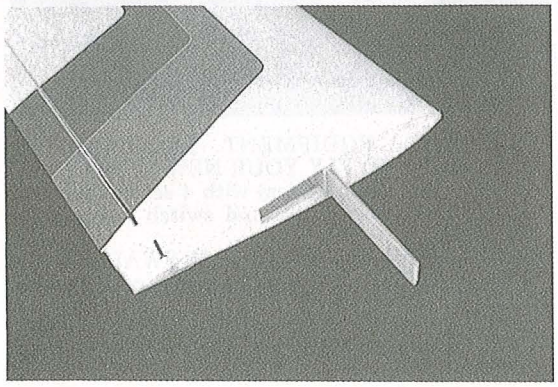
Please follow the manufacturers instruction manual for proper engine break – in procedure, prior to flying.



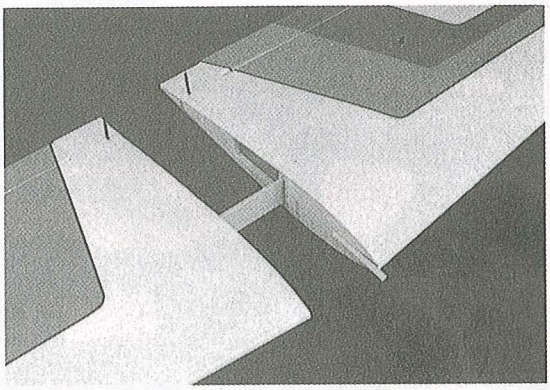
STEP 1
In the following 4 steps you will be attaching the parts illustrated in this picture.
We recommend the use of a slow cure fpoxy that cures in about 30 minutes (THIS ALLOWS YOU TO WORK WITH THE PARTS BEFORE THE GLUE CURES) .



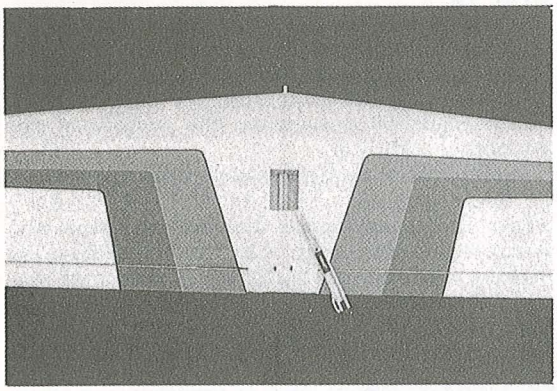
STEP 2
AILERON INSTALLATION:
Remove the ailerons from the main wings (THEY NOT GLUED) . Take the hinges and work them in by folding the hinges at the center a few times (THIS WILL MAKE THEM SOFT.)
Spread a little bit of epoxy glue on both sides of each hinge and insert the hinges into the main wing panels. Wipe off any excess glue before installing the ailerons.
Put a little bit of glue on the other half of each hinge, and then insert the ailerons into the hinges.



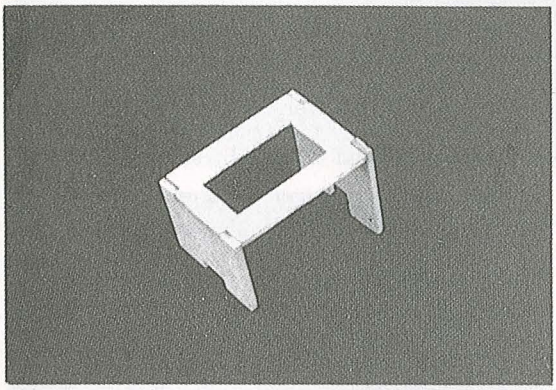
STEP 3
MAIN WING ASSEMBLY:
Test fit the two wing halves together and check for proper alignment. Set the main wing aside for now.
Take the two plywood wing joiners and the plastic joiner and apply epoxy glue on both sides of the plastic joiner.
Wipe off excess glue from the wing joiner assembly.
Make sure that the joiners are flush with each other, before the glue sets.
Do not glue both wings at this time.
When the wing joiner is dry, apply & glue to half the wing joiner and insert into only one wing half at this time.
Wipe off excess glue.
Note: The joiners have a few degrees of dihedral in them, so be certain that the " \/ " angle is facing upwards when viewing the wing from the leading edge.
Use plenty of epoxy on the wing joings at all stress points.



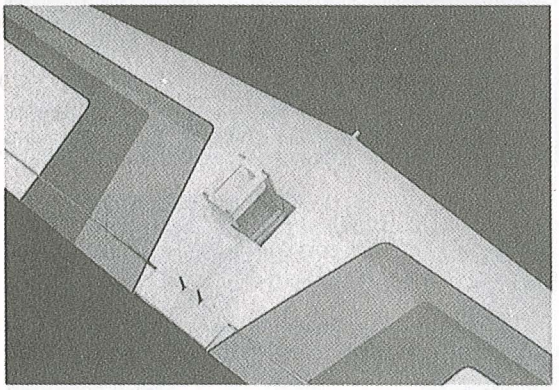
STEP 4
Apply a generous amount of glue on both sides of the wing root (FLAT PARTS) , into the wing joiner slots, and on the wing joiners themselves, then carefully slide both wing panels together.
Check to see that they fit properly and allow the epoxy glue to cure. Masking tape can be used to hold the wings together while the glue is drying, but wipe off any excess glue before putting the masking tape over the wing joint.
To avoid getting glue into the groove where the wooden dowel will slide in, use the wooden dowel by inserting it into the hole and then remove the dowell and wipe the glue off the dowell.
NOTE: The wooden dowell will be installed at a later step.



