

Designed by Ken Willard

Seamaster 40

Assembly Manual



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I. INTRODUCTION

The Ace Seamaster 40 is designed and engineered to provide you with a nice looking, easy flying amphibian that goes together in a minimum amount of time with a minimum amount of frustration. Please read and follow these instructions to insure that these two goals are accomplished.

We recommend the use of modern cyanoacrylate (CyA) glues for the most part. There are many brands available (Jet, Pic, Pacer, Alteco, Hot Stuff, etc.) and they all have three basic viscosities available: thin (for close fitting balsa joints), thick (for plywood, hardwood, and not-so-perfect balsa joints), and very thick (for joints where a filet or "bead" is required.) For the most part, we recommend the thick variety used in conjunction with an accelerator or "setter" which cures the glue upon command. Epoxy is recommended for the engine nacelle components. Of course, any modeler has his favorite techniques of gluing but keep in mind that this is a water-going craft and water has a way of getting into everything, so don't use water soluble glues.

There are a few things to keep in mind when building this kit with its lite ply construction. It's a wonderful material that has a tremendous strength to weight ratio and is easy to work. It should punch out of the die cut sheets easily; if not, sand the back

of the sheet a bit...some cutting with an X-acto knife may be needed. Some warping of the material is normal and the key lock construction technique eliminates this being a problem. Also, one side of the lite ply is generally better than the other which may have some dark streaks, knots, and fill. Simply keep the good side to the outside of the structure.

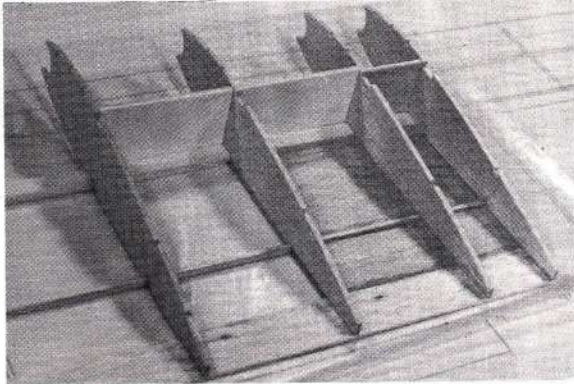
We have used various finishing techniques on the prototypes, all of which were successful. Plastic film is the quickest, easiest, and usually prettiest. BUT, keep in mind again that water permeates everywhere so overlap the joints at least 1/4" and reseal all edges a couple of times to make sure the joints are secure, especially in the hull area. It would be a good idea to go over all the exposed edges with very carefully applied thin CyA.

If you choose to use paint, we recommend that the hull be fiberglassed with 3/4 oz. cloth and resin, or cover it with Silkspun or Supershrink Coverite before painting. Avoid too much paint buildup so weight doesn't accumulate.

Although the plane looks bigger, a good .40-.45 two cycle or a .60 four cycle flies the Seamaster nicely; don't be tempted to put a screaming .60 schneurle two cycle on it...the plane is not structurally stressed for it. Realize the Seamaster 40 is not a pattern ship; it is a mildly aerobatic sport ship for pleasing, predictable performance off land and water.

II. WING CONSTRUCTION

We prefer the 3M Spray 77 Cement technique for building the wing. Spray a flat building surface with a light coat of the Spray 77 and lay the plans down. Lightly spray the plans and cover with waxed paper. Apply a heavier coat to the waxed paper and you're ready to stick parts down. When you're ready to remove the structure, slide a thin metal ruler or something similar between the plans and the work surface and lift up, then peel the plans off the wing. Of course, you can use the traditional method of using pins.



() Locate the die cut balsa ribs, lite ply tips and spar webs, tubular leading edge, spruce spars, and 1/16" X 1 1/4" Balsa trailing edges. Note that there are six inner ribs; they are 3/32" smaller all around. All the other ribs are outer ribs.

() Place the trailing edge on the plans with the end flush with the center section; let any excess material on this part plus the spars and leading edge extend out the tip of the wing.

() Using one of the outer ribs as a guide, place the 1/8" X 3/16" spruce rear spar and the 1/4" X 1/2" spruce main spar.

() Cut one of the 3/32" X 3" X 18" balsa center section planking into 5 3/4" lengths. Place this planking flush with the centerline and between the trailing edge and the rear spar and between the rear spar and the main spar. Cut to width as required.

() Locate the three die cut lite ply spar webs that go between the first four inner ribs. Notice that the web that goes between the center rib and the second rib has a "tic" mark on it. Place the ribs in position with this web positioned so the tic mark is down toward the sheeting and closest to the center rib. Do not glue.

() Use the other two webs and space the 3rd and 4th ribs. Do not glue the webs in place, but glue the ribs to the spars, sheeting and trailing edge.

() Glue the five outer ribs in place, using the die cut lite ply template to keep them perpendicular.

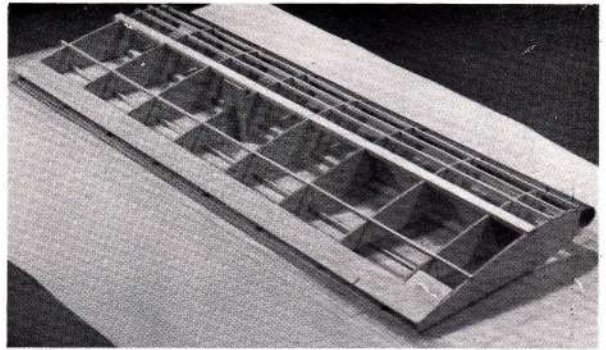
() In the die cut sheet that contains the Tip Float parts, there are two pieces 3/8" X 3 3/4"; they are used to mount the Tip Floats. They both go between the two outermost ribs, one at the trailing edge and one at the leading edge. Install the rearward one now, between the two outermost ribs and flush with the rear edge of the trailing edge.

() Glue the 1/4" X 1/2" top main spar in place.

() Glue the three 1/8" X 3/16" spruce turbulator spars in place.

() Glue the top balsa trailing edge in place.

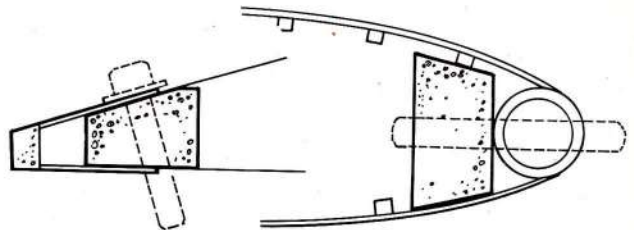
() Glue the tubular leading edge in place, making sure it is seated in each rib.



() After the glue has set, remove the wing half from the work surface. Using a long sanding block, true up the rear edge of the trailing edge sheeting to accept the trailing edge cap.

() Mark the rear edge of the wing's trailing edge 3 3/8" in from the center.

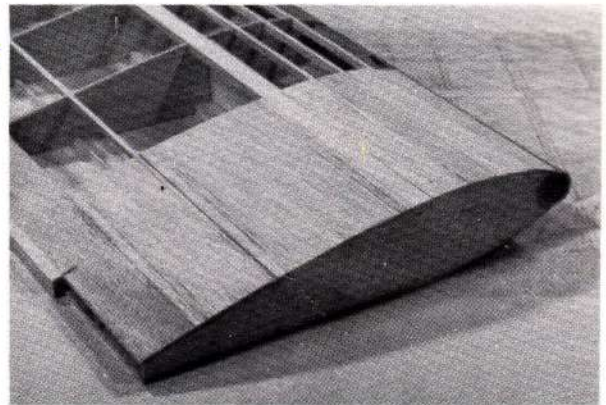
() Place the wing back on the plans and glue the 1/4" X 1/2" balsa trailing edge cap in place with the center end up against the mark you just made.



() Remove the wing from the work surface.

() Test fit the Wing Bolt Spacer block; it should go between the first two ribs and be a snug fit between the trailing edge sheet. Glue it in place.

() Glue in the Wing Dowel Block between the first two ribs with the small end up against the leading edge. Make sure none of the block protrudes past the outer edge of the ribs.

