

**ROYAL
PRODUCTS CORP.**

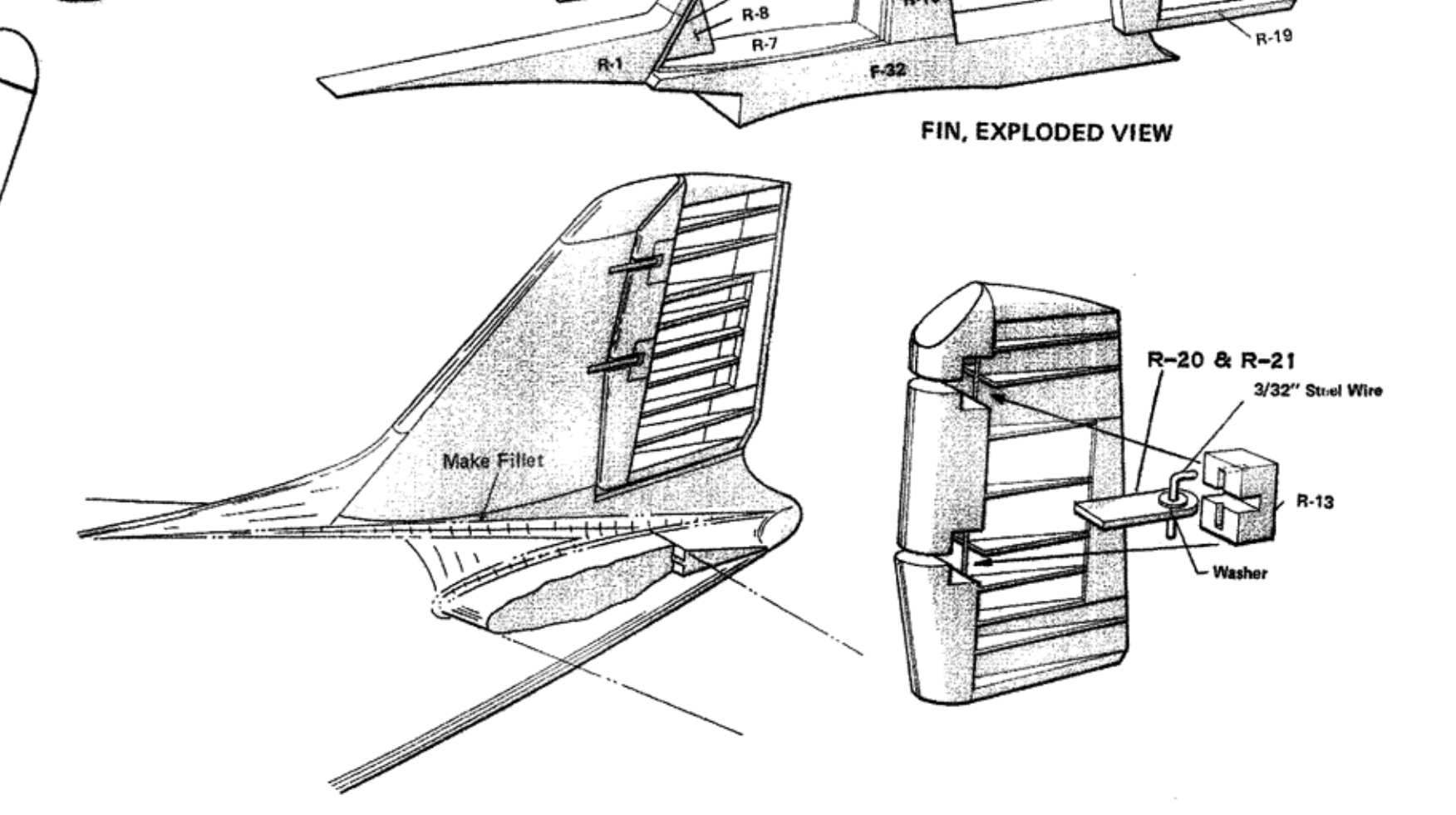
DOUGLAS C-47D

Skytrain

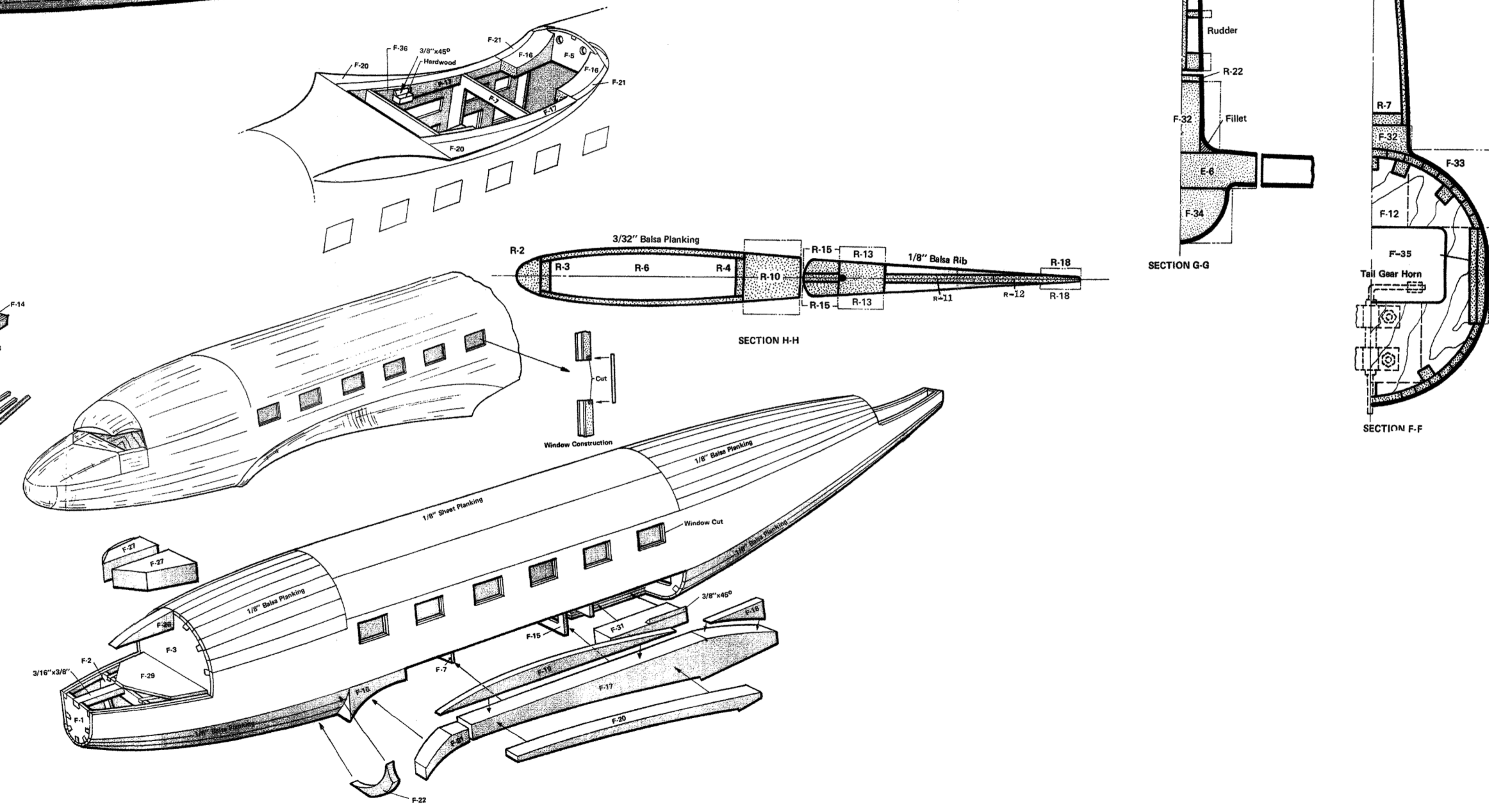
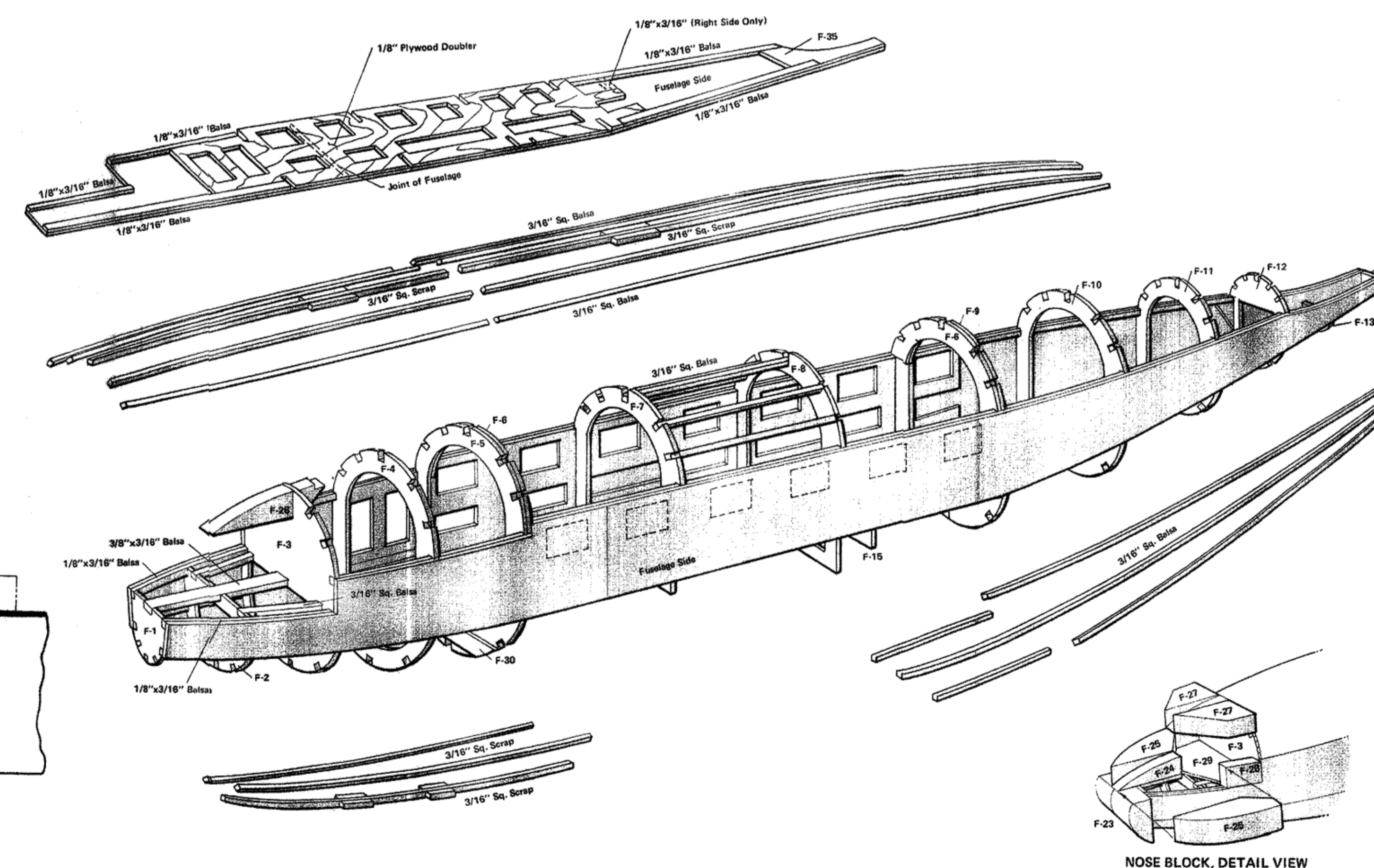