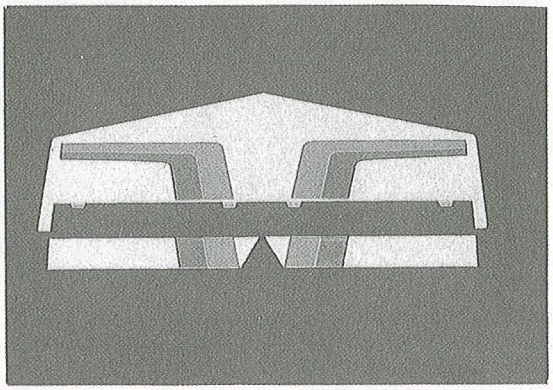
STEP 5
With a pen, trace an outline on the bottom of the wing (NEAR THE CENTER) using the aileron servo tray as a guide. The actual location of the out out is between the rear of the main wing joiner and in front of the rear wing joiners.



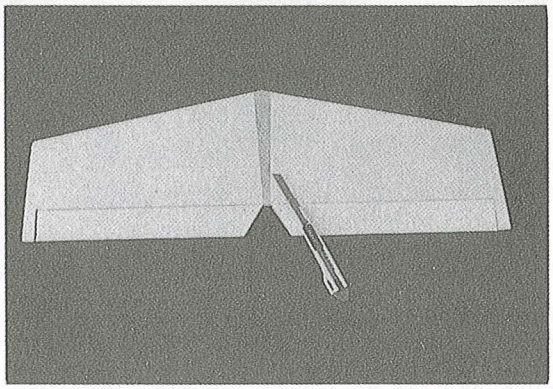
STEP 6
AILERON SERVO TRAY ASSEMBLY:
Using thick or medtum cyanoacrylate glue, assemble the aileron servo tray as shown.



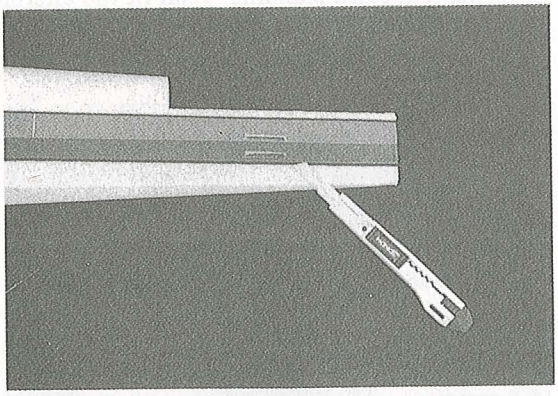
STEP 7
ASSEMBLY OF THE SERVO TRAY TO THE MAIN WING:
Using the assembled servo tray, center it on the bottom of the main wing.
Check that the alignment is correct and cut out the marked portion, removing the plastic covering and balsa planding. Trial fit the aileron servo tray into the cut－out. One side of the servo tray is shorter. The shorter side gots towards the rear of the wing. Glue the servo tray in place with cyanoacrylate glue.



STEP 8
Follow the same procedure as outlined in step 2. Glue half of each hinge (BOTH SIDES) to the gorizontal stabilizer and then glue the elevator to the other half of the hinges.
Wipe off excess glue.
After the glue has cured, work the elevator until the movement is free.

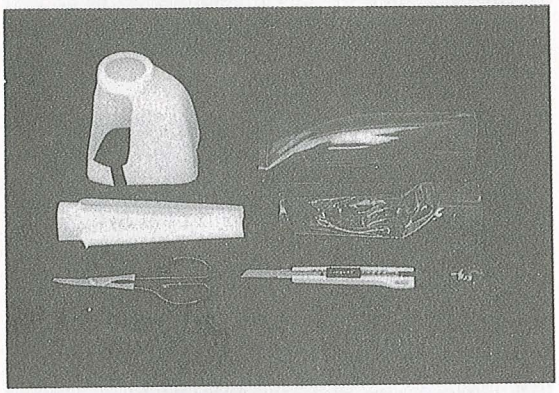


STEP 9
Install the horizontal stabilizer temporarily on the rear of the fuselage (DO NOT GLUE AT THIS TIME) .
Align the stabilizer and make sure it is centered on the fuselage. Take a pincil and make a line underneath the stabilizer in both sides of the fuselage. Remove the stabilizer. Then turn it over and center the vertical fin on the top of the stabilizer. Trace a line on both sides of the vertical fin. Take an xacto knife and cut along the lines to remove the plastic covering, exposing the bare wood for gluing.



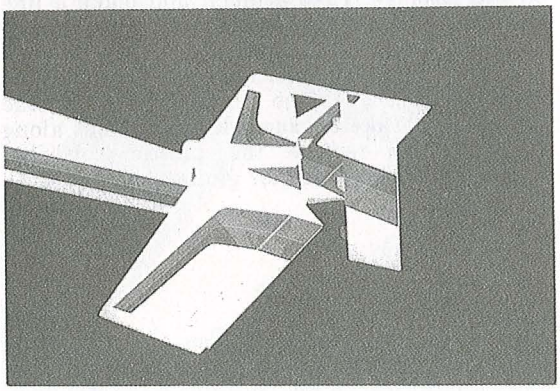
STEP 10

Locate the small oval slots at the rear of the fuselage (TWO ARE ON THE STARBOARD SIDE, AND ONE IS ON THE PORT SIDE) .
Using the xacto knife, remove the pladtic film covering these slots.
(THERE IS ALSO A LARGER SLOT ON TOP OF THE FUSELAGE FOR THE VERTICAL FIN.)



