



**AIRTRONICS®**

**BUILDING INSTRUCTIONS**

**SAGITTA XC**

UNLIMITED CLASS B/C SAIL PLANE



## Introduction

Since the mid-1970's, there has been a significant increase of activity and interest in R/C sailplane cross country flying. One of the most important reasons for this increase in interest has been the Great Race held by the S.O.A.R Club in Plainfield, Illinois. This cross country race has been held annually since 1976, and the objective is a simple one: fly around a 76-kilometer course in the shortest time possible from a single launch, or, failing that, log the longest single flight. Skip Miller, pilot for the F.A.S.T. team, was the first to ever complete the course in the 1982 Great Race. The thousand dollar first prize check was collected by the M.O.S.S. Club of Ohio for completing the course in the fastest time.

The challenge that cross country flying presents to the pilot can be found in no other phase of soaring. Instead of being restricted to airspace limited by field boundaries, the flyer can literally fly as far as he can see. The decisions to be made are numerous; how long to work one particular thermal, how high to climb in a thermal before leaving it, how fast to fly between thermals, how far to follow lift off the course and dozens of others. A large part of the allure of cross country flying is the "man against nature" aspect of it. The length of the flight is entirely dependent on how well the pilot uses his skill and knowledge to face the conditions nature throws at him.

Cross country tasks also offer a demanding challenge to the sailplane designer. A cross country sailplane needs to be very efficient with a high L/D, visible at high altitude and/or great distances, stable enough to fly hands off if the pilot becomes temporarily disoriented or loses visual contact, and strong enough to survive high speed runs between thermals and encounters with wind shears during those runs. These requirements have led to a breed of sailplane which is very large, has a broad speed envelope, and utilizes a conventional polyhedral layout with rudder and elevator as the primary controls.

The Sagitta XC (XC is the abbreviation full-scale pilots use for cross country) was conceived expressly for cross country flying as well as competing in the S.O.A.R. Great Race and similar events. The airplane has been quite successful, gaining one second place and one third place in the Great Race and being the first plane ever to complete the course during the competition itself. The size was determined by laying out the wing and stab to the maximum surface area allowed by the F.A.I. A large wing chord and 14½ foot wing span give the XC an aspect ratio of 14.4 to 1 and allow it to operate at a higher Reynolds number than most models, both of which are factors which contribute greatly to the model's efficiency. The Eppler 205 airfoil and careful attention to drag reduction make for a very clean airplane with excellent slow speed and climbing characteristics as well as the ability to cover astonishing amounts of sky in short order. The polyhedral wing gives the XC hands off stability in straight flight and gentle turning characteristics, while the full flying tail surfaces give positive response to control inputs at all speeds.

The structure of the Sagitta XC was carefully engineered to provide the strength necessary for an airplane of this size to survive the rigors of cross country flying. The wing features D-tube construction with full span box spars in the center

spars. The fuselage consists of a birch ply forward section with an airply and balsa tailcone. The resulting airframe is extremely stout and able to withstand considerable stresses without damage, but still offers the advantage of using conventional materials and construction techniques.

At this point the task of writing the construction manual for the XC will be put in the capable hands of Al Doig. I would like to thank Al for his writing and photographic talents. I would also like to extend a special thanks to Skip Miller, Gordon Pearson, and Roger Taylor, each of whom built prototype Sagitta XCs, and gave me invaluable help in arriving at the final design presented here.



## Pre-Construction Notes

The Sagitta XC is not a difficult model to build, it is simply large. However, due to the large number of parts in the airframe, we recommend that you read through this manual at least once and familiarize yourself with the plans before starting assembly of the kit. Understanding the entire construction sequence will help you avoid any problems early in the assembly of the model.

No special techniques or building fixtures are required in the construction of your Sagitta XC, however a good building board is a must. To avoid building in warps, the board must be perfectly straight and flat. It should also be faced with a material which you can push pins into easily.

A few simple tools will be needed. These include a model knife and/or a supply of single edge razor blades, a razor saw, pliers, a small hammer and a hand drill and drills. You will also need hardwood sanding blocks and assorted grades of sandpaper, a small block or razor plane, a supply of straight or tee-pins and masking tape.

The types of adhesives used are a matter of personal choice, but we don't recommend normal model airplane cement. For general construction, we suggest the use of aliphatic resin glue such as Wilhold or Titebond. Slow drying epoxy such as Hobby-poxy II or Sig will be required and 5-minute epoxy will be useful. We built the prototypes with Jet and feel that the time and weight saved is worth the extra cost. There are many other alpha cyanoacrylate adhesives available now, and all seem to work well. Be sure to follow the warnings on the bottle and check that all joints fit tightly.

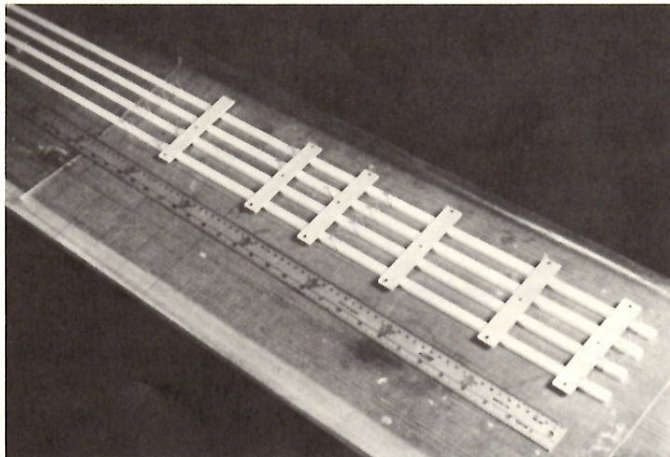
Be sure to cover the plans with Handi-Wrap or similar material before starting construction so that the structure does not become glued to the plans.



## WING CONSTRUCTION

**1. Spars**—The spars are assembled separate from the wing proper. Care should be taken to assure there are no gaps in the

Locate the Wing Stick Bundle containing the  $\frac{1}{8}$ " x  $\frac{3}{8}$ " x 48" spruce spars. Select the four with the straightest grain. Use these as the main spars and set aside. Select another 48" and a 36" x  $\frac{1}{8}$ " x  $\frac{3}{8}$ " spruce piece and cut each in half, for use as the 18" and 24" spar doublers. Taper the ends of these four pieces as shown on the drawing. Glue the doublers to the spars and clamp securely. Make sure the spars are straight by checking with a straight edge. When the glue is set, face off the sides with a sanding block to remove the excess glue.



Laminating the spar doublers in place. Note the use of T-pins to keep the spars aligned.

**2.** Locate the Wing Parts Bag containing the shear webs. Remove the bundle of eight  $\frac{3}{8}$ " x  $\frac{3}{4}$ " x 3" vertical grain balsa spar fillers, four W19 hardwood dihedral wedges, and four W22 polyhedral wedges.

Locate the Hardware Bag containing the brass tubing and take out four  $1\frac{1}{32}$ " O.D. x 3" wing rod tubes.

Note that the root end of the  $\frac{1}{16}$ " x  $1\frac{1}{4}$ " x  $47\frac{5}{8}$ " ply shear web has been trimmed to a lesser angle ( $3^\circ$ ) than the outboard end ( $5^\circ$ ).

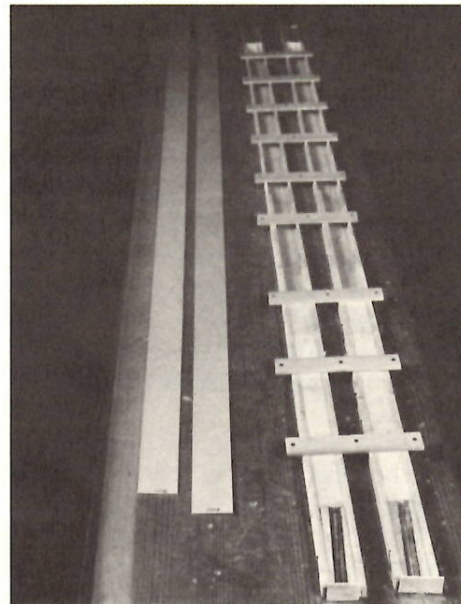
It would be well to mark the root to avoid error in assembly. Also, be sure to assemble the spars on the shear webs with the longer doubler at the top.

Mark the location of the first  $\frac{3}{8}$ " x  $\frac{3}{4}$ " x 3" spar fillers on the two ply shear webs, and pin them to a board. Carefully glue the top and bottom spars and balsa spar fillers in place, clamping until the glue sets. Note that there is no difference between the right hand and left hand spars.

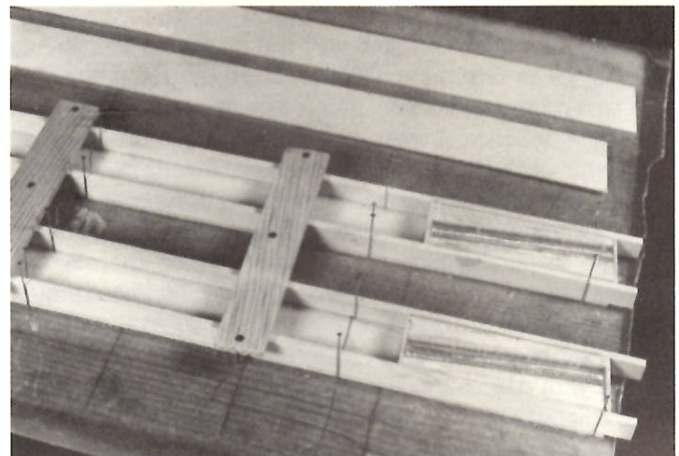
**3.** Roughen the brass tubes with sandpaper, and test fit them into cradels at each end, formed by the W19 and W22 dihedral and polyhedral wedges. Make sure the wedges form the angle in the correct direction at both ends of the spars.