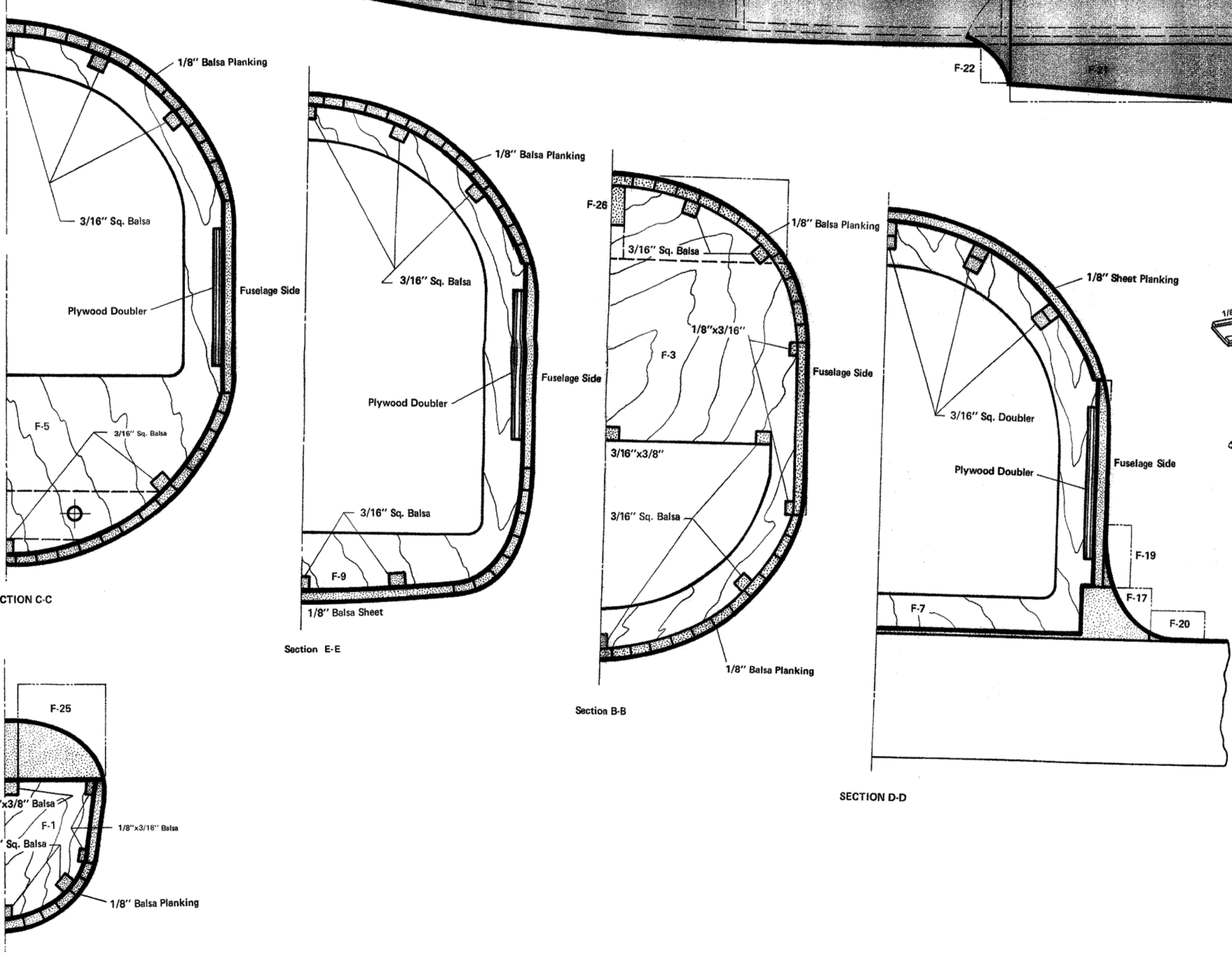
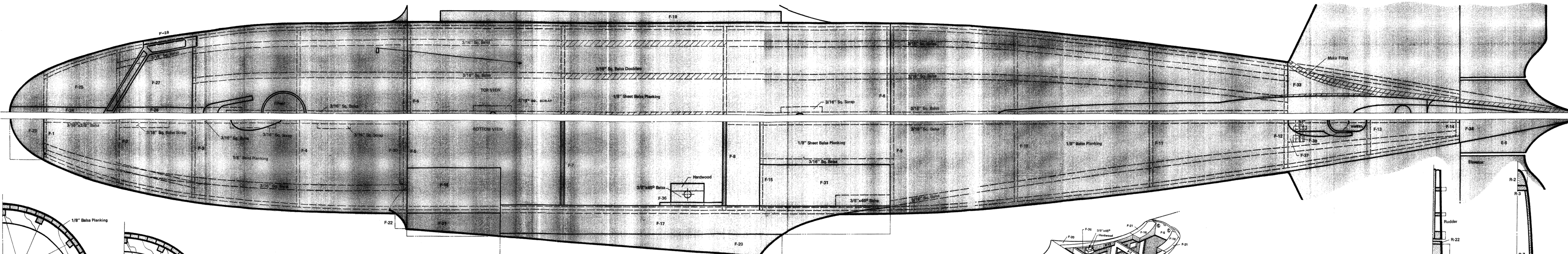
Scale 7/8"=1'
 Length 56 7/8"
 Wing Span 83 1/8"
 Wing Area 767 Sq. In.
 Weight 9-10 lb.
 Engine 40 R/C Twin
 Control 4-6 CH. Prop.