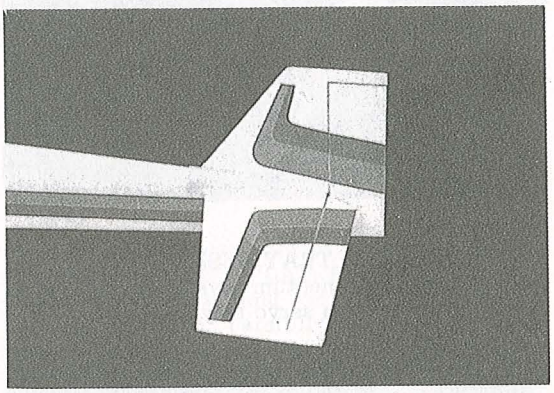
STEP 11

Using a hobby knife, carefully cut along the cut – out line inscribed on the cowling, canopy, pilot, and the fin fairing, removing the excess plastic as shown above.
We recommend using contact cement , you can use thick cyanoacrylate glue, but this has a tendency to run, so be very careful if using this glue.



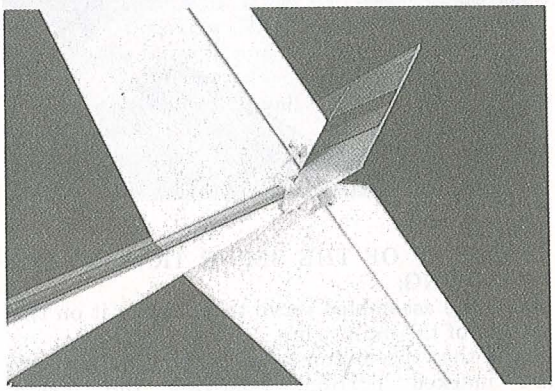
STEP 12

1. Install the vertical fin on top of the horizontal stabilizer uaing the procedure described for installation in step 9.
Using epoxy glue, make sure the vertical fin is straight and 90 degrees to the surface of the gorizontal stabilizer.
Use a couple of straight pins to hold the vertical fin in place.
After the epoxy glue has cured, glue the horizontal stabilizer to the rear of the fuselage making sure that the stabilizer is level with the wing saddle. (USE A STRAIGHT EDGE AND LAY IT ON THE WING SADDLE AND THEN BY VIEWING THE PLANE FROM THE REAR, THE STRAILIZER SHOULD LINEUP WITH THE STRAIGHT EDGE, AS MUCH AS POSSIBLE.) Apply epoxy glue to the stabilizer and let the glue cure before conttinuing on.
2. Apply epoxy glue to both hinges and insert into the vertical fin (WIPE OFF EXCESS GLUE) .
NOTE: A small slit will have to be made on the lower part of the fuselage to install the lower hinge.
Apply glue to the other half of the hinges and insert the rudder into the hinges.
Repeat this step for installing the elevator on the horizontal stabilizer.
It may be necessary to trim the plastic fairing to fin properly around the stabilizer.

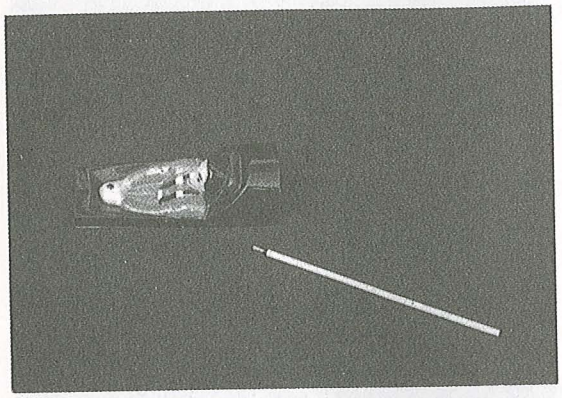


STEP 13

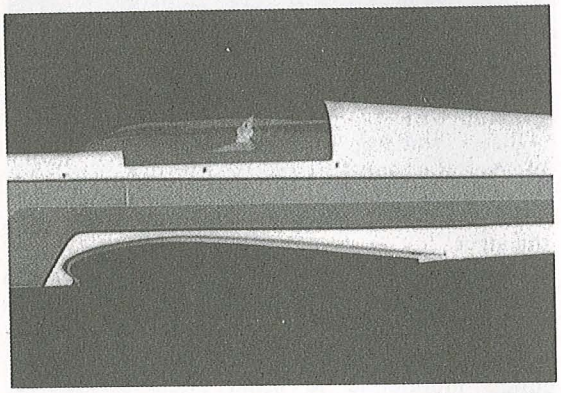
The finished tail wing and rudder assembly are now ready for installing the control horns and the pushrods.



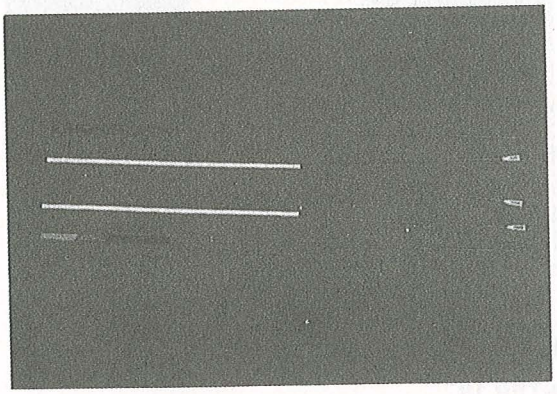
STEP 14
Install a control horn on the starboard side of the rudder nearest to the edge of the front of the rudder. The control horn should be located slightly above the top of the fuselage on the rudder.
Install two other control horns (ONE UNDER THE RIGHT ELEVATOR) and one under the left elevator. To determine the exact location of the control horns, measure from the rear fuselage center and to about one inch on each side, make a small mark on the bottom of both elevators. This is the postion of the contral horns.



