



SAGITTA 600

Up until the last two or three years, the majority of sailplane development in the United States has been concentrated on standard and open class sailplanes. Theoretically, larger sailplanes fly better, and therefore they should be more competitive in a straight thermal duration contest. But with the advent of shorter launch lines, precision duration, and FAI F-3B events, the easier handling and better maneuverability of the smaller airplanes outweighed the theoretical advantage of the open class ships. It has also become apparent that flying ability has a great deal more to do with a person reaching the winner's circle than the size of his airplane. The 1979 World Champion, Anton Wackerle, flew a 2-Meter airplane, as did John Brown, the winner of the 1981 AMA Nationals.

The majority of 2-Meter kits available on the market today are intended as trainers for newcomers to our sport, and so they are designed with simple construction and forgiving flying characteristics. These same airplanes can be flown by more experienced pilots and be quite competitive in AMA duration type contests. But under adverse conditions or in multi-task events the average 2-Meter airplane begins to struggle. In order to improve performance, the same type of design refinements that have developed in the larger classes must be applied to the 2-Meter ships. A semi-symmetrical airfoil for a wider speed range and improved L/D, a clean overall configuration, and careful attention to drag reduction are all musts on a fully competitive 2-Meter sailplane. The Sagitta 600 is intended to be a fully competitive sailplane in both duration and multi-task contests. The Sagitta 600 is derived from the standard class Sagitta 900, which has already proved its contest winning potential. The 600 retains most of the 900's design features, with the construction slightly simplified. The Sagitta 600 also has all of its big brother's flying characteristics; it tows well, handles

easily, covers large areas of sky impressively and moves right out when a bit of down elevator is fed in. If you are looking for a high performance 2-Meter sailplane, then the Sagitta 600 is the one for you.

CONSTRUCTION

Stabilator:

The stabilator assembly is constructed in one piece, and then cut apart on its centerline after construction and sanding are completed.

1.) Pin the 1/4" balsa stab leading edge blanks in place over the plans. Be sure that they fit tightly against each other at the center.

2.) Plug each end of the two 1/8" O.D. x 1/8" brass joiner tubes with scrap balsa to prevent epoxy from getting inside the tubes. Sand the outside of the tubes with coarse sandpaper and then clean the tubes with thinner or acetone to ensure a good bond.

3.) Epoxy the joiner tubes into the forward and aft tube carriers, and then epoxy the carriers in place against the stab leading edge blanks.

4.) Cut the stab root ribs from 1/4" x 1/4" balsa stock and pin in place. Cut the trailing edges and tips from 1/8" x 3/8" spruce and the stab leading edges from 1/8" x 1/4" spruce. Fit all joints tightly, then glue the stab outline pieces in place, making sure to shim the L.E., T.E., and tip pieces 1/16" off the work surface.

5.) Cut the stab ribs from 3/32" x 1/4" balsa, starting from the center and working toward the tip. Be sure all end cuts are angled to fit tightly against the L.E. sheet and trailing edge. When all the ribs are fitted, glue them in place. Add the 1/4" sheet gussets and allow the stab to dry completely before removing from the plan.

6.) Remove the stabilator from the plan and sand to shape. The stab should taper spanwise in thickness from 1/4" at the tube carriers to 1/8" at the tip. The L.E. sheet and ribs should be sanded to an airfoil shape that matches the 1/8" thick L.E. and T.E. Round the leading edge and tips, and taper the trailing edge slightly. When

shaping is complete, separate the two stab halves by carefully cutting through the tube carriers and brass tubes with a razor saw.

Rudder:

1.) Pin the 1/4" rudder leading edge sheet in place over the plan, then cut the 1/4" x 1/4" balsa rudder post and glue it in place against the rear edge of the L.E. sheet.

2.) Cut the rudder base from 1/4" x 3/8" balsa, then cut the trailing edge and tip from 1/8" x 3/8" spruce. Fit all joints tightly, then install the outline pieces, shimming them up 1/16". Add the 1/4" balsa gussets.

3.) Cut the rudder ribs from 3/32" x 1/4" balsa. Make sure the ribs butt tightly against the rudder post and trailing edge and glue in place. Let the entire assembly dry thoroughly.

4.) Remove the rudder from the board. Taper the rudder from 1/4" thick at the bottom of the L.E. sheet to 1/8" thick at the tip. Cut the base and tip to the outline shown on the plan, then use a sanding block to taper the ribs and trailing edge. Round the rudder L.E., tip, and base, blending all joints smoothly.

5.) Slot the rudder post for the hinges and bevel the leading edge to a Vee-shape from the bottom of the L.E. sheet to the lower end. Work carefully and finish up with a sanding block. Mark and drill the holes for the rudder horn. This completes the rudder assembly.

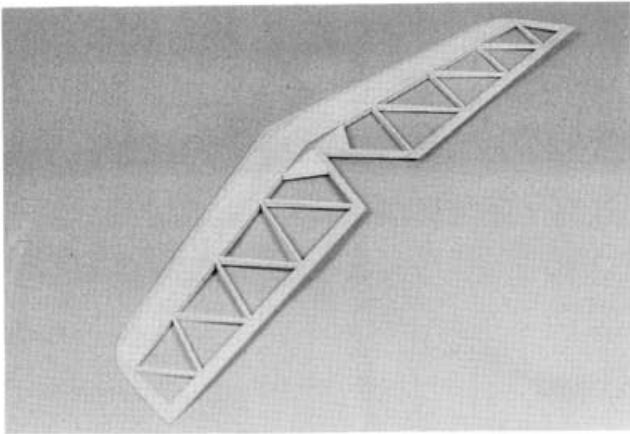
Wing:

The wing construction sequence outlined assumes that you have no special jigs and a limited working area. If you have enough space, building both panels at the same time will reduce building time. If you have a hinged building board, the tip panels can be built directly onto the center panels, which is the fastest way to build the wing. We suggest that you install the tubing for the spoilers and the spoiler frame even if you don't intend to use the spoilers initially. If you decide to go with the spoilers at a later date it's a great deal easier just to cut out the covering than to try and

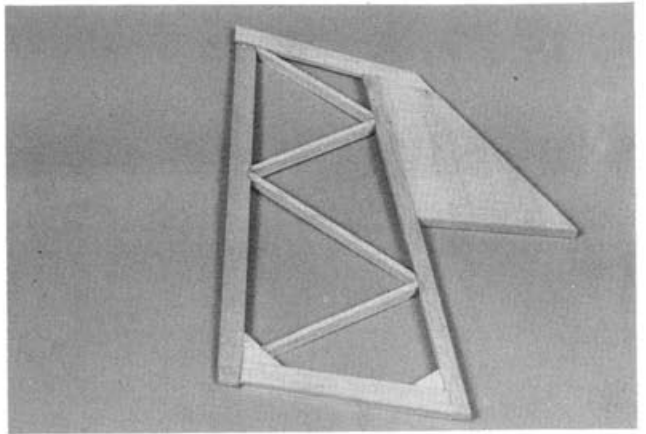
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Derived from the Sagitta 900 which has already proven itself, the Sagitta 600 is intended to be a fully competitive 2-Meter sailplane in both duration & multi-task contests.