To prevent epoxy from running into the tubing, sharpen one end and, cookie cutter style, cut a piece of  $\frac{1}{16}$ " balsa, leaving the plug in the tubing. Mix a generous amount of epoxy and epoxy the wedge blocks and tubing in place. A dam at the end of the polyhedral brass tubing will not only prevent the epoxy from running away, but will also restrain the rod from going past the tubing end. Make sure that both tubes are tight against the ply web.

**4.** Sand the surface smooth, and glue the remaining ply shear web to the spar assembly, clamp to a smooth surface



Gluing the basic spar assembly. Note how spars are clamped by using scrap lumber and small nails.



Detail of tip joiner tube installation. Note use of pins to keep spars aligned with the edges of the ply web.

**5. Wing assembly**—Thumbtack one center wing drawing to your building board and cover with wax paper.

Trim both edges of a piece of  $\frac{3}{32}$ " x 4" x 48" sheet, taking care that the total width of both cuts does not exceed  $\frac{1}{8}$ ". Then split the sheet to form the  $\frac{1}{8}$ " wide T.E. sheet.

Trim one edge of a  $\frac{3}{32}$ " x 4" x 48" sheet straight, making sure the cut is not more than  $\frac{1}{8}$ ". This will be the lower L.E. sheet

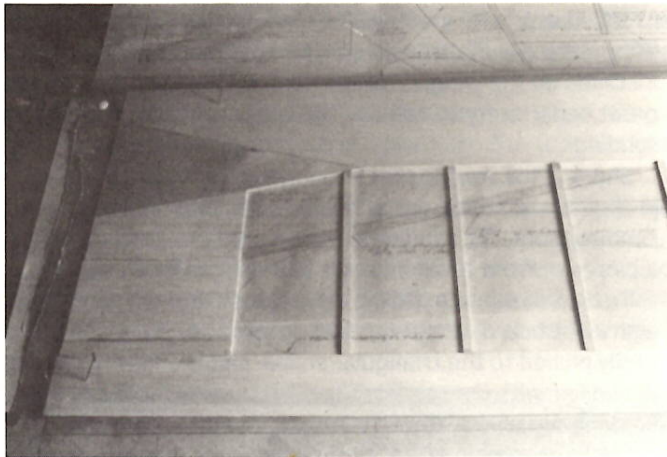
**6.** Trim the inboard end of the L.E. sheet to match the angle of the triangular  $\frac{3}{32}$ " ply gusset. Make the cut accurately, as the leading edge sheeting will be butt glued to the gusset, forming the lower wing surface.

Use a CA adhesive to glue the gusset to the sheeting and pin in place over the drawing.

Bevel the rear of the  $\frac{3}{32}$ " x  $1\frac{1}{8}$ " x 48" trailing edge sheet for a good fit with the top T.E. sheet and pin in place.

Using  $\frac{3}{32}$ " x 3" x 36" balsa, sheet the lower inboard and outboard ends of the panel. Note that the inboard sheeting stops at the first W4 rib. Glue with CA.

Locate three pieces of the  $\frac{3}{32}$ " x  $\frac{1}{4}$ " x 36" balsa cap strip stock in the Balsa Wing Stick Bundle. Cut to length and glue in



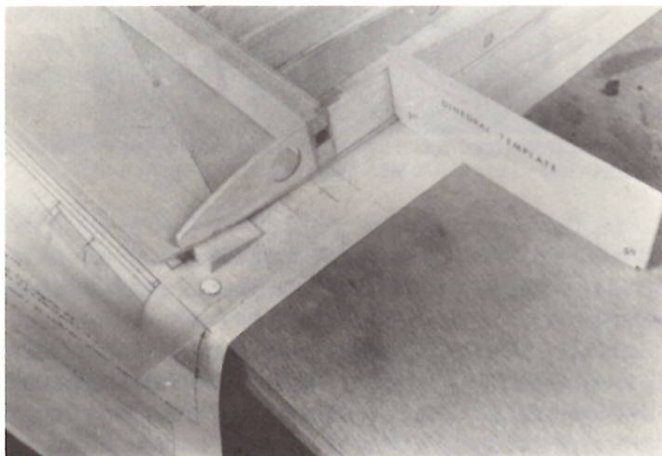
Detail of lower wing skin showing L.E. sheet, T.E. sheet, center sheet, root gusset and cap strips.

**7.** Locate sixteen of the W4A (front) and W4B (rear) ribs in the Wing Rib Bag; also the  $\frac{1}{8}$ " ply W2 and W3A, B and C. Mark these and be sure to get them in the correct place, otherwise the rear wing tube will not fit. W3A has the hole nearest the top of the rib; W3B is in the middle, and W3C has the hole nearest the bottom.

Begin the wing assembly by making a template to set the angle of the end ribs. The inboard rib is at  $3^\circ$ , the outboard at  $5^\circ$ .

**8.** Glue the spar in place to the leading edge sheeting and cap strips, using Titebond. All ribs can be fastened with CA for fast, accurate assembly.

Before the Titebond sets, start installation of the W4B ribs. This will assure that the spar is vertical with a good fit to the ribs. Fasten one outboard W4B, one inboard, and one in the middle, checking that the rear of the spar aligns with the drawing. Install the remaining W3 and W4 ribs making sure the inboard and outboard ribs are set to  $3^\circ$  and  $5^\circ$  respectively. There are fifteen W4 ribs in the center panel. The sixteenth is the first rib in the outer panel.



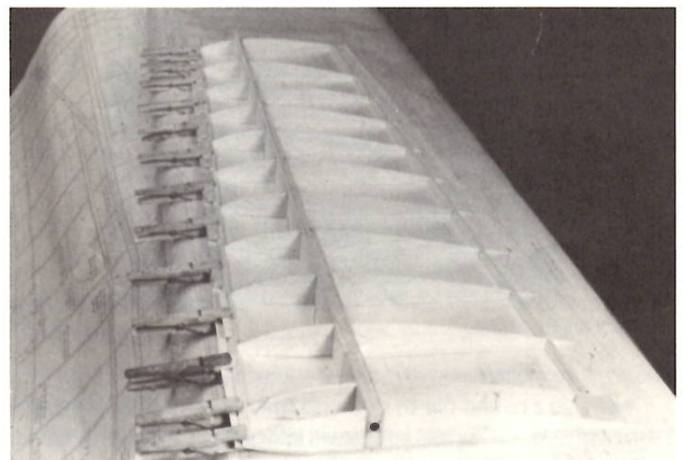
Using dihedral template to set angle on W3A. Note use of trailing edge stock to shim up leading edge.

**9.** As the lower forward surface of the 205 airfoil curves upward, the lower sheeting must be formed to fit the contour.

small side under the lower leading edge sheet until the contour matches the forward ribs. Use one of the W2 ply ribs as a pattern and cut the circular hole for the ballast tubes in five of the W4A balsa ribs.

Mark the rib locations on the sheeting and install the forward ribs using CA. Hold the rib in a good fit position until the adhesive sets. Be sure to get the ribs right side up.

**10.** Locate the paper ballast tubes in the Ballast Tube Bag. Cut two plugs from  $\frac{1}{4}$ " balsa and epoxy them into the ends of the tubes, so the ballast won't slide out. Install one paper tube in the wing, plugged end outboard, and glue in place, using Titebond.



Clamping leading edge in place. T.E. stock shim has been removed in this picture.

**11.** Locate one 48" shaped spruce leading edge in the Spruce Wing Stick Bundle. Use Titebond to glue in place, clamping until glue sets.

Locate one 36" and one 48" x  $\frac{1}{8}$ " x  $\frac{3}{8}$ " spruce in the Spruce Wing Stick Bundle. Cut the 36" length in half for the diagonal sub spar. Set the other half aside for use in the other panel. Lay the spar across the ribs in the proper location, and mark the rib crossings. Cut the notches. Cut the spar at the correct angle for the spar joint and glue in place.

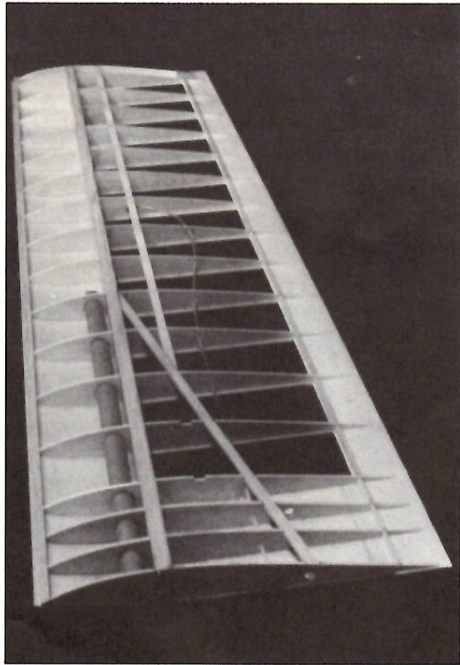
Trim the  $\frac{1}{8}$ " x  $\frac{3}{8}$ " x 48" spoiler spar to the angle of the diagonal spar. Glue in place and trim the outboard end flush with the rib.

