

CHUPEROSA



Chuperosa was born a couple of years ago in a form much different from what is presented here. She has gone through a lot of growing pains but she's turned into quite a little sweetheart. Rusty Shaw first gave her life. Rusty got interested in hand launch from watching Jim Porter toss around his little "Whisper I" hand launch design.

Rusty started his experiments with a "T" tail design which utilized the Eppler 205 airfoil. Not completely happy with the results, Rusty changed the wing to an "Antares" airfoil. During all of this experimenting,

Rusty's arm was getting stronger and stronger! Finally, one day Rusty asked Porter what airfoil he was using on the "Whisper I." Porter's response, "Eppler 214." Rusty immediately got out his foam cutter and went to work again.

As a result of Jim Porter and Rusty Shaw's efforts, interest in hand launch in eastern Iowa is growing. Our club, the "Eastern Iowa Soaring Society," has devoted a contest exclusively to hand launch for the past couple of years and that will grow to two contests in 1987. At our 1986 H/L contest, Chuperosa soundly beat

everything that was "thrown" at her.

Chuperosa has been flown on the slope quite successfully (3rd place in recent races), and she's been flown against standard class ships (4th of 12 at a recent thermal event) with equal success. Mostly, though, she's just plain fun to fly almost anywhere.

Rusty's original Eppler 214 prototype weighs in at 18 ounces. This is because he doesn't own a "mini" radio, so he stuffs a full size Futaba in her belly. The Eppler 214 airfoil carries the extra weight quite well. Rusty believes that the extra weight "throws" better when compared to a lighter plane. Judging from his performances at our last two contests, I can't dispute his theory.

I got into the act late this summer (1986) when I retired after 31 years as an engine designer for John Deere. I was looking for something to do, and recognizing the potential of Rusty's design, I suggested that we try to publish Chuperosa's story. Rusty agreed, but informed me that the only plans he had were on three sheets of 8½ x 11" graph paper taped together. Having been a designer for 31 years, I figured I was qualified to draw some



ABOUT THE AUTHOR

Leroy Satterlee is 49 years old, and recently retired from a 31 year career as a design engineer. He has been active in model aviation off and on for the past 37 years and has built and flown free flight, U-control, R/C power, indoor, and sailplanes.

Leroy's current favorites are sailplanes and R/C electrics. He currently flies hand launch, 2-meter, standard, and unlimited class sailplanes. He is active in local thermal contests, cross country, and sport flying and is LSF Level IV, working toward Level V. He is currently president of the Eastern Iowa Soaring Society and an AMA Contest Director.

Although Leroy has designed and built many planes over the years, this is the first design he has submitted for publication. In all fairness, he admits that this design job was a "cooperative" effort. His friend and flying companion, Rusty Shaw, came up with the basic concept and first prototype. With Rusty's blessing, Leroy took over from there and developed the design into what is presented here.

This little 60" beauty will give you some very relaxed air time. With its light wing loading, it takes very little to catch the thermals.

plans, so I went to work.

I've made some cosmetic changes and revised the construction by lengthening the nose to provide a little additional space for R/C gear, but the character of Chuperosa hasn't been altered. I also drew the plans, and wrote the story at Rusty's request.

Since I became involved, I've built three additional prototypes and they weigh between 13.5 ounces and 15 ounces. The lighter plane "floats" better in still air, but as Rusty predicted, I can't throw it as high as the heavier plane. Flight times are, therefore, a toss-up.

For schoolyard flying we use a sort of mini hi-start, which consists of about 15' of old, standard size hi-start tubing, and about 35' of 50 lb. pull monofilament fish line. This device, when stretched to its limit, really puts Chuperosa up in a hurry. Zoom launches from this device are, to say the least, spectacular. Chuperosa can be built as either a polyhedral ship or an aileron ship. Either version is a blast to fly.

I've watched Rusty perform an interesting trick with the polyhedral prototype several times. He hooks up the mini hi-start, stretches it to the max, turns on the Tx and Rx, lays the Tx on the ground, and launches the plane, which proceeds to fly a 360° pattern. Most onlookers just stand there with their mouths hanging open.

Please look over the plans and consider Chuperosa as a fun addition to your personal armada. If you decide to build her, first decide which version you want, then collect your materials and let's proceed.

CONSTRUCTION

Let's begin with the fin assembly:

1. Cut out the 3/32" balsa fin core, the 1/64" ply fin side sheets, and the 1/4" sq. balsa elevator tube supports. Sand or cut down the elevator tube supports to 1/4" x 7/32". This is so they'll match the finished elevator thickness.

2. Solder a suitable electrical terminal end to the Sullivan cable, then put the cable back into the yellow tube.

3. Attach the first 1/64" ply fin side sheet to the fin core. Use Titebond and clamp until dry. Next, epoxy the elevator cable assembly into the slot in the fin core as shown. A few drops of epoxy are sufficient to hold the cable.

4. Install the second fin side sheet and clamp or weight it until it's dry.

5. Glue on the elevator tube

supports with Hot Stuff or Zap. Be sure they're on straight and that the 7/32" dimension is in the vertical direction.

6. Drill the 3/32" diameter hole for the elevator pivot tube. Use a drill press for accuracy if possible. If a drill press isn't available try to get the hole as square to the part as possible. This simplifies the alignment job later.

