

PELICAN



The Pelican, which even looks like an airplane, is a good, solid little trainer. Builds into a super little sport ship also . . .

In the August '80 issue of this publication appeared a construction article for a rather radical electric powered sailplane. In that same article I made the statement, "I think sailplane designs are boring." In the time from then 'til now it appears as though I **did** step on a lot of toes, the repercussions of which I am still getting. **But**, the one thing that surprised me was that those repercussions were all positive. So . . . I said to myself . . . self!, we must be on the right track, modelers **really** are tired of the same old 'new' thing. Now in light of this, I'm gonna do it again (sorry I just can't help myself), "trainers are all basically the same and there hasn't been any major changes for at least a decade, possibly two decades."

Now you are probably thinking . . . okay 'whiz kid' what did ya come up with this time? Well I'm **not** gonna tell you I've come up with a whole new concept or that I have this neat little 'crash proof' trainer. The simple fact of the matter is that there are no 'crash proof' trainers and probably never will be. If you fly a model, trainer or otherwise, into the ground, it's gonna break and that's all there is to it.

What I have come up with is an improvement. Not a big one, but at least it's a step in the right direction.

By Charlie Parker

The Pelican, is a good, solid little trainer. I have eliminated a couple of items that seem to always annoy beginners (and myself). The first being over-responsive turning. Many trainers are three channel and when the rudder is deflected, even slightly, the tail kicks out and the ensuing turn is usually a borderline spin. The student's response to this is usually some sort of panic and he screams, "But I only moved it a little." Have you ever watched a beginner move the stick a "little?" Stop to stop every time. Now as long as we can't slow the beginner down, why not slow down the model instead? Let's make it so that no matter how much stick travel he gives it, it will just slowly roll into the turn, like a sailplane, but slower. Hummmmm . . . that works pretty good, how'd we do that? Simple. Give it a sailplane wing, only shorter, and put it on the bottom. Now we can place the main gear tread about half the wingspan, presto, a trainer that can't be driven on two wheels and a wing tip!

While we're at it let's give it some sort of canopy so it at least looks like an airplane. Only let's make the canopy a 'pop top' so you don't have to take the wing off to make adjustments

or to turn on the radio. Just think, you don't have to remove anything! Just lift it up, make the adjustment, and set it back on even with the engine running.

For a limited time a semi-kit for Pelican will be offered. It will consist of a canopy and rib set. Cost is \$10.00 plus \$1.00 postage. Parker R/C Planes, Box 8195, Van Nuys, California 91409. Thank you. Now let's start building!

CONSTRUCTION

Start by cutting fuselage sides, formers, vertical fin and rudder, stabilizer and elevator, and all ribs as indicated. Order of assembly will be; fuselage, empennage, wing, landing gear, engine, fuel system, and radio.

The Pelican can be completely assembled using the 'fast' glues such as Jet or Hot Stuff. If you feel the need for epoxy, feel free. However, epoxy is somewhat of an overkill.

Fuselage and Empennage:

Lay out the two sides (left and right). Mark the 3/16" wide slots for formers F-1, F-2, F-3 and the location of the 3/16" sq. vertical braces aft of former F-3. Cut and glue in place the upper and lower longerons and the vertical braces aft of F-3.

Cut and fit the 3/32" vertical grain sheet doubler between formers F-1 and F-3. Proper spacing for the

formers can be obtained using the former to check fit during assembly. Install formers F-2 and F-3 to the right half of the fuselage.

Turn the right half with formers installed upside-down and locate and glue left half of fuselage in place. Check against the plans for squareness.

The front of the fuselage where F-1 locates is a little narrower than the center of the fuselage. Pull the front inwards and glue F-1 in place. Check assembly against plan. The rear of the fuselage can now be pulled together and glued. Install all upper and lower rear cross braces.

Install the cross-grain sheeting in the upper portion of the fuselage between former F-3 and rear of fuselage. Be sure to omit sheeting in the area where the stabilizer is located (see photo).

The NyRod (or equivalent) casing for rudder and elevator can now be installed. The casing should exit the rear of the fuselage, approximately 3" from the fuselage tail post. The front of the casing should exit through former F-3 approximately 1/2" from top of the fuselage.

The remaining lower rear sheeting can now be glued in place. Also install the lower 1/4" cross-grain sheet between formers F-1 and F-2.