**12.** Locate one 3' length of  $\frac{1}{8}$ " plastic spoiler cable tube in the Fuselage Stick Bundle. Drill the  $\frac{1}{8}$ " holes through the ribs for the tubing. Note that the right wing tubing is in a different location than the left. Use one of the plywood root ribs to accurately locate the exit point of the cable. The tubing into the spoiler bay is held in place by a piece of  $\frac{1}{4}$ " sq. balsa, notched to fit the tubing. The  $\frac{1}{4}$ " sq. can be found in the Fuselage Stick Bundle. Epoxy the tubing in place.

**13.** You will find the  $\frac{3}{32}$ " x  $\frac{1}{4}$ " x  $3\frac{7}{16}$ " trailing edge shear webs in the Wing Parts Bag. Install these, flush with the tops of the ribs, using CA, trimming to fit. Do not install one in the last bay outboard.

Trim a piece of a  $\frac{3}{16}$ " x  $1\frac{1}{4}$ " trailing edge balsa stock to fit the outboard trailing edge bay. Glue in place, flush with the tops of the ribs.

Locate the  $\frac{1}{4}$ " balsa leading edge gusset in the Wing Parts



Basic center panel completed. Rear joiner tube has to be installed before top sheeting can be installed.

*Reinforce spar  
below behind relies for horn (spoiler)*

**14.** Use a round file to clean up the holes in W3A, B and C so the  $1\frac{1}{32}$ " O.D. x 3" brass tubes will slide in. Roughen the surface of the tubes with sandpaper. Either crimp the outboard end of the tube, or epoxy a piece of scrap plywood over the outboard side of W3C to prevent the wing rod from sliding through. Spot epoxy the tubes in place, then test fit the wings together on the joiners. When satisfied there is not any binding, epoxy the tubes in place.

**15.** Smooth any small protrusions from the wing top surface in preparation for sheeting.

Glue the  $\frac{3}{32}$ " x  $1\frac{1}{8}$ " x 48" top trailing edge sheeting in place and pin securely to the building board.

Trim the aft edge sheet with a straight-edge. We recommend contact cement to install the leading edge sheet as it eliminates tedious pinning and drying time. Use a small brush to apply cement to the spar, leading edge and rib surfaces, then coat the inside of the sheet where it contacts these points. Let contact dry and press 2 or 3 pins vertically into the spar to act as alignment guides. Align sheet against pins and drop onto spar, supporting the sheet so that it does not contact the ribs or leading edge. Rub down firmly against the spar then lower the sheet slightly and rub with your palm so that the sheet contacts the ribs. Work forward from the center toward each end finally rubbing down the leading edge joint. The panel can be removed from the board as soon as the sheet has been completely rubbed down. If you prefer to glue the sheet in position be sure that the joints are completely dry before unpinning the panel.

**16.** Install the center section sheeting and the top sheeting over the last two W4B ribs.

Use  $\frac{3}{32}$ " x  $\frac{1}{4}$ " stock for the fillers at the fore and aft of the spoiler bay. Add the cap strips.

The spoiler blades will be fitted after completion of the wing

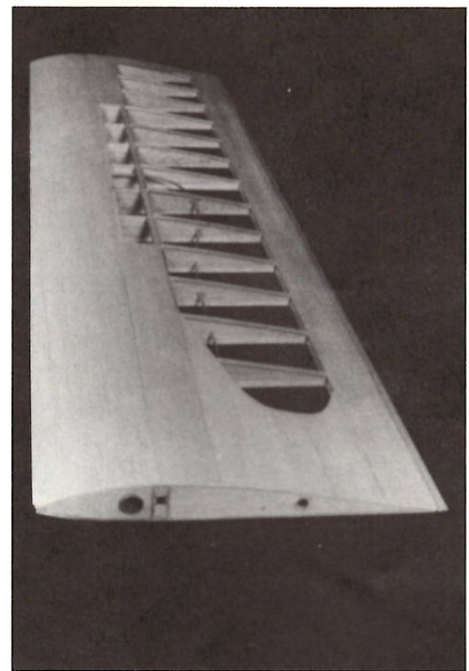
**17.** The  $\frac{1}{8}$ " x  $\frac{3}{8}$ " x 48" spruce trailing edge (from the Spruce Wing Stick Bundle) should be shaped and sanded before it is installed on the wing. It can be done on the wing, but there is great opportunity to damage the wing during the shaping and sanding.

Shaping the trailing edges is surprisingly easy if you use the proper tools; which are a razor sharp block plane and a 2' sanding block. The sanding block is made by contact cementing a piece cut from a sanding belt to a flat piece of wood.

To hold the spruce trailing edge, fasten it to the very edge of a straight board with about five spots of CA. The piece is then easily planed to the triangular shape, and brought to the final dimension with the sanding block. All four trailing edges should be done while you are in the mood.

Sand the wing trailing edge straight and square using the long sanding block. If the wing is held at the edge of a thick board, or workbench, the edge will keep the sanding block vertical while sanding, giving a good square edge.

Use CA to apply the trailing edge. This completes the wing center section for now.



Center panel completed. Spoiler bay outlining has been completed but ribs have not yet been relieved to clear the spoiler blade.

**18.** Get two pieces of  $\frac{3}{32}$ " x 3" x 36" and two pieces of  $\frac{3}{32}$ " x 4" x 36" sheet balsa from the Wing Tip Sheet Bag. Trim all four trailing edges from the 3" sheets as shown on the drawing trim instructions.

Pin one  $\frac{3}{32}$ " x 4" x 36" lower leading edge sheet over the wax paper covered drawing. Bevel the top of one trailing edge sheet as shown and pin in place. Use the  $\frac{3}{32}$ " x 3" balsa sheet from the center section construction to make the inboard sheeting. CA in place, along with the  $\frac{3}{32}$ " x  $\frac{1}{4}$ " balsa lower cap strips (from the Balsa Wing Stick Bundle).

**19.** Glue the lower spar in place on the sheeting and cap strips.

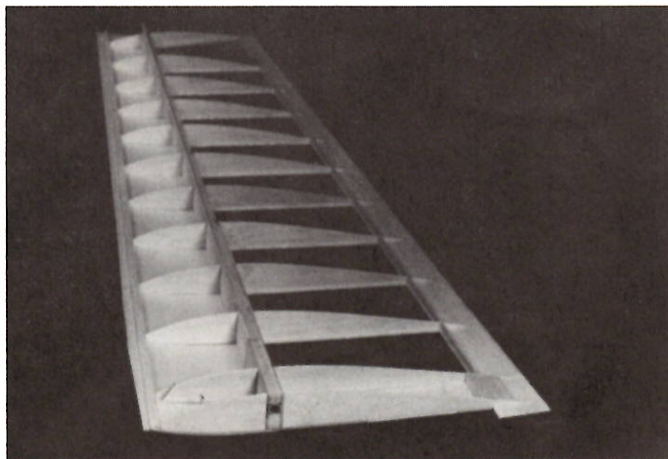
Install ribs W7 thru W16. Apply glue to the rib notches and

they will give the proper angle. Glue a dam of scrap balsa at the ends of the wedges to prevent epoxy from running out of the cavity.

Epoxy the brass tube and rear W20 web in place. Use a generous amount of epoxy and make sure the tube is tight against the forward web.

Install W4A and W4B at the inboard end of the tip. Split W6 and install forward and aft sections.

**21.** Use the trailing edge stock to shim the lower leading edge sheeting to fit the ribs, and CA them to the sheeting. Glue the 36" piece of shaped leading edge in place, clamping securely.



Basic tip panel completed. Shear webs and T.E. web are trimmed flush with tops of ribs after assembly.

**22.** The Wing Parts Bag contains the  $\frac{3}{32}$ " x  $\frac{1}{4}$ " x  $3\frac{1}{8}$ " balsa aft shear webs, two  $\frac{3}{32}$ " x  $\frac{1}{4}$ " x 5" aft tip shear webs, and  $\frac{1}{16}$ " x  $1\frac{1}{4}$ " x  $3\frac{1}{8}$ " vertical grain shear webs. Glue these in place. When dry, trim flush with the spar and rib tops.

Glue the  $\frac{1}{4}$ " sheet gusset and  $\frac{5}{16}$ " x  $1\frac{1}{4}$ " T.E. stock filler in place.

**23.** Glue the top leading edge sheeting in place.

Glue the trailing edge sheeting in place, as well as the inboard sheeting, and cap strips.

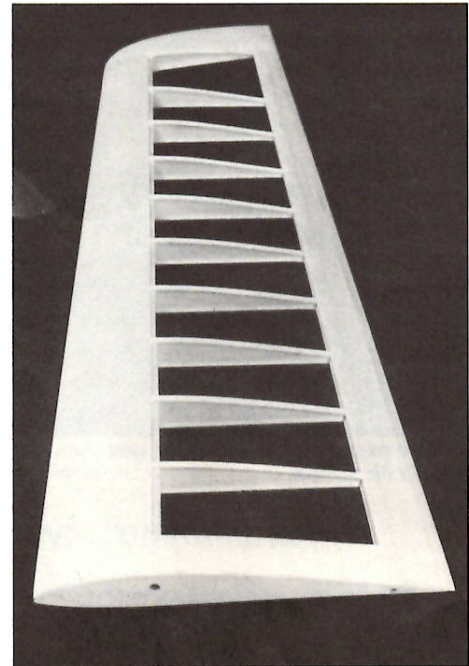
**24.** Sand the trailing edge straight and square. Roughly shape the wing tip block. Sand the end of the wing flush with W16 and glue the tip in place, making sure the trailing edge is flush with the wing trailing edge.