SPECIFICATIONS:
 Span 95 ft.
 Length 64 ft. 6 in.
 Height 17 ft.
 Weight, Empty 17,087 lb.
 Max. 29,300 lb.
 Cruising Speed 185 m.p.h.
 Maximum Speed 230 m.p.h.
 Service Ceiling 24,100 ft.
 Range 2,125 mi.

Powerplant: Two 1200 h.p. Pratt & Whitney
 Twin Wasp R.1830-92



- FIN AND RUDDER**
1. Mark centerlines on R-3,4,5,6, and 7.
 2. Pin R-4 to work surface with centerline facing up. Using cyanoacrylate adhesive (Hot Stuff, Zap, Jet) and a small right triangle glue R-7, 6, and 5 to R-4. Align centerlines and be sure ribs are square to R-4. Add R-8.
 3. Unpin and add R-3 to the face of the ribs. Be sure the centerline on R-3 intersects the rib centerlines.
 4. Carefully sheet the fin structure.
 5. Add R-2, R-10, R-9, and R-1.
 6. Pin R-11 to work surface. Glue R-12 to rear edge.
 7. Glue R-14, 15, 16, 17, 18, and 19 to surface of R-11/R-12.
 8. Add the 1/8" x 3/8" balsa ribs.
 9. When dry, flip over and repeat step 7 and 8.
 10. Relieve the two R-13 pieces for R-20 and 21 hinge pieces. Drill a 3/32" hole in R-20 and R-21. Make up hinge pin and drill R-13 accordingly. Assemble R-20, R-21, and hinge pins to the R-13 pieces. Glue R-13's in place in rudder assembly.
 11. Sand rudder and fin to shape but do not glue R-13's into R-10 until model is finished.