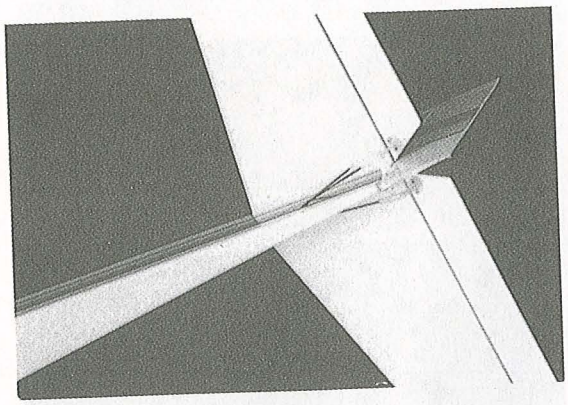
STEP 15
Cut off the pilots head from the body with scissors. Paint the individual parts according to your taste and preference.



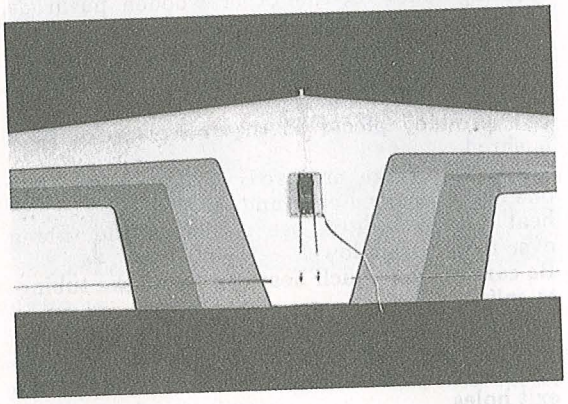
STEP 16
Assemble the pilot and glue to the fuselage.
Trim the canopy as necessary to fit in place.
Secure the canopy in place using eight m2x8mm self-taping screws.
Using your radio airboren switch plate as a guide, make a small rectangular openinc in the left side of the fuselage. (OPPOSITE THE MUFFLER). Use the supplied screws for the switch and mount the switch from the instide of the fuselage.
NOTE: In the following step locate the pushrods that have threaos on one end only.



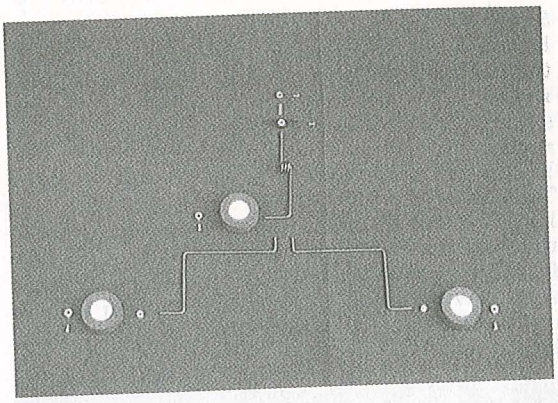
STEP 17
(RUDDER PUSHROD.) :
Make a 90 degree bend 1/4 from the end of a non-threaded end of pushrod and insert into the hole of one of the wooden pushrods near the end.
Use epoxy glue to secure the metal pushrod in place.
(ELEVATOR PUSHROD) :
Make two more 90 degree bends (SAME WAY AS FOR THE RUDDER) into two non-threaded ends. Insert these two rods into the locating holes on the other wooden pushrods, and glue in place with epoxy.
Let dry for a while.
Locate a long piece of black (FLAT) shrink tubing.
Cut as many pieces as required, one for each pushrod.
Slide one of the prepared, shrink tubing over one of the epoxied ends and with a heat gun, or heat from a lighter, use to shrink the tubing over the wooden dowel.
Be careful-too much heat can cause the tubing to split.
Do not put the plastic adjusters on at this time.
Insert the elevator pushrod into the fuselage working it until both ends extend through the exit holes.
NOTE: One easy way to do this, is to purchase two small plastic tubes 24" long, first insert the tubes through the exit holes and push both tubes towards the front of the fuselage until the tubes show up at the wing saddle.
Insert the elevator pushrods into the 2 tubes (THE PLASTIC TUBE SERVES AS A GUIDE) then push the elevator pushrods along with the tubes, towards the rear, and at the same time, pull on the tubes from the outside of the fuselage. Refeat the same step for the rudder pushrod.
Install the nylon adjusters on the threaded ends of the elevator and the rudder pushrod. (ONLY AFTER FINAL ADJUSTMENTS HAVE BEEN MADE, ADD A SMALL AMOUNT OF " CA " GLUE TO THE THREADS TO SECURE THEM IN PLACE.)