Build the other outer panel to this point.

(See photo top right.)

**25.** Sand the ends of both inner and outer wing panels at the polyhedral joint. Insert the joiner rod and test the fit of the joint. Sand the ribs a bit if necessary to achieve a good fit. With the long sanding block, square up the trailing edge of the outer panel and sand until it exactly matches the trailing edge of the inner panel. CA the spruce trailing edge, which you previously shaped, in place. Locate the four W5 ply ribs in the Wing Rib Bag (they have only two holes).

Stand the inner wing panel against the workbench, outboard end up. Put a film of oil on the wing rod and insert in the tubing. We will now epoxy W5 to the inner wing panel. Mix some 5-minute epoxy and put a light coating on the end rib. Slide the



Finished tip panel ready for covering.

the ply cap ribs with the outer panel in place assures a gapless joint.

Use the same method to epoxy the W5 ply rib to the inboard end of the outer panel. Make sure both W5 ribs are exactly aligned and that the trailing edges are aligned.

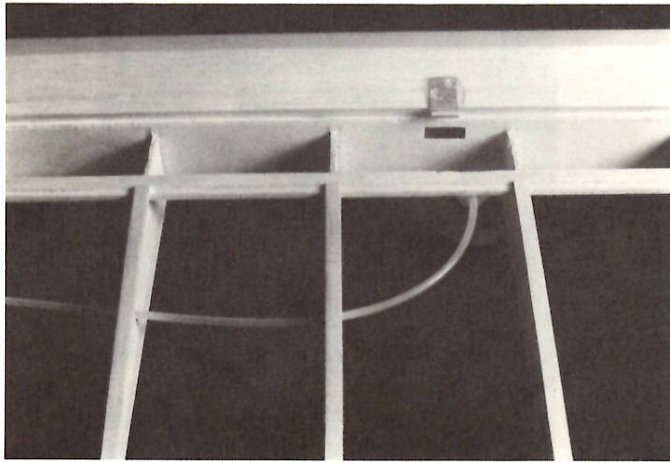
**26.** From the Hardware Bag, remove two  $\frac{5}{32}$ " O.D. x  $2\frac{1}{4}$ " brass tubes and from the wire joiner bag, take a  $\frac{1}{8}$ " x 2" piece of music wire. Cut the brass tubing into four 1" pieces. Roughen the outside with sandpaper. Insert the wing rod into the center panel. We will now drill the hole for the rear polyhedral joint joiner tubing. A  $\frac{5}{32}$ " hole must be drilled at the same angle as the main joiner rod, using the hole in W5 as pilot. Drill all four holes in the inner and outer panels as best you can, there will be opportunity to achieve perfect alignment.

Insert the tubing in the holes and join the panels with the joiner rods. If there is any binding, the holes can be aligned with the drill. When the fit is satisfactory and the W5 ribs are matched, epoxy the tubes into the holes. Coat the pins with oil, assemble the wings, and let the epoxy harden in an assembled condition. Before the epoxy is completely set, loosen the joint to free any bond.

**27.** Cut the  $\frac{5}{16}$ " x  $1\frac{1}{4}$ " x 36" trailing edge stock to fit the spoiler bay. Carefully trim the ribs so the spoiler blade rests on the ribs, and protrudes very slightly above the top sheet. Trim four  $\frac{1}{8}$ " sq. pieces of balsa to support the ends of the blades and CA to the ribs at the ends of the bays. Epoxy the spoiler horns (from the Hardware Bag) to the blade, as shown. Carefully cut about a  $\frac{5}{16}$ " x  $\frac{5}{8}$ " hole in the aft ply shear web to clear the spoiler horn.

(See photo top left, page 6.)

**28.** Sand the wing panels smooth, paying particular attention to the leading edge shape. Use the long sanding block to sand to the shape shown on the drawing.



Hole in ply web to clear spoiler horn. Note  $\frac{1}{4}$ " x  $\frac{1}{4}$ " balsa block used to hold end of spoiler tubing to spoiler sub-spar.



## STABILATOR CONSTRUCTION

**1.** Locate the four shaped  $\frac{1}{8}$ " balsa leading edge sheeting in the Fuselage Side Bundle. From the Fuselage Stick Bundle (the one with the pushrods) remove: one  $\frac{1}{4}$ " x  $\frac{1}{4}$ " x 36" balsa; two  $\frac{1}{8}$ " x  $\frac{3}{8}$ " x 36" spruce; two  $\frac{1}{8}$ " x  $\frac{3}{8}$ " x 36" balsa; one  $\frac{1}{8}$ " x  $\frac{1}{8}$ " x 36" balsa; one  $\frac{1}{8}$ " x  $\frac{1}{8}$ " x 18" balsa; one  $\frac{1}{8}$ " x  $\frac{1}{2}$ " x 36" spruce; one  $\frac{1}{8}$ " x  $\frac{1}{4}$ " x 12" balsa. From the Fuselage Ply Parts Bag remove: two shaped  $\frac{3}{8}$ " x  $\frac{1}{2}$ " x  $1\frac{1}{4}$ " hardwood tube carriers; two  $\frac{1}{8}$ " x  $\frac{3}{8}$ " shaped spruce wedges; two ply root ribs. From the Hardware Bag remove: one  $\frac{5}{32}$ " x  $2\frac{1}{4}$ " and one  $\frac{5}{32}$ " x 3" brass tubing; two wheel collars, with short allen head screws. From the Wing Parts Bag remove the  $\frac{1}{8}$ " x  $\frac{7}{8}$ " x 6" gusset material. From the Hardware Bag remove one  $\frac{1}{8}$ " x  $2\frac{3}{4}$ " and one  $\frac{1}{8}$ " x  $3\frac{1}{2}$ " music wire.

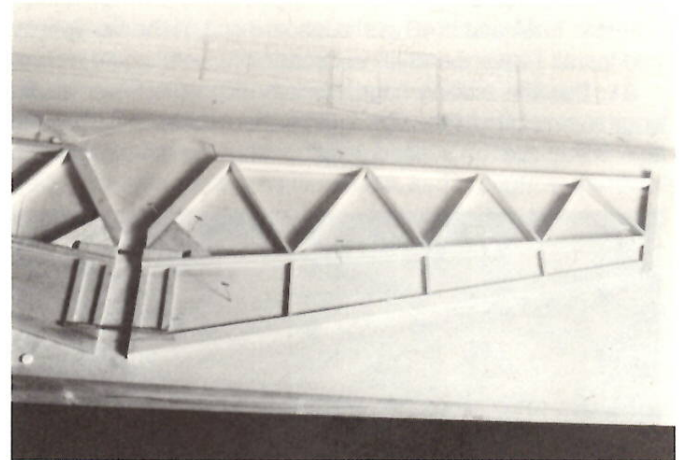
**2.** The  $\frac{1}{8}$ " x  $\frac{3}{8}$ " spruce trailing edge is more easily shaped before assembly in the same manner as the wing trailing edge. However, this one is tapered symmetrically. Mark a center line on one edge. CA the strip to the edge of a board. Plane and sand to the center line. Remove, turn over, fasten down, and repeat the planing and sanding.

**3.** Pin one shaped leading edge sheet over the wax paper covered drawing. Cut two  $\frac{1}{8}$ " x  $\frac{3}{8}$ " balsa filler strips and fit them at each tip, from the leading edge sheet to the trailing edge—glue in place. Trim the spar to length; glue and pin in place.

Trim a piece of  $\frac{1}{8}$ " x  $\frac{3}{8}$ " spruce from the 36" length and glue it to the entire length of the tip over the leading edge sheeting and the balsa filler piece. Trim a piece of  $\frac{1}{8}$ " x  $\frac{1}{2}$ " spruce to length as the leading edge and glue in place. Trim and glue the  $\frac{1}{8}$ " x  $\frac{1}{8}$ " ribs.

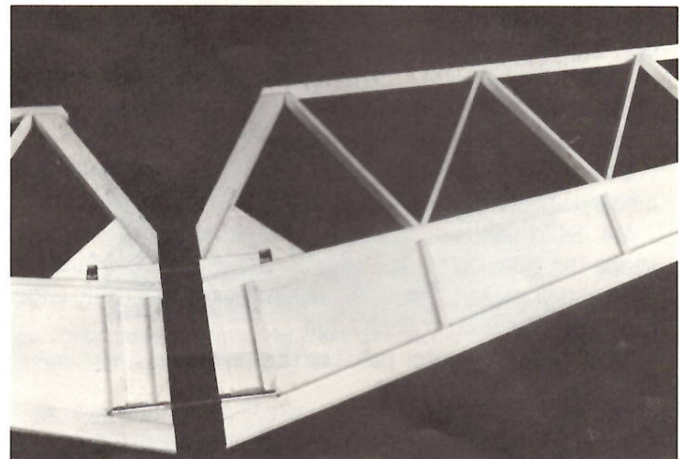
**4.** Cut the  $2\frac{1}{4}$ " and 3" pieces of brass tubing exactly in half. Use sandpaper to roughen the surface. A hole must be cut in the ends of the  $1\frac{1}{2}$ " pieces, so the wheel collar screw can grip the joiner to secure the stab. A convenient way to put a hole in the tubing is to file a notch at the appropriate place with a needle file. Slip the wheel collar in position and test the clamping action on the joiner. Leave the collar in place on the tubing. Mix some 5-minute epoxy and epoxy the tube into the spruce

Glue the two  $\frac{1}{8}$ " x  $\frac{1}{4}$ " balsa spacers in place. Temporarily place the  $\frac{1}{8}$ " x  $\frac{3}{8}$ " hardwood wedge and forward brass tubing in place. Insert both stab joiners and check the spacing with the holes in ply root ribs. Also, check that the wires are parallel. When satisfied, epoxy the wedge and brass tube in place.