7. Epoxy the 3/32" o.d. x 5/8" brass

pivot tube in place, being sure it's square with the fin in both directions.

8. Cut out the 1/8" light balsa rudder and glue the 1/8" sq. balsa stiffeners in the three large holes. Now lay these aside and we'll move on to the elevators.

Building the Elevators:

1. Cut out the 3/32" light balsa elevators, the 1/16" balsa elevator spars, and the 1/16" balsa root

CHUPEROSA BILL OF MATERIALS

Wing:

1*	— 13 x 30 x 2	White Styrofoam
4	— 1/8 x 1/4 x 9	Spruce spars
1	— 1/32 x 2 1/2 x 5 1/2	Ply dihedral braces
10	— 1/32 x 3 x 36	Balsa wing sheeting (contest grade)
2	— 1/4 x 3/8 x 36	Hard balsa leading edge
2	— 1/4 x 3/4 x 6	Sheet balsa wing tips
1	— 1/8 x 1/2 x 2	Birch ply wing hold-down parts
4	— 1/32 x 5/16 x 15	Ply aileron & opening edging
2	— 1/16 x 1/2 x 1	Phenolic sheet (aileron horns)

Fuselage:

4	— 1/8 sq. x 36	Spruce fuselage longerons
1	— 1/8 sq. x 13	Spruce cross members
2	— 1/8 sq. x 36	Balsa cross members, uprights, diagonals
1	— 1/8 x 1/4 x 1 1/2	Spruce tail post
1	— 1/4 x 1 x 1	Fingerboard for hand launch (F-4)
1	— 3/16 triangle x 2 1/2	F-2 gusset
2	— 1/2 x 1 3/8 x 1 3/8	Hard balsa nose block (laminated)
1	— 1/4 triangle x 3	Balsa gussets for uprights
1	— 1/8 x 3 x 36	Balsa sheet fuse, sides, floor, hatch, etc.
1	— 1/16 x 1 1/4 x 4 1/2	Ply (F-1, F-2, H-3)
1	— 1/8 x 1/2 x 7	Ply (F-8, TH-1, TH-2)
1	— 1/32 x 1 x 5 1/2	Ply (F-3, F-6)
1	— 1/64 x 1 x 1	Ply (F-5)
1	— 1/8 x 1 x 8	Lite ply (F-95) wing cradles
4	— 1/8 x 1/4 x 1	Ply servo rails

Rudder & Fin:

1	— 1/8 x 3 x 8	Balsa rudder (contest grade)
1	— 3/32 x 3 x 8	Balsa fin core (contest grade)
2	— 1/64 x 4 x 8	Ply fin side sheets
1	— 1/8 sq. x 5	Balsa rudder stiffeners
1	— 1/4 sq. x 5	Balsa elevator pivot support (hard)
1	— 1/16 x 1/2 x 1	Horn (phenolic)

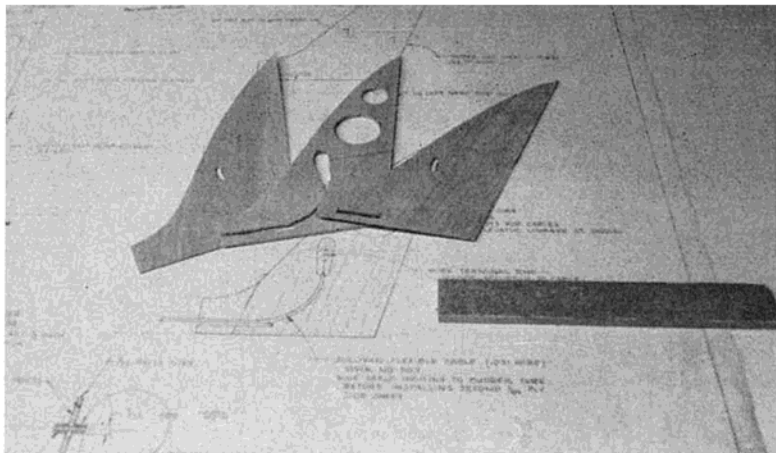
Elevators:

1	— 3/32 x 3 x 36	Balsa elevator (contest grade)
1	— 1/16 x 3 x 14	Balsa elevator spars & root reinforcements
2	— 1/16 i.d. x 1 3/4	Brass Tube (elevator pivot & actuator)
1	— 1/8 sq. x 9	Balsa elevator stiffeners
2	— 1/16 o.d. x 2 3/8	Piano wire (elevator pivot & actuator)

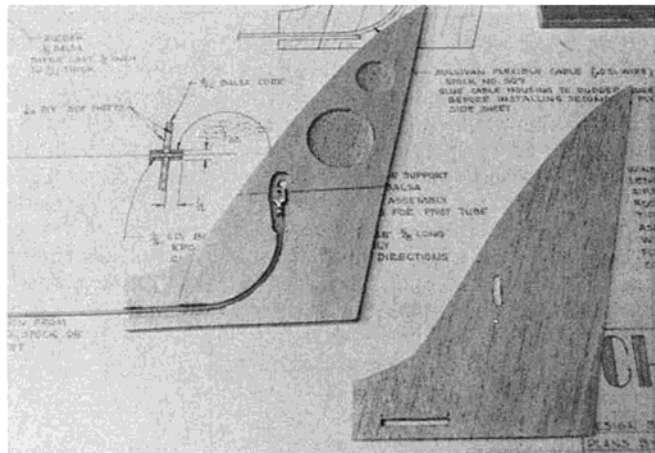
Hardware:

1	— Nylon clevis	Rudder
4	— Sullivan 031 wire	
	Flex cable stock No. 507	Aileron, rudder, elevator pushrods
	(only 2 req'd if building polyhedral version)	
1	— .062 i.d.	Wire terminal end (elevator actuator)
1	— #8-32 x 1	Nylon screw (wing)
1	— Small cup hook	Tow hook, see plans
1	— 1/2 wide x 36	Vinyl tape (rudder & aileron hinges)
1	— 3/32 i.d. x 20	Nylon tube for antenna
1	— 1 1/2 x 16	Fiberglass tape (center section) Opt.
2	— 1/8 dia. ball	Ball joint hook-up for ailerons at servo end
1	— 3/32 o.d. x 5/8	Brass tube for fin
2	— 3/32 o.d. x 1 3/4	Brass tubes for elevators
1	— 1/16 x 7 x 9 1/4	Formica or aluminum for wing core templates.

*Note: A set of wing cores are available from Leroy K. Satterlee, 1604 Huntington Rd., Waterloo, Iowa 50701, for \$6.00 per set postpaid anywhere in the continental U.S.

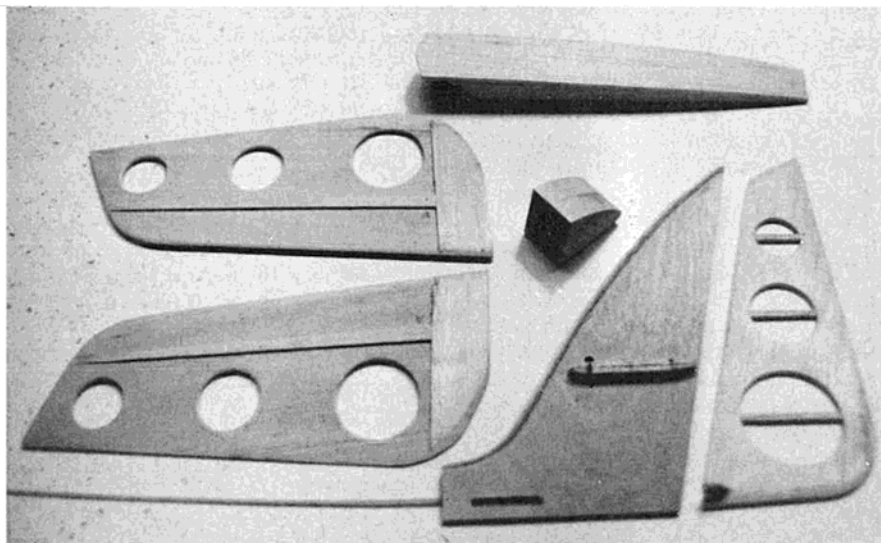


Fin parts before assembly.



Beginning fin construction.

CHUPEROSA
 Designed By:
 Leroy Satterlee & Rusty Shaw
TYPE AIRCRAFT
 Schoolyard Sailplane
WINGSPAN
 60 Inches
WING CHORD
 Root 8"/Tip 6"
TOTAL WING AREA
 420 Sq. In.
WING LOCATION
 High Wing
AIRFOIL
 Eppler 214
WING PLANFORM
 Tapered L/E
DIHEDRAL EACH TIP
 Aileron Version 1 1/2"
 Poly Version 4 1/2"
O.A. FUSELAGE LENGTH
 36 Inches
RADIO COMPARTMENT SIZE
 (L) 10" x (W) 1" x (H) 2"
STABILIZER SPAN
 17 1/2 Inches
STABILIZER CHORD (incl. elev.)
 3 Inches (Avg.)
STABILIZER AREA
 52 1/2 Sq. In.
STAB AIRFOIL SECTION
 Flat Diamond
STABILIZER LOCATION
 Midway on Fin
VERTICAL FIN HEIGHT
 7 Inches
VERTICAL FIN WIDTH (incl. rud.)
 4 1/2 Inches (Avg.)
REC. ENGINE SIZE
 NA
FUEL TANK SIZE
 NA
LANDING GEAR
 NA
REC. NO. OF CHANNELS
 2
CONTROL FUNCTIONS
 Ail. Version — Rud., Ail., Elev.
 Poly Version — Rud., Elev.
BASIC MATERIALS USED IN CONSTRUCTION
 Fuselage Balsa, Ply & Spruce
 Wing Foam, Balsa, Ply & Spruce
 Empennage Balsa & Ply
 Wt. Ready To Fly 13-18 Oz.
 Wing Loading 4.5-6.2 Oz./Sq. Ft.



Completed fin, rudder, elevator, hatch, and noseblock.

reinforcements. Also cut out the two, 3/32" o.d. x 1 3/4" brass tubes.

2. Notch the elevators for the brass tubes.

3. Build both elevator halves simultaneously using the 3/32" o.d. x 1 3/4" brass tubes for alignment. Leave about 1/16" space between the root of the two elevator halves so you'll have space to cut the tubes when everything is dry. Epoxy the tubes in place and install the 1/8" sq. balsa stiffeners.