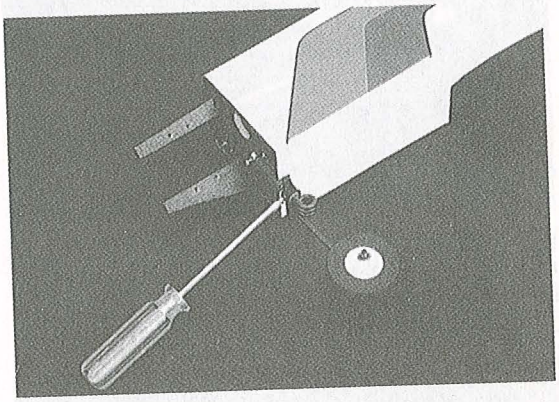
STEP 18
Turn both the transmitter and receiver switches to "on" and center the small trim levers on the transmitter.
Rotate the adjusters in the proper direction to align the control surfaces (RUDDER, ELEVATOR) and to make them level. (TURNING THE ADJUATERS CLOCKWISE SHORTENS THE LENGTH) .
Once the adjustments have been made, you can apply a little bit of "ca" or "THREADLOCK" on the threaded ends of the adjusters to secure them in place.



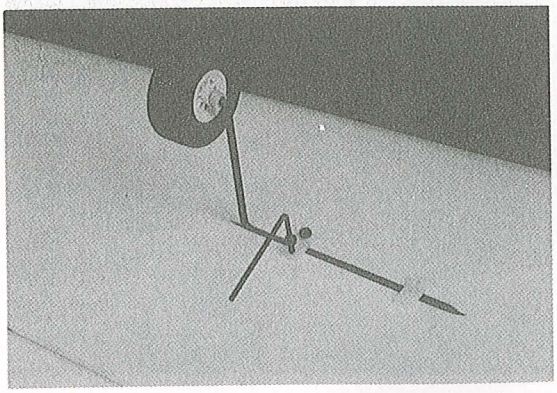
STEP 19
Route the servo wire through the side of the tray as shown.
Using the screws supplied with your radio, mount the servos into the servo tray. Don't forget to install all the servo grommets and the small brass eyelets through the bottom of thr servo grommets.
Mount the control rods to the aileron servo arm. Center the aileron servo arm by removing the center screw and re-positioning it until the arm is 90 degrees.
Cut the pushrods to the proper length as needed, make a "Z" bend at the end of the pushrod and insert the ends through the servo arms.
NOTE: Make sure that the ailerons are at neutral and that aileron travel is equal both ways, otherwise you will have difficulty in contolling the airplane in the air.



STEP 20
Place the wheels on the ends of the struts and secure them with the supplied wheel collars.
(USE "LOCKTITE" TO SECURE THE LOCKING SCREWS IN PLACE) .

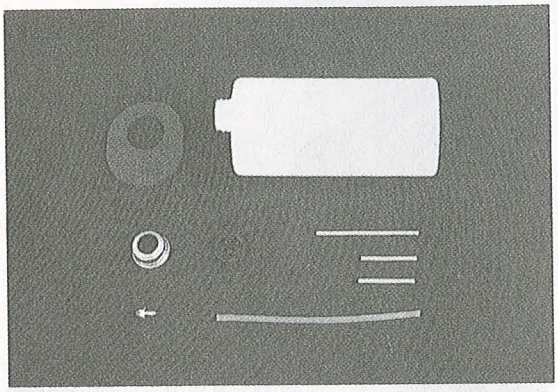


STEP 21
MOUNTING THE NOSE GEAR ONTO THE FUSELAGE:
1.Insert the top of the landing gear strut through the steering arm.
2.Insert the landing gear strut into the "1" bracket while slipping the retaining collar over the strut.
Finish by sliding the strut assembly through the top of the nose wheel secure the lock screws with "LOCKTITE".
3.Apply "LOCKTITE" and tighten the set screws on the steering arm and on the retaining collar.
NOTE: Install the front wheel and align the wheel prior to tightening the steering arm and retaining collar set screws.



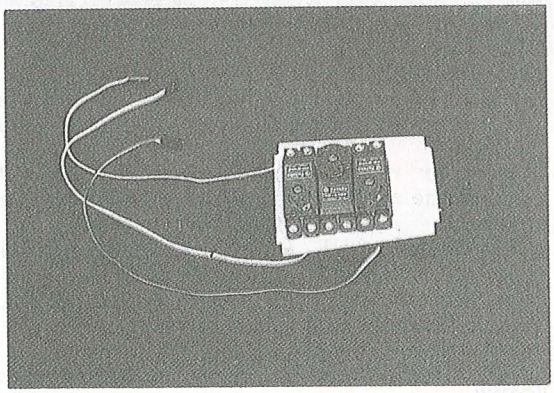
STEP 22

1. Locate the landing gear slots (2) on the botton of the main wings. Using an "xacto knife", remove the plastic covering film from the slot area only.
2. Insert the strute into the slots and up into the pre – drilled holes (2) inside the wings.
Install the plastic retaining straps over the struts and drill small holes using a 1/16" drill bit.
3. Using the supplied screws secure the retaining straps in place.