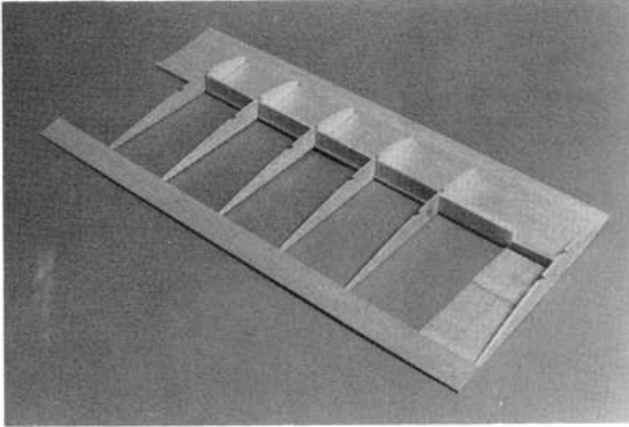
By Lee Renaud



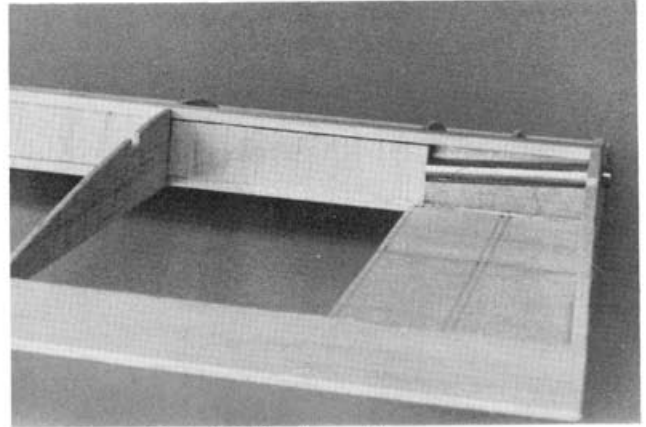
Completed stabilator assembly ready to cut in two.



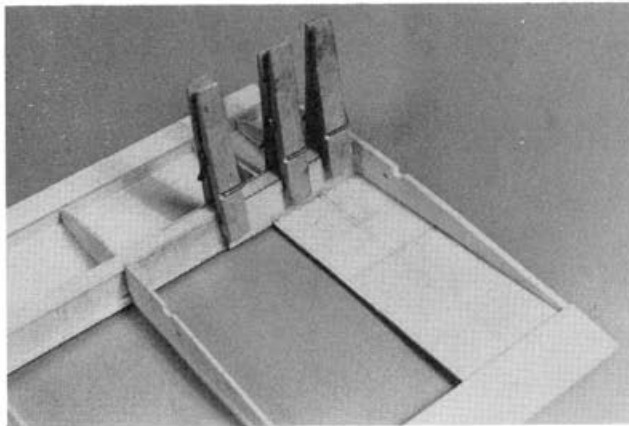
Rudder assembly ready for shaping and sanding.



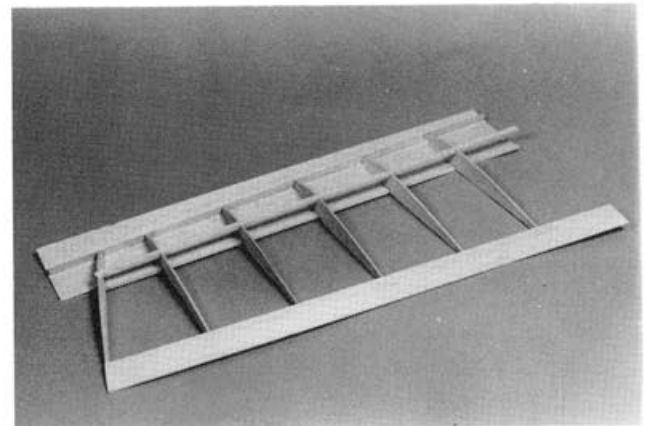
Inner wing panel ready for upper spar and joiner tube.



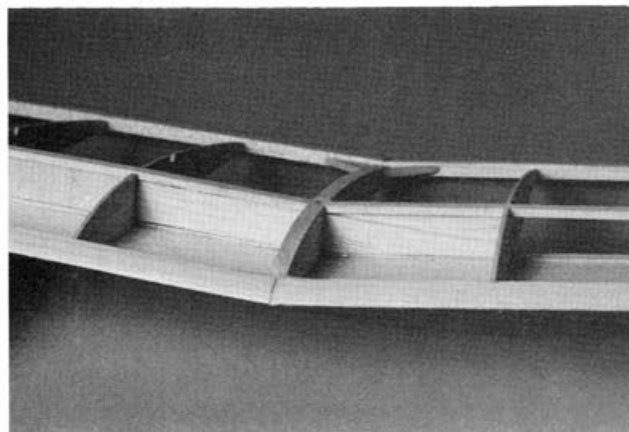
Wing joiner tube tacked in place with epoxy.



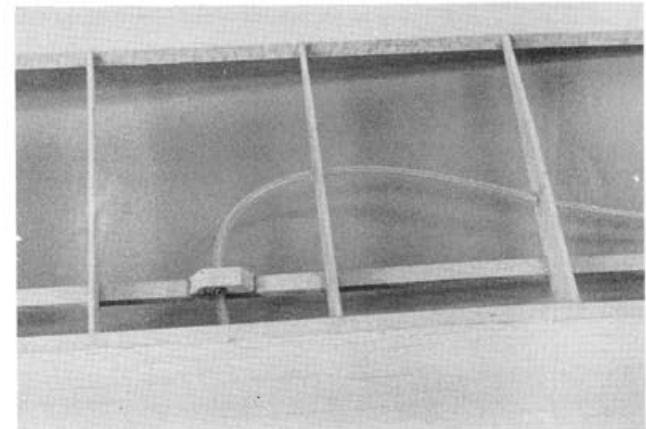
Brass tubing for wing joiner epoxied between spars.