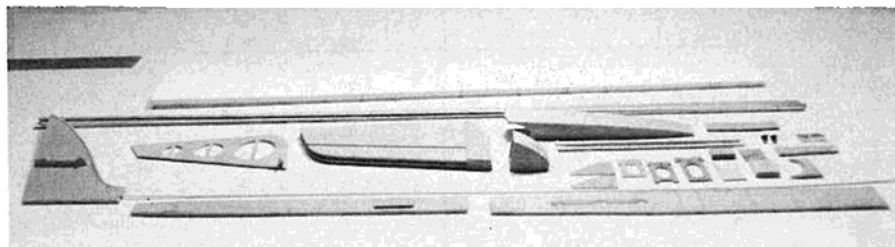
4. Remove the elevator assembly from the building board and install the 1/16" root reinforcements and the 1/16" balsa spars. Cut the brass tubes to separate the two elevator halves, and lay them aside.

Building the Fuselage:

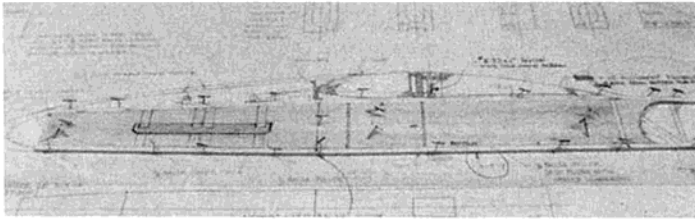
1. Cut out all of the balsa and ply fuselage and hatch parts, using the patterns provided on the plans. Extra care and accuracy here will pay off later with a strong, straight fuselage structure.

2. Put waxpaper over the plans and build the fuselage sides, using parts F-13, F-14, F-15, and F-16. Also the spruce longerons, the spruce tailposts, and the two spruce uprights ahead of F-3. Install the 1/8" sq. balsa uprights and diagonals and the 1/4" end grain balsa triangle stock gussets.

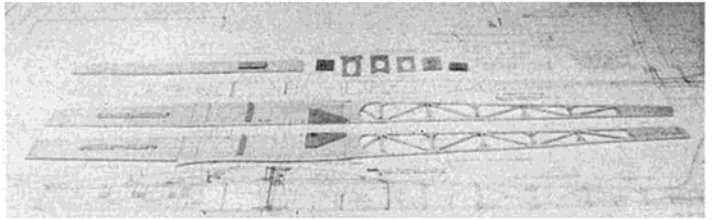
3. Build the second fuselage side directly over the first, separated by waxpaper. The two sides should be identical except for diagonals, which



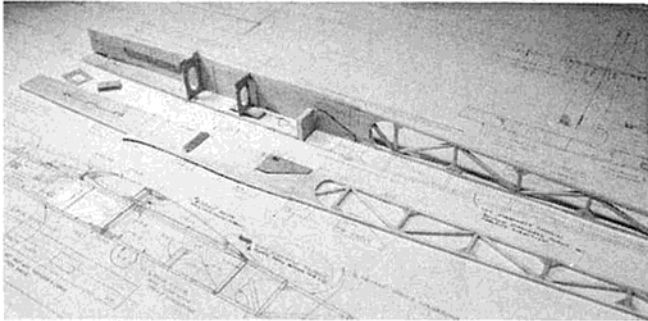
Partly completed "kit."



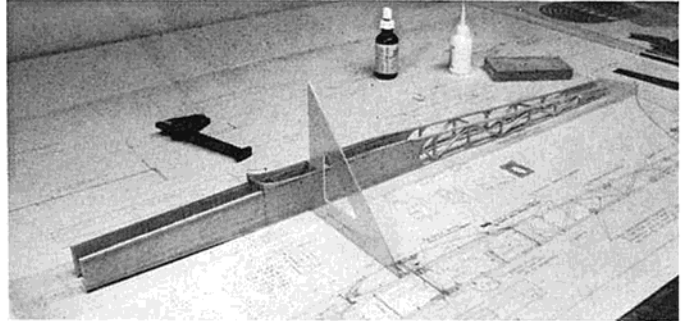
Building first fuselage side.



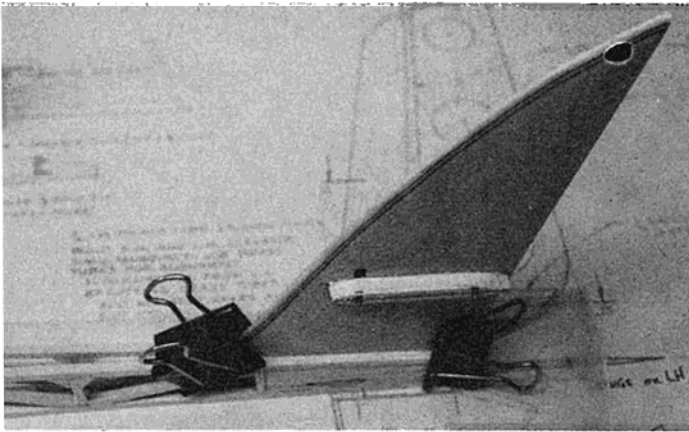
"Mirror image" fuselage sides.