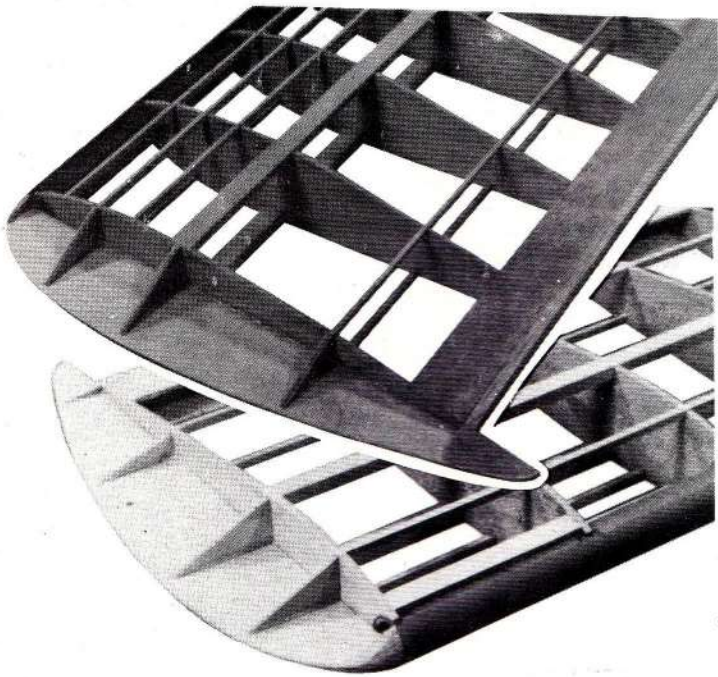


() Glue the 1/8" X 3/16" bottom turbulator spar in place.

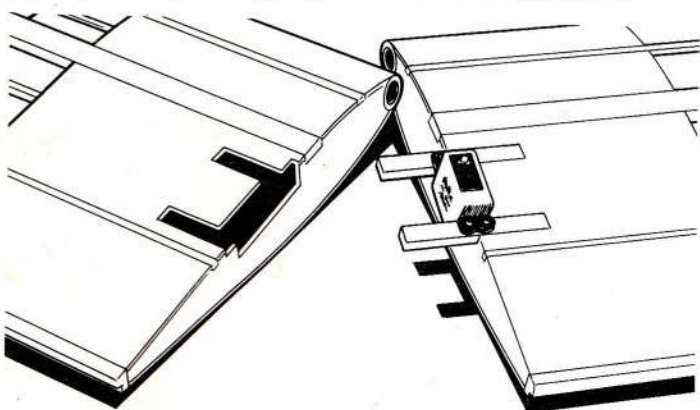
() Finish planking the bottom of the wing.

() Now glue the lite ply shear webs in place.

() Plank the center top of the wing with 3/32" balsa.

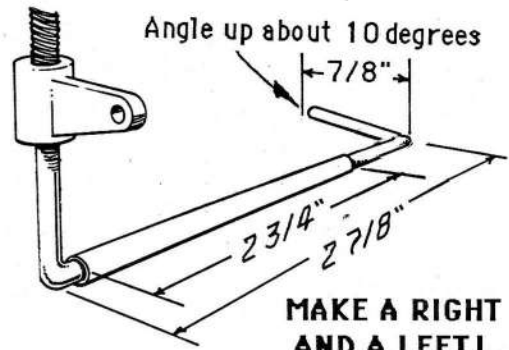


- () Cut off any excess material flush with the outside edge of the outermost rib. Sand flush.
- () Locate one of the die cut tips and one set of the triangle braces.
- () Center the tip on the leading edge and the trailing edge cap; keeping the front of the tip lined up with the front of the leading edge, glue in place.
- () Glue the triangular braces in place.
- () There is a piece of balsa $5/8" \times 2" \times 9"$. Cut it into two pieces; one 4" and one 5" long.
- () Save the 5" piece for the fuselage and use some of the 4" piece to make filler blocks at the leading and trailing edge of the tip. Sand to shape.
- () Glue the front Tip Float Mounting Plate between the outermost two ribs, up against the leading edge tube and flush with the bottom of the two ribs.
- () Repeat the preceding steps for the other wing panel.



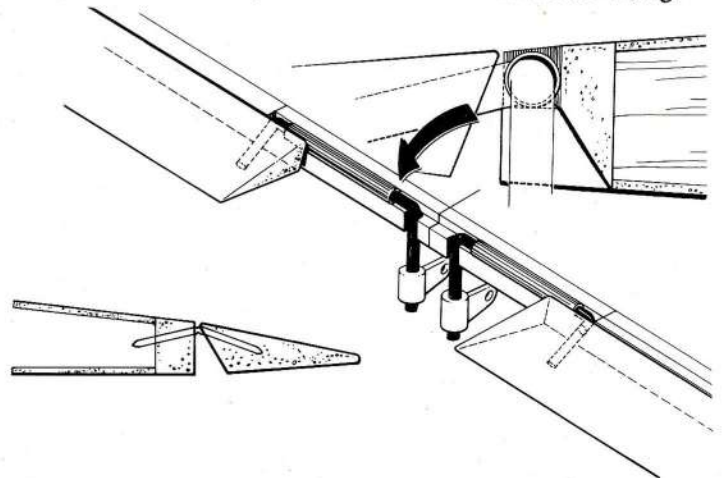
- () Prepare the center face root of each wing panel for joining by sanding each off smooth and flat with a sanding block. Place the wing panels together and check for the proper dihedral...it should be 1" under each tip or 2" total. Fit if needed. Do not glue together yet.
- () Glue the grooved aileron torque rod block onto the rear center of each wing panel. It should be butted up against the trailing edge cap and the groove on the top and toward the rear. Trim off any excess to match the root of the wing.

- () It is a good idea to make the aileron servo cutout at this time before the wings are joined. Position the servo in the center of the bottom of the wing between the main spar and the rear spar; do not cut away the spars. Make a cutout for the servo you will be using in each panel. Cutout for the $1/4" \times 3/8"$ spruce servo rails, too. Set the servo and the rails aside for now.
- () Place one wing panel on a flat surface with wax paper under the center section.
- () Move the other panel into place with the bottom of the tip rib blocked up 2".
- () Securely glue the wing panels together making sure there's no twist.



MAKE A RIGHT AND A LEFT!

- () With the material furnished, make a RIGHT and a LEFT torque rod assembly as shown. Make sure you put the tubing over the wire before bending!
- () Measure $3/8"$ from the center and mark the rear of the aileron block on the wing.
- () Cut an approximately $1/8"$ wide groove vertically in the aileron block at these marks to clear the torque rod after it is installed and swings forward. Hold the torque rod assemblies in place and check the operation: the torque rod should be able to swing through approximately 30 degrees both ways.
- () Roughen up the outside of the nylon tubing and glue the torque rod assemblies to the torque rod block with thick CyA, being careful not let any wick inbetween the rod and the tubing.

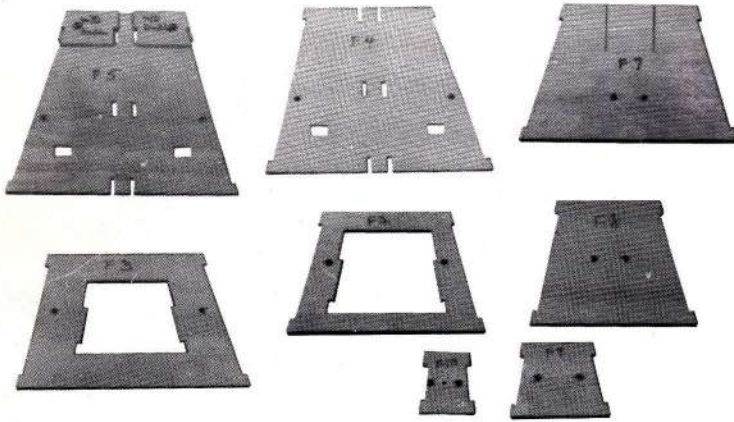


- () Check that both pieces of $7/16" \times 1 1/2"$ aileron stock are $25 1/4"$ long.
- () Place the ailerons in position lined up with the tip and make a mark where the torque rod hits the aileron. Using a $3/32"$ bit, drill holes in the ailerons to accommodate the torque rod. Angle the hole so you drill into an ample amount of material.
- () Locate the hinge position and slot for and temporarily install the hinges....they, too, need to angle down into the aileron.

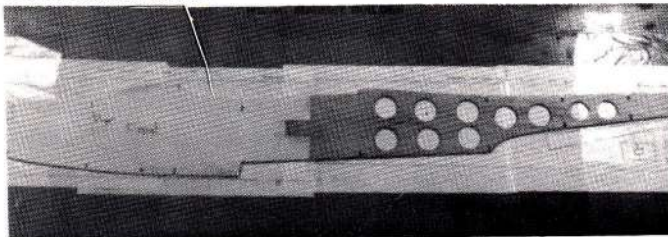
- () Sand the ailerons so you get a good match at the tip. Remove them for now.
- () It is time to reinforce the center section of the wing. We have found the following technique to be the easiest.
- () Cut four pieces of the 4" wide Polymat cloth 12" long.
- () Spray one side of each of the pieces with 3M Spray 77.
- () Apply this to the bottom center section with a 1/4" overlap at the center.
- () Repeat for the other side on the bottom. Repeat for both sides on the top, overlapping at the front and rear.
- () Making sure you don't wick any into the aileron linkage, impregnate the cloth with thin CyA.
- () Trim away any excess.
- () Using the same technique, further reinforce the very center of the wing with the 1 1/2" wide heavy cloth.
- () Sand off the fuzz until smooth.