The 1/2" sheet nose blocks located forward of F-1 should be cut to the side profile shown on the plan. Make two (2). Install left and right blocks as shown on top view.

The top 3/16" nose block sheet can now be secured in place forward of F-1.

PELICAN

Designed By: Charlie Parker

TYPE AIRCRAFT

Trainer

WINGSPAN

50 Inches

WING CHORD

8 Inches

TOTAL WING AREA

395 Sq. In.

WING LOCATION

Low Wing

AIRFOIL

Flat Bottom

WING PLANFORM

Constant Chord

POLYHEDRAL, EACH TIP

3 Inches

O.A. FUSELAGE LENGTH

31 1/2 Inches

RADIO COMPARTMENT AREA

(L) 8" x (W) 3 1/2" x (H) 2 1/2"

STABILIZER SPAN

16 Inches

STABILIZER CHORD (incl. elev.)

5 Inches (Avg.)

STABILIZER AREA

80 Sq. In.

STAB AIRFOIL SECTION

Flat

STABILIZER LOCATION

Top of Fuselage

VERTICAL FIN HEIGHT

6 Inches

VERTICAL FIN WIDTH (incl. rudder)

5 Inches

REC. ENGINE SIZE

.09-.10

FUEL TANK SIZE

2 Oz.

LANDING GEAR

Tricycle

REC. NO. OF CHANNELS

3

CONTROL FUNCTIONS

Rud., Elev., Throttle

BASIC MATERIALS USED IN CONSTRUCTION

Fuselage	Balsa & Ply
Wing	Balsa & Ply
Empennage	Balsa
Wt. Ready To Fly	32-44 Oz.
Wing Loading @ 40 Oz.	14.6 Oz./Sq. Ft.

Install 1/2" triangle stock to the rear of F-1 as shown. The 1/4" top sheet between F-1 and F-2 is a hatch cover from which you will have access to the fuel tank and nose gear steering. This sheet should only be **tack glued** in place. Do not remove this cover until final sanding is completed.

The fuselage can now be rough and final sanded. Check cross section for amount of wood to be sanded off. Do not round off corners in the area where the canopy mounts.

Remove the forward hatch cover and install the 1/8" x 1/4" spruce hatch cover blocks as shown on plan. Again place hatch cover on fuselage and drill screw holes in hatch cover and spruce blocks. (Use 1/16" drill bit.) Remove hatch cover.

Drill 1/4" holes for wing hold-down dowel in fuselage as shown on plan.

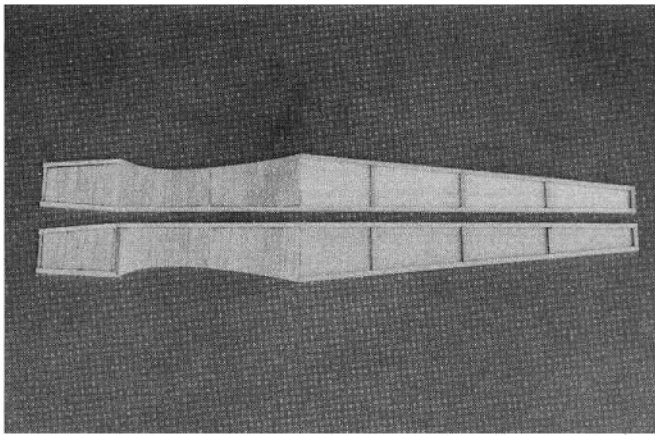
Install wing hold-down dowels. Note: dowel(s) should protrude through fuselage sides approximately 1/2" to 3/4".

Locate stabilizer and draw a centerline (front to rear). Place the stabilizer on the fuselage and tack glue in place. Check for alignment and squareness against fuselage side. Mark the fuselage/stabilizer and remove stabilizer. Apply glue and reinstall stabilizer, holding in position until glue sets up. Assemble left and right elevator halves over plan.