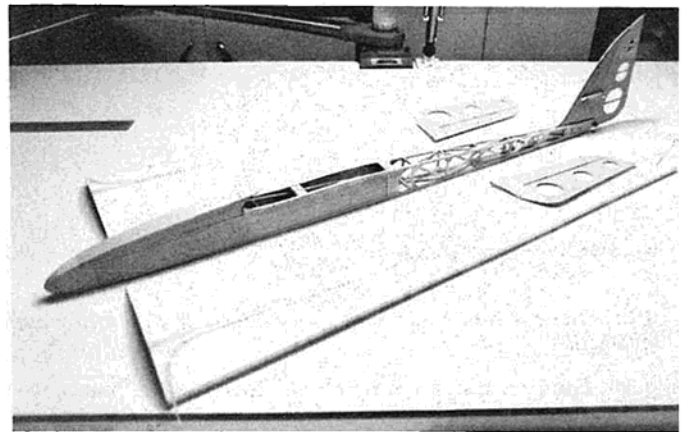
Joining R.H. fuselage side to bottom.



L.H. side being added to fuselage.



Fin sub-assembly clamped into rear of fuselage.



Semi-finished plane minus wing sheeting and covering.

slant the opposite way on the second fuselage side.

4. Remove both fuselage sides from the building board and block sand them smooth and flat.

5. Create right and left fuselage sides by installing parts F-6 and the 3/16" triangle stock gusset behind bulkhead F-2. You should now have two, "mirror image" fuselage sides.

6. To the right-hand fuselage side,

attach bulkheads F-1, F-2, and F-3. Also preassemble F-4 to F-5 and then attach that sub-assembly to the right-hand fuselage side.

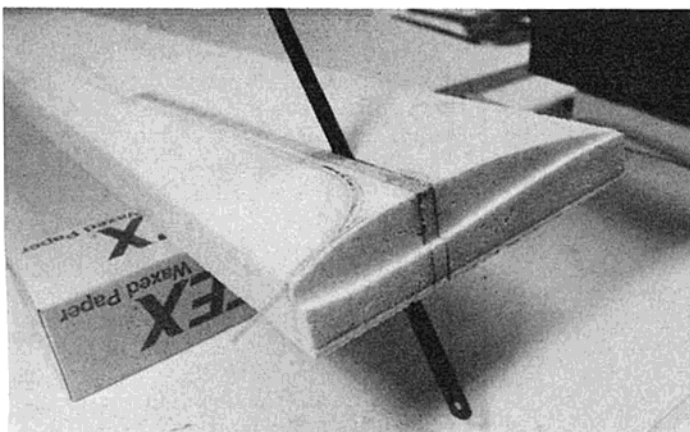
7. Cut out F-7, TH-1, and TH-2. Create a sub-assembly by attaching TH-1, and TH-2 to F-7.

8. Pin the F-7 assembly to the board over the plans (use waxpaper). Use the centerline to get F-7 centered.

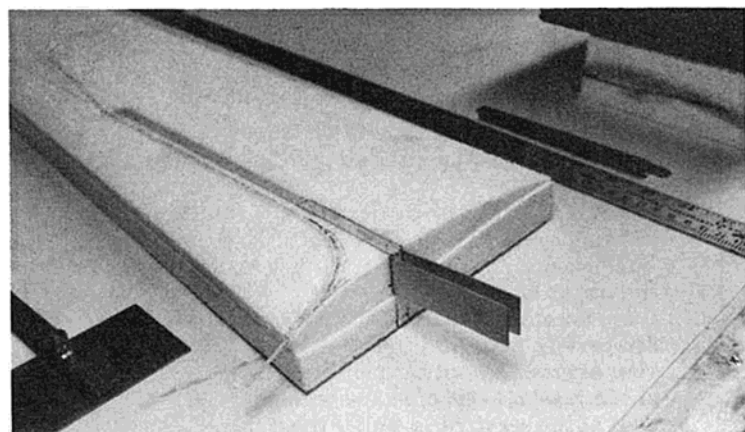
9. On the right-hand fuselage side,

apply Titebond to the lower longeron, between bulkhead F-1 and the front of F-4. Install this against the F-7 assembly which is pinned to the plans. Use triangles to keep the fuselage side vertical.

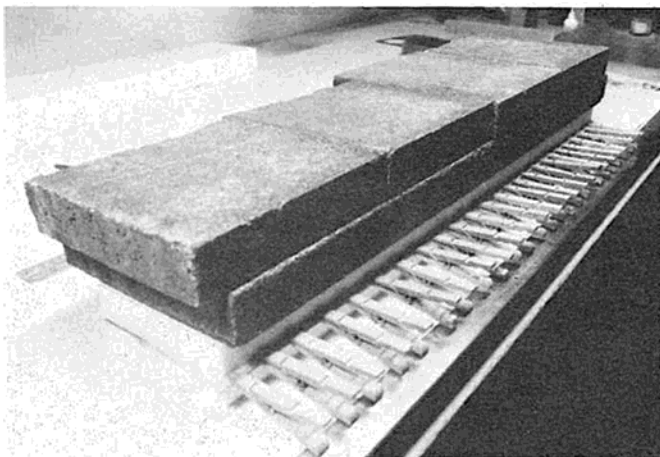
10. Install the left-hand fuselage side against the F-7 assembly in the same way as the right-hand side was done. Don't forget the glue at bulkheads F-1, F-2, F-3, and F-4.