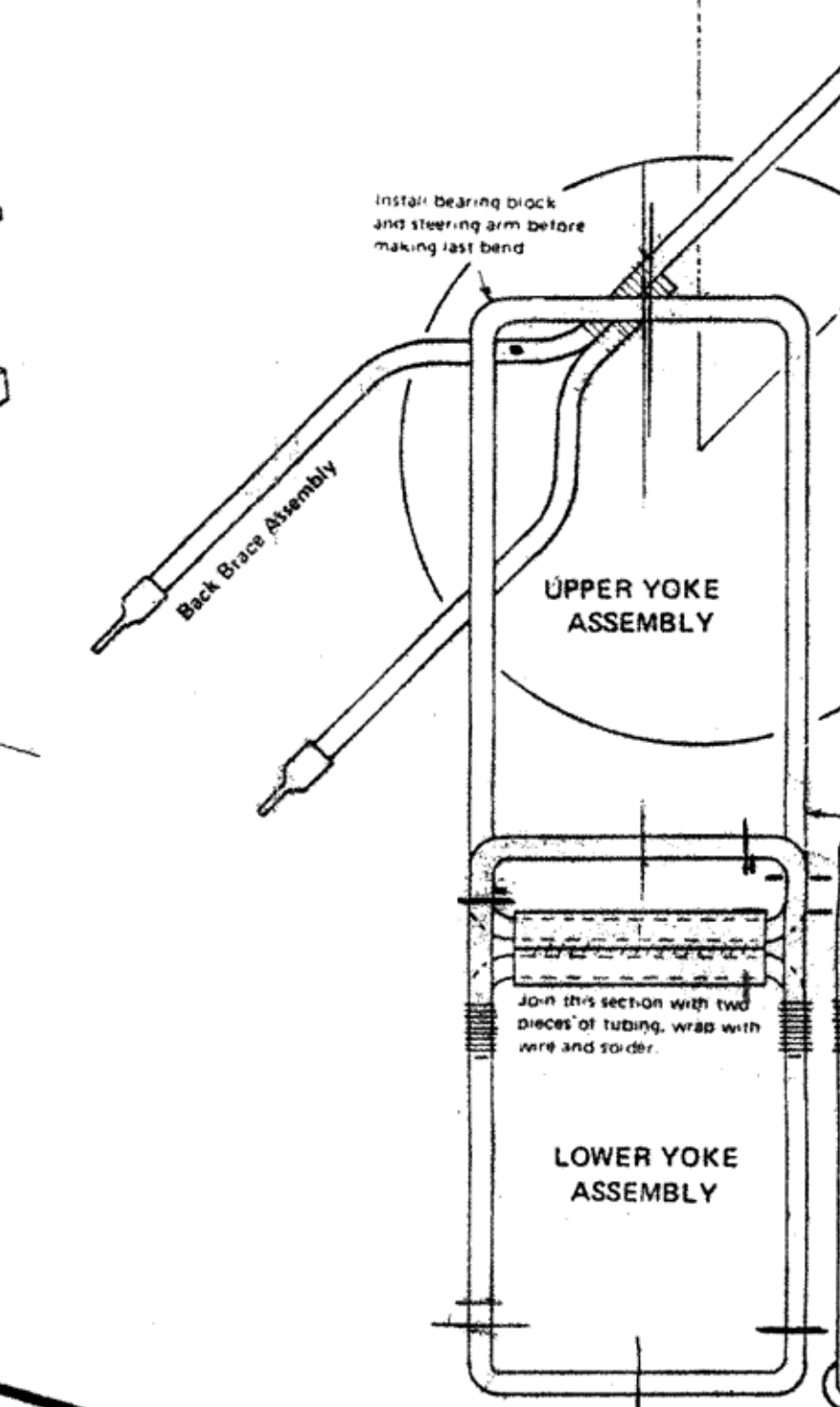
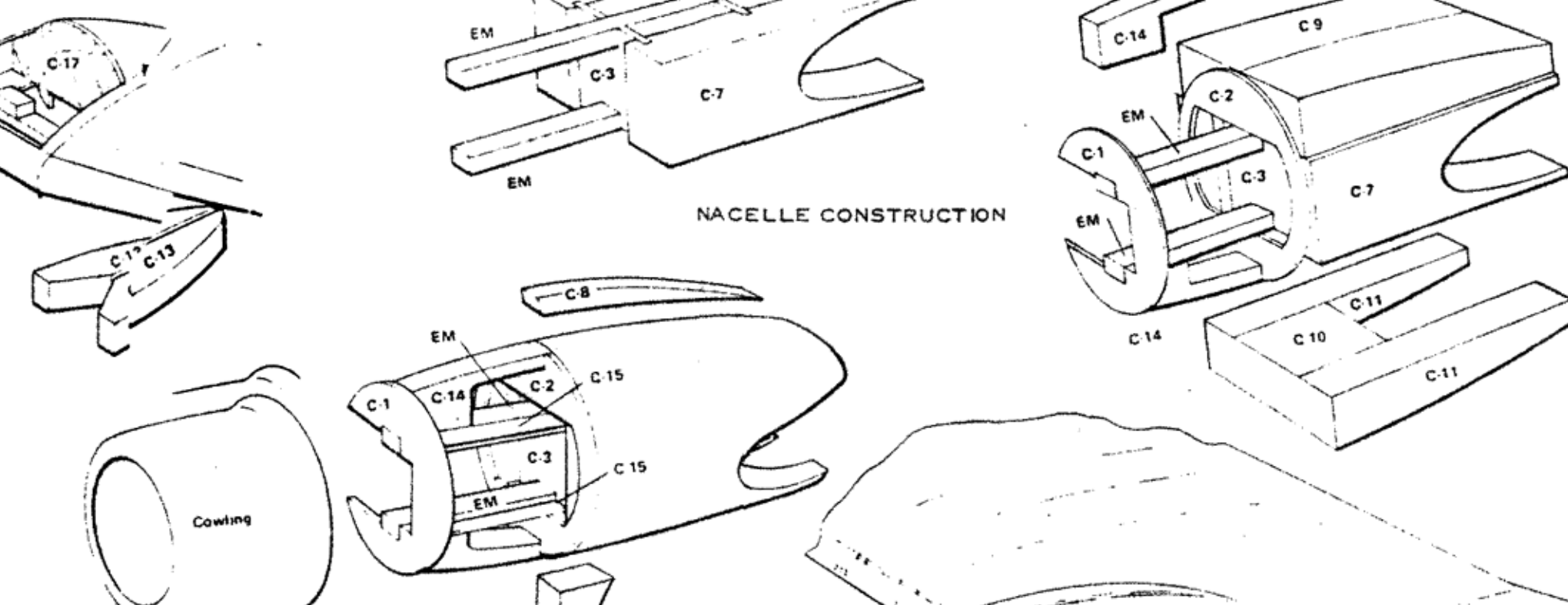
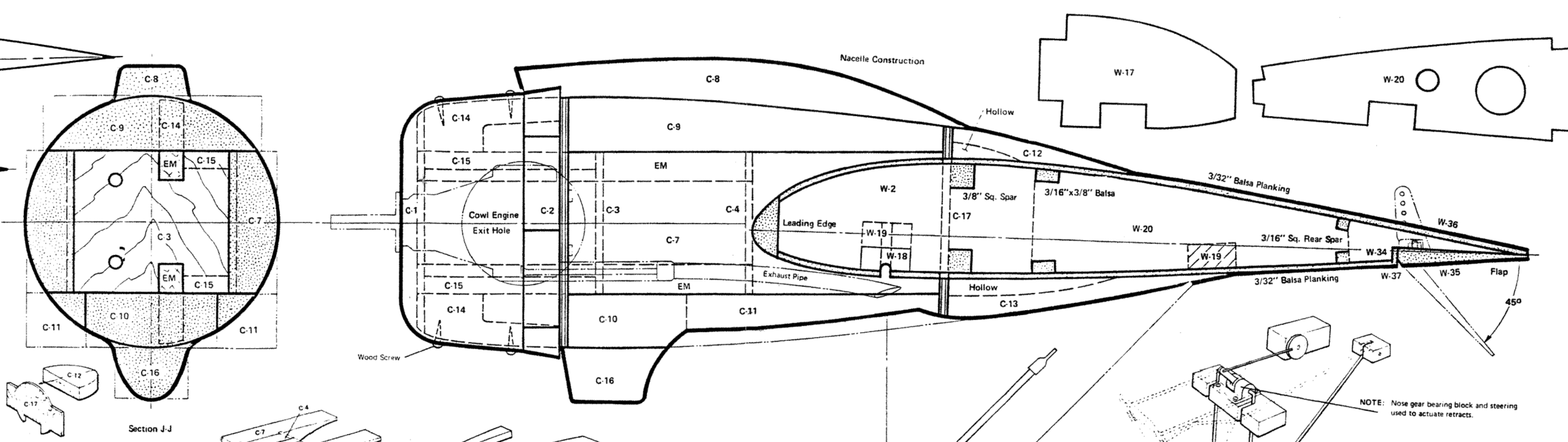