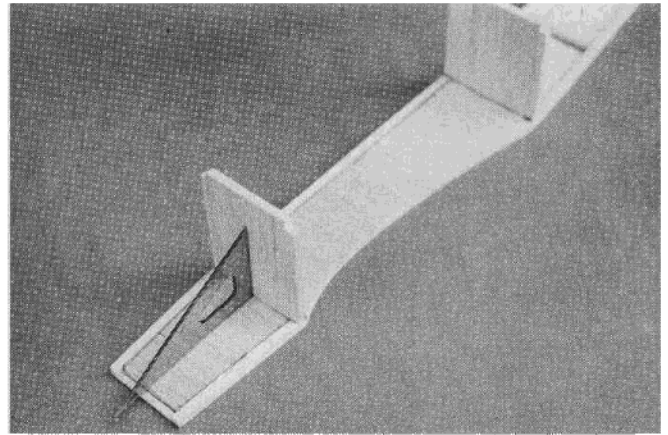
Install vertical fin on stabilizer centerline. Cut and glue the 3/16" fin supports in place as shown.

Locate and glue 3/16" ply fuselage/canopy blocks in place forward of F-3 and aft of F-2 as shown

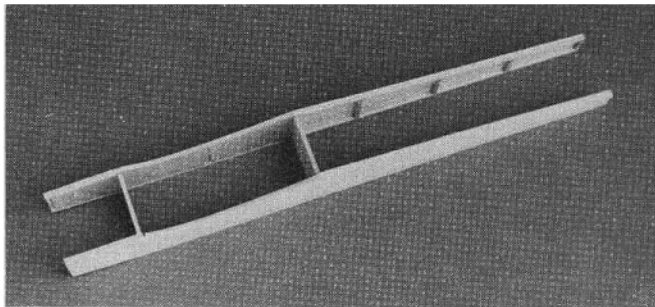




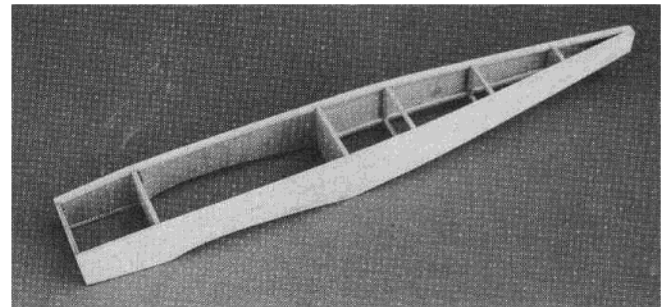
Fuselage side assemblies. Note spacing of front doubler for first two formers.



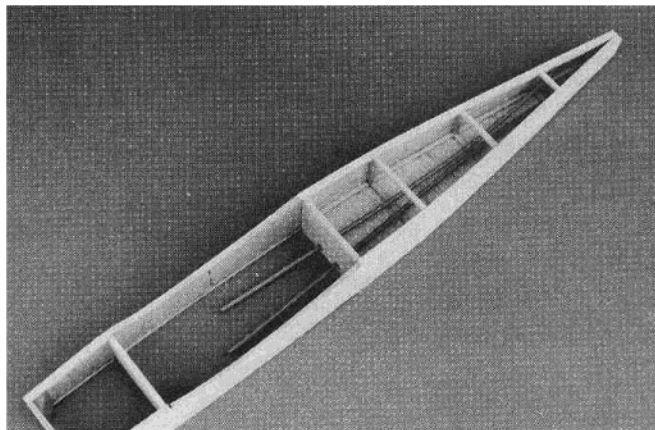
F-2 and F3 must be installed squarely.



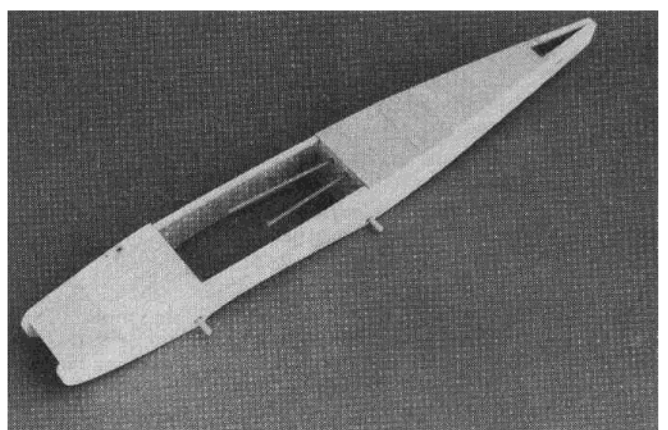
Left and right sides assembled to F-2 and F-3.



Basic fuselage assembly.



Outer pushrod tubes installed and rear top sheeting attached.