Construction of stab. Note how second panel is built with joiners in place to assure proper alignment between the stabs.

**5.** Fit the  $\frac{3}{8}$ " balsa gusset in place and trim the  $\frac{3}{8}$ " x  $\frac{1}{2}$ " balsa stab root pieces to size. Epoxy both in position. Cut the  $\frac{1}{4}$ " x  $\frac{1}{4}$ " balsa trailing edge to length. Shim up above the board with a couple of scraps of  $\frac{1}{16}$ " material, pin and glue in place. Trim and glue the  $\frac{1}{8}$ " x  $\frac{3}{8}$ " balsa ribs. When dry, remove from the building board and CA the  $\frac{1}{8}$ " x  $\frac{3}{8}$ " spruce trailing edge which you previously shaped.



Detail of stab center showing wheel collar and brass tube installation. Spruce T.E. caps have not been added yet.

**6.** Carve out the area of the top leading edge sheet to clear the forward brass tube and glue it in place.

**7.** Build the other stabilator half. When epoxying the brass tubes in place, do so with the two stab halves together, and the wires in place. This will assure a perfect match.

**8.** Sand the stabilator halves to the airfoil shape shown on the drawing. This completes the stabilator with exception of



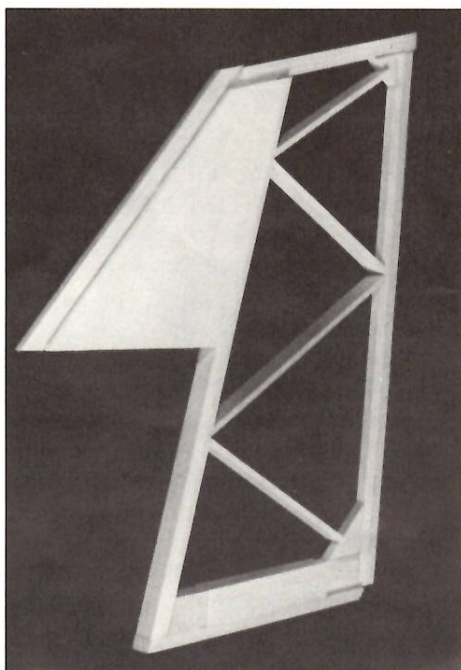
## RUDDER CONSTRUCTION

**1.** From the Fuselage Stick Bundle remove: one  $\frac{3}{16}$ " x  $\frac{3}{8}$ " x 36" spruce; one  $\frac{1}{8}$ " x  $\frac{1}{2}$ " x 36" balsa; one  $\frac{1}{4}$ " x  $\frac{1}{4}$ " x 36" balsa; one  $\frac{1}{8}$ " x  $\frac{1}{2}$ " x 12" spruce; one  $\frac{1}{4}$ " x  $\frac{1}{2}$ " x 18" balsa; one  $\frac{1}{4}$ " x  $\frac{3}{4}$ " x 11" balsa; one  $\frac{1}{8}$ " x  $\frac{3}{4}$ " x 8" balsa.

From the Fuselage Ply Parts Bag, remove two  $\frac{1}{8}$ " ply rudder horn mounts.

From the Fuselage Balsa Parts Bag, remove the  $\frac{1}{2}$ " balsa shaped rudder filler.

**2.** Cut the  $\frac{3}{16}$ " x  $\frac{3}{8}$ " spruce leading edge to length and glue to the exact center of the shaped balsa rudder filler. Pin in place over wax paper covered drawing.



Basic rudder assembly. Filler strips should be added to either side of the spruce L.E. before final shaping.

Trim the  $\frac{1}{4}$ " x  $\frac{1}{2}$ " balsa, and  $\frac{1}{8}$ " x  $\frac{1}{2}$ " spruce spars to length. Glue these together and then to the balsa filler—pin in place.

Trim the top  $\frac{3}{16}$ " x  $\frac{3}{8}$ " spruce rudder tip to length. Shim up from the building board with scrap  $\frac{3}{32}$ " balsa. Glue and pin in place.

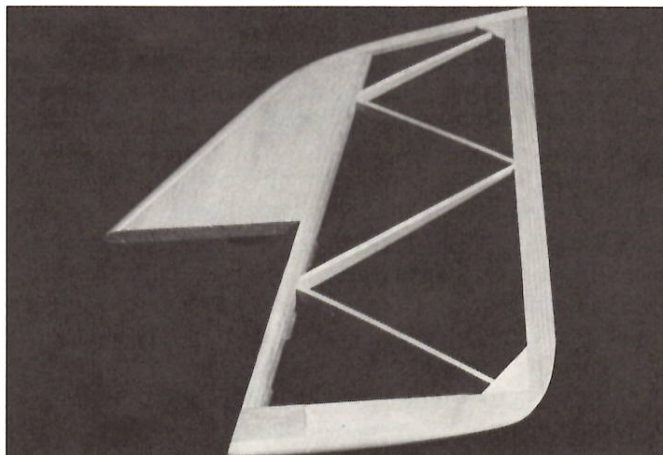
Trim the bottom  $\frac{1}{4}$ " x  $\frac{3}{4}$ " x 9" rudder base to size. Shim with scrap  $\frac{1}{8}$ " balsa, glue and pin in position.

Cut the trailing edge  $\frac{1}{4}$ " x  $\frac{1}{4}$ " balsa to length. Shim with  $\frac{1}{8}$ " scrap balsa. Glue and pin in position.

Use the remaining piece of the  $\frac{1}{4}$ " x  $\frac{3}{4}$ " x 9" balsa to make the gussets. Glue in place.

Trim and install the  $\frac{1}{8}$ " x  $\frac{1}{2}$ " ribs. Notch the rudder post and install the  $\frac{1}{8}$ " ply horn mount. Trim and install the  $\frac{1}{8}$ " x  $\frac{3}{4}$ " balsa filler and the  $\frac{1}{4}$ " x  $\frac{1}{2}$ " balsa lower cap.

**3.** Carve and shape the  $\frac{3}{16}$ " x  $\frac{3}{8}$ " spruce trailing edge to



Finished rudder ready for covering. Note plywood horn mounting plate, aileron bearing hinges and filler strips on L.E.



## FUSELAGE CONSTRUCTION

**1.** Lay the drawing on a long building board and over side views with wax paper.

From the Fuselage Side Bundle, take two birch ply forward sides and two poplar ply aft sides.

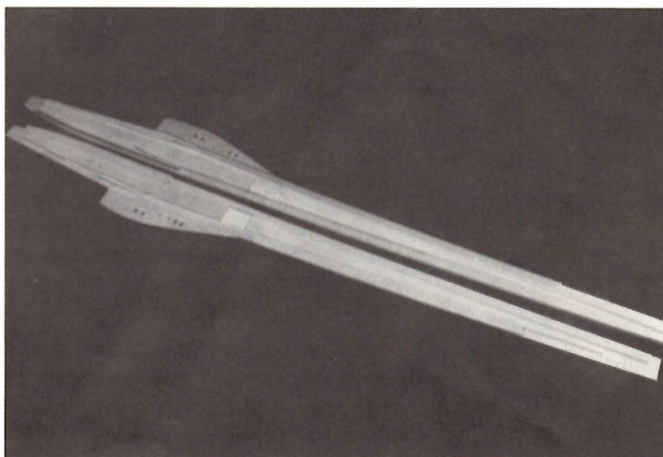
In the Ply Parts Bag, locate two  $\frac{1}{8}$ " x 1" x 2" air ply reinforcements. From the Fuselage Stick Bundle, take five  $\frac{1}{8}$ " x  $\frac{3}{8}$ " x 36" spruce pieces, and one  $\frac{3}{8}$ " x 36" triangular balsa.

**BE SURE TO MAKE A RIGHT HAND AND LEFT HAND SIDE!**

Tack down the forward sides over the plan. Mix some 5-minute epoxy, coat the butt joint between the fore and aft sides, slide the aft side in place, and tack down. Accurately locate the  $\frac{1}{8}$ " ply reinforcement and epoxy in place. If this is not located correctly, the pushrod cables will not fit properly.

**2.** Cut one  $\frac{1}{8}$ " x  $\frac{3}{8}$ " x 36" spruce piece in two and trim the 36" pieces to the correct length and angles for top and bottom longerons. The 18" lengths are for the top forward longerons, and must be trimmed as shown. Glue and tack in place.