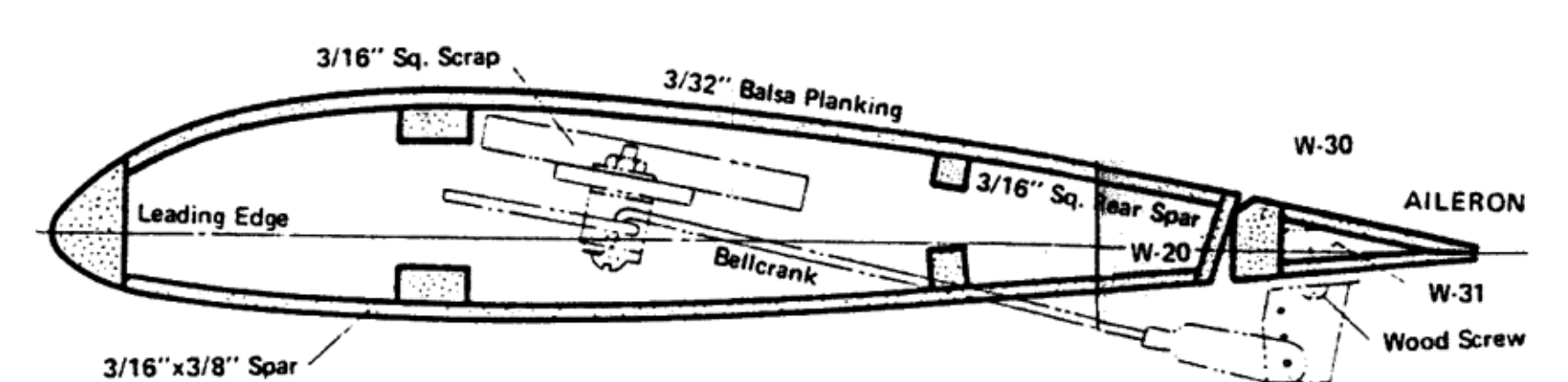
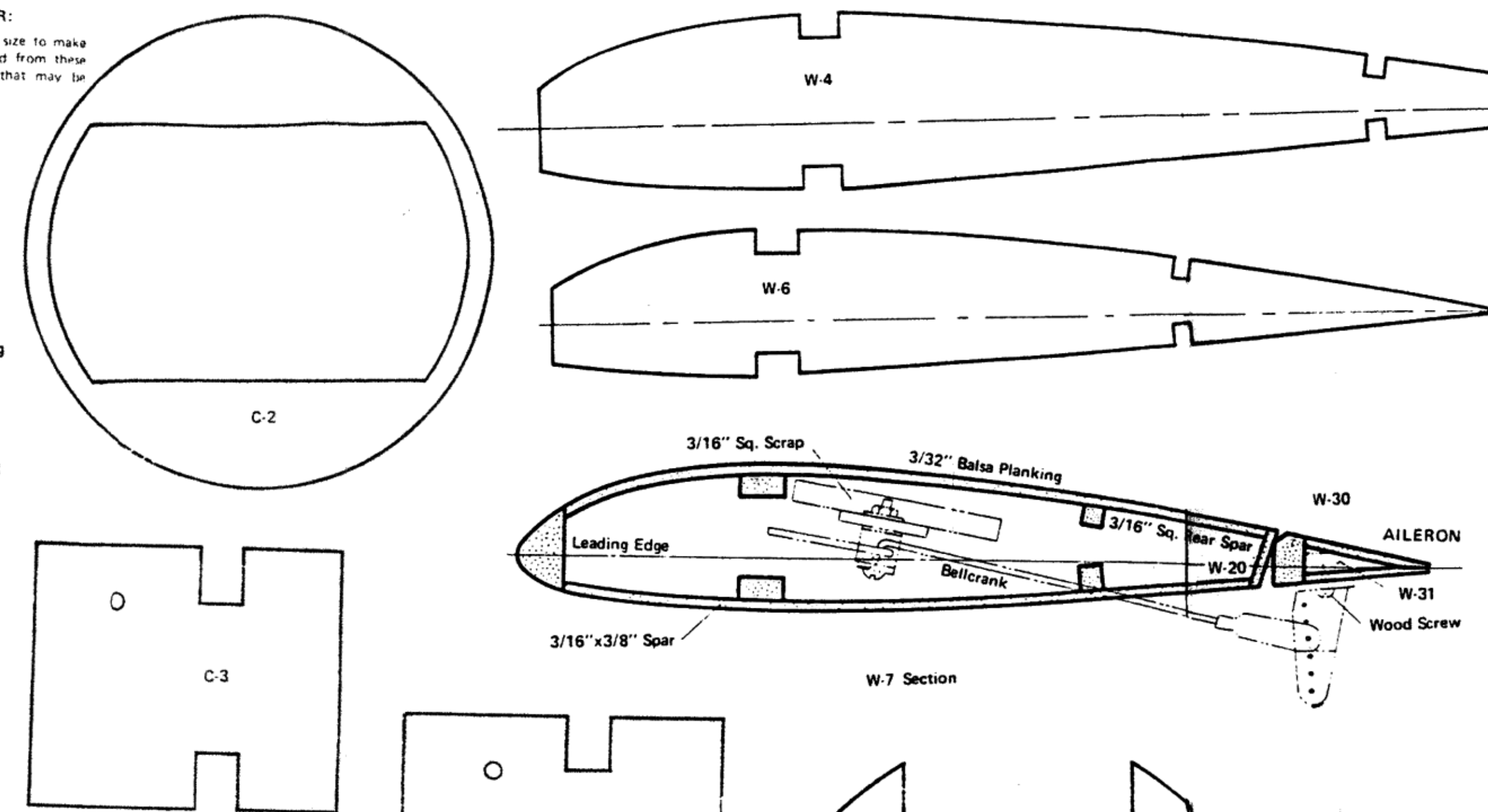
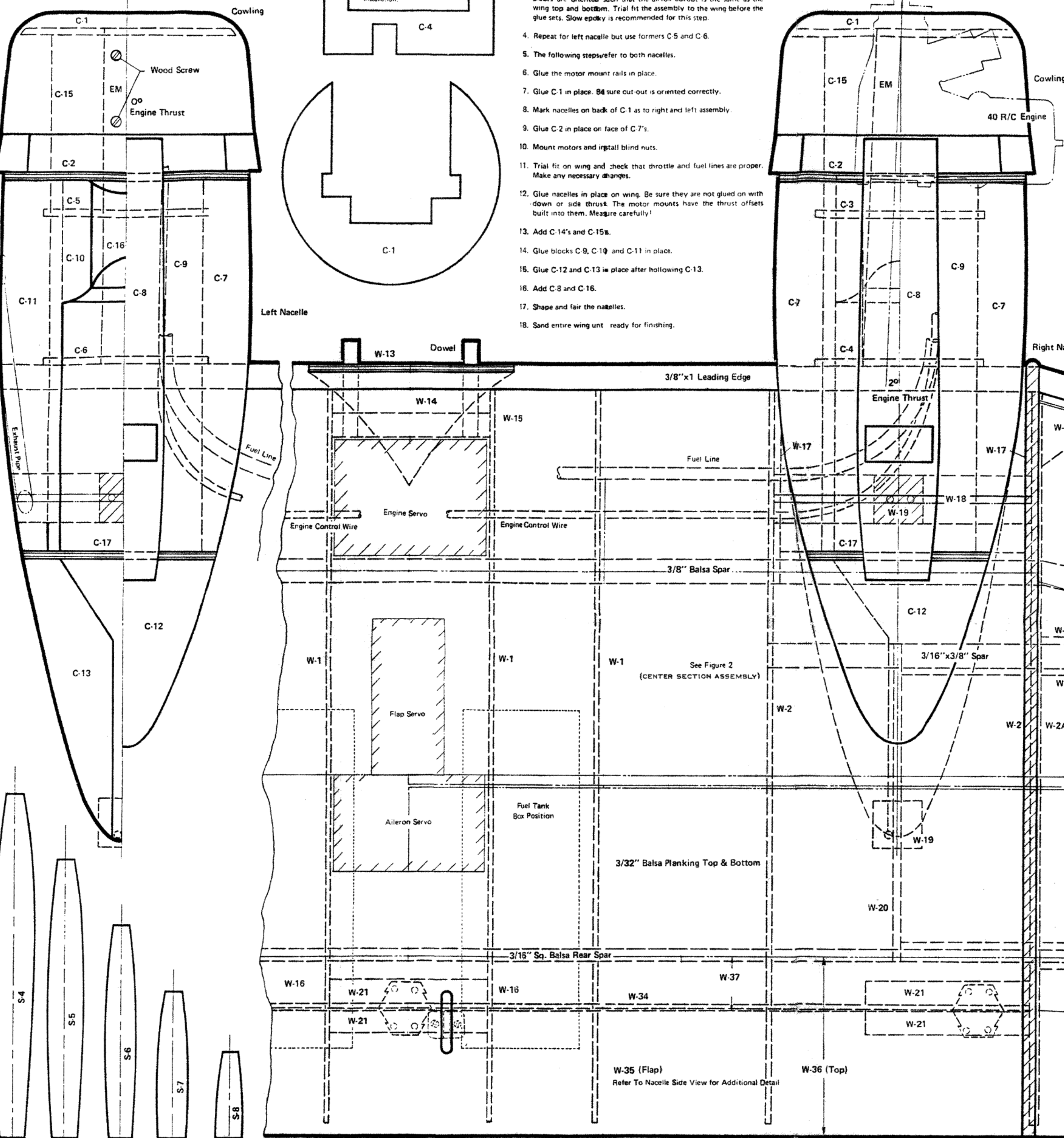
NACELLE CONSTRUCTION