Top sheeting completed and wing dowels installed.

on plan. Note: Depending on the wood you have selected, the fuselage may be 'bowed' between formers F-2 and F-3. When installing the ply canopy blocks use rubberbands to hold fuselage square until blocks are secure. The fuselage sides may be wet with water to bring back to square. Leave the rubberbands in place until dry.

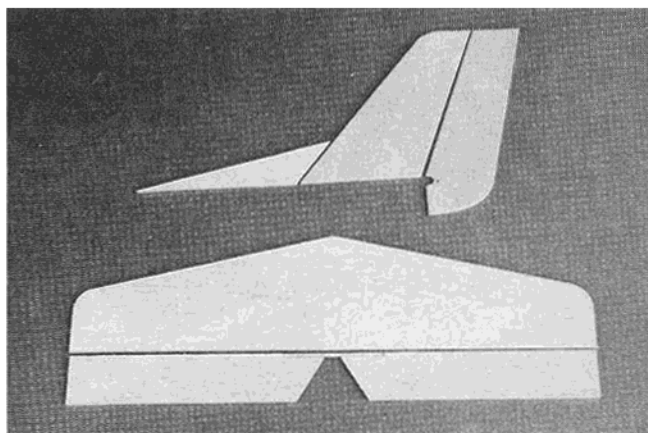
The canopy frame is built up on the fuselage. Cover the top of the fuselage with wax paper or plastic wrap. Cut and pin the two 3/16" x 3/8" side rails in place. Cut, pin and glue the two 3/16" x 3/4" forward and aft blocks in place. (The canopy is approximately .030" thick and the side rails should be trimmed so the canopy is flush with the fuselage sides when fitted.)

Locate and glue C-1 in place as shown. The small canopy retainer hook is made from 1/16" music wire and can be epoxied in place. Cut and install 3/32" gussets in canopy corners as shown.

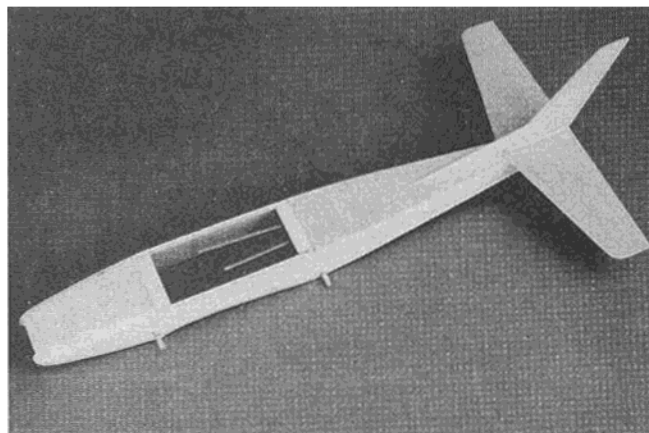
The placement of four 3/16" dowel pins is not critical other than it must be a four point attach. Drill all four 3/16" holes while canopy is still pinned in place. Canopy frame can now be removed and four 3/16" x 1/2" pins installed in frame. The 3/16" holes in the fuselage should be filed slightly to provide an easy fit, but not tight. Paint the frame black when complete. Trim and install canopy to frame. Please note that the rear of the canopy must be notched to clear the top 1/16"

fuselage sheeting. The canopy is secured to the fuselage with two rubberbands wrapped around a piece of 3/16" dowel that is glued to fuselage sides just above the wing saddle and on center with canopy retainer hook.

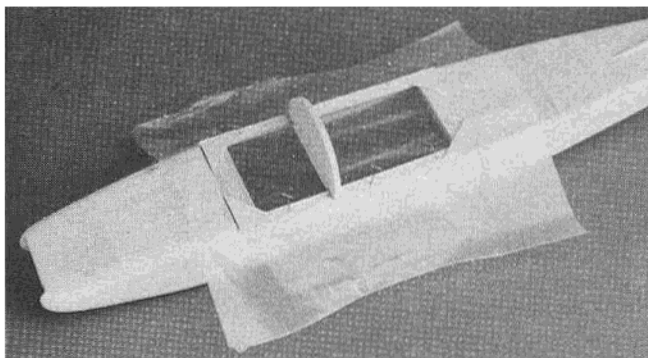
Install the 3/16" x 3/4" x 3/4" ply nose gear blocks. The bottom block is secured to former F-1 and the bottom fuselage sheeting. The top block is approximately 3/4" higher and secured to F-1 also. Drill 1/8" hole through bottom side of fuselage and both blocks. Remove bottom sheet to accept lower 1/8" wheel collar (hole in sheet will be about 3/8" diameter). Steering arm placement is top side of lower block. Nose gear may be