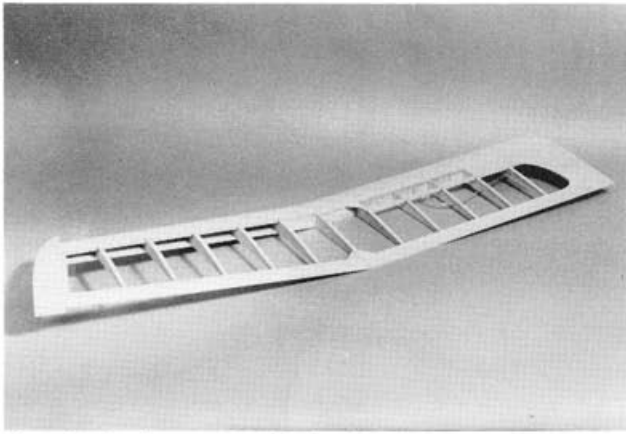
Outer wing panel ready for assembly to inner panel.



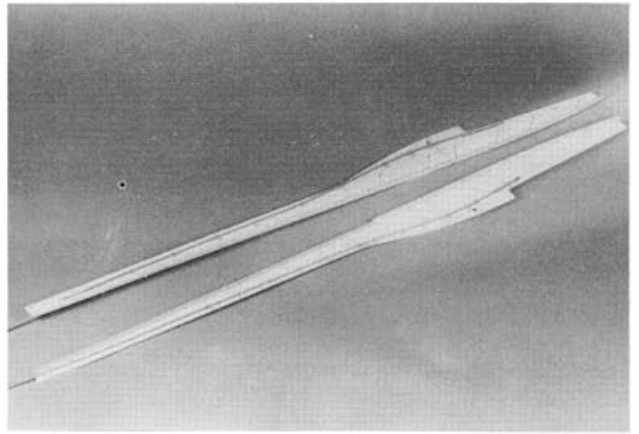
Wing joiner — outer panel to inner panel.



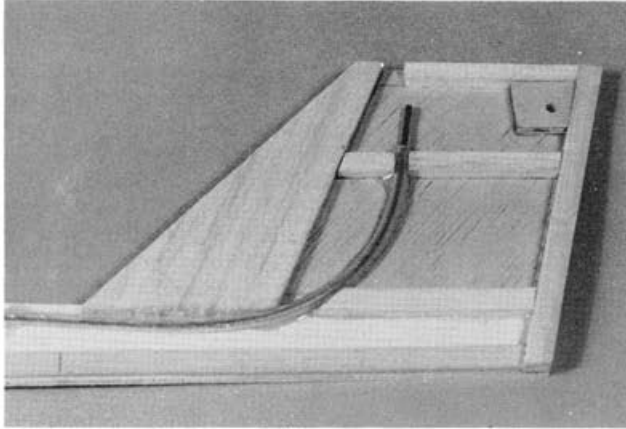
Spoiler cable tubing assembly.



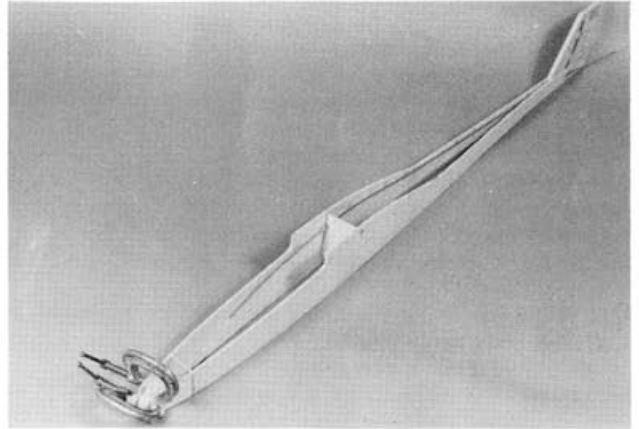
Completed wing panel — left hand.



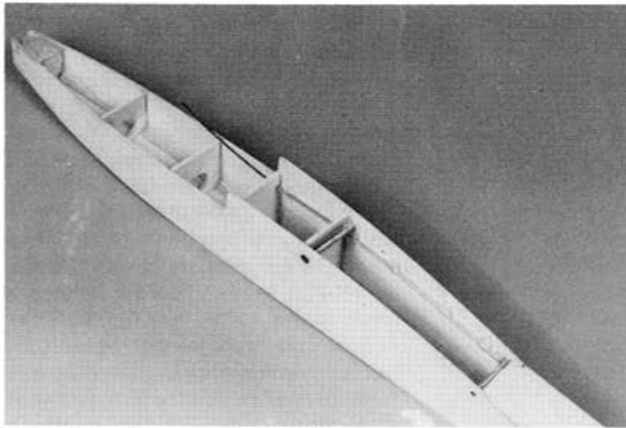
Fuselage sides with pushrods and longerons installed.



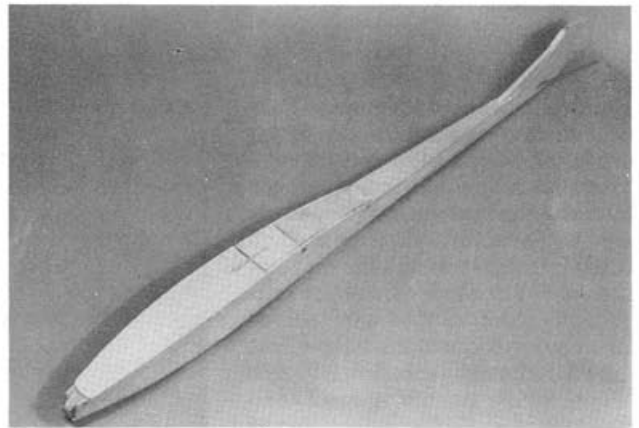
Stabilator pushrod epoxied in place to fin.