Cut the 36" triangle stock in half and glue and pin in the position shown.



Fuselage side assemblies showing spruce longerons, airily splice plates, balsa triangle stock and pushrod installation.

**3.** Remove from the board and cut an exit slot for the rudder

loons will add body to the epoxy. Be sure the pushrods are glued their entire length! Install the antenna tube on the right hand fuselage side.

Carefully measure and mark the location of the bulkheads on the fuselage sides, using the tic marks on the drawing.

**4.** The next step is critical to the fit of the wings to the fuselage and the wings into the tubes. As there are two wing rods in the Sagitta XC, the rods must be fitted to the fuselage with the wings in place, as an error of only a few thousandths would mean that the rods would not mate with the fuselage.

Locate two  $\frac{5}{32}$ " x  $2\frac{1}{2}$ " brass tubes in the Hardware Bag. Roughen the outside with sandpaper. Locate bulkheads F1 through F7 in the Fuselage Ply Parts Bag.

Test fit F5 and F6 to the fuselage sides. Note that the servo plug access slot in the bottom of F5 goes on the right hand side. Sand any interferences.

Slide the brass tubes through the fuselage sides and place the sides with the flat bottom resting on a flat surface. Put F5 and F6 in place, against the brass tubes. Mark the tubes and cut them to length so they barely extend beyond the sides.

Locate the  $\frac{5}{16}$ " wing rods in the Wing Joiner Bag. Put the rods through the tubing and mount both wings on the rods, sliding them tight against the fuselage. If the wings will not slide on both rods, determine whether the rear tubing should go forward, or aft. Any misfit will be very small. With a round file, enlarge the rear hole only, either forward or aft—do not enlarge it upward or downward.

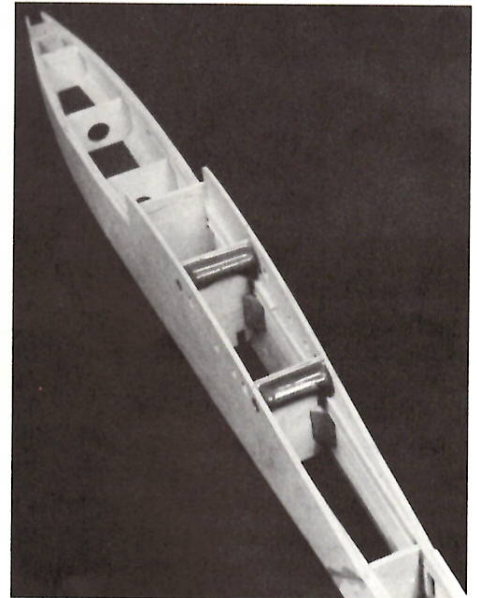
When both wing rods slide easily into the wings, and the wing root is flush with the fuselage sides, mix some 5-minute epoxy; remove F5 and F6 without disturbing the fuselage/wing position. Apply epoxy to the fuselage, bulkhead and tubing, and slip the bulkheads into position. Hold the bulkheads tight to the tubing, the fuselage tight to the bulkheads, and the wings tight to the fuselage. Use all three of your hands for this operation. There may be a  $\frac{1}{32}$ " or  $\frac{1}{16}$ " gap between the wing trailing edge and the fuselage. If so, hold the fuselage so this small gap is

equal on both sides. When the epoxy is cured (10 min or so), add the triangular bracing to the rear of F5 and F6. Mix some 5-minute epoxy and microballoons and put a liberal fillet around both brass tubes, attaching them firmly to F5, F6, and the fuselage sides.

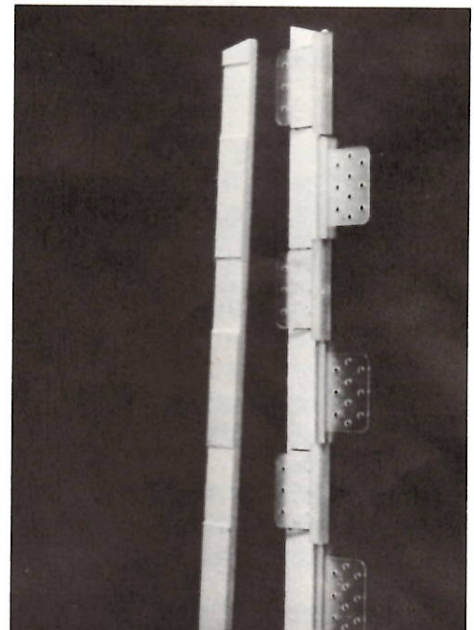
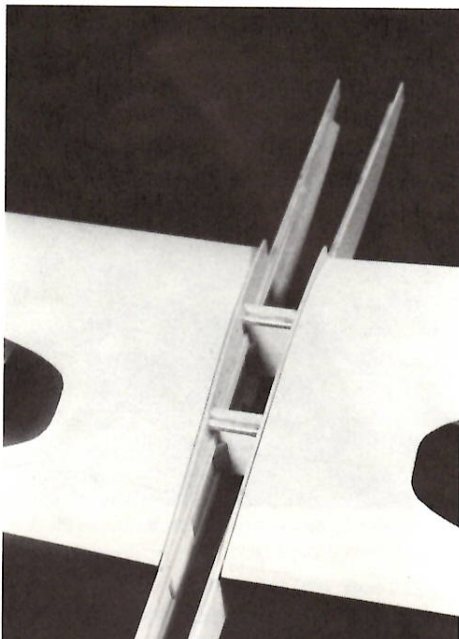
**5.** Epoxy F7 in place. Locate the noseblock in the Fuselage Ply Parts Bag. Epoxy the noseblock and F1 in place, clamping the fuselage sides securely to the noseblock.

Now, epoxy F2, F3, and F4 in place. Add the triangular gussets to F1, F3, and F4 and the bottoms of F5 and F6.

**6.** Locate three  $\frac{1}{8}$ " shaped balsa fin sides in the Fuselage Balsa Parts Bag. Pin one sheet over the drawing. Trim one sheet to complete the front of the fin sheeting, glue together. Trim and glue the other sheet.



Basic fuselage structure. Formers F1 through F7 and noseblock have been installed. Note generous use of epoxy and microballoons around joiner tubes.



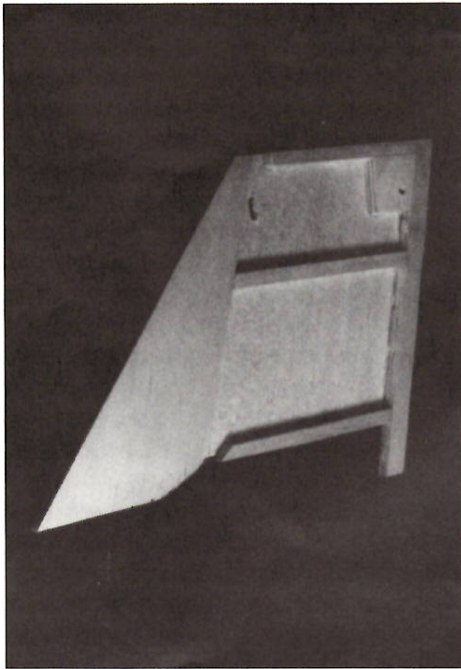
**7.** Trim two fin posts from  $\frac{1}{8}$ " x  $\frac{3}{8}$ " spruce. Locate six rudder hinges in the Hardware Bag, and one .093" x 6" hinge pin from the Wing Joiner Bag. The fin posts are to be notched to receive the hinge tabs.

String the hinges on the pin. Alternate tab directions. Lay the bottom hinge on one of the hinge posts, with the end of the hinge flush with the bottom. Now, mark the alternate tab locations on the post. Transfer these locations on the other post. Use a file to notch the posts to receive the hinge tabs. Each post is notched to half the tab thickness. Keep the hinges on the pin and epoxy the tabs into the slots and the two post halves together.

**8.** Clean up the epoxy; trim the protruding tab from the top hinge enough to clear the stab bearing block, and the lower one to clear the longeron. Glue the hinge post to the fin sheet along with the  $\frac{1}{4}$ " balsa filler block and the  $\frac{1}{4}$ " square balsa ribs. Note that the bottom  $\frac{1}{4}$ " sq. rib protrudes  $\frac{1}{8}$ " below the sheet. The  $\frac{1}{4}$ " ply bearing block can be found in the Fuselage Ply Parts Bag.

Epoxy the bearing block in place and drill the  $\frac{5}{32}$ " hole through the fin sheet.

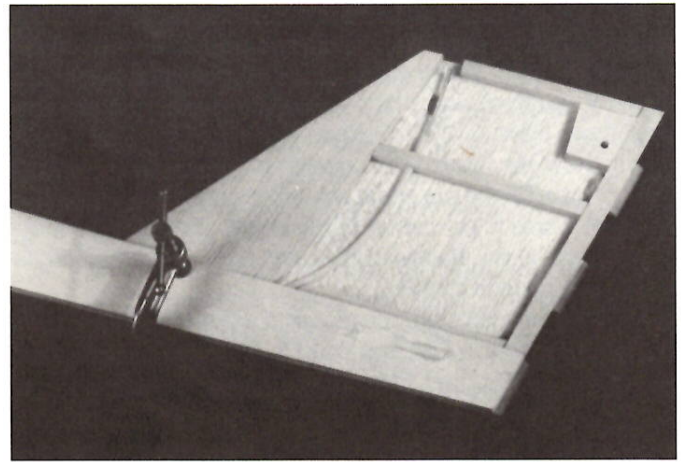
Measure and mark the forward stabilator pin slot; drill and file to shape. Using this sheet as pattern, mark the location on the other fin sheet; drill and file the slot.