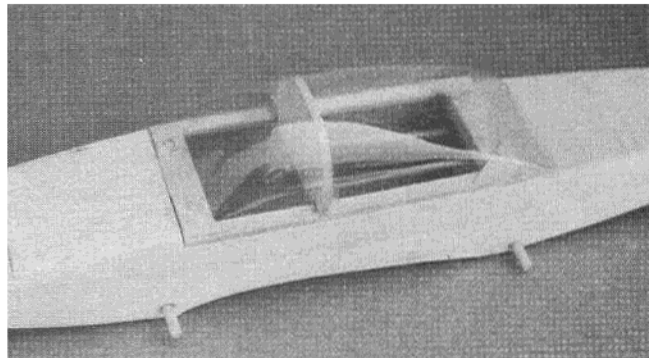
Tail surface components.



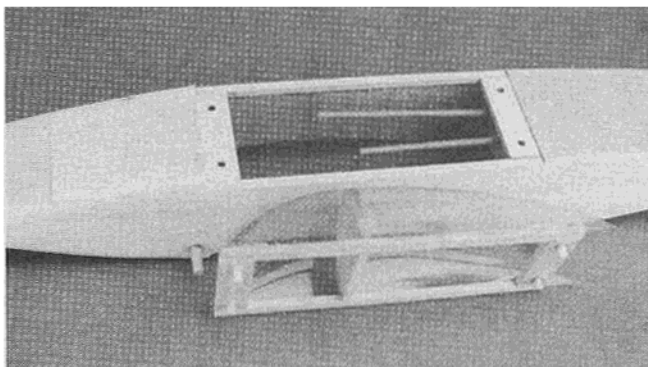
Horizontal and vertical stabilizers installed.



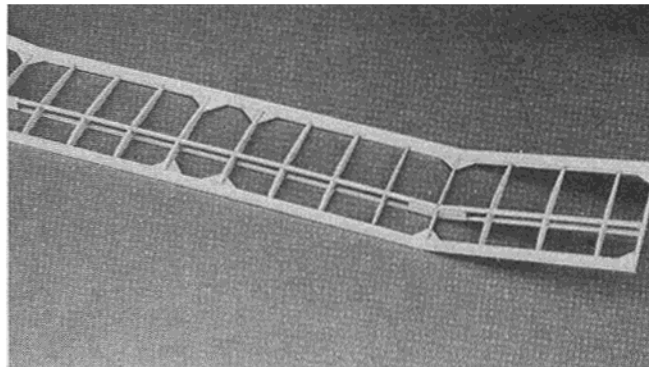
Wax paper separates fuselage and canopy build-up.



Completed pop top canopy.



Bottom view of canopy showing locating dowels.



Basic wing structure.

installed now or after covering.

Wing:

The wing center section is built-up as one piece (section between the two W-4 ribs). Start by pinning the lower 1/8" x 1/4" spruce spar in place over the plan (be sure to cover plan with wax paper or plastic wrap). Place and glue all W-1, W-2, and W-3 ribs to lower spar. Secure upper spar in place. Cut and secure the 3/8" x 1/2" leading edge in place. Cut and secure the 1/4" x 1" trailing edge stock in place.

The wing tips for Pelican are of the polyhedral type. Without going into a lengthy explanation, they are the type of tip used on sailplanes quite frequently and provide tremendous stability.

Wing tips are assembled in the same manner as the wing center section. Cut and pin the lower 1/8" x 1/4" spruce spar(s) in place. Glue the remaining W-3 ribs in place. The top spar is 1/4" shorter on the inboard side of the panel. When you secure the top spar in place you should have a 1/4" gap where it meets the center section of the wing. This gap will close when you tilt the panel up to set the polyhedral.

Cut and pin the leading and trailing edges in place. Note that the inboard side of the leading and trailing edge should be beveled slightly to match the amount of polyhedral.