- covered with wax paper to keep them aligned. Make the left side first (good side up) and then the right side (good side down).
- () Keep the right side down on the work surface.

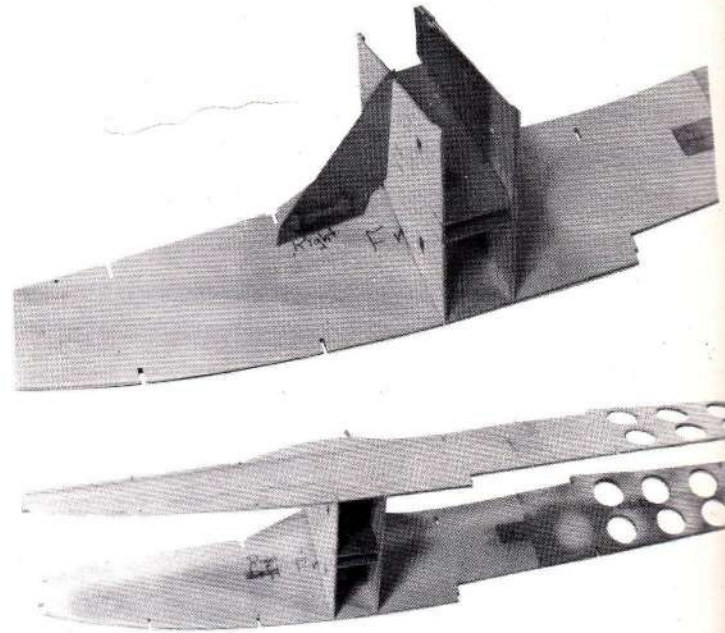
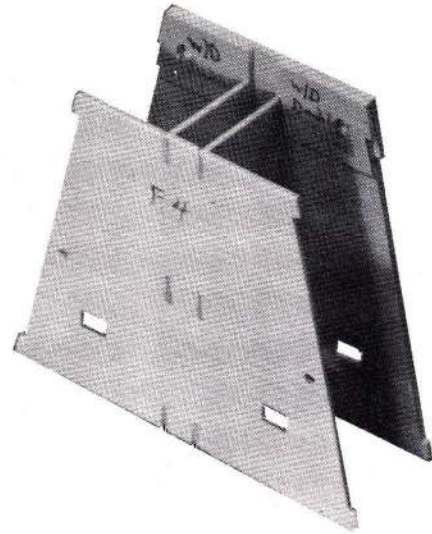
III. FUSELAGE CONSTRUCTION



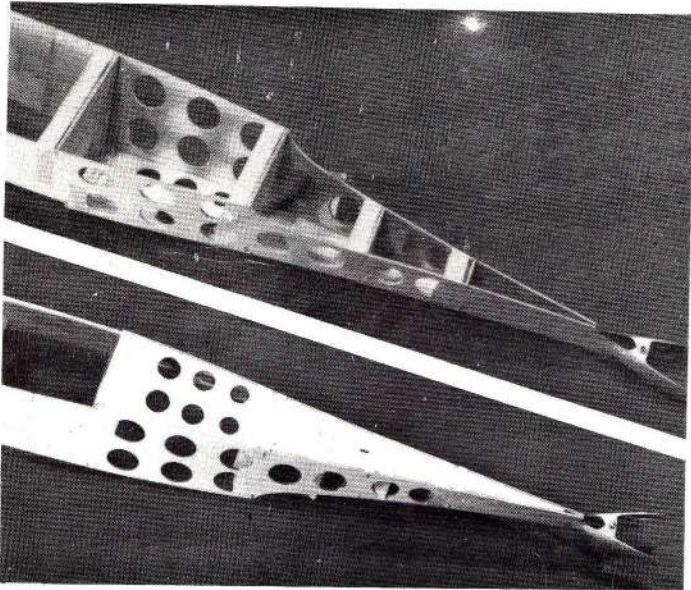
- () Before punching the fuselage parts out of the die cut sheets, identify and label them lightly with a soft pencil using the ID guide.
- () Remove the parts from the sheets and clean up the edges.
- () With a 1/16" drill bit, drill a hole where the "tic" marks are on the two Front Hull Sides. These will be pilot holes for drilling out later.
- () With a 3/16" bit, drill holes where the "tic" marks are on formers F2 through F10. F1 will be drilled later.
- () Locate the Wing Dowel Doublers (2). Glue them to one side of F5, making sure the top outside corners are flush and the "tic" marks are facing you. Mark this side "front".
- () Drill two 1/4" holes through the Wing Dowel Doublers and F5 at the tic marks.



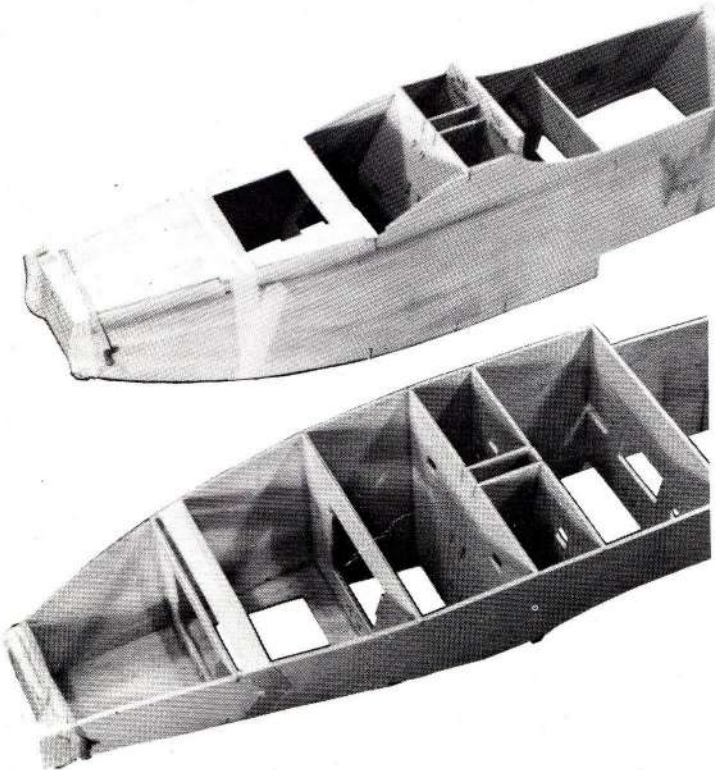
- () Locate the Front and the Rear Hull Sides. Pair them up so you can make a right and left side with the better of the two surfaces being on the outside.
- () Join the Front and Rear Hull Sides together using the plans



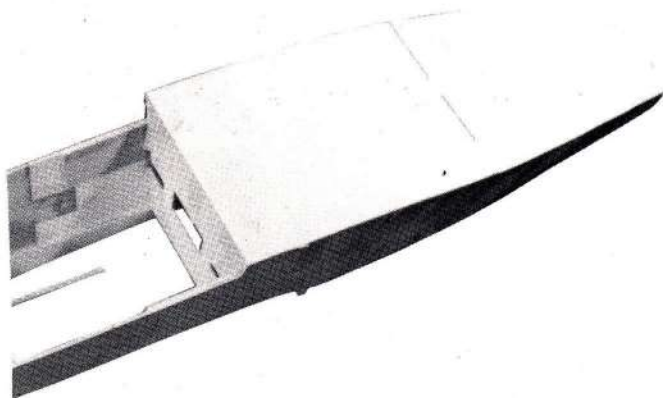
- () Test fit F4, F5, and the Pylon Spacers. Note that the doublers face the inside of this structure. Do not glue. Trim if necessary for good fit. Slip the 1/2" X 1 7/8" X 12 1/2" hardwood Pylon into the box formed by the Pylon Spacers...if it fits too tight, sand. With thick CyA, tack glue the tabs on the Pylon Spacers to F4 and F5, being careful not to glue the Pylon. Remove the Pylon and run a bead on the outside of the box formed by the Pylon Spacers, F4, and F5, being careful not to get glue on the inside of the box. Recheck the fit of the Pylon.
- () Glue this assembly to the right fuselage side.
- () Glue the left side to this assembly. After the glue has set, remove the hull from the work surface.