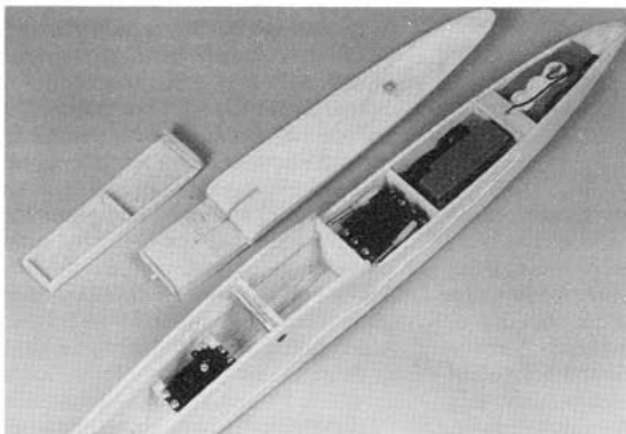
With F4 installed, glue nose block in place.



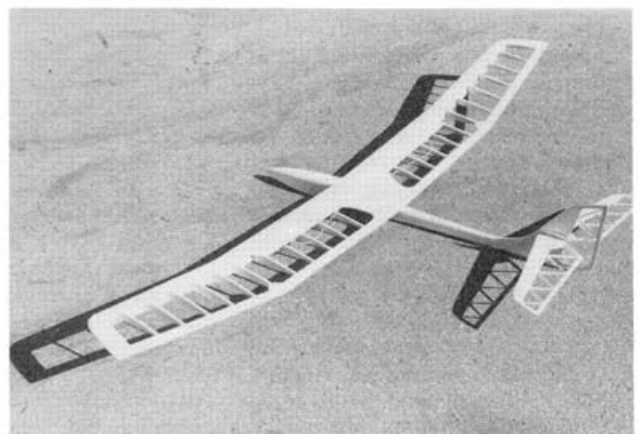
Wing joiner tube epoxied to F4.



Fuselage ready for sanding.



Proper radio installation pads receiver and battery with foam.



Sagitta 600 ready for covering and painting.

install the spoiler mechanics in a completed wing.

1.) Pin the 1/4" x 1" tapered trailing edge in place over the plans, using a pin every second rib to hold it securely.

2.) Using 2-3 W-2 ribs as spacers between the T.E. and the spar, pin the 1/8" x 1/4" spruce spar in position. Make sure the aft ends of the ribs are pressed tightly against the trailing edge.

3.) Sort through the 1/16" balsa leading edge sheet and set the two lightest pieces aside for the tip panel sheeting. Take one of the remaining sheets, trim the rear edge true using a straightedge, and pin in place forward of the spar. Glue the sheet to the forward face of the spar, making sure that both the sheet and the spar are tight against the work surface.

4.) Cut the 1/16" balsa rear bottom sheet and fit it between the spar and trailing edge, leaving a 1/16" space at the forward edge of the sheet to clear the rear plywood web. Use the reference marks on the plans to mark the location of the W-1 and W-1A ribs on the spar and center sheet.

5.) Use a sharpened piece of 1/8" O.D. brass tubing to cut the holes for the nylon spoiler tubing in the W-1, W-1A and W-2 ribs. Note that the holes are located differently in the right and left wing panels. Glue the 1/8" thick W-1 rib in place using the end of one of the plywood webs to tilt the top of the rib outboard slightly.

6.) Glue the 1/4" spruce dihedral wedge and the 1/4" balsa spar filler in place on the lower spar. Glue the first W-2 rib in place against the end of the spar filler. Install a 3/32" balsa shear web outboard of the rib, using enough aliphatic glue to ensure the web is bonded to the spar and rib. Glue the next W-2 rib in position, allowing the shear web to determine the rib spacing. Proceed in this way, rib — shear web — rib — shear web until all of the W-2 ribs are installed.

7.) Slip a piece of trailing edge stock under the bottom leading edge sheet to shim the sheet up against the bottom surface of the ribs and glue the sheeting to the ribs. Glue the pre-shaped spruce leading edge in position.

8.) Apply aliphatic glue to the rib notches, the top of the spar filler, and the shear webs, and install the 1/8" x 1/4" spruce top spar. Glue the 1/16" plywood forward web in place, using clamps to hold the web securely to the dihedral wedge, spar filler, and spars. Cut the two W-1A ribs apart at the spar notch and install the forward portion of the ribs. This completes the basic center panel assembly. Let it dry thoroughly before removing from work surface. The second center panel must be completed through this point before continuing.

9.) Sharpen one end of a 1/4" O.D. brass tube with a #11 X-Acto blade. Using the ply root rib as a guide, drill a hole in the W-1 rib. Check that the hole is adjacent to the forward ply web and top edge of the spruce dihedral wedge. Use a rat-tail file to correct any misalignment.

10.) Sand the outer surface of the joiner tubes with coarse sandpaper

then remove the joiner. Mix up a generous batch of epoxy and microballoons. Pack the cavity around the tube completely with epoxy, holding the panel with the leading edge down to keep the epoxy in place. Coat the edge of the top and bottom spars, the rear face of the dihedral wedge and the spar filler with epoxy as well. Clamp the 1/16" ply rear web in place making sure it is tight against the spars. Clean off excess epoxy and allow to dry thoroughly before removing clamps.

12.) Pin the tip trailing edge in place and, using W-3 and W-8 as spacers, pin the 1/8" x 1/4" spruce bottom spar in place. Locate the two pieces of 1/16" sheet you set aside earlier, and cut each of them in half so that you have four 18" pieces. Trim the aft edge of one of the pieces true using a straightedge, then pin it in place against the forward edge of the bottom spar, making sure both the spar and sheet are tight against the work surface.

13.) Install ribs W-4 through W-9, making sure that they are perpendicular to the work surface, and glue the tip shear webs in place. Slip a piece of trailing edge under the bottom sheet to shim the sheet against the ribs. Glue the sheet to the ribs, and install the pre-shaped spruce leading edge. Apply glue to all the rib notches and shear webs, then install the top spar, making sure it is flush with the top surface of the ribs. This completes the basic tip panel assembly. Complete the other tip to this point before continuing.

14.) Prop up one center panel 1" and block sand the L.E., T.E., and spars hand launch glider style. Install one of the 1/8" balsa polyhedral ties, making sure it is a tight fit between the spars, and is aligned with the forward edge of both spars.

15.) Trial fit the tip panel to the center panel, making sure that the bottom spar in the tip is tight against the bottom edge of the polyhedral tie. Block sand the tip as necessary to get tight fitting joints between the L.E., T.E., and spars. When satisfied with the fit glue the tip panel to the center panel.

16.) Taper the top portion of the second polyhedral tie so that it is a tight fit between the top and bottom tip spars. When it fits properly, install the second tie, making sure it is tightly pressed against the center panel tie. Shape and install the 1/8" x 1/4" L.E. tie. Cut W-3 apart and glue the forward and aft sections in place, tilting the rib slightly so that it is centered on the spar joint. Repeat steps 14, 15, and 16 for the other wing.