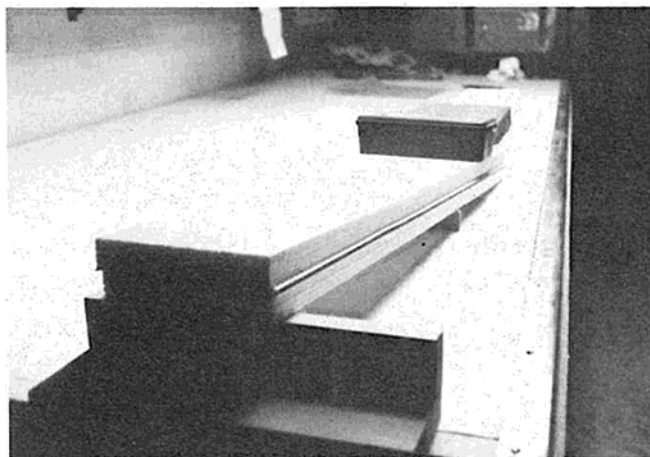
Hacksaw the slots for the 1/32" ply dihedral braces.



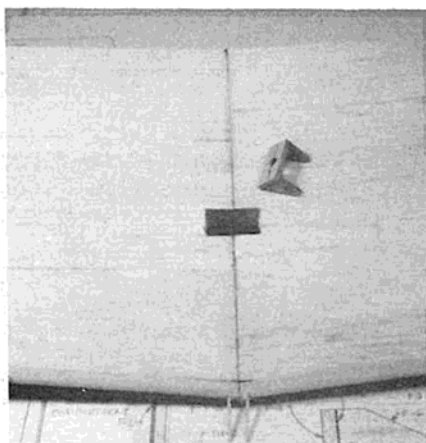
Trial fitting the dihedral braces.



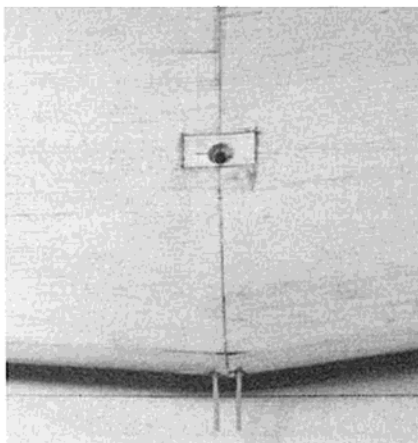
Clamp everything securely while the wing skins are curing.



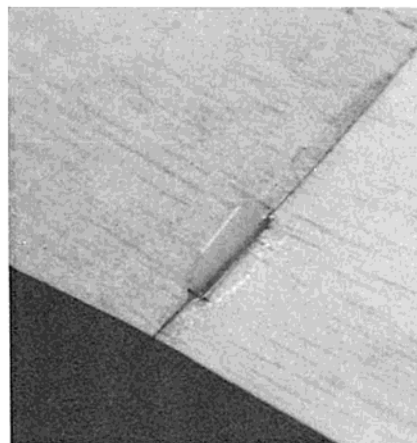
Joining the two wing halves.



Wing hold-down parts ready for installation.



Wing hold-down area plugged and finished.



Wing alignment tab installation.

11. Glue in the pre-assembled fin between the rear of the fuselage sides. Clamp securely. Be sure the fin is on the fuselage centerline, and use triangles to be sure the fin remains vertical. Just let the Sullivan cable lay on the bottom for now.

12. Install all of the 1/8" sq. balsa cross members to the rear of bulkhead F-3. Use the fuselage vertical side members as a guide for placement of the cross members.

13. Install pieces F-9, F-10, F-11, and F-12. Install F-8 with epoxy since it absorbs all the launch loads. Install the two F-95 lite ply wing cradle pieces.

14. Remove the fuselage assembly from the board and pin down the front portion of F-7, from bulkhead F-1 to the nose block. Attach the fuselage sides to F-7 with Titebond from F-1 to the nose block.

15. Install the spruce cross members just behind the nose block and another just to the rear of F-1 at the upper longeron.

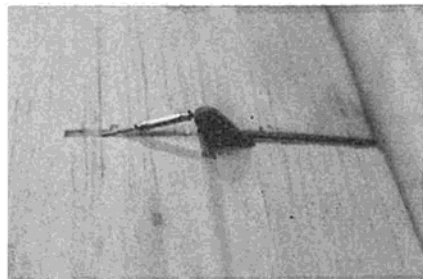
16. Locate and install the 1/8" ply servo rails in a position suitable to your servos. Try not to push the front of the fuselage out of shape with the ends of the servo rails. Taper them to avoid this, as the hatch will not fit properly otherwise.

17. Laminate the nose block from the two pieces of hard balsa as shown. Pre-cut the ballast cavity before attaching the two halves together. When dry, attach the nose block to the front of the fuselage.

18. Install the upper and lower 1/8" sq. balsa diagonals to the rear of the fuselage. Make sure the lower ones slant the opposite direction from the upper ones.

19. Install a tube for your antenna as shown. This allows reassembly of the antenna if the receiver is removed. Use epoxy.

20. Install the Sullivan rudder cable as shown. Solder only the threaded portion of one of the Sullivan fittings to the cable as shown on the plans. Attach the cable housing to the fuselage sides using Hot Stuff and



Ailerons horn and cable hook-up.

micro-balloons or baking soda.

21. Remove the fuselage from the board and sand it with a sanding block. Be sure to taper the rear portion to clear the rudder horn and clevis. Taper both sides and round the rear at the tailpost area.