- Note that two nacelles are constructed the same with the exception that C3 and C4 are in the right nacelle and C5 and C6 are in the left nacelle.
- Make a dry assembly of the nacelle. Check fit of parts.
- Start with the right nacelle. Glue C3 and C4 to two C7 pieces. Be sure that C3 and C4 are oriented properly. Work over the right nacelle drawing. Check that C3, C4 are 90° to the C7 side pieces. Also be sure that the C7 pieces are oriented such that the airfoil cutout is the same as the wing top and bottom. Trial fit the assembly to the wing before the glue sets. Slow epoxy is recommended for this step.
- Repeat for left nacelle but use formers C5 and C6.
- The following steps refer to both nacelles.
- Glue the motor mount rails in place.
- Glue C1 in place. Be sure cut-out is oriented correctly.
- Mark nacelles on back of C1 as to right and left assembly.
- Glue C2 in place on face of C7's.
- Mount motors and install blind nuts.
- Trial fit on wing and check that throttle and fuel lines are proper. Make any necessary changes.
- Glue nacelles in place on wing. Be sure they are not glued on with span or side thrust. The motor mounts have the thrust offset built into them. Measure carefully!
- Add C14's and C15's.
- Glue blocks C8, C10 and C11 in place.
- Glue C12 and C13 in place after hollowing C13.
- Add C8 and C16.
- Shape and fair the nacelles.
- Sand entire wing unit ready for finishing.