17.) Trim the aft edge of the top center leading edge sheet with a straightedge then trim the end so that

SAGITTA 600

Designed By: Lee Renaud

TYPE AIRCRAFT

2-Meter Sailplane

WINGSPAN

78 3/4" Proj.

WING CHORD

7 3/4" Avg.

TOTAL WING AREA

600 Sq. In.

WING LOCATION

Shoulder

AIRFOIL

Eppler 205

WING PLANFORM

Constant Chord Center

Double Taper Tips

DIHEDRAL EACH TIP

3 1/2 Inches

O.A. FUSELAGE LENGTH

39 3/4 Inches

RADIO COMPARTMENT SPACE

(L) 12 3/4" x (W) 1 1/2" x (H) 1 3/4"

STABILATOR SPAN

24 Inches

STABILATOR CHORD

4" (Avg.)

STABILATOR AREA

90 3/4 Inches

STAB AIRFOIL SECTION

Symmetrical

STABILATOR LOCATION

Fin Mounted

VERTICAL FIN HEIGHT

8 1/2 Inches

VERTICAL FIN WIDTH (incl. rudder)

5 3/4 Inches

REC. ENGINE SIZE

NA

FUEL TANK SIZE

NA

LANDING GEAR

NA

REC. NO. OF CHANNELS

2-4

CONTROL FUNCTIONS

Rud., Elev., Spoilers,

Optional Ailerons

BASIC MATERIALS USED IN CONSTRUCTION

Fuselage Balsa & Ply

Wing Balsa, Ply & Spruce

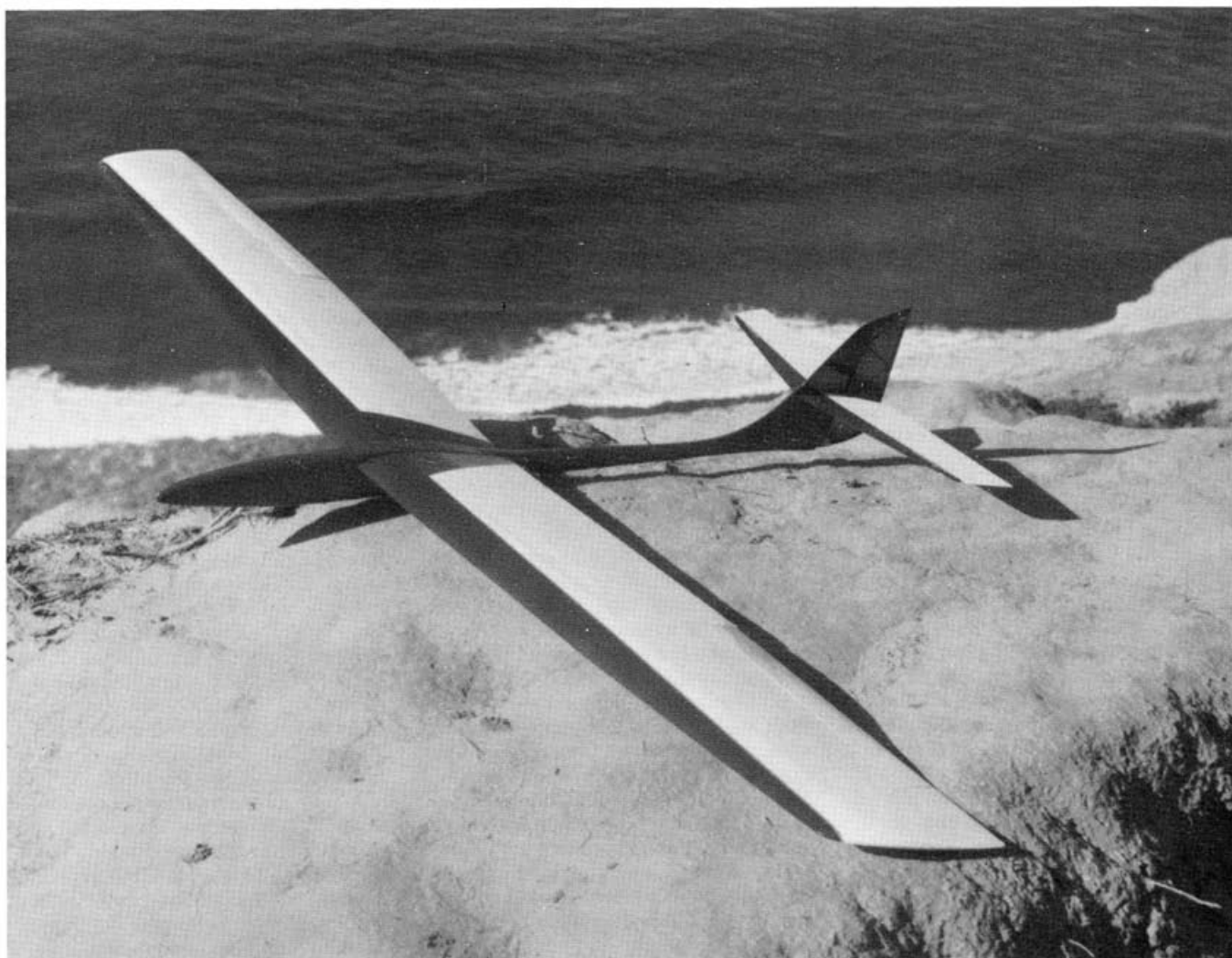
Empennage Balsa & Spruce

Wt. Ready To Fly 30-34 Oz.

Wing Loading 7.4-7.9 Oz./Sq. Ft.

and clean thoroughly with acetone or similar solvent. Plug one end of each tube with balsa to prevent epoxy from running into the tube. Push tube through W-1 and against the end of the spar filler in each panel. Be sure the tube is tight against the forward ply web and dihedral wedge, then spot epoxy in place using 5-minute epoxy.

11.) Check alignment again and correct any errors before continuing,



it is centered on rib W-3. 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 ribs 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 you 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.

18.) Add the aft portions of the W-1A ribs and install the 1/8" x 1/4" spruce spoiler spar. Glue a piece of 1/4" x 1" trailing edge in place as shown on the plans to act as a block for the aft alignment tube. Route the nylon spoiler tubing through the

pre-drilled holes in ribs and secure to the underside of the spoiler spar.