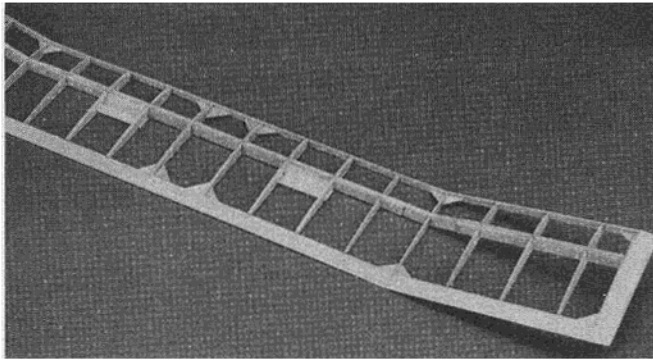
Cut and glue all 3/32" vertical grain sheer webbing. **Do not install**

webbing in the bays on either side of the W-4 rib at this time.

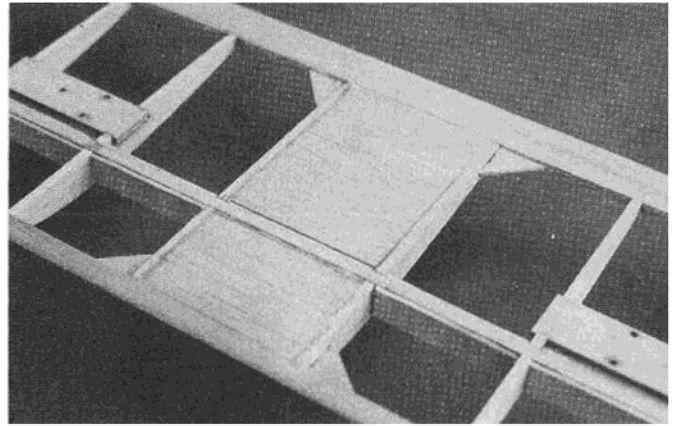
Unpin the outboard panels and block the tips up to the required 3". Check alignment of upper and lower spar, leading, and trailing edges. Glue the two (2) WW-1 polyhedral braces to the spar as shown and fill remaining gap between braces and ribs with 3/32" balsa webbing.

The basic wing is now complete. Unpin entire assembly from plan. Add all 3/32" gussets as shown. Secure tip blocks in place. The center bay has 3/32" sheeting which is flush with the bottom of the ribs — install this sheeting now.

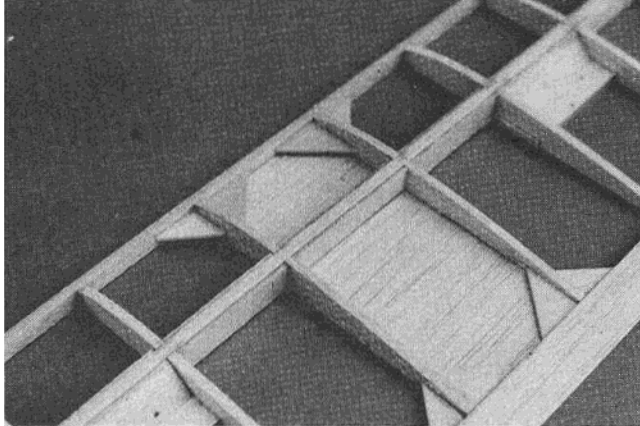
Cut and glue the 1/16" x 1" ply gear



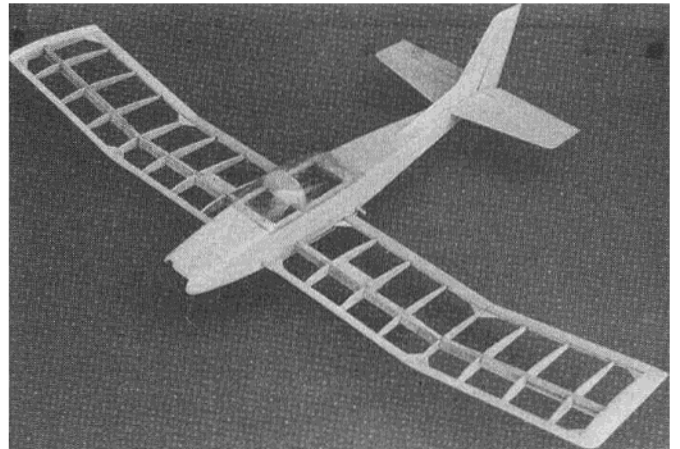
Wing with landing gear supports, spar webbing, and tips installed.