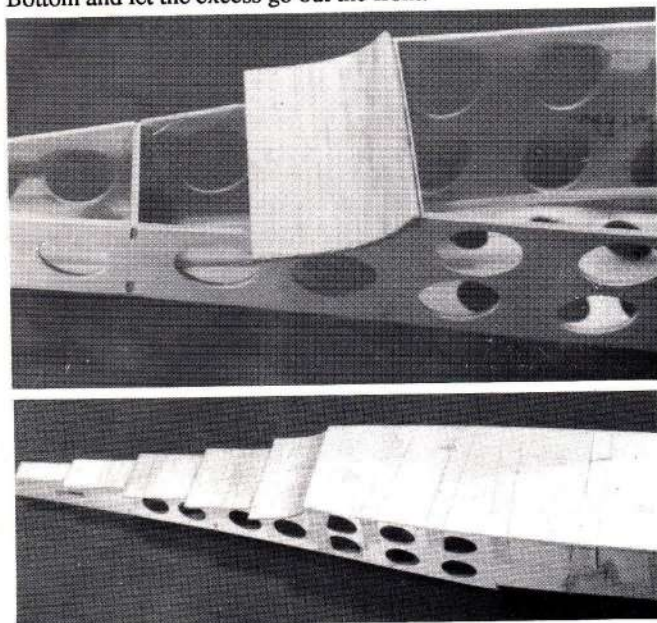
- () Slip (do not glue) formers F6 through F10 into place on one side or the other.
- () With the Hull Rear Top in place as you do it, bring the other side into place, starting at the former F7 and working rearward. Hold everything together as you go with masking tape. Clamp the rear together with a clip. Trim any tabs or notches as necessary for a good fit.
- () Run a bead of CyA on all the former-to-side joints.
- () Note that F7 has an incomplete cut-out in it. Glue the top of F7 outside of this cutout to the top. With a knife, complete the cutout and remove. Now add the Rear Top Brace to add strength back to where the cutout was removed. This cutout is to provide aileron linkage clearance.
- () Now run a bead of CyA over all the rest of the former-to-top and top-to-side joints.
- () Unclamp the rear, apply some glue, and re-clamp.



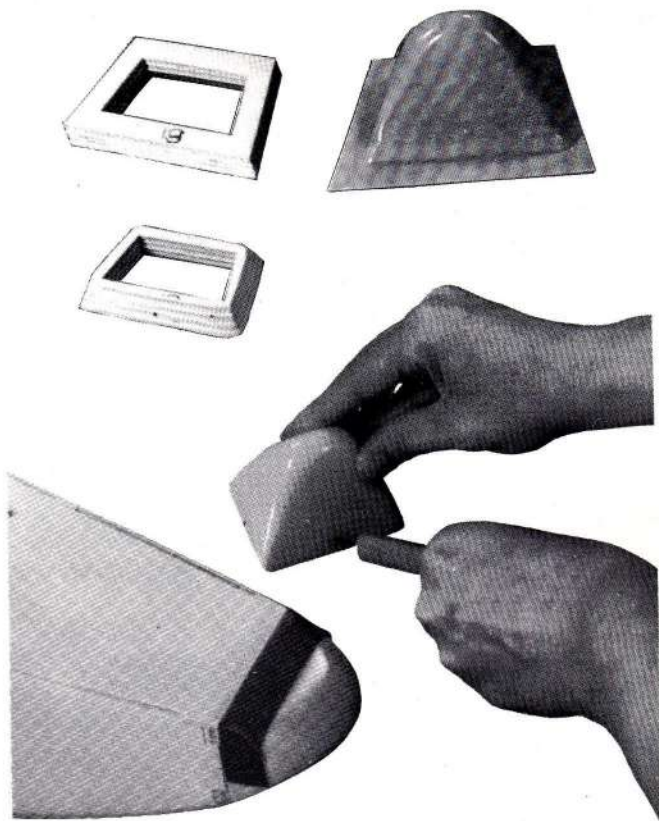
- () Locate the Hull Front Top. Note there is a die cut hatch in the Front Top. On the inside surface, mark the front of the hatch with "Front". Now the hatch can be removed.
- () Glue the two F1's together with the "tic" marks on the outside.
- () Draw a center line vertically on the front of F1. Locate the nylon Nose Gear Bearing and position it on the front of F1 so that the steering arm, when installed, will line up with the "tic" mark. Mark the four hole locations for the Nose Gear Bearing. Drill four 1/16" pilot holes at these locations and mount the Nose Gear Bearing with No. 4 X 1/2" self tap screws
- () Test fit F1, F2, F3, and the Hull Front Top, using tape and rubber bands to hold everything in place. Leave the Windshield off for now...it is installed after the wing is drilled for the dowels.
- () When satisfied with the fit, from the bottom, run a bead of CyA of glue around all the joints you have just created.
- () Locate the Hatch Retainer. Working from the inside, center this in hatch opening and run a good bead of CyA on the outside edge of the Hatch Retainer.
- () Put the Hatch into place. Drill a 1/16" hole down through the Hatch and the Hatch Retainer, 1/8" in from each corner. Remove the Hatch and drill out the holes in the Hatch to 3/32". The Hatch is secured with No. 2 X 3/8" Screws.
- () Glue the Landing Gear Doublers to the inside of the fuse sides, against the rear of F6 and flush with the bottom edge of the sides.
- () Also glue the Wing Saddle Doublers to the inside of the fuse sides, flush with the top edge of the sides in the wing cutout area.
- () Now it is time to think about your radio installation. Study the drawings under Part VIII, Equipment Installation. The Throttle, Elevator, and Rudder servos go right behind F6 on rails that rest on the Landing Gear Doubler. The Elevator servo goes in the middle. The side that the throttle servo goes depends on your throttle linkage. Study the plans and visualize how your engine will mount so that the throttle linkage is down on the bottom, closest to the fuselage. Most engines, this will be such that the engine head and carburetor are on the right. In this case, the Throttle servo is to mount on the right side and the Rudder servo on the left.
- () Drill a 1/8" hole in F1, 1/8" below the "tic" mark that is on the same side the rudder servo will go.
- () From the 22 1/2" length cut a piece of inner Nyrod (white) to extend from F1 to just beyond F6. With sandpaper, take the shine off the front of the outer surface of the Nyrod you just cut. Thread it through the appropriate holes in F1, F2, F3, F4, F5, and the slot in F6. Making sure it is flush with the outside surface of F1, glue the Nyrod to F1 with a bead of CyA on the back side.
- () At the rear of the fuselage, where the rudder Nyrod exits (on the side opposite the rudder servo), finish cutting the slot for the exit. Glue in the slot on the other side.
- () From the 36" length, cut a piece of outer Nyrod (yellow) 24" long. Roughen it up where it will exit the fuse and where it will pass through F7.
- () Install it in the fuse so about 1/2" extends out the rear and glue in place at the rear and at F7. After dry, trim off the excess at the rear. Double check that it is securely glued in place, especially where it exits the fuse.



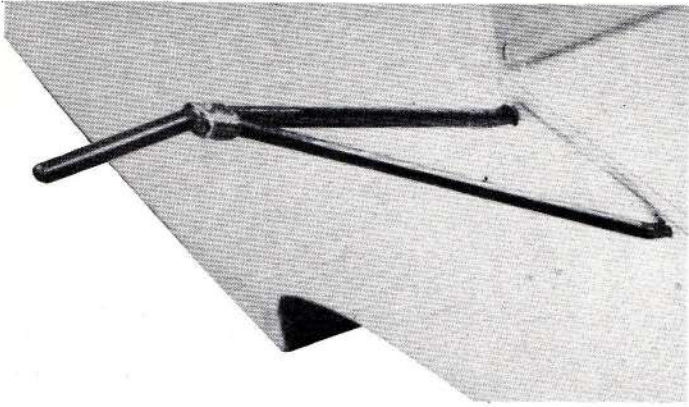
- () With a long sanding block, sand the bottom of the hull so the formers and the hull bottom are even.
- () Three die cut lite ply pieces cover the bottom from F1 to F8. You will need 15 minute or longer Epoxy to do this job, plus plenty of masking or duct tape.
- () Begin with the Hull Center Bottom. This goes from F3 back to the rear edge of F6. Epoxy it in place, keeping it flush with the rear edge of F6. Note it is purposely a bit oversize. Just keep it centered as best you can. Mainly, make sure you put enough tape on to hold the joint securely.
- () Repeat for the Front Bottom. Make it flush with the Middle Bottom and let the excess go out the front.