Basic fin assembly. Bottom of fin L.E. blank has been radiused for stabilator pushrod.

**9.** Hold the fin in position on the fuselage and bend the stab pushrod into position and mark the top  $\frac{1}{4}$ " sq. rib. Drill a  $\frac{1}{8}$ " hole to accept the tubing and radius the  $\frac{1}{4}$ " filler sheet to clear the tubing.

Test the fin for fit to the fuselage. When satisfactory, slide the tubing through the hole and epoxy the fin to the right side of the fuselage. Glue the tubing against the fin sheet. When set, clamp the left hand side temporarily in position. Mark



Gluing fin into fuselage. Stabilator pushrod is glued to fin side sheeting.

**10.** Tin the end of the stabilator cable and solder the stab drive fitting (from the Hardware Bag). Glue the other fin sheet in place and drill the  $\frac{5}{32}$ " hole through.

In the Hardware Bag you will find a piece of  $\frac{5}{32}$ " O.D. brass tubing  $\frac{1}{2}$ " long. Roughen with sandpaper and epoxy into the stab hinge hole in the fin. Place the stabilator halves in position with the wires in place. Sand the stab roots until they fit well to the fin. Epoxy the ply root ribs in place and assemble the stab on the fin. Hold in position until the epoxy sets, then remove them.

**11.** Mark the three hinge positions on the rudder and cut slots for the hinge tabs. Insert the hinge tabs and check the fit to the fin hinges by inserting the hinge rod. Now, epoxy the hinges to the rudder, and again assemble the rudder to the fin with the pin in place, for good alignment. Remove the pin and rudder just as soon as the epoxy set will permit in case some epoxy has gotten to the hinges.

**12.** Locate the  $\frac{1}{8}$ " birch plywood forward floor, and the balsa rear floor in the Fuselage Side Bundle. Epoxy the forward floor to the fuselage bottom, holding tightly in place with masking tape. Glue the rear balsa floor to the fuselage, securing with pins, or tape.

**13.** The  $\frac{3}{8}$ " balsa rear top block is in the Fuselage Side Bundle, which by now is no bundle. Notch the forward end to fit between the sides, and trim to length. Put the wing center panels on the fuselage, and the stabilator on the fin. Check the alignment of the stabilator with the wing by sighting from the rear. If it is not perfectly true, the fuselage must be twisted and held in place while the epoxy sets. Now epoxy the top block to the fuselage.

Trim the  $\frac{1}{4}$ " balsa filler blocks and glue in place at the forward end of the top block.

**14.** Join the hatch blocks with the  $\frac{1}{8}$ " x  $\frac{1}{2}$ " x 2" ply piece from the Ply Parts Bag. Note that the distance from the bottom of the front block to the bottom of the rear block is  $\frac{3}{4}$ ", to clear F4. Fill the top of the slot with scrap  $\frac{1}{8}$ " balsa. Round the rear bottom edge to match the fuselage. Check the dorsal fin for fit and glue in place.

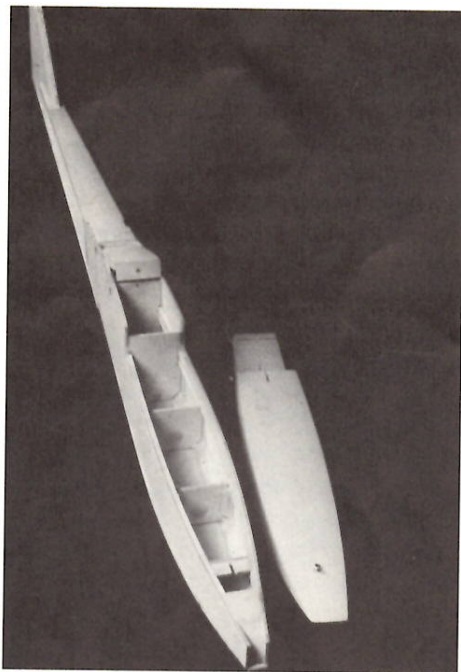
Find the rear hatch cover and two F5A hatch formers in the Fuselage Ply Parts Bag. Make the rear hatch frame from  $\frac{1}{8}$ " x  $\frac{1}{2}$ " spruce. Shape the side rails to match the fuselage contour. The

**15.** Locate the  $\frac{1}{8}$ " x  $\frac{1}{2}$ " x  $\frac{1}{4}$ " ply forward hatch hold-down plate, and the small  $\frac{1}{4}$ " dowel, in the Fuselage Ply Parts Bag. Cut the plate to shape and epoxy in place. Slide the forward hatch in position and mark through the  $\frac{1}{4}$ " hole onto the hold-down plate. Drill a  $\frac{1}{8}$ " hole at the mark and file a  $\frac{1}{8}$ " wide slot in the plate. Glue the  $\frac{1}{4}$ " dowel in the hatch hole, flush with the bottom. Fill the top of the hole with scrap balsa and glue in. Drill a  $\frac{7}{64}$ " hole in the center of the dowel. Find the  $\frac{3}{8}$ " Phillips head screw in the Hardware Bag and screw it in the hole far enough to engage the slot.

**16.** Place the rear hatch in proper position and drill a  $\frac{1}{8}$ " hole through the hole in F5A and into F5. The Ply Parts Bag has a short piece of  $\frac{1}{8}$ " dowel. Insert the dowel into the hole and slide the forward hatch into position marking the location of the dowel. Drill a  $\frac{1}{8}$ " hole in the face of the forward hatch and glue the dowel into this hole. Slide the other F5A over the dowel and glue it to the face of the forward hatch as shown on the drawing.

**17.** Check the fit of the ply root ribs W1. Make sure the spoiler cable tube is centered on the hole in the rib. If not, enlarge as necessary.

Install the wings on the fuselage. Check the fit of the wing root to the fuselage sides. Carefully sand the wing root until there is no gap. Epoxy the ply root ribs to the wing root, one at a time and join the wing and fuselage with the wing rods, holding the wing tight against the fuselage. This will give a perfect fit.

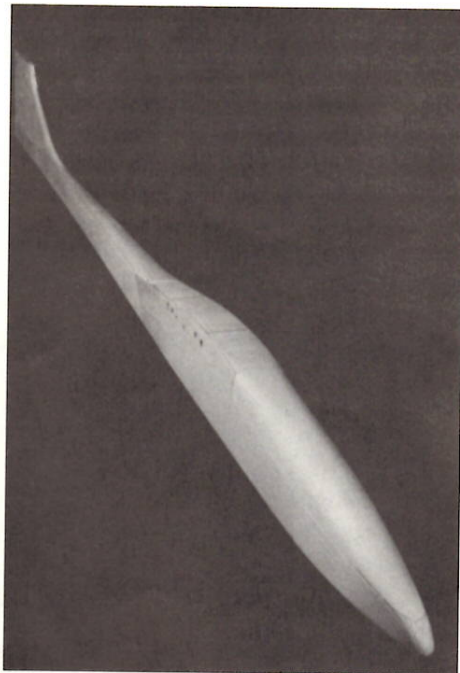


Fuselage ready for rough carving. Remove as much material as possible by carving before going to sandpaper.

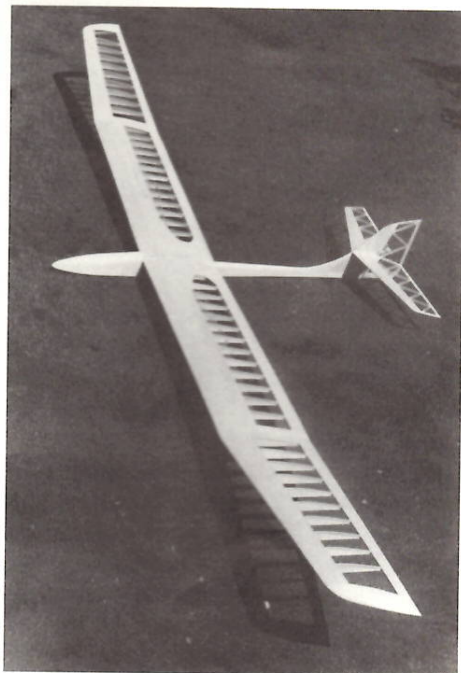
**18.** The fuselage is now ready for final shaping and sanding. Use a razor plane and a sharp knife to do as much of the rough carving as possible. Make the fuselage contours as smooth as possible, with the forward hatch flowing into the wing and the top block flowing from the wing and into the dorsal fin. Add the filler blocks to the leading edge of the rudder, on each side of the spruce leading edge to form a more smooth transition to the fin. Use 80 grit sandpaper for final shaping. changing to

ally if a Thermic Sniffer is contemplated.

Final finishing of the wings is done with the outer panels in place so the polyhedral joint can be smoothed and leading and trailing edges sanded flush.



Finished fuselage ready for painting. Good fits between hatches and fuselage are very important.



Completed Sagitta XC ready for finishing and covering. Photo gives little indication that this airplane has a 14½ foot wingspan.

The framework is now ready for covering and finishing.