19.) Cut and install the top center sheet, starting with the piece butting against the leading edge sheet. Note that the outboard end of this sheet is flush with the outer face of the rib. Install the sheet on the outboard end of the spoiler blade. It's easier to trim the contour of these pieces after installation. Fit and install the 1/16" x 1/4" fillers that outline the forward and aft edges of the spoiler bay. Fit and install all center panel capstrips. We suggest cutting the caps slightly oversize and then bowing them in place to eliminate pinning. This completes assembly of the center panel. Remove from work surface when dry.

20.) Prop up the center panel so that the bottom tip spar is flat against the work surface. Install the tip leading edge sheet and capstrips following the methods outlined in steps 17 and 19. Let dry completely and remove from work surface.

21.) Trim the L.E., sheet, spars, and T.E. flush with W-9 and epoxy the tip block in place. Carve and sand the block to shape using the cross sections shown on the plans for reference. Trim

the sheet, L.E., spars and T.E. flush with W-1 but do not install the 1/16" ply root rib yet. This completes the basic wing assembly except for the final sanding, spoiler installation, and fitting to the fuselage.

22.) Use rubber cement or contact to secure a piece of #120 or #180 sandpaper to a sanding block at least 3" x 10". Be sure that the paper is tight against the surface of the block to avoid sanding undercamber into the wing. Block sand the entire lower surface being sure that the block contacts the spar and trailing edge at all times. Then sand upper surface taking care to follow the rib contour on the capstrips. Check that all seams and joints are smooth and flush by running your fingertips over the wing.

23.) Use a small block or razor plane to shape the leading edge. Check plan for the correct shape. Work carefully when shaping the leading edge and be sure both wing panels are identical. Block sand to final contour then change to #220 or #240 sandpaper and final sand entire wing panel including tips.

Note: The brass tubes for the wing alignment pin are not installed until the fuselage has been assembled. The

fuselage is used as a jig to accurately locate the holes in the wing.

Spoiler Installation:

1.) Trim the two ribs marked "X" on the plans to provide clearance for the spoiler blade. Cut the 1/4" x 1" T.E. stock blade to fit the opening, allowing a 1/32" gap all around the blade. Sand blade smooth all over.

2.) Locate the spoiler control horn as shown on the plans and epoxy or Hot Stuff to the lower surface of the blade. Note that the horn projects 1/4" forward of the blade leading edge and that a right and left hand blade is required. Temporarily hinge the blade in place with masking tape and fit the 1/16" x 1/4" balsa blade supports at both ends of the spoiler bay. Use your fingertips to check that the blade is flush with the surrounding structure.

3.) Cut two lengths of dial cord and insert into tubing from the root end. Hold panel tip down to help feed cord smoothly through tube. Pass cord through the hole in the horn so that one inch projects past the horn. Cut a 3/8" long piece from the end of a round toothpick and use this as a wedge to secure the dial cord by pushing into the horn from the outboard edge. Pull dial cord from root to check blade action and be sure the horn and retainer clear the shear web, trimming the web as necessary.

Fuselage:

1.) Align the right fuselage side over the plan and carefully mark the location of the formers and nose block. Transfer these locations to the left side aligning the sides carefully.

2.) Cut the 1/16" x 1/4" spruce longerons and the 1/4" triangle and glue in place along the lower edge of the sides.

3.) Slot the left side for the rudder pushrod, then install the pushrod using the notches in formers F-3, F-4, F-5 to locate it. Be sure to glue the pushrod to the side for its **entire** length. It is essential for the pushrod to be secured for its entire length to achieve a slop-free linkage.

4.) Cut the 3/32" balsa fin sheeting and pin it and the 1/8" balsa fin L.E. in place over the plans. Cut two pieces of 1/16" x 1/4" spruce to form the fin post. Lay out the hinge locations and file a 1/64" deep slot in each piece to accept the hinges. Glue the pieces together to form a 1/8" x 1/4" post with three 1/32" hinge slots in it and pin in place. Add the 1/8" x 1/4" balsa frame pieces, locating the notches for the elevator pushrod carefully. Finally, glue the 1/8" ply tube bearing in place and let the fin dry thoroughly before removing from plan.

5.) Glue the completed fin in place on the right fuselage side. Make sure the fin post is aligned with the aft edge of the side.

6.) With the cable inserted inside the plastic housing, glue the last 1/4" of the elevator pushrod in place where it passes through the 1/8" x 1/4" frame piece closest to the stab. Curve the pushrod as shown on the plan, making sure that it never comes closer than 1/8" to the lower longeron. Glue the curved portion of the pushrod in place and check the cable for smooth operation. When satisfied there is no binding, glue the rest of the pushrod to the side, making sure it is secured for its entire length.

7.) Insert the rudder cable into the plastic housing on the left fuselage side. Holding the right and left sides together, slide the 1/4" main joiner tube through the hole in each side. Bring the aft 4 1/2" of the sides together and make sure the lower longerons fit tightly together without distorting the pushrod tubing and causing the cables to bind. If necessary, scrape down the outer wall of the pushrod tubing with a razor blade until the sides can be clamped together without the pushrods interfering.

8.) Block up the joiner tube so that each end of it is the same distance above the work surface. Clamp the rear portion of the sides together, lining up the aft edges of the sides carefully. Use a large square to make sure the fin is perpendicular to the work surface. Check the fin alignment carefully as it determines whether or not the stab lines up with the wing. When satisfied glue the aft 4 1/2" of the sides together.

9.) Using the reference marks install F-4. Make sure the rear face of the former is tight against the joiner tube, but don't glue the tube in yet.

10.) Pull the sides together at the nose and clamp with the noseblock in place. Sight down the fuselage to make sure everything is aligned and then epoxy the nose block in place.

11.) Install formers F-1, F-2, F-3 and F-5, using the reference marks on the sides to line them up. Glue the 1/8" plywood floor in place and add the 1/4" balsa top block.

12.) Slide the main wing joiner into the fuselage tube and check that the fin is perpendicular to the joiner. If it is, glue the 1/8" balsa bottom sheet in place. If the fin tilts to one side, twist the fuselage slightly in the opposite direction and align the fin carefully while gluing the bottom sheeting on.

13.) Remove the 1/4" brass tube from the fuselage and sand the outside with coarse sandpaper, then clean the tube with acetone or similar solvent. Epoxy the tube in the fuselage, making sure there is a fillet of epoxy between the tube and F-4.