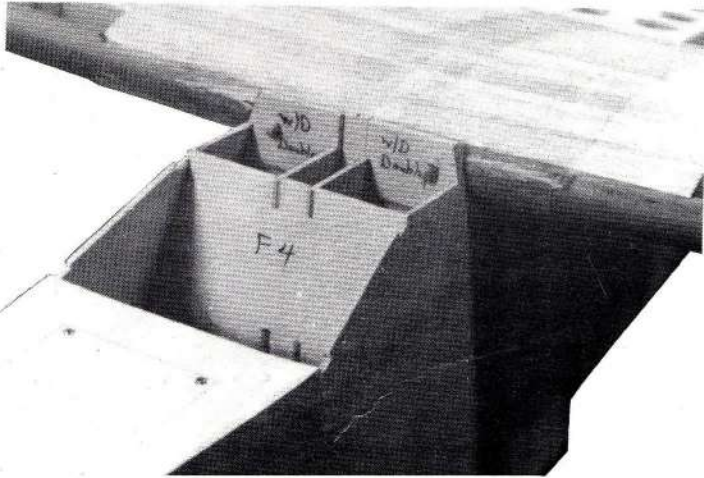
- () Soak a 5" long piece of 1/8" X 3" balsa in hot water for about 10 minutes...if you have some ammonia to add to the water, do so.
- () Glue this to the curved portion of the bottom behind F8, letting it protrude up a bit past the former.
- () When dry, trim this planking off flush with the bottom of F8.
- () Now epoxy the final lite ply bottom piece in place with the front butted up against F6. When dry, trim the rear to match the contour of the planking.
- () Finish planking the rear with the 1/8" balsa furnished, crossgrained.
- () After the Epoxy has set, trim off any excess material from the bottom and block sand. Do not round off the edges, especially from F8 forward.



- () Laminate the four Bow Retainer pieces together. Keep the edges lined up. They will be shaped to fit inside the plastic Bow.
- () Trim the excess plastic from the vacuum formed plastic Bow. Shape the Bow Retainer to fit snugly inside the Bow. The back surface of the Bow Retainer should be flush with the rear edge of the Bow.
- () With the Bow Retainer in place, mark the center of each of the top and two sides of the Bow, 1/4" forward of the rear edge. On the bottom, make two marks, 1/4" either side of the center. Drill a 1/16" hole at each mark, keeping the bit perpendicular to the bow. Remove the Bow retainer and enlarge the holes in the Bow to 3/32".
- () Using five No. 2 X 3/8" Self Tap Screws, fasten the Bow to the Bow Retainer.
- () Fit this assembly to the front of the fuselage; some trimming will be needed to clear the Nose Gear Bearing.
- () Being careful not to glue the Bow to the Bow Retainer, glue the Bow Retainer to the Hull (F1), keeping it centered.
- () Remove a screw from one of the edges of the Bow, and sand the fuselage to match the Bow. Protect the plastic Bow with some tape while sanding. Repeat for the other three edges.
- () Remove the Bow and temporarily install the preformed Nose Gear. You will have to drill a hole in the Bow Retainer to clear the gear. The Steering Arm with an 1/8" Wheel Collar and set screw holds the gear in place (you will have to cut the first hole off the arm. The top of the gear should be flush with the top of the Nose Gear Bearing. After your airplane is all finished and everything is working OK, grind a flat spot on the Nose Gear where the set screw makes contact. The nose wheel (not furnished) is secured by soldering the furnished eyelet to the axle.
- () Reinstall the Bow, making a slot to clear the Nose Gear.



- () Using a 3/16" bit, drill out the holes for the front landing gear tube. They are located just behind the front step where you drilled a 1/16" pilot hole.
- () Repeat for the landing gear brace tube, using a 5/32" bit. These holes are just behind the holes you just drilled.
- () Roughen up the ends of the 5/32" and 3/16" brass tubing supplied.
- () Slide them into their respective holes, and glue in place with CyA or Epoxy. When dry, sand off any excess flush with the outside of the hull.
- () Prepare the preformed landing gear by filing any burrs off the ends. Also, shine the gear up with steel wool to remove any oxidation or grease.
- () Slip the 5/32"D Landing Gears and 1/8"D Landing Gear Braces into their respective tubes. Using the fuselage itself as a holding fixture, bring the Landing Gears and Landing Gear Braces together at the bottom. Wrap the joint with the soft wire furnished and solder securely with a large soldering iron or small torch.
- () The wheels (not furnished) are secured by soldering the eyelets furnished to the axles.
- () When flying the Seamaster off of land, use a rubberband across both gears to keep the gears from working their way out; it doesn't take much to hold them in. Of course, in the seaplane mode, simply pull the gears out; since the tubes are continuous, no water gets in the hull.



- () Put the wing in it's position on the fuselage. Make sure it is centered.
- () While holding the wing in place, drill two 1/4" holes into the wing, running the bit through the holes in F5 that are already drilled. The holes should go through the leading edge and go into the hardwood block that is installed in the wing.

() From the 1/4" dowel furnished, cut two pieces 2 1/4" long. Sharpen one end and round the other on each piece. Press the sharpened end of each dowel in the holes you just drilled, leaving about 3/16" of the dowel protruding from the wing. Glue in place by wicking thin CyA into the joint.

() Measure 1 1/2" in front of F7 and mark the inside of the wing saddle doubler. Securely glue the 3/4" X 3/4" X 1 1/2" hardwood Wing Holddown Blocks to the Wing Saddle Doubler, centered on the marks you just made and flush with the top edge.

() Mark the wing 1 3/4" on either side of center and 1 3/8" forward of the rear edge. Reposition the wing and with the wing centered and lined up, drill a 3/16" hole through the wing and into the Hold Down Blocks, keeping the drill perpendicular to the top surface of the wing.

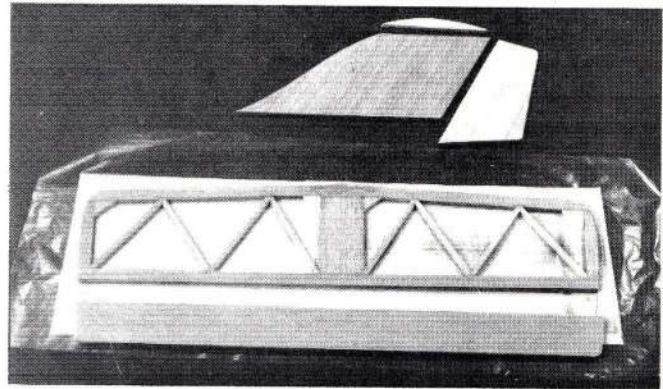
() Remove the wing and drill out the holes in the wing to 1/4". Tap the holes in the Hold Down Blocks out to 1/4"-20. Impregnate the hole with thin CyA and when dry, retap.

() The wing is secured to the fuselage with the 1/4"-20 nylon bolts and washers.

() Now glue the lite ply Windshield into place.

() Using a block and 50 or 80 grit paper, rough sand the fuselage, removing any excess material. Use a light weight filler such as Model Magic or Micro Fill for imperfections.

IV. TAIL CONSTRUCTION



() Locate the 1/4" balsa die cut Stabilizer and Fin parts and the lite ply Stab Leading Edge Brace.

() On a flat surface, build the Stabilizer over the plans covered with waxed paper. The "Spray 77 Technique" works well here, too. Follow this sequence:

1. Leading Edge, Trailing Edge, Tips, and Center Section.
2. Leading Edge Brace.
3. Gussets (small ones in the center.)
4. 1/4" Sq. Diagonals.
5. Remove from the work surface and reglue all joints from the other side with thin CyA.

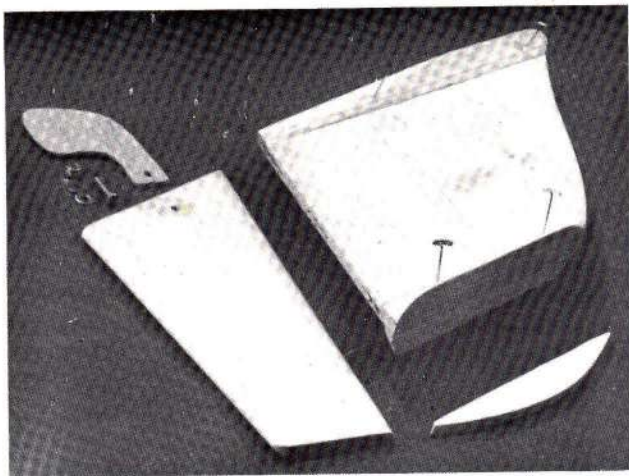
() Glue the four 1/4" Fin parts together on a flat surface with the bottom edges lined up.

() With a sanding block, round off the following edges: the leading edge and tips of the Stab, the trailing edge and tips of the Elevator, and the trailing edge and tips of the Rudder.

() Bevel a 30° degree "V" into the leading edge of the Elevator and the Rudder.