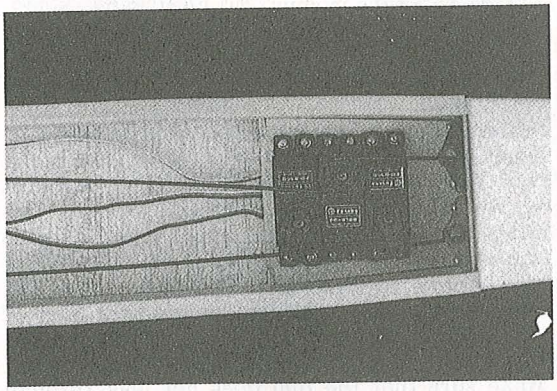
STEP 23

(FUEL TANK ASSEMBLY) 320cc:
NOTE: These following steps are very important.
1. FUEL PICKUP LINE ASSEMBLY:
A. Take a short piece of aluminium tubing (SHORT ONES) .
Slip the the end of the flexible silicone tubing over the metal tube (APPROXIMATELY 3/8" ON THE TUBE) . Then measure about 6 inches in length from one end of the flexible tubing. Cut off excess tubing. Slip the metal fuel pickup over the other end of the flexible tubing .
B. Locate the rubber seal. Insert the prepared fuel line into one of the three holes in the rubber seal until the metal tube protrudes on the other side equally.
NOTE: Take a pencil and make a red mark on this tube for indentification.
Take another short piece of metal tubing and insert it into the rubber seal until the metal tube protrudes equally on both sides.
NOTE: This tube is your "FILLER" tube.
C. Locate the long metal tubing and carefully (WITH YOUR FINGERS) .
Bend the tube near the end to form a "J" type of shape.
Be careful not to make a kink in the tube.
Insert the straigh end of this tube through the rear of the rubber seal until the tube protrudes out the other side about a 1/4 – 3/8" inch.
Insert the three tubes including the fuel pickup into the tank, making sure that the "J" shaped tube is pointing towards the top of the tank.
Next locate the metal cap and using a pair of pliers screw the metal cap on to the fuel tank. Do not over tighten.
Make sure that the fuel does not leak through the cap seal.
D. Locate the black sponge type gasket and glue it to the inside of the engine firewall and align the hole on the gasket with the hole inside the fuselage.
Take the fuel tank and insert it into the fuselage up to and against the foam seal. Use "CA" glue and spread around the part of the fuel tank that joins around the plywood former. This is mecessary to keep the fuel tank from moving towards the back. (USE GLUE ON BOTH SIDES OF THE PLYWOOD FORMER AND THE FUEL TANK) .
E. Before installing the engine, install three silicone fuel tubes. One for the " CARSURETOR", one for "filling" and one for "muffler pressure". The length of all three tubes should be about 6 inches each. (YOU CAN THEM TO THE PROPER LENGTH LATER) .
NOTE: The fuel pickup tube inside the tank is the one that attaches to the carburetor.



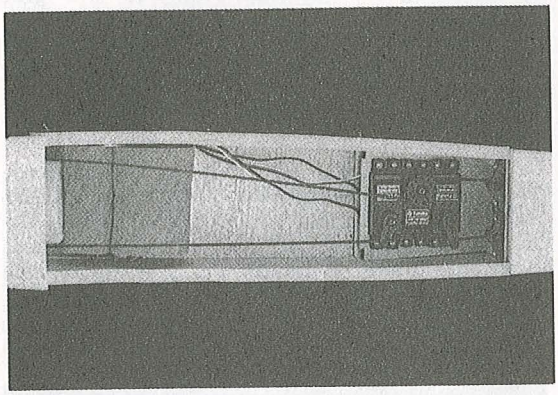
STEP 24

Locate the large plywood servo tray and remove the three small cut – outs.
Trial fit the servos into these cut – outs. You may have to remove a little bit of wood edpending on the size of your servos. Using the supplied grommets and eyelets, install all three servos on the tray with supplied screws.



STEP 25

1. Wrap the on－board battery and the receiver in thick foam fubber sheets using large rubber bands . Insert the battery first up against the fuel tank, and then insert the wrapped receiver after.



STEP 26

THE SERVO TRAY:

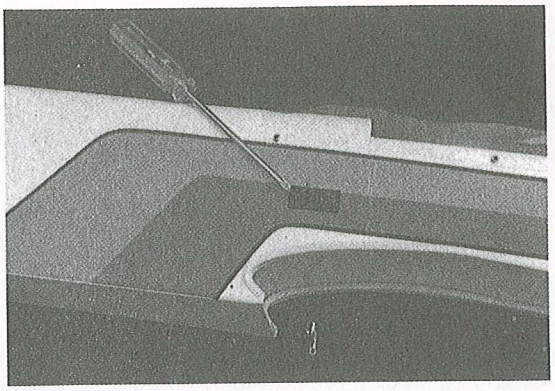
Install the servo tray inside the fuselage and use "CA" glue to secure the servo tray to the fuselage.

Turn your receiver and thansmitter on and connect the approprlate servos to each receiver channel.

(REFER TO THE RADIO'S INSTRUCTION MANUAL.) Connect the pushrods to the servo arms and cut the rods to the proper length. Make a "Z" bend into the end of each rod.

Insert the rods into the servo arms.

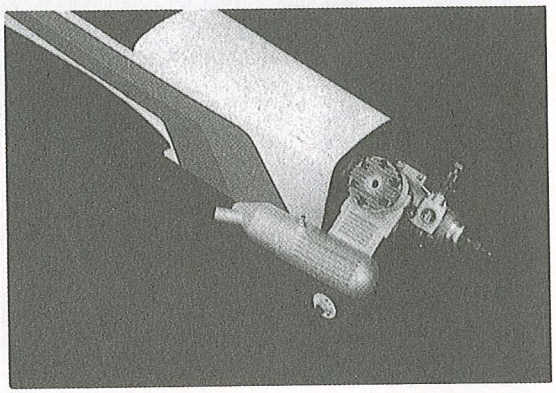
NOTE: Don't forget to turn your equipment "OFF".



STEP 27

1. NOTE: Connect the battery pack to the on－off switch locate the small rectangular hole on the left side of the fuselage and remove the film covering the hole. Use the switch's top pacte as a guide and drill 2 small holes and attach the switch the seitch inside the fuselage. NOTE: The on－off switch must be on the opposite side of the muffler.

