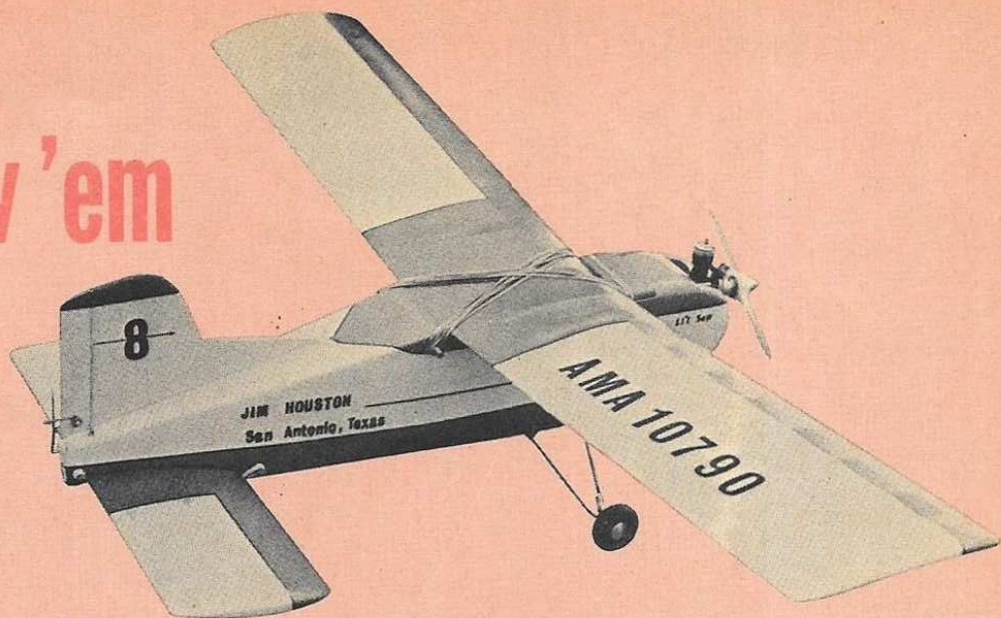


"Li'l Sep" by
San Antonio's Jim Houston

Texans grow 'em small, too!

**Remarkably rugged little
rudder-only radio control
flyer is descended from
long line of winning
"Separator" planes**



During the entire time you are building this model keep one thought in mind at all times...it must be light! Do not use excessive amounts of cement and select your wood carefully. Use hard but light wood.

Let's start with the wings. Pick some fairly soft 1/16" sheet and cut 22 ribs. Cut the notches for the spruce spars noting that the upper spar is slightly ahead of the lower one so the upper sheet will fit flush with the back side of the top spar. Although the plans call for 1/8" sq. spruce spars, 3/32" sq. would be even better if your hobby dealer stocks this size. Cut the leading and trailing edge sheets from hard 1/32" stock and proceed with the wing construction as follows: Pin the hard 1/8 x 3/16" leading edge down onto a flat board that takes pins easily. Apply glue along the edge of one of the leading edge sheets and glue it to the back of the leading edge and also pin it to the board. Pin the trailing sheet in place. Glue the lower spar to the back edge of the leading edge sheet and place two or three ribs in place to locate it correctly and then pin it in place.

Glue and pin all ribs in place. Add the top spar. Run a bead of glue along

the front edge of the top leading edge sheet and along the top of the ribs and the spar. Pin the sheet to the ribs and flush behind the leading edge. The ideal pin for this job is about 1/2" long and very thin. Variety stores usually stock this item. Now glue the top trailing edge sheet in place making certain that a firm joint is made at the trailing edge. Add the top capstrips but do not capstrip the three center ribs as the center section will be sheet covered after the wing halves are joined together.

It is best to allow the cement to dry overnight before removing the wing from the building board in order to install the bottom capstrips. The plywood dihedral brace should be cut to the angle shown and be long enough to fit flush to the third rib of each wing half. In order to install this brace, it will be necessary to cut the center and second ribs behind the spars and remove the thickness of the brace from the ribs.

Glue the brace to the two spars and then replace the ribs. Add the wing tips shaped as per plan. Cover the wing with light weight Silkspan or silk and try to finish it with no more than four coats of dope.