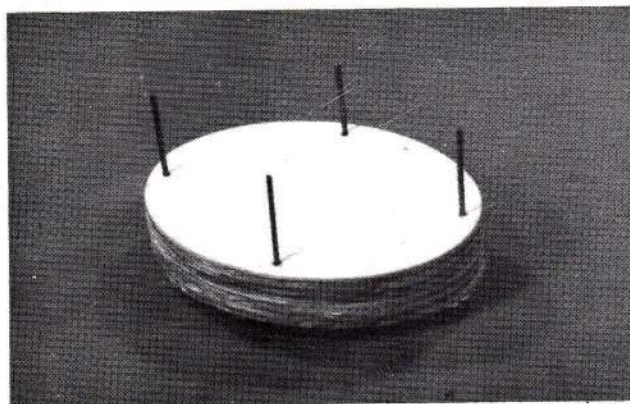
() Leave the trailing edge of the Stab, the trailing edge of the Fin and the leading edge of the Fin square.

() Sand the surfaces of the Stab, Fin, Elevator, and Rudder smooth.



- () Slot for and temporarily install the hinges in the tail surfaces.
- () Drill a 3/16" hole in the Rudder in the middle, 1" up from the bottom. Cut a 1/4" length of outer (yellow) Nyrod and press it into this hole. Soak the area around this tubing with thin CyA.
- () Drill a 1/8" hole at the 'tic' mark in the lite ply water rudder for the 6-32 X 3/4" bolt furnished. It will be installed with this bolt and an aircraft nut after the plane is complete. For strength, coat the water rudder with thin CyA.
- () Balsa triangular stock is furnished for tail bracing. Cut two lengths for the top of the Fin and two lengths for the bottom of the Fin. Shape the front and rear of the top pieces to fair into the leading and trailing edge of the Fin. Do the same with the bottom pieces, and also taper them at the rear to match the Fuselage sides when installed.
- () The 1/4" balsa Fin Cap will be installed later....it supports the elevator Nyrod and installs with the sharply pointed end at the Stab leading edge.

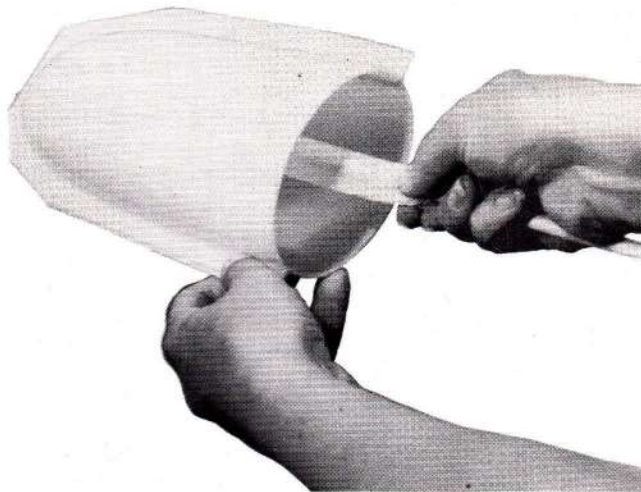
V. PYLON/POD CONSTRUCTION



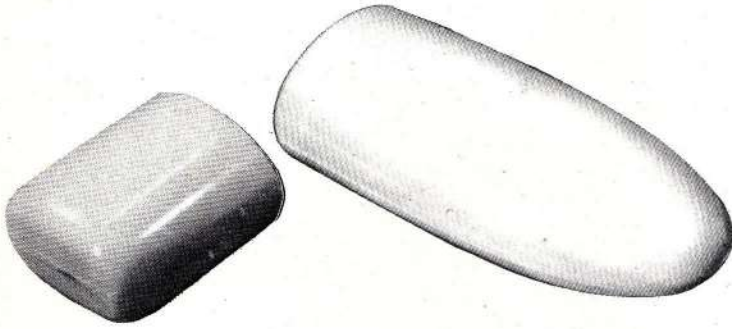
- () As it comes, the pylon measures 12 1/2" overall. If you will be using a 10" prop, 1" can be cut off. If you will be using an 11" prop, leave it full length.
- () Locate the six lite ply Firewall parts. Note the "tic" marks. These are reference marks for engine center-line plus assembly guides.
- () The easiest way to glue these parts together correctly is to drill 1/16" holes at the four outside tic marks. Use toothpicks, 1/16" dowels, or 1/16" music wire in these holes to keep the six parts aligned as you glue them together. Keep the double tic marks at the top. Slow cure epoxy is recommended.



- () Using clothespins, clamp the two plastic Pod halves together, lining them up as best you can. Use thin CyA and wick along the edges of the flanges. Don't be too concerned about getting a perfect glue joint; the flanges will be cut off later.
- () With a sharp knife or razor saw, cut the front Cowl from the rear Pod, separating the plastic part into two pieces.
- () Check the length of the cowl relative to the engine you are using. Shorten if needed.
- () Use thick CyA or Epoxy to fill in the radius of the seam on the inside of both the Cowl and the Pod.



- () Cut a piece of the 3/4" nylon tape, 22" long. Spray one side with Spray 77. Using a dowel or stick, press the center of the tape to the inside center of the Pod; work the nylon tape around the seam to the front. When the tape satisfactorily covers the entire seam, wet the tape with thin CyA to reinforce the seam.
- () Repeat for the cowl.
- () Using the same technique, reinforce the front lip of the Pod and the rear lip of the Cowl. Butt this reinforcement tape up against the tape you applied for the seam reinforcement...if you overlap them, you will build up too much thickness.

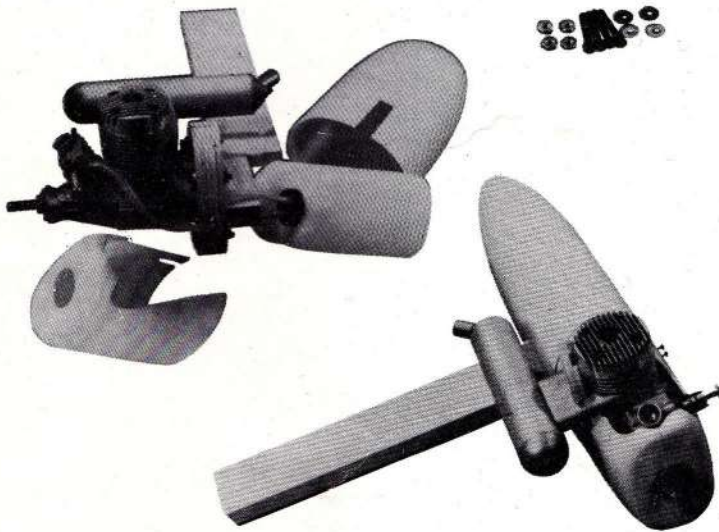
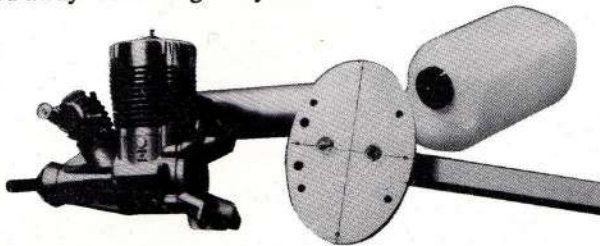


() Trim the flange off the Pod and Cowl. If you have access to a bandsaw, it is the quickest: saw to 1/16" away and block sand the rest.

() Fit the Pod and Cowl onto the laminated Firewall. Each is mounted halfway onto the Firewall. Some sanding of the Firewall will probably be necessary for a snug fit; when done, soak the edge with thin CyA to strengthen.

() Make a mark around the lip of the Cowl and Pod, 3/16" back from the edge. Slide the Pod half way onto the Firewall. Use a 1/16" bit and drill seven holes around the rim of the Pod. The two holes on the bottom are to be spaced about 1" apart to allow clearance for the Pylon. Remove the Pod and drill the holes out to 3/32". Reattach the Pod and secure with seven No. 2 X 3/8" Self Tap Screws.

() Repeat the same procedure for the Cowl using six No. 2 X 3/8" screws. You won't need one on the side where the cowl will be trimmed away for the engine cylinder.



() Remove the Pod and Cowl and drill for the engine mount you will be using. Center it on the firewall. On the vertical centerline of the Firewall, drill two 5/32" holes, 1/2" above and below center. Countersink for the No. 8 X 1 1/4" Wood Screws. Drill 3/16" holes for the fuel line near the top edge of the Firewall, about 3/4" apart.