2. Mark a small hole on the side of the fuselage and pass the receiver amtenna through it. Attach the other end to the top of the rudder using a small pin and a rubber band.



STEP 28

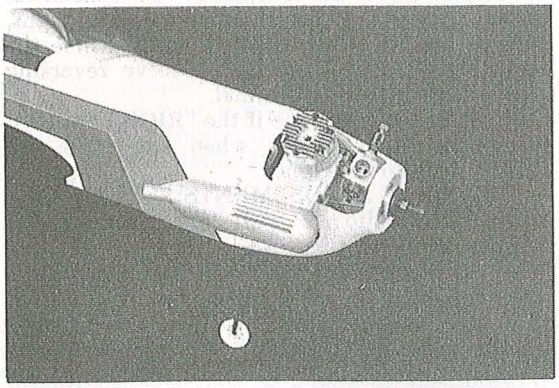
Install the engine on the engine mounts using the supplied bolts and locknuts. Before tightening the screws re－check the engine's alignment on the fuselage.

Before installing the muffler on the engine, install the throttle control rod to the throttle servo, passing thr rod through the fuont firewall and connecting the other end to the carburetor lever.

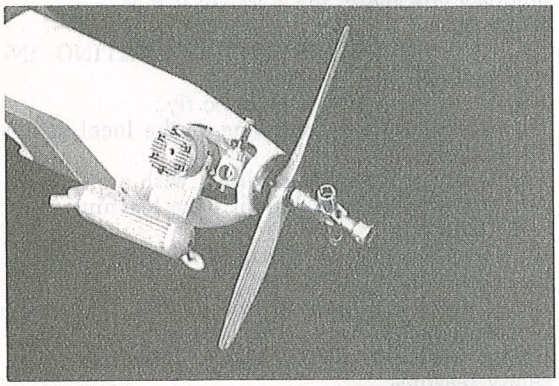
NOTE: Make sure the carburetor is fully closed when the throttle stick is fully down on the transmitter.

Adjust the length of the rod to prevent any "BINDING".

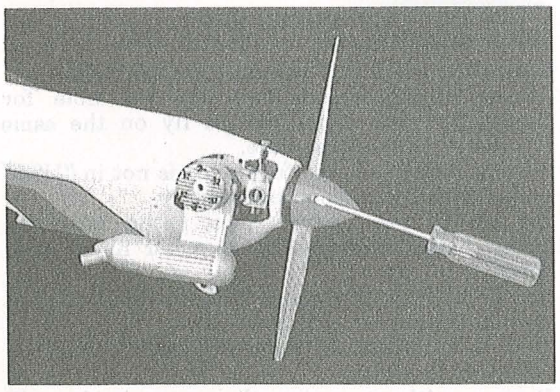
Next install the muffler on the engine using the suppoied screws. Connect all the fuel lines described in the previous steps.



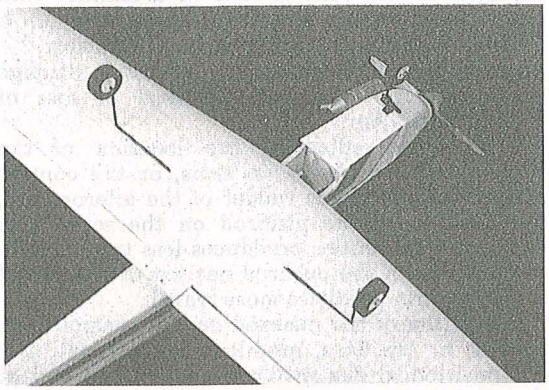
STEP 29
Because skyward allows a wide range of engines, the cowling will need to be trimmed to fit.
Trim off a little at a time. Make openings for the muffler, cylinder head, carburetor needle valve, etc. Once the fit is good mount the engine cowling using (4) M2x8 mm self-taping screws. (TWO ON EACH SIDE) .



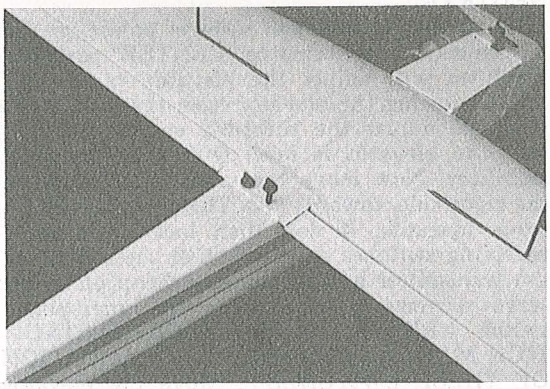
STEP 30
Place the spinner bacx plate on the engine crankshaft, against the drive washer. Install the propeller, flat washer and locking nut, then tighten the nut securely on the engine.



STEP 31
Position the spinner over the propeller with the ontches aligning with the propeller and secure with (2) screws.
Secure by inserting screws through the spinner and bacdplate.
NOTE: This spinner is designed to fit most propellers.
If your propeller does not fit easily into the the spinner ontches, you may need to cut of shave the ontches to fit.
remove an eoual amount of material on each side of the spinner, or your will have a lot of visration.



STEP 32
Insert the wooden dowell into the leading edge in the center of the main wing, and leave about 1/2-"5/8". Cut off excess wood. (USE "CV" OR EPOXY GLUE TO SECUER THE WOODEN DOWELL.) Wipe-off excess glve.