The construction of the stabilizer may at first seem difficult but it is really very simple. This method results in a light but very strong surface.

Cut the 11 ribs and the two leading edge sheets and the two trailing edge sheets as shown. Bevel the edge of mating sheets and glue them together to form a "V". Apply glue to the ribs and insert them into the "V" leading edge. Space them correctly and line them up carefully by pressing the trailing edges of the ribs to a flat



Roberta Houston (left) and Lisa Houston hold Ben Harr's 4-foot Separator and Poppa's 2-foot Li'l Sep. Full size working drawings for Li'l Sep are available from Hobby Helpers. Jim says you can build Separators for any size engine by scaling up the small job. See article for info.



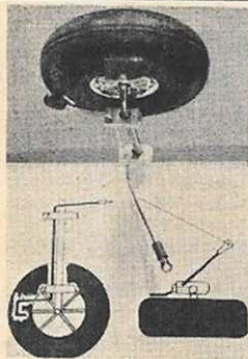
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Li'l Sep

surface. Next apply cement to the back ends of the ribs and insert them into the trailing edge "V". Square up the stab by placing it over the plan or via a carpenter's square. Cover the center section with 1/32" sheet and glue all the capstrips in place. The tips are shaped from solid balsa and are similar to the wing tips. While sanding the tips to final shape, round off the leading edge slightly. Apply a thin coat of dope to the framework and then sand smooth using very fine sandpaper.

Cover with your choice of Jap tissue, lightweight Silkspan or light silk. After covering, mark one side of the stab "UP" so that you can rubber band it to the fuselage with the same side up each time you fly.

The fuselage is fairly easy to build as it is square and has simple straight lines. Select two 3" wide sheets of hard 1/16" balsa. You may trace the outline of the sides from the plan or simply measure the plan and draw the outline on the balsa. Be sure to mark the former locations on the inside of the sides.

Use hard 1/8" sheet for formers A-1 and B. Cut out the center of B only. Glue these formers to one of the sides making certain that they are absolutely square. Glue the remaining side in place after the first side glue joints are completely dry. Check again for absolute squareness. Cut the tail block from scrap balsa as per top and side views. Pull the ends of the fuselage sides together and glue them to the tail block. By marking a center line on former A-1 and the tail block and then lining these up over the center line shown on the plan top view, a straight fuselage will be insured. Allow this to dry completely before proceeding.

Use the remainder of the 1/16" sheet to cover the top of the fuselage grain spanwise from former B back and over the tail block. When the glue is dry you may install the escapement.

Due to the short distance between the escapement and the winding hook, a sufficient number of turns can be had only if 1/16" sq. rubber is used. I have had good luck by slicing 3/16" flat rubber lengthwise to form the loop. In either case you will have to adjust your escapement to operate with minimum of spring tension. Make this adjustment before installing it in the fuselage. It is also wise to solder the lead wires to the escapement before you install it. Make up the torque rod as shown using wing spar stock.

Cover the bottom of the fuselage with the hard 1/16" sheet but with the grain running across the fuselage. Glue the two 1/8 x 1/4" wing support strips along the inside top edges of the fuselage as shown. The short bulkhead to separate the receiver and support the jacks to plug your receiver into may be added at anytime. The reinforcement at the tail (see dotted outline on plan) should be soft 3/32" sheet. You want a firm surface to rubber band the stab to, but you have to be careful not to get the model tail heavy.

The nose section is exceptionally strong and is quite simple to construct once you understand how it goes together. First cut some 1/8" balsa 2" wide and about 2 1/2" long with the grain running lengthwise. Glue these to the inside of the sides with their rear edges glued to the front of former B. Next

glue the plywood firewall to the front of these side doublers and to the fuselage sides. Now take two pieces of 3/16" sheet and glue them to the inside of the sides and to the firewall.

Former A is installed between the 1/8" doublers just far enough behind A-1 to allow your pencils to fit snugly. Install the front wing hold down dowel first as it goes against the front side of A-1 and is in the battery compartment. This dowel, as well as all the rest, should protrude about 3/8" on each side. The bottom is covered only as far forward as former A. The space between former A and the firewall is left open to allow the nose gear to swing rearward. A diagonally installed 1/16" sheet as shown on the side view plan forms sort of a wheel well.