NOTE TO THE MODELLER:

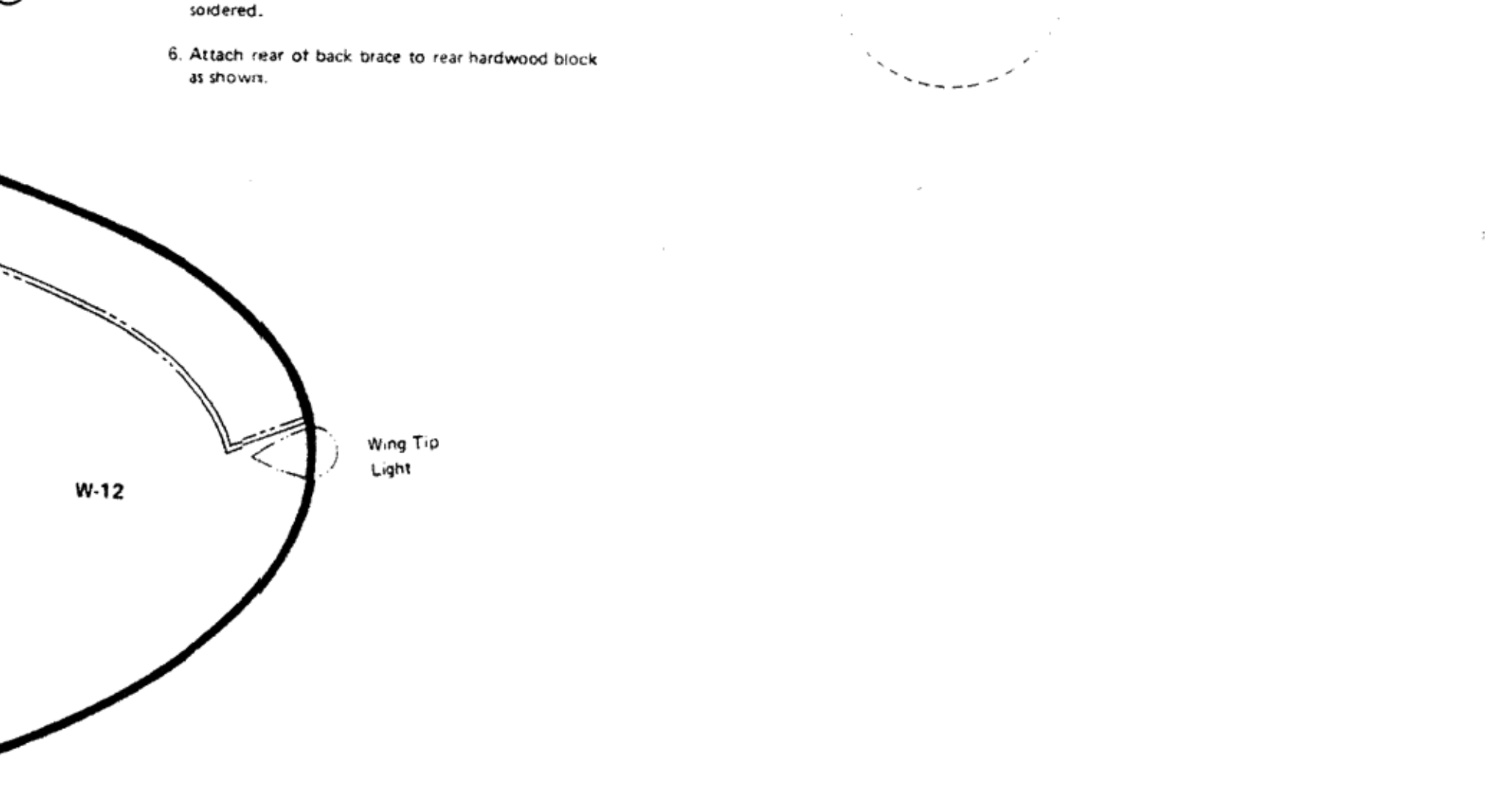
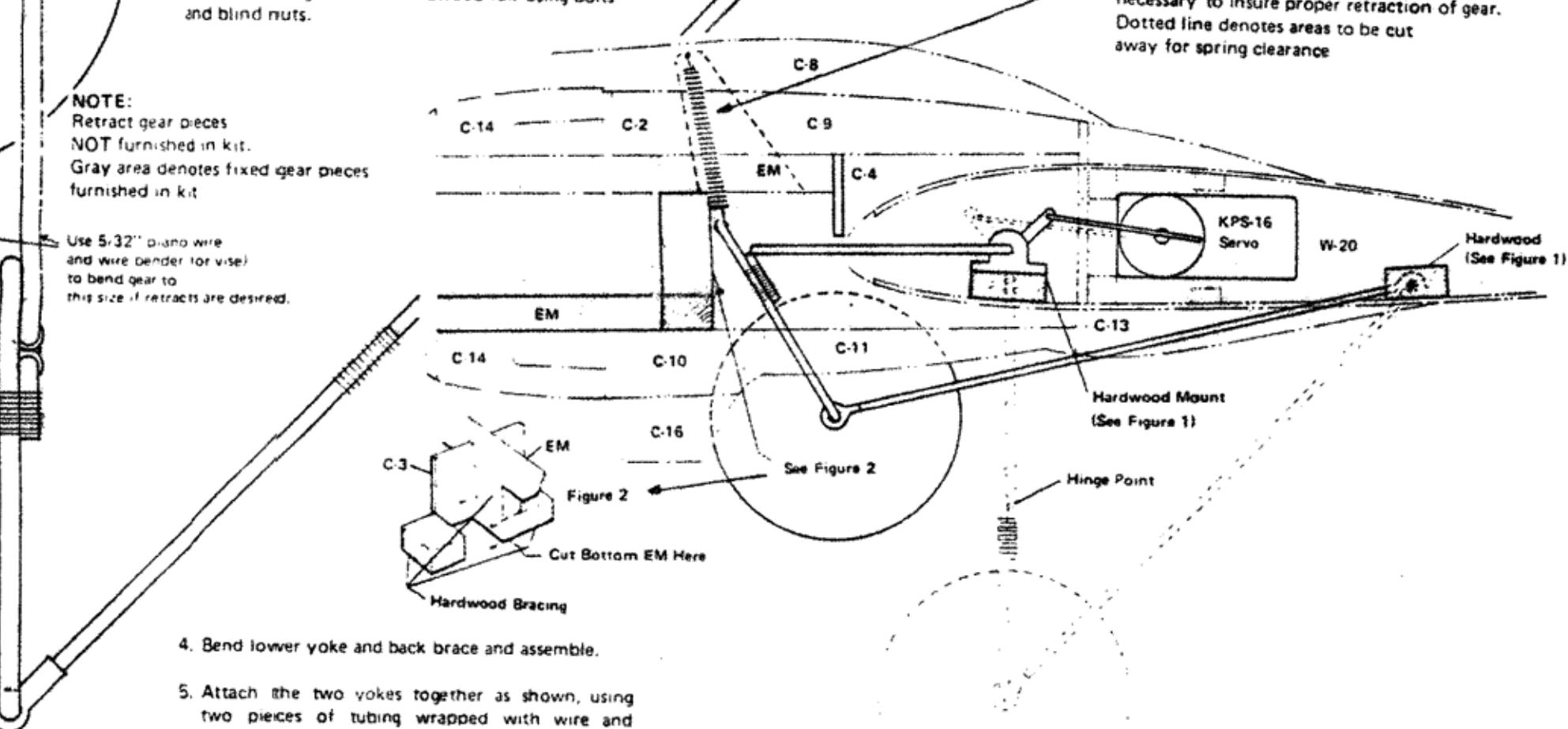
All formers and ribs are shown actual size to make "scratch" building easily accomplished from these plans, and to facilitate any repairs that may be necessary.