STEP 33
Before putting the main wing on the fuselage, make sure that the aileron servo is connected to the receiver.
Using (2) large nylon screws install the wing as shown.

SETTING THE CONTROL SURFACES:
In oredr to get good flight performance from your airplane, it is important that you adjust the travel of the elevator, rodder, ailerons, and the throttle.
First make sure that all the control rods move freely with the servos, through the fuselage, and to the control horns and that there is no "BINDING" or jamming.
It is equally important that the servos be adjusted to the control rods in a manner that allows the servos to move freely and in a manner that allows a good range of rotation.
Any binding of these servos can cause damage or premature wear and can lead to loss of control in the air.
NOTE: When adjusting the location of the control rods on the servo arms, or the control morns located on the rudder of the ailerons etc, the position of the pushrod on the servo arm closest to the center, prodduces less travel while the position of the pushrod nearest to the end of the servo arm produces more travel.
The position of the pushrod on the control horn nearest to the base, produces more travel, and the position of the pushrod nearest the end of the control horn produces less travel. The ideal setting would be to position the rod at both ends (SERVO ARM, CONTROL HORNS) to their mid-positions.
NOTE: These settings will have a direct effect on how sensitive the airplane will be in the air.
1. SETTING THE CONTROL SURFACES TO " NEUTRAL":
With the transmitter and receiver power on, set all the transmitter trims to "CENTER" position.
First we will adjust the elevator to neutral. While viewing the elevator from the side of the fuselage, adjust the threaded end adjuster so that the elevator is level with the horizontal stabilizer. Now move the transmitter stick on the right side, towards you. The elevator should move upwards. If not, then locate the servo reversing switches on the back or the bottom of the transmitter and reverse the direction of the servo movement, by flipping the appropriate switch (REFER TO THE RADIO INSTRUCTION MANUAL FOR THE EXACT LOCATION OF THESE SWITCHES). Move the elevator stick "FORWARD" and the elevator should move down. Both up and down movements should be about 3/8" each way.
If the elevator travel is more or less, then this can be corrected by re-positioning the rods on the servo arms or the control horns.
2. SETTING THE RUDDER TO NEUTRAL:
While viewing the top of the fuselage from the rear, adjust the threaded end of the rod so that the rudder is in line with the vertical fin. Again, the total travel for the rudder should be about 3/4 - 1.0 inch both ways.
Move the left rudder stick on the transmitter towards the left. The rudder shoule move to the "LEFT". If not, then flip the servo reversing switch to correct the movement.
3. THIS NEXT STEP IS VERY CRITICAL:
With the transmitter and receicer on, set the aileron stick and trim to neutral. While viewing the airplane from the rear, move the transmitter stick (RIGHT ONE) towards the right, observe the "UP" not down. If not, reverse the servo direction by flipping the servo reversing switch for the aileron channel.
Now try it again and see if the "RIGHT" aileron is moving "UPWARDS" when you move the ailreon stick to the right.
4. THROTTLE ADJUSTMENTS:
While the radio is still on, observe the carburetor opening.
With the transmitter trim lever set to minimum make sure that the carburetor opening is in the "FULLY" closed position. Move the throttle trim lever to "MAXIMUM". Again observe the opening, and you should see a small opening instide the carburetor. This is the ideal "IDLE" position. Now center the trim lever, and move the throttle stick towards the front. The carburetor should be fully open without the control rod binding.
NOTE: When starting the engine, always move the trim lever to maximum. Make sure that the throttle stick is "FULLY" down, (TOWARDS YOU).
With the trim lever you can easily adjust the engine's idle speed, for a steady R.P.M.

STEP 35

SAFETY WARNINGS AND OPERATING INSTRUCTIONS:
Always select a proper place to fly.
You should fly your airplane at the local model flying club.
There, you will receive training with a qualified flying instructor, and bfnefit from learning how to fly safely.
If you cannot find a flying club, then locate a large open field that is far.
From houses, electrical wires, and free from obstructions.
Before actually flying check everything for safety reasons.
Always perform a pre-flight inspection and control surface check, of the airplane for loose parts.
Check the hinges. Make sure the control rods are firmly attached. Check the motor mounting bolts.
Check that the propeller is tight.
Check everything that could come loose.
Check the frequency before using the radio.
Many aircraft frequencies are available for flying, but two pilots cannot fly on the same frequency at the same time.
Always make sure the frequency is not in "USE" before turning on your transmitter.
Do not fly near power lines, power lines can cause radio interference, so avoid flying near them.
Never attempt to retrieve a model that has become entangled in a power line.
Your local utility company will assist you.
Manners at a club:
It goes without saying that your hobby will become more enjoyable if everyone is courteous to everyone else.
Always observe all field rules and exercise good common sense.

SPECIAL NOTE ABOUT SKYCOAT COVERING:

Dut to temperature differences between the factory and your particular area , you may find some small wrinkles in the covering material.

This is not a deffct and can be easily corrected using a heat gun.

A special skyward heat gun for modeling use is recommended.

Turn on the heat gun and gently blow hot air back and forth.

Cover the wrinkled area approximately 8 – 10 inches above the surface. The covering will loosen at first, then shrink after a moment. Move the heat gun gradually to shrink out all the wrinkles.

This process is not difficult, but if you are not sure as to this technique, ask an experienced modeler of the hobby shop to help you. If there is no modeling heat gut available, some hair dryers with 800 to 1000 watts may work also. Let the nozzle approach the covering surface of move the hair drier slower to solve the problem of insufficient heat. Be careful. Too much heat will burn a hole in the covering.