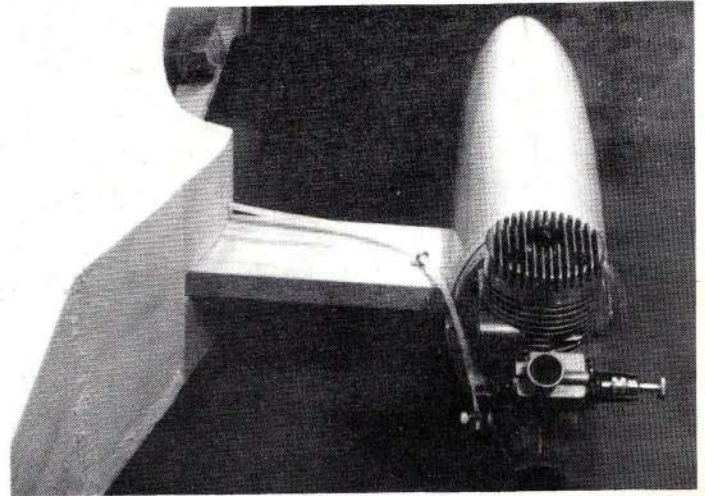
() Epoxy the Firewall to the Pylon with it centered, perpendicular, and flush on top.

() After the glue has set, drill 3/32" pilot holes through the two woodscrew holes into the Pylon; put some soap on the threads and anchor the Firewall to the Pylon with the two No. 8 X 1 1/4" Wood Screws.

() Mount the engine.

() Plumb your tank and run the fuel line and vent through the Firewall to the engine. Note that the tank is suspended in the Pod with pieces of foam rubber on four sides.

() Install the Pod, making a rectangular cutout to clear the Pylon.



() Install the Cowl, making the appropriate cutouts to clear the engine.

() Slide the Pylon assembly into the Fuselage, making sure it bottoms out.

() Use the No. 6 X 1/2" Self Tap Screw to hold the Pylon in place by running it through the back side of F5 into the Pylon.

() Cut the 5/8" X 2" X 5" Balsa block in half and glue each half up against F5 on either side of the Pylon. DO NOT GLUE to the Pylon.

() Remove the Pylon and shape the fairing blocks to match the windshield. From the backside of F5, run a 1/4" drill bit into fairing blocks through the dowel holes so they will clear when the wing is put on.

() Prepare for the throttle linkage installation by making a mark on the outside of the fairing block 1/2" in front of the rear edge of F5 and 3/8" to the right (or left, if appropriate) of the pylon slot. Drill a 1/8" hole at this mark, angling the hole so it will exit the rear of F5 about 1 1/2" down from the top. Make sure it exits below the wing. Thread the outer rod for the throttle linkage through this hole and route it over to the throttle servo location.

DO NOT GLUE.

() Reinstall the Pylon assembly.

() Route the other end of the throttle linkage to the carburetor and mark where it runs along side of the pylon, about 1/2" below the Pod. Install the screw eye furnished in the Pylon at this point.

() Hook up the inner (solid) throttle linkage to the carb and check for free movement.

() After satisfied with the throttle linkage, remove it from the plane to be reinstalled after the plane is finished.

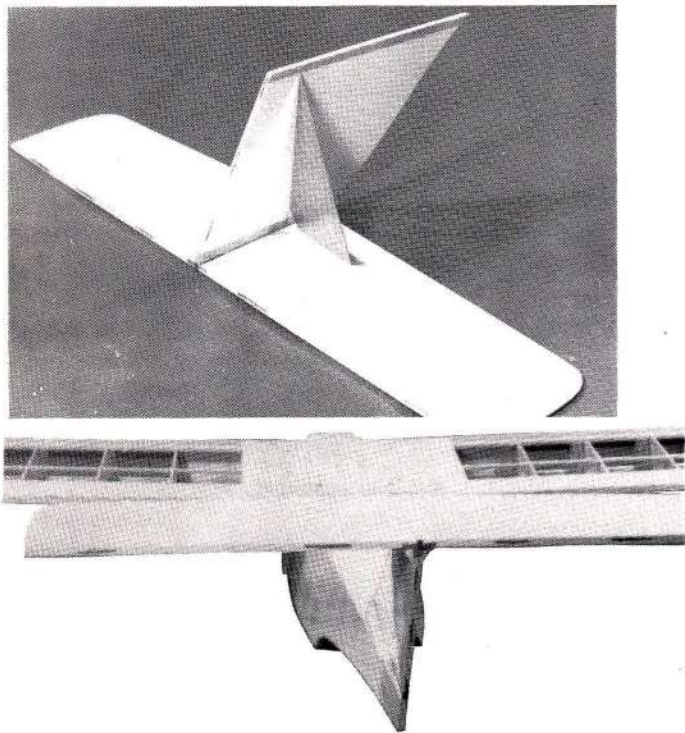
VI. TAIL INSTALLATION

() There are two ways to go here. If you are using a film type covering material, you may want to cover the tail and the fuselage first before gluing it together. It is easier to cover before assembly than after. If you do, mark the stab and fin where the glue joints will be and cover up to there. Don't cover over the joint area and then cut the covering away because you'll inevitably score the surface of the wood, weakening the structure.

() If you do cover the fuselage before installing the tail, "store" the elevator linkage (white Nyrod) in the fuselage by threading it through the slot in the fuselage top and through the holes in F8 and F7. Pull it on through until there is only an inch or so sticking out the slot. Let the excess coil up in the wing compartment.

() The other procedure is to cover the model after the tail is installed. This makes building easier but covering harder. If you are going to paint the plane, it is the proper way to proceed.

() Either way, the following steps indicate how to install the tailat this point the tail surfaces can be covered or uncovered.



() Lay the Stabilizer down on a flat surface. Center and glue the Fin to the Stab using a triangle to keep it perpendicular. Add the triangular bracing.

() As an alignment aid, bolt the wing to the fuselage. Glue the Fin/Stab assembly to the Fuselage keeping it in proper alignment. Add the triangular bracing.

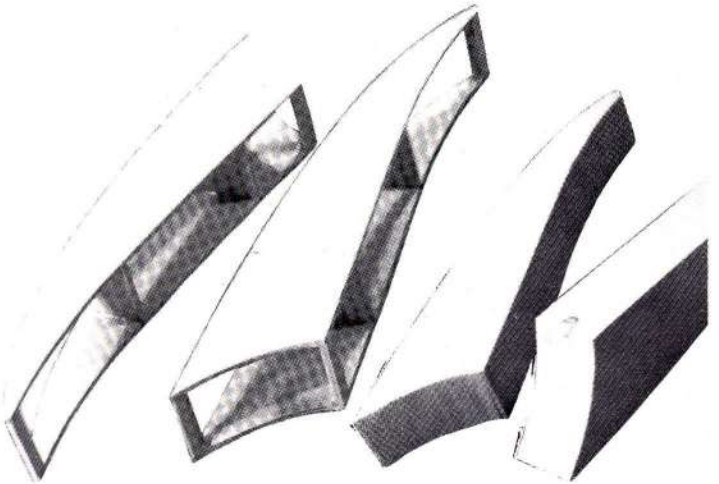
() Glue the Fin Cap in place on top of the center of the Stab. The sharply pointed end lines up with the front of the Stab.

() Install the elevator linkage outer tube (white Nyrod) through the slot in the fuselage top and the holes in F8 and F7. (This may already be installed; if so, pull it out from inside the fuselage.) Roughen up the outside of the last foot or so with some sandpaper. The linkage glues to the center of the Fin's leading edge and to the Fin Cap. A notch will need to be cut in the leading edge of the Stab to get a good transition. It should end about 2 1/2" forward of the Stab trailing edge (elevator leading edge). Glue it in place using thick CyA.

() After soldering a Threaded Coupler to one end and treading on a Clevis to the coupler, temporarily install the inner flexible metal cable for the elevator linkage. Position, drill for, and install the Elevator Control Horn. Note that you will have to do a little trimming on the Rudder to clear the horn's plate.

() Do the same for the Rudder Control Horn after temporarily installing the inner Nyrod, Threaded Stud, and Clevis.

VII. TIP FLOAT CONSTRUCTION



() Locate and punch out the Tip Float parts.

() Fit the sides and the formers together; remember, keep the better surface of the wood to the outside.

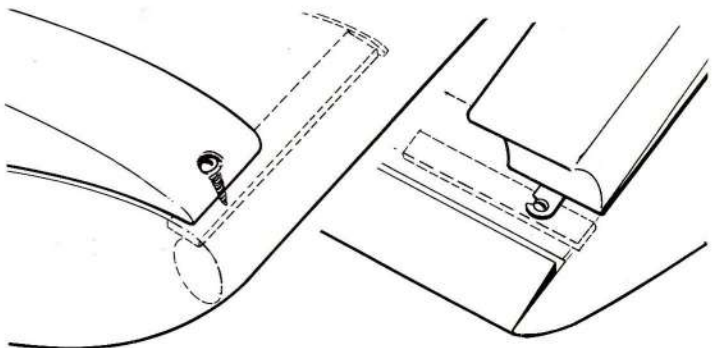
Glue with thick CyA, keeping the structure square.