This completes the basic fuselage assembly.

Building the Hatch:

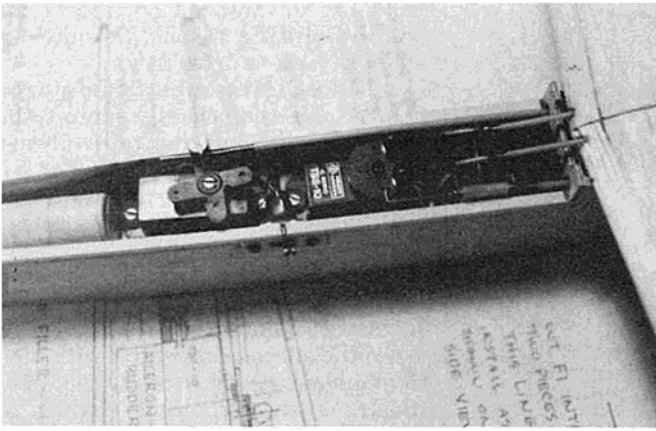
1. Cut out the hatch parts H-1, H-2 and H-3, and the 1/64" ply hatch centering tabs.

2. Cut slots half way through H-2 as shown to aid in bending.

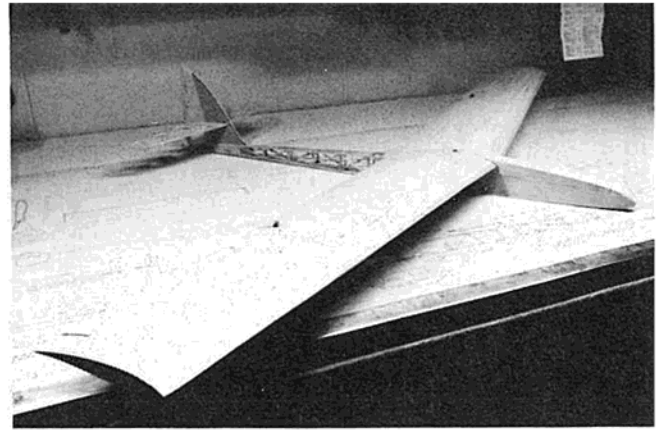
3. Glue H-2 to the two H-1 sides using Hot Stuff or Zap. Install hatch gusset H-3. I recommend that you don't install the centering tabs until later, after your radio installation is complete. This way you can avoid any interference that might occur between the tabs and the servo wheel or pushrods.

Everything we built so far is identical to either version of Chuperosa. The wing is obviously where the major differences are. Select which wing you want to build and let's proceed.

The following instructions assume that you can cut foam wing cores or that you have access to someone who can. I've provided template drawings



Servo and hook-up installation.



Completed aircraft prior to covering.

for cutting the cores. Duplicate them carefully in Formica, because you'll be in the core cutting business once your friends see Chuperosa fly.

Cut the cores from 2" thick, white styrofoam (the type used to insulate houses). Use from 24 to 27 volts from a Variac or use two 12 volt batteries to obtain 24 volts. I use a 36" cutting bow with Sig nichrome wire. Cut the bottom contour first and then the top. Cut from trailing edge to the leading edge.

The following instructions are identical for either wing version, except as noted.

1. Lightly sand the cores to remove the cutting "hair" and any other minor roughness. Old, worn out sandpaper of 220 grit or finer, works best for sanding foam.

2. If you're building the aileron version, cut the 1/8" x 1/8" grooves for the cables in the top surface of the wing. Skip this step if you're building the poly version.

3. Cut the 1/8" x 1/4" spar grooves in the top and bottom surfaces of the cores. The Dremel router is the best way I know of to cut the spar and cable grooves. Use an old hacksaw blade to cut the slot along the front and rear of the spar for the dihedral braces. Press the spars in their grooves during this step to help guide the hacksaw blade. Do **not** remove the foam from between the spar grooves. This foam remains to act as the shear web. Glue the spars into the grooves with Titebond and clamp them in the wing beds until they are dry.

4. If you're building the aileron version, now is a good time to epoxy the aileron cables into their respective grooves.

5. Create your wing skins, using 1/32" contest grade balsa. I use masking tape and Hot Stuff for good joints on the skins.

6. Sand the wing skins smooth on both sides using a sanding block. When done, vacuum the skins and the wing cores. Make sure both are as clean and dust free as you can get

them.

7. I use Safe-T-Poxy to attach the wing skins to the cores. I mix about one ounce of Safe-T-Poxy and spread it as evenly as possible over the correct surfaces of both wing skins. I use a squeegee made from a margarine tub lid. After the skins are "wet," scrape all the epoxy back off with the squeegee. This leaves you with "tacky" wing skins and most (about 90%) of the epoxy back in the mixing cup.

8. Put the bottom skin in the appropriate bed, install the core and then put on the top skin. Add a bead of extra epoxy along the rear 1/4" of wing skin where it extends beyond the foam core. Put the top of the bed in place and apply lots of weight (I use four patio blocks). Also, clamp the trailing edge very securely to assure a straight, strong, trailing edge. **Note:** Hobby epoxy II or wing tape can be used with equal success to apply the wing skins. Use your favorite method.

9. Install the leading edge and the 1/4" balsa wing tips. Carve and sand everything to the appropriate shape, except the trailing edge.