## RELEASABLE TOWHOOK INSTALLATION

An Airtronics contest Towhook has been included in the kit

release under heavy launching loads.

Although only a four channel radio is required for the Sagitta XC, the configuration of controls on a 5 or 6 channel transmitter is more convenient. It is usual to operate the spoilers from the "throttle" lever. While release can be easily achieved by a sideward movement of "rudder," a "retract" switch on the top of the transmitter makes a more satisfactory arrangement.

1. Locate the position of the towhook from the drawings and mark the location on the bottom of the fuselage. Drill holes around the inside of the outline and cut out with an X-Acto knife. File carefully to size for a good fit, but ensure the sides of the unit are not compressed. Install the unit and drill the mounting screw holes. Install the mounting screws and nylon keepers.

2. Use a 1/8" extension drill to drill holes in the bulkheads for the tubing. Take the most direct route, but take care to leave room in the receiver compartment for your particular receiver.

3. After the release servo has been installed, run a piece of dial cord through the tubing, loop through the holes in the servo arm and towhook arm, and tie a temporary knot. When the unit is latched, the cable should be slack. When the servo is actuated, the towhook should release before the very end of travel, and should not be stalled at the very end. Adjust the throw by changing the length of the servo arm and/or change the attachment point on the towhook arm.



## COVERING AND FINISHING

We suggest you use only Super MonoKote to cover the wing panels and tail. Some of the other plastic coverings are more flexible and do not offer the strength of MonoKote. When coming down from a very tall thermal we don't want wing flutter, do we? Follow the instructions on the MonoKote package.

The fuselage can be MonoKoted or painted, using the K & B Super Poxo matched finishing system. A good cheap way to spray paint is using a Preval Sprayer. This is an aerosol type unit that is available at paint and hardware stores for a couple of bucks; it works very well. Put on the K & B primer first, and sand most off. Then put on another coat and sand well. Between coats, look for cracks, etc. and fill with spackle. Now, mix the epoxy paint, one part epoxy, one part hardener, and one part thinner. Set the bottom of the sprayer in hot tap water for 5 minutes. Spray on a light coat; let is set for 10 minutes. Spray on another coat; let is set. Then put on a wet looking coat being careful not to let it run. If it does run, hold the fuselage level with the run at the top, working it back and forth to smooth the run. After 10 minutes hang the fuselage up to dry overnight.



## SPOILER FINAL INSTALLATION AND RIGGING

1. Slit the covering in the spoiler bay, fold down and iron all around the frame edges. Check the fit of the blade, and cover both sides and all edges with MonoKote. Shrink carefully to

is even all around. Press on the hinge and check the blade action.

3. Locate the dial cord in the Hardware Bag and feed it through the tubing from the root end. Slip the cord through the horn and wedge in place with the end of a round toothpick. Pull the cord to open the spoilers and stick on one of the lead weights from the Hardware Bag. Check the spoiler action and correct any binding before flying.

4. The final step is terminating the servo end of the dial cord. This is done after the spoiler servo is installed in the fuselage. Note that each end of the spoiler cord attaches to the opposite end of the servo arm. Thread a #2 x 7/16" sheet metal screw and eyelet into each side of the servo arm, forming two posts. Wrap the cord a half turn around the post and tie a knot, forming a loop. Make sure the loop is large enough to pass over the top of the screw and eyelet, then put a drop of CA on the knot. Check to see that the spoiler opens to 80° - 90°, and closes fully. Any adjustment can be made with the toothpick peg in the spoiler horn. Repeat the process for the other wing panel and make sure both blades extend equally.



## RADIO INSTALLATION AND FINAL ASSEMBLY

1. Solder a threaded coupler (from the Hardware Bag) onto the rudder end of the rudder cable and slide it into the fuselage.

2. Locate the rudder horn, nylon keeper, and two #2-56 x 5/8" long screws in the Hardware Bag. Mount the rudder horn so the clevis holes fall on the rudder hinge line. Thread a clevis onto the rudder cable. Mount the rudder to the fin and attach the rudder cable. Insert the stab joiners through the fin (the front one through the stab drive fitting) and plug on the stabilator panels.

3. Install the servo rails, and mount the servos in the fuselage. Center the rudder and stabilator, then trim the ends of the cables as necessary to allow the threaded couplers and clevises to be installed between the servo arm and the cable. Solder the couplers onto the cable; thread the clevises onto the couplers, and attach to the servo arms.

4. Install the battery pack, receiver and switch. Check control action and adjust linkages to obtain the control movements shown on the plans.

5. Hinge the rear hatch with Slietac, or MonoKote. Install the Airtronics delux skid (from the Hardware Bag) with the #2 x 3/8" sheet metal screw and #2 washer. Install the tailskid.

6. The Hardware Bag contains four screweyes and two springs. Drill pilot holes and install the screweyes in the root rib of the wing panels. Test fit the wing to the fuselage making sure the screweye clears the hole in the fuselage. Use pliers to open up the screweyes on one wing. Hook the closed loop of the spring, and close the screweye. Install the wings and clip a bit off the loops of the other screweyes, so the spring can be hooked to it.

7. Assemble the model and add weight to the nose until the ship balances at the CG shown on the plan. Trim the sailplane

8. Balance the assembled model on the center of the fuselage to see if one wing is heavier than the other. If it rotates, spanwise, add weight by drilling a small hole in the bottom of the tip and inserting lead. A slight tilt can be tolerated, but excessively out-of-balance wings will cause erratic turns.



## BALLAST

If the two ballast tubes furnished with the Sagitta XC are filled solidly with lead, they would weigh about 30 oz. each or a total of 3.75 pounds. This would raise the wing loading from a range of 8.5 - 9.9 oz. per sq. ft. (depending on the construction, and equipment used), to a range of 12.7 - 13.7 oz. per sq. ft. This increase in wing loading would result in an increase in speed of about 20%.

Melting lead to fill the tubes is not recommended, unless you are an expert with proper facilities. It is quite dangerous; not only because of the hot metal, but the fumes are also dangerous to breathe.

Although not so heavy, the tubes can be more safely filled with fine lead shot, and the ends sealed. For incremental ballasting the tubes can be cut in halves, or thirds. The wing tubes are then plugged with wood dowel cut to the appropriate length so the brass sections do not slide around. For less than full length ballast, the dowel plugs should be put in first to keep the weight near the center of the airplane.

Ballast is used not only in windy weather, but in cross country work, to increase the speed between thermals.



## PRE-FLIGHT CHECKS

Before you go out to the flying field, we suggest that you run through the following pre-flight check list. It is a good idea to develop the habit of regularly checking the model and radio system between flying sessions. Many times you will find a problem in the shop which, if not corrected, might cause a crash.

1. Inspect the model carefully. Check the radio operation by trying all control functions and make certain that the surfaces move in the proper direction. Be sure the rudder and stabilator surfaces are neutral when the transmitter trims are set at neutral. Check that the spoiler blades close tightly and extend equally. If any adjustments need be made to the clevises or spoiler cables, find out why. Many times, a changing adjustment indicates something loose or failing.

2. Check that the servos are firmly mounted and that the receiver and battery pack are secure. Make sure that the nose trim ballast is firmly mounted and cannot shift forward or backward. A strong launch can shift things toward the tail.

3. Check all flying surfaces for warps. Remove any warps by reheating the film covering. Be sure the tip panels are not washed-in (leading edge higher than the trailing edge, at the tip). A small amount of wash-out is OK, as long as both tips are the same.

4. Check your batteries, both in the transmitter and airplane. If you are using dry batteries, be sure they are fresh; nicads, that they are fully charged. Remember that more radio failures occur from defective, or improperly charged batteries than any other cause.



## FLYING

Once the Sagitta XC has been properly pre-flighted, you are ready for flying. Assemble the model, making sure the stabilators are locked onto the joiners, the wing retaining springs are in place, and using vinyl tape to secure the tip panels to the center panels. If you wish to hand glide the plane before the first launch, remember that it is an eight pound airplane and wings require a forceful push to get flying, not just a quick flip of the wrist. When satisfied, go get the winch line for your first flight.

A word about launching the Sagitta XC. In two years of test flying, the prototypes have been launched numerous times on 12 volt winches without any problems. On a standard 12 volt winch the XC will obtain decent height in calm air conditions; something many other large sailplanes have difficulty doing. With any breeze at all the Sagitta will launch with the best of them. Do be cautious about line breakage; the area and weight of the XC put quite a strain on the line. You won't break the airplane on tow, but a broken line and subsequent stall could prove disastrous. Be careful!

Once the XC is in the air, you will find out what a well behaved and responsive sailplane it really is. The handling characteristics are quite similar to a standard class sailplane. But keep in mind that this is a big airplane and requires more space to turn in. The size of the airplane also makes it difficult to judge its speed at first—the tendency is to think the airplane is moving slower than it is. Be careful about building up speed the first few flights until you become adjusted to the XC.

Once you are familiar with the XC's handling, you can start maximizing its performance. It can thermal at slow speed, but don't drag it around when flying between lift. Get the model moving at a slightly faster speed which will take advantage of the L/D for maximum efficiency. If you hit sink, dropping the nose slightly will get the XC out of bad air with a minimum of altitude loss. In all types of flying, but especially when flying cross country, use the airplane's efficiency in covering ground to go look for lift, don't wait for lift to come to you!

Good luck with your Sagitta XC, we hope that you will enjoy both building and flying it.