14.) Insert the main wing joiner into the fuselage and slide one wing onto the joiner. Align the wing on the

fuselage and use a long 1/8" drill to drill the hole for the rear alignment tube. Remove the panel and repeat this procedure for the other wing, making sure that both panels have the same amount of incidence. Cut the 1/8" diameter brass tubing to length and epoxy into the wings and fuselage.

15.) Slip the 1/16" ply root rib onto the end of one wing panel. With both joiners in the fuselage, slide the wing into place. Check to see that there are no gaps between the fuselage and root rib. Sand the wing or add small balsa shims until the entire joint between the root rib and fuselage is tight fitting and gap free. When satisfied with the fit glue the root rib to the wing and sand it until it matches the wing section. Repeat this procedure with the other wing.

16.) Install both wings on the fuselage and check the fit between the top of the wings and the top of the fuselage sides. Sand the sides until they are flush with the wing top surface from the main wing joiner back to the rear wing joiner, being careful not to sand the wing top sheet. Remove the wings and glue the 1/4" sheet filler block in place at the forward end of the top block.

17.) Build the rear hatch frame out of 1/8" x 1/4" spruce. Shape the side pieces to match the fuselage side contours and glue the 1/16" ply hatch cover in place. Double check the fit of the hatch, then glue one F-4A in place on the front edge of the hatch.

18.) Temporarily hinge the rear edge of the hatch with masking tape and hold the front of the hatch in position. Using F-4A as a guide, drill a 1/8" hole for the 1/8" hold-down dowel in F-4. Be careful not to drill into the joiner tube.

19.) Assemble the forward and aft hatch blocks with the 1/8" plywood spine. Add the 1/4" diameter dowel insert, then fill the area above it and the ply spine with scrap balsa.

20.) Slot the 1/16" ply hatch hold-down plate and epoxy in place. Install the hold-down screw in the hatch. Sharpen one end of the hatch hold-down dowel and slightly round the other. Insert the rounded end into the hole in F-4 and carefully slide the hatch into place, driving the pointed end of the dowel into the aft hatch block. Remove the hatch and glue the dowel in position, and then glue the second F-4A to the aft face of the hatch block.

21.) Add the 3/32" sheet to the left side of the fin. Locate the 1/8" diameter hole in the stab bearing insert and open up the hole in the fin sheeting, then install the 1/8" stab bearing tube. Cut the slots for the forward stab joiner. Glue the dorsal fin in place on top of the fuselage, then

add the 1/8" x 1/4" spruce tailskid.

22.) The fuselage is now ready for final shaping and sanding. Use a razor plane and a sharp knife to do as much of the shaping as possible. Work to make the fuselage contours as smooth and streamlined as possible, with the forward hatch flowing into the wing and top block flowing from the wing and into the dorsal fin. After you have rough carved the fuselage, use very coarse (50-80 grit) sandpaper to bring the fuselage to final contour. Use progressively finer grades to smooth the entire fuselage prior to finishing.

Covering and Finishing:

We suggest you use Super MonoKote to cover the wing panels and empennage. The other plastic film materials we have tried are more flexible and contribute no skin stiffness to the airframe, causing possible flutter problems at high air speeds. For contest work, especially speed and distance tasks, you want all the stiffness possible.

The fuselage can be MonoKoted or painted using the K & B Super Poxo matched finishing system. If you plan to fly your Sagitta 600 extensively or use it for F-3B type contests, we recommend that you fiberglass the entire fuselage with lightweight glass cloth and K & B finishing resin. This additional step is not all that difficult and adds strength and durability to the fuselage.

Spoiler Final Installment And Rigging:

1.) Slit covering in the spoiler bay and fold down and iron all around the frame edges. Trim off surplus material and seal edges. Check blade fit and cover both sides and all edges of the blade. Be sure you cover the top and bottom of the blade and shrink carefully to prevent warping.

2.) Cut a piece of Slietac or similar material 1/2" wide by 9" long. Drop blade into opening and center so that the gap is even all around. Press on hinge and iron firmly to the wing and blade. No internal pieces are required. Trim ends and check blade action.

3.) Feed dial cord through tubing starting at the root end. Slip the cord through the horn and wedge in place. Pull the cord to open the spoilers and apply a 1/4 oz. to the bottom of the blade. Check the spoiler action and correct any binding before flying.

4.) The final step is terminating the servo end of the dial cord, which is done after the spoiler servo is installed in the fuselage. Note that each of the spoiler cords attaches to the opposite end of the servo arm. Thread a #2 x 5/16 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

small drop of Jet on the knot. Check to see that the spoiler opens 80°-90° and closes fully. Any adjustments 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 onto the rudder end of the rudder cable and slide it into the fuselage. Solder the amp stab drive fitting onto the elevator pushrod and insert it into the fuselage.

2.) Install the rudder hinges and glue the rudder in place, making sure that it swings freely. Mount the rudder horn with two #2-56 x 5/16" long screws. Thread a clevis onto the rudder cable and attach to rudder. Insert the stab joiners through the fin 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 Slictac or MonoKote. Install the Airtronics' deluxe skid with a #2 x 3/8" sheet metal screw and #2 washer. Install the towhook in the location shown on the plans. Add the 1/16" music wire tailskid.

6.) Assemble the completed model and add weight to the nose of the model until the airplane balances as shown on the plans. Trim the airplane slightly nose heavy for the first few flights, then move the C.G. back as you become accustomed to the airplane's flying characteristics.

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 that 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. Adjust clevises and/or spoiler cables, if required.

□ 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 carefully for warps. Remove any warps present by re-heating the film covering. Be sure that the tip panels are not washed-in (leading edge higher than trailing edge at the tip). A small amount of wash-out is okay as long as both tips are the same.

□ 4.) Check the span-wise balance by making a string sling and supporting the ship by the main wing joiner. If it rotates span-wise, add weight to the lighter wing tip. A slight tilt can be tolerated but excessively out of balance wings will cause erratic turns. Remove the wing panels and recheck that the fuselage hangs level when supported by the main joiner. This will provide slightly nose heavy trim which we find is safer for the first few flights.

□ 5.) Check your batteries, both in the transmitter and airplane. If you are using dry batteries be sure they are fresh; if nicads, that they are fully charged. Remember that more radio failures occur from defective or improperly charged batteries than any other cause. Don't be a statistic!

Flying:

The Sagitta is a very clean and responsive aircraft. It is capable of very tight turns and will really move out if you feed in down elevator. Be careful not to over-control on your first flights and make all commands smoothly until you have become accustomed to the control response. We suggest using a Hi-Start with 3/16" x 1/16" surgical tubing for your first flights.