Form the nose gear over the outline on the plan, with the wheel on one end. Solder the retaining wire across the legs and solder the top ends together. This unit may be mounted to the back of the firewall in either of two ways. It may be retained by drilling small holes through the firewall and sewing the gear in place with fine wire. However the method that has been used successfully mounts the gear with "J" bolts home made from 2-56 x 3/4" bolts that are bent into a hook. With either method, the nose gear must be free to swing back on impact. A 4-40 bolt and two nuts, one in front of and one behind the firewall is mounted between the gear legs and just above the bottom of the firewall. This bolt is used to hold the rubber band that gives the gear its shock action.

The main landing gear is also formed over the plans and assembled as shown. It is held to the bottom of the fuselage by rubber bands and the dowels provided. A piece of 1/16" plywood cut to fit across the fuselage between the gear legs is glued to the bottom of the fuselage and thus keeps the gear from turning.

A piece of 1/8" plywood of proper width and height to extend above and below the engine mounting plate is tapered as shown on the plan top view to give almost the exact degree of side thrust required.

In order to install the fuel tank as close to the motor as possible I mounted the Cox .020 as follows: Mark and drill the two mounting holes through the firewall. Drill the same spaced holes in a piece of tin then trim the tip to a narrow strip. Solder a nut over each hole and place this strip behind the firewall. The two #2 motor mounting bolts are then filed flush with the back edge of the nuts. The nuts are impressed into a piece of soft 3/32" sheet balsa which is then glued over the nut-tin assembly to the firewall. A 1/2 ounce rectangular fuel tank, modified as shown, was thus installed directly behind the firewall. Remember to plug one of the filler tubes after filling the tank to prevent a siphoning action which could cut down on flight time. An optional modification that you might consider would be to position former A so that the fuel tank can be glued against it. The battery compartment could then be filled with sponge or foam rubber to keep the batteries from bouncing around. The top of the nose section may be a complete one piece removable hatch or it may be made in two pieces with the section over the batteries the removable portion.

I used one coat of filler, two coats of white and one coat of trim color to finish the fuselage.

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The rudder is cut from 1/8" or 3/32" hard balsa. Draw a center line on the top of the fuselage to assure proper rudder alignment. Glue a 1/8" sq. to both sides of the rudder, flush with the bottom edge. Trim these strips to the triangle shape shown on the plans. Place a piece of sandpaper face up on a flat surface and sand the bottom edge of the rudder assembly flat and square before gluing it to the fuselage.

Li'l Sep should balance correctly just as it is built. If it doesn't you can move some of the components or add weight as needed. **DO NOT TEST GLIDE.** All you can prove this way is how strong your model is.

Set the rudder arm with a fairly short throw. I set my first Li'l Sep with about a 1/4" throw, and when I gave it the first signal it did three snap rolls before I could let go of the button. So set for a small rudder movement until you get the feel of your model. If possible, make your first flight over grass, and hand launch it.

If the model is launched straight and proceeds to climb in a straight line, let it go until it is up 50 to 100 feet before you try anything. Li'l Sep is very stable and will fly out fine by itself. However I advise you to acquire the services of the best rudder flyer you know to handle the button on the first few flights. This little bird really flies, and until it is properly trimmed out is tricky to fly.

My Li'l Sep flies very well. It will do rolls, snap rolls, slow rolls and barrel rolls. It does beautiful true spins and all other stunts expected of any rudder ship. When I say it flies, I have to think of the day I released it with weak batteries. When it got up about 50 feet I lost control and it flew away. Up!

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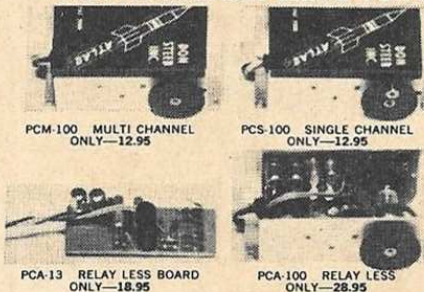
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