10. Cut out the little box behind the spar where the wing hold-down parts will go later.

11. Sand the dihedral angle on the root end of the wing panel. The angle is slightly different between versions, so select the angle appropriate to the version you're building.

12. Build the second wing panel to be a "mirror image" of the first.

13. Cut out the correct dihedral braces from 1/32" ply for the version you're building. Slide the dihedral braces into the slots in the left-hand wing panel (use slow setting epoxy). Wet the protruding ends of the dihedral braces, and the root end of the wing panel with slow setting epoxy. Slide on the right-hand panel. Prop up the wing, using the plan dimensions appropriate to the version you're building. Make sure it stays lined up until the epoxy is cured.

14. If you're building the polyhedral

version, cut off the wing tips at 15" from the center section joint. This cut should be square with the trailing edge. Sand the joint angle on each panel end (approx. 2° per panel). Apply slow setting epoxy and block up the tip until the epoxy sets.

15. If you're building the aileron version, cut out the ailerons as shown. The cut should be 3/32" wide. Face the aileron edges and the opening with 1/32" x 5/16" plywood strips. I use the ply because it's easily cut with scissors, and it makes a very stiff aileron and opening. When this step is completed, you should have a 1/32" gap all around the finished aileron.

16. Pre-assemble parts WH-2 to WH-1 with epoxy. When the epoxy is set, fasten this assembly to the rear dihedral brace, inside the hole in the wing center section. Locate as shown on the plans and fasten with epoxy since this part absorbs all launch loads. Make up a 1/4" x 19/32" x 1-1/16" balsa plug for the hole above the wing hold-down bracket. Punch a 7/16" diameter hole in it as shown. Glue this plug directly on top of WH-1. When the glue has dried, finish the top of the plug to match the upper contour of the wing. You now have a little recess for the head of the #8-32 wing hold-down screw.

17. Install the wing alignment blade at the rear centerline of the wing. I use a piece of a plastic margarine tub lid for this. It holds the wing securely but gives a little if you dig in a wingtip on landing.

18. This completes the wing if you're building the polyhedral version, except for the covering.

19. Cut out and install the aileron horns as shown. I use Radio Shack phenolic circuit board material for horns since it's strong, drills without splintering, and cuts easily on my Dremel jigsaw. Epoxy the horn inside of the 1/32" ply end piece. This gives support all around the horn for a secure joint.

20. Make up the inner wing cables as shown using the .031 music wire,

and the unthreaded portion of the Sullivan fitting. Do only the outer, or aileron horn end, for now.

21. Hook up the cable to the aileron horns and temporarily mount the ailerons with masking tape (always tape the upper surface).

22. Install the rudder/aileron servo and fasten the wing to the fuselage with the #8-32 nylon screw. Put the Du-Bro ball joint posts in the servo wheel as shown. This arrangement gives excellent aileron differential. Lock the ailerons in neutral with tape and make sure the servo is centered. Solder on the front cable fittings so that the Du-Bro ball socket matches the post location on the servo wheel.

The aileron version wing is now completed except for covering.

Make a rudder horn and epoxy it into a slot in the rudder. Make up the rudder cable as shown and adjust it so that the rudder and the rudder/aileron servo are centered at the same time. Fasten in your elevator servo and finish up the front of the elevator cable. Be sure to Hot Stuff the elevator cable into place at the rear and sides of the fuselage.

You can now install your hatch centering tabs so that they clear everything that moves.

Sand the rudder and elevators to their final, streamlined shape. Do the same with the leading edge of the fin.

Give the wing a final going over with a sanding block. Streamline the trailing edge by carefully sanding the top surface in a gentle curve down to the epoxy line where the top and bottom skins meet. Smooth everything up with 220 sandpaper. Vacuum the wing and then go over all the parts with a tack rag. Now we're ready for covering.

Since Chuperosa doesn't rely on the covering for her strength, almost any covering will work. I've used both Black Baron film by Coverite, and Super MonoKote by Top Flight. The Black Baron goes on very easily, especially over the sheeted surfaces, but the MonoKote is much prettier in my opinion. Solarfilm probably would work well also.

Once your Chuperosa is covered, and reassembled, you're almost ready for the fun stuff. Prudence at this point will pay off handsomely later. **Please**, check the following before you go out to fly:

A. Does Chuperosa balance on, or slightly ahead, of the C.G. symbol on the plans?

B. Do all control surfaces move, and in the right directions? (I accidentally flew my 2nd prototype without hooking up the ailerons.)

C. Is the #8-32 nylon wing screw in tight?

D. Fasten on the hatch with two

small tabs of vinyl tape, or wrap a small rubber band around the front of the fuselage.

Now --- let's go fly!

Use neutral transmitter trims during hand launches to prevent looping.

Be ready to tap in some quick, down elevator to level her off before her momentum dissipates. Remember the old pilots axiom, "maintain thy airspeed, lest the ground rise up and smite thee!"

Chuperosa is strong enough to withstand winch launches if the speeds are kept reasonable. She'll fly from a regular hi-start, too. Moderate zoom launches are possible with any of the launch devices.

Using the mini hi-start described earlier, I fly from a 100 ft. x 100 ft. patch of my backyard regularly.

With Chuperosa, any small field is a flying field, so get out there and enjoy!

□