If you have a fish scale available check for 8-10 pounds of line tension for winds up to 10 mph. Note your position on the field and adjust accordingly on succeeding flights. Face directly into the wind and hold the nose up slightly. Release the airplane smoothly with the wings level. If the ship starts to weave back and forth during the launch, apply a little down elevator. Control rate of climb by feeding in slight up or down elevator. Check glide trim and turn response using transmitter trims, if necessary. All of the test ships have flown well on their initial flight, so you should experience the thrill of the majestic glide and beauty of this ship on your first launch. We suggest that you don't use the spoilers on early flights. When landing don't set up the approach too high as the glide is very flat and the tendency is to overshoot. Just get it on the ground smoothly, and don't worry about hitting a spot. Don't try diving during the landing approach as the speed builds up, the L/D improves, and the ship just keeps going!

Once you are familiar with the flying characteristics of the Sagitta 600, it's time to make use of the airplane's potential. The Sagitta likes to fly a little faster than most other sailplanes. She'll fly around on the verge of a stall without a problem, but if you let the Sagitta's speed increase slightly, you'll be amazed at how much the L/D improves. In the cruise mode the Sagitta can cover large amounts of sky looking for that elusive thermal, and, if you hit sink, dropping nose slightly will allow you to punch through an area that will leave most floater types in the landing pattern. Practice covering ground with your Sagitta and go looking for lift instead of waiting for it to come to you. And when you're at a contest and the thermal you need to win is a half mile off the field, you'll be able to go find it and ride it for a max. Good luck to you and your Sagitta when that day comes.

AILERON VERSION SUPPLEMENT

One of the things that has become obvious is that to be competitive on an international level an airplane has to

be equipped with ailerons. Ailerons also offer improved response and superior turning ability in speed and distance events to the average contest flier. Since most of us learned to fly sailplanes with rudder and elevator, switching to ailerons will require some adjustment on the part of the pilot, but with the electronic coupling of ailerons and rudder available in today's radios this task is greatly simplified. The following notes explain how to build the Sagitta 600 with ailerons. The modifications to the basic airframe are simple, and if you've been wanting to give ailerons a try, we encourage you to build your Sagitta 600 with them.

The stabilator and rudder are built exactly the same as the polyhedral version of the airplane. We recommend that you cover the stab roots with lightweight fiberglass cloth to strengthen the stab in the tube carrier area.

The fuselage construction is identical to the polyhedral airplane with the addition of the aileron servo in the ballast compartment between F-3 and F-4. The ailerons are attached to the servo arm using two #999 Du-Bro solder lines modified by cutting off the pin side of one link and hooking the two links together using the remaining pin.

The major changes are in the wing. The wing planform, straight center panel with double tapered tips, is retained, but the wing is built flat with no polyhedral. Two inch wide ailerons are added from W-3 to W-8. The ailerons are driven by stranded cable pushrods which run from the servo in the fuselage and curve to attach directly to the aileron without the use of bellcranks. The 1/4" shear webs are continued out to the center panel/tip panel joiner, and a third 3/32" shear web is added in each tip. The following steps are a general guide for constructing the Sagitta wing with ailerons.

1.) Lay out the entire wing plan flat on the board and tape in place. Pin both the tip and center trailing edges in place, and pin the 1/8" x 1/4" x 36" bottom spar in place.

2.) Trim the aft edge of the center and tip bottom L.E. sheet straight and glue in place, then cut and install the center bottom sheet, making sure to leave a 1/16" space between the forward edge of the sheet and the spar.

3.) Use a sharpened piece of brass tube to drill the holes in the ribs for the spoiler tubing and aileron cable tubing. Notch ribs W-3 through W-8 for the 1/8" x 1/4" spruce sub-spars 1" forward of the rear edge of the ribs.

4.) Drill a 1/4" diameter hole for the main joiner tube in the W-1 rib. Glue

the rib in place, using one of the ply webs as a guide to tilt the top of the rib outboard 3°. Install the spruce dihedral wedge and balsa spar filler.

5.) Install the W-2 ribs as described in the polyhedral version instructions, using the shear webs to determine the rib spacing. Assemble the center panel and tip panel joiner together so that the bottom surface is straight and glue in place on the spar.

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6.) Use the notches in ribs W-4 and W-8 to locate the bottom aileron sub-spar and pin it in place. Install W-4 through W-9, using the 3/32" shear webs as spacers between W-4, W-5, W-6 and W-7. Be sure to taper the tops of the panel joiner and the shear webs so that the top spar will seat properly in the rib notches.

7.) Apply glue to the tops of all the shear webs, the panel joiner, and all the rib notches. Press the top spar in place, making sure it is tight against all of the shear webs. Glue the 1/16"

ply forward web in place to the forward face of the spars, spar filler, and dihedral wedge. Clamp in place until glue is thoroughly dry.

8.) Use epoxy and micro-balloons to install the main joiner tube and rear ply web, and clamp the web securely to the spars. Shim the bottom leading edge sheet up against the bottom of the ribs and glue the sheeting to the ribs. Glue the pre-shaped spruce leading edge in place and add the 1/8" x 1/4" L.E. tie.

9.) Cut the W-1A and W-3 ribs apart and install the forward and aft sections. Glue the spoiler spar and the top aileron sub-spar in place. Trim off the last 1" of W-4, W-5, W-6, and W-7 flush with the aileron sub-spars. Glue a 1/2" x 1" balsa filler block to the forward face of the trailing edge between W-3 and W-8.

10.) Install the spoiler and aileron

tubing. Add a 1/16" x 1/4" balsa edging strip along the top aileron sub-spar, then glue on the top sheeting and capstrips as outlined in the polyhedral version instructions.

11.) Cut the aileron from the wing and dress the edges of the aileron cutout with a sanding block. Face the back edge of the aileron sub-spars with vertical grain 1/16" balsa sheets. Add 3/16" sheet balsa gussets at either end of the aileron cutout to tie the sub-spars to the trailing edge.

12.) Carve the 1/2" filler block down to match the angle on the trailing edge of the aileron. Bevel the front edge to allow about 30° of up aileron travel and mount the aileron horn. Temporarily hinge the aileron with masking tape and connect the cable to the horn. Check the control action and correct any binding now.

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13.) Complete the wing according to the polyhedral version instructions. After covering, hinge the ailerons with Slietac or MonoKote. Set up the ailerons so that you have about 20° of up and 15° of down. You can couple the ailerons and rudder or fly them uncoupled. □