Wing bottom sheeting.



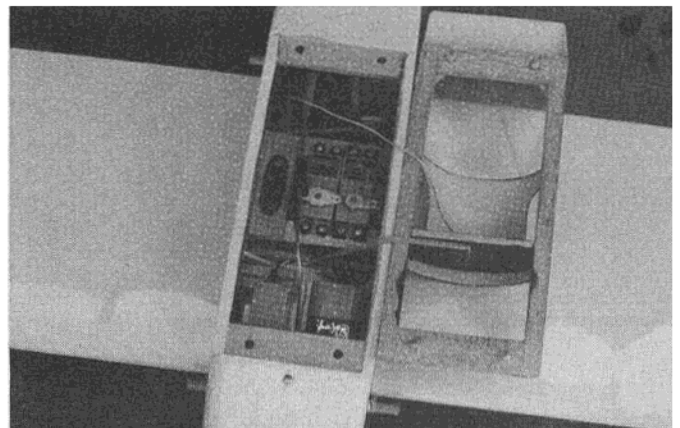
Center section details.



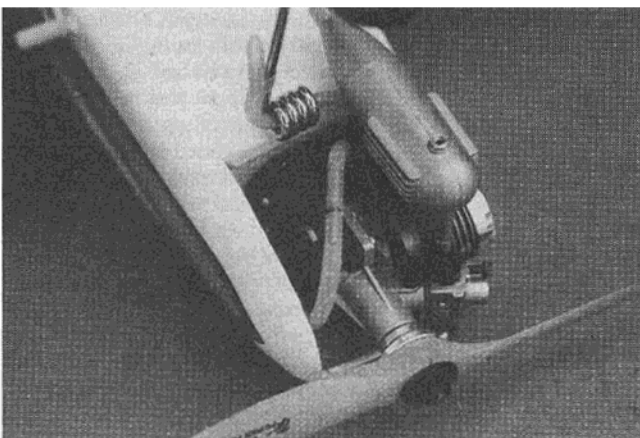
A little hangar flying is in order at this point.



Fuel tank and nose steering installation.



Radio compartment is accessible beneath canopy. Note radio component locations.



Bottom view of engine installation.



All finished out and ready to take to the sky.

blocks and 1/2" triangle stock in place as shown. The main gear for Pelican is a Hallco #B105-3 dural type. The gear must be cut in half and bent to match the height of the nose gear. The gear is secured in place, after covering, with three (3) #4 x 1/2" sheet metal screws on each side. Rough sand leading edge of wing and tip blocks. Finish sand wing. The wing assembly is now complete. Round off the corners of the tail surfaces and finish sand.

Engine/Tank Installation:

Pelican is designed for a .09 or .10 size engine. Anything larger will produce flying speeds that will be less than controllable. The engine mount used is a Kraft type #KM-15. Mark and drill mounting holes so that mount is about center of the firewall. Also drill fuel feed and vent holes in the upper right and left hand corners of the firewall and drill throttle rod hole.

Fitting the engine to the model is somewhat of a cut 'n fit — try to allow about 1/8" clearance around entire engine.

Once fitting is complete, fuel proof engine and fuel tank compartments. Thrust line can be set by either beveling rear of engine mount or adding shims to rear of mount. Engine should not be permanently installed until model is covered and/or painted.

Radio Installation:

The radio used in the prototype Pelican was a three channel Futaba. Please follow the radio manufacturer's instructions for mounting. Trays are usually provided for mounting and require only hardwood or plywood rails to be glued into the fuselage. Total deflection for controls are as follows: Rudder — 5/8" left and 5/8" right; Elevator — 1/4" up and 1/4" down; Throttle — as required. **Do not**, under any circumstances, exceed the control throws listed above.

Placement of radio components should be as noted on the plans. The C.G. location will be very close to correct with this radio configuration requiring only minor adjustment, if any.

Covering And Finish:

To speed completion of Pelican it is suggested you use one of the heat shrink type covering materials. Again, follow the manufacturer's instructions for covering.

There is one item often overlooked in the completion of trainers such as this, orientation. If you cover the Pelican in a symmetrical color scheme it will be difficult to tell left from right when the model is flying at some distance from you. It is to your advantage to cover a wing tip with a different and distinctive color. There is nothing worse than being unable to tell which way the model is going, and this can have disastrous results! So, mark a wing tip!