() Add the three 1/4" X 1 1/4" braces at the front and the top and bottom of the rear. Keep the front brace and the top rear brace flush with the top edge of the float.

() Plank the floats with 3/32" X 3" balsa, crossgrained.

() Sand and cover or paint the floats.

() Look at the flat nylon hold downs furnished. One end has a "V" notch in the side of it. We will secure the other end of it to the top rear of each tip float. Cut away the sheeting in the center of the top rear of the float in 1/4" to clear the flat nylon hold down. The lite ply cross brace should be exposed. Secure the nylon hold down with a No. 2 flat head screw and CyA glue.

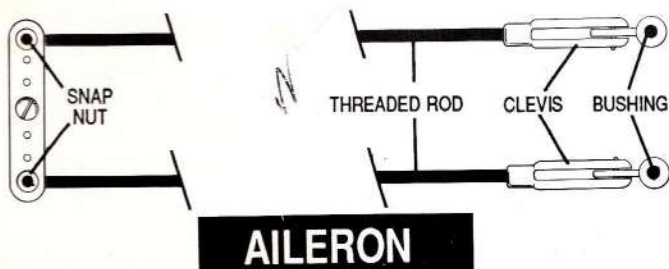
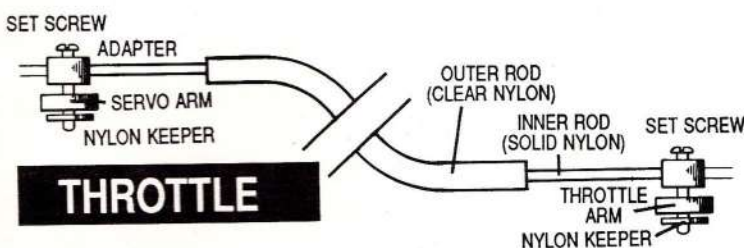
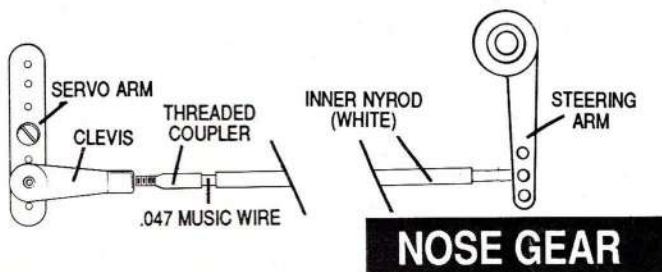
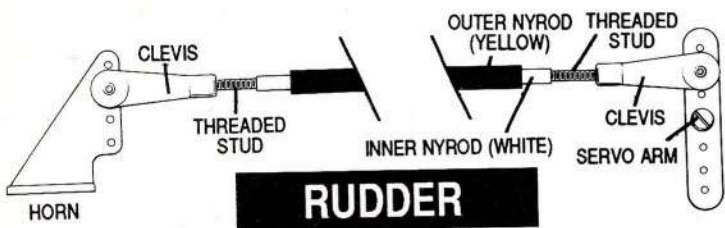
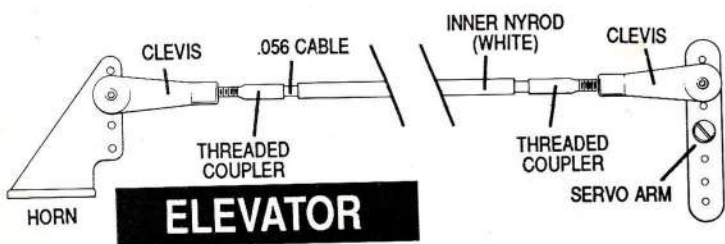


() Position a float on the bottom of the wing with the outer edge lined up with the outermost rib and the front edge lined up with the front edge of the lite ply mounting plate that is installed in the wing. At the rear, mark the location on the wing of the hole in the "V" notch. Remove the float, drill a 1/16" pilot hole, and screw a No. 4 X 1/2" Self Tap Screw into this location, leaving 1/16" of the screw exposed.

() Snap the tip float into place on this screw you just installed. At the front, centered on the float, drill a 3/32" hole about 3/16" back from the front edge through the float and into the mounting plate. Drill the hole in the float out to 1/8". The front of the float is secured with a No. 4 X 1/2" Self Tap Screw.

VIII. EQUIPMENT INSTALLATION

- () Reinstall the rudder and elevator control horns.
- () The throttle, elevator, and rudder servos are mounted to rails that rest on the landing gear doublers that are in back of F6. Cut the rails at an angle to match the slant of the fuselage side.
- () There are two lite ply pushrod braces to secure the outer tubes of the elevator and rudder linkages in the wing compartment. Slip them over the linkages before hooking up to the servo



- and glue them in place after the installation is complete. They overlap together at the center and in turn glue to the fuselage sides. Similarly do the same for the throttle linkage with a piece of scrap lite ply with a 3/32" hole drilled in it; slide it over the Nyrod and glue to the rear of F6. A piece of scrap with a 3/32" hole in it glued to the front of F6 will secure the nose gear Nyrod.
- () Position the batteries to achieve the proper balance or CG as shown on the plans. They will probably need to go up in the forward section of the hull.
- () The receiver can easily go in the section between F5 and F6. Holes are provided in the formers through which the cables can pass.

IX. KEEL/TAIL SKID

- () A 1/8" X 1/8" spruce keel is to be installed in the center of the hull from the front of F1 to the rear of F6. If you have covered the model with a film material, it will have to be cut back where the keel goes before gluing it on. Shape the front of the keel to match the contour. Impregnate the keel with thin CyA for strength.
- () A nylon Tail Skid is furnished to protect the bottom tail of the fuselage. Drill holes for it and install it just in front of the Rudder.

X. FINISHING TOUCHES

- () The plastic bow, pod, and cowl should be painted with a good enamel or epoxy paint. Sand the entire surface with 400 grit sandpaper to give the paint some tooth. If there is some doubt about the paint's compatibility with the plastic, test it on a piece of scrap first.
- () You will probably choose to paint the wooden Pylon, too. In any event, whether you paint it or cover it, don't apply the finish to the portion of the Pylon that fits down into the box in the fuselage; if you do, it won't fit.
- () The pylon is constructed to be removeable. It may be that you have no reason to ever remove the pylon assembly; if so, simply glue it in place.
- () Since you'll be flying off water, some precautions should be exercised to prevent water going in unwanted places. It is suggested to seal the wing-to-fuselage joint. The easiest and quickest way to do this is to use Silicone Sealant. Begin by covering the center bottom of the wing with plastic food wrap; bring it around the leading and trailing edges and hold in place with some tape, keeping it as wrinkle free as possible. Now run a bead of Silicone Sealant all around the fuselage wing saddle area where the wing contacts it. Install the wing in place immediately, using the nylon bolts and washers. Let dry overnight. Remove the wing and use a sharp razor blade to trim off the excess silicone. You should now have a virtually water tight seal for the wing. If your hatch is not a good tight fit, you may want to do the same for it.
- () Your receiver and battery pack should be encased in a plastic bag with a rubber band to hold the bag around the wire leads. Then wrap them in foam rubber as usual.
- () Now go over all your covering material seams and inspect them for integrity.

Continued on back

XI. FLYING OFF WATER

Unlike most airplanes on floats, when flying the Seamaster off of water there is very little you have to worry about different from flying off of land. One, Murphy's Law will apply. Even though you have your most dependable engine on the Seamaster, it will quit on you in the middle of the pond! Have some way of retrieving your plane.

You will find that with the water rudder deployed, taxiing with the Seamaster is easy even in moderate wind. As you accelerate for takeoff, just keep neutral elevator until the plane is

"on step" and flying speed is attained. A touch of up will break the plane from the water and you're in the air.

Landings, too, are much like on land, except you don't want to land at a full flare stall. Keep a bit of throttle in it and land with the airplane level and with some speed. After touch down, pull the throttle back to idle and let the plane slow up on its own.

If you are like us, you'll find yourself shooting touch and go's continuously and enjoying the thrill of combining the experience of flying with the tranquil beauty of the water. We hope the Seamaster provides you many hours of pleasure both in building and flying this unique airplane. Your comments are welcome.

INITIAL CONTROL SURFACE THROWS

Elevator: 1/2" Up, 1/2" Down

Ailerons: 3/8" Up, 3/8" Down

Rudder: 1" Left, 1" Right

(Measured at rear edge of control surface.)



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