Rudder and elevator can be hinged in several ways, one being with small nylon hinges. This requires cutting slots in the tail surfaces prior to covering. After covering, the nylon hinges are inserted and several small pin holes are made through the area where the hinge is. Apply several drops of cyanoacrylate adhesive into these holes to secure the hinges. Be careful not to get the CA into the hinge line as you will end up with a non-moveable surface.

Covering film can also be used as a hinging material. Before covering the tail surfaces, sand a 60° bevel on both surfaces of the stabilizer and elevator (bottom side) and also on rudder and fin. Iron the material into the groove on each side until the material adheres to itself. This makes a very strong and flexible gapless hinge.

When wing covering is complete, add tip washout of 1/2". This is accomplished by simply twisting the wing tip, trailing edge up, leading edge down, while applying heat. Hold the wing tip until covering cools. Be sure both sides have the same amount

of twist.

The canopy can be painted to match the fuselage. On the prototype we used Pactra's Polyurethane spray. There is no particular window scheme for Pelican so mask off the windows to your liking. When the paint is dry (about 24 hours) run some 1/16" striping tape around the windows, this will add the 'finished look.' Canopy can now be installed on fuselage. Install as noted earlier.

Once covering is complete the engine may be permanently installed. Hook up the throttle control. Final throttle adjustment is made during test run-ups.

The recommended fuel tank is a Sullivan 2 oz. slant type mounted sideways. Pad the tank lightly with foam rubber and be sure to clear steering and throttle rods. Install hatch cover with two (2) #2 x 3/8" sheet metal screws and washers. Install main gear and all wheels.

The wing is secured with four to six rubberbands. Do not exceed eight bands as you could crush the wing. If you have not charged your radio batteries, do so now.

Flying:

(Editor's Note: It is highly recommended that any beginner in R/C before attempting to fly for the first time, obtain the help of an experienced R/C pilot. If this is not possible, then follow the outline listed below).

Before you load up Pelican and head to your favorite flying site, check the C.G. of your model. Add weight as necessary on nose or tail to make it balance as shown on the plans. Run-up the engine, checking to be sure it idles reliably and give it one last thorough shake down! Be sure everything is the way it should be before even leaving the house. Nothing is more frustrating than to get to the field and find that you have hooked up the elevator backwards or that the steering works opposite the rudder. You should arrive at the field with a model that is ready to go. Anything short of this type of

preparation is only asking for trouble, and if you don't believe that, ask an experienced modeler.

Once you have made it to the field, fuel up and start the engine. The only adjustments that should be required at this point is a final mixture setting. Immediately start your taxi to the departing runway. While taxiing, get the feel for the steering and mentally prepare yourself for take-off. Arrival at the runway will consist of a quick run-up to clear the engine and your roll out to the runway centerline. 'Hit it' and **go**. Pelican will become airborne, depending on wind, in about 20 to 40 feet. Make an easy climb to get some altitude before attempting trim adjustments. You will note that turning response is slow which will give you time to react. For the first few minutes of flight make some nice wide oval turns and maybe a Figure 8 or two to get accustomed to control response. Now reduce the throttle to about half, let the plane slow down, and give it some up trim to maintain level flight. Try a few more turns and notice the same response in slow flight as with full throttle.

All you have to concentrate on is up and down, left or right, and slow or fast. Flying **too** slow will produce a stall. If this occurs it will be a **very** gently one. In a stall the Pelican will be in a mild sink with the nose trying to lower itself. The wings should remain level unless you do something like push on the rudder. Stall recovery consists of no more than releasing the elevator and adding a little throttle.

Landings with Pelican are so easy it's almost boring. All you do is **turn** downwind and reduce the throttle to about half. Turn base leg and then final. As soon as you turn on final, reduce throttle to just above idle. Pelican is a floater and once on final, you will be more or less flying a small sailplane. Let it come down to the runway. At about 2' above the runway very **slowly** start giving it up elevator. Ya know what? You just landed. Bet you never flew one that easy before! Taxi back to the pits, stop the engine, and turn off the radio. While your at it, give yourself a pat on the back, you earned it!

Now do it again . . . Happy flying!



From RCModeler Jan. 1982