NOTE: UNCUT ENGINE COWL AVAILABLE IF WANKEL ENGINES ARE TO BE USED.



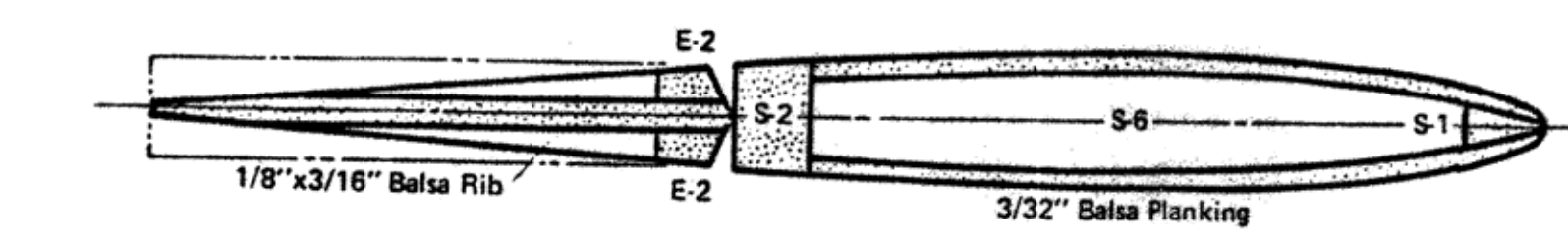
RETRACT GEAR MODIFICATIONS

- Cut away parts C16, C10, C13, C11 and C4 as required for clearance of wheel and all retract mechanism in extended and retracted positions.
- Send landing gear wire as per drawing, being sure to slip the bearing block and steering arm in place before making the last bend in the top "U" shaped leg. Grind or file a "flat spot" on the portion of the wire that comes in contact with the steering arm locking screw to prevent slippage.
- Attach bearing block to hardwood rail using bolts and blind nuts.

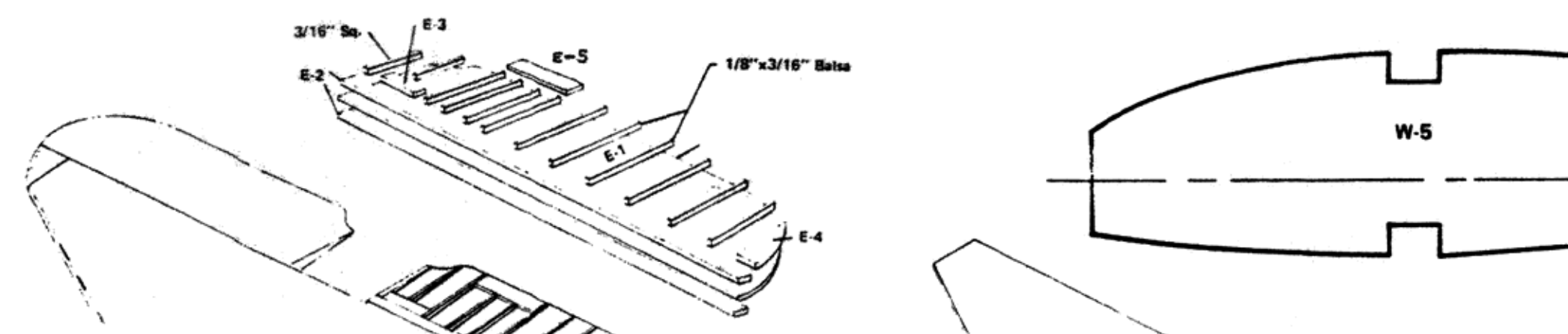


NOTE: Turn plans over to construct opposite wing. Rubbing plans with a light oil will make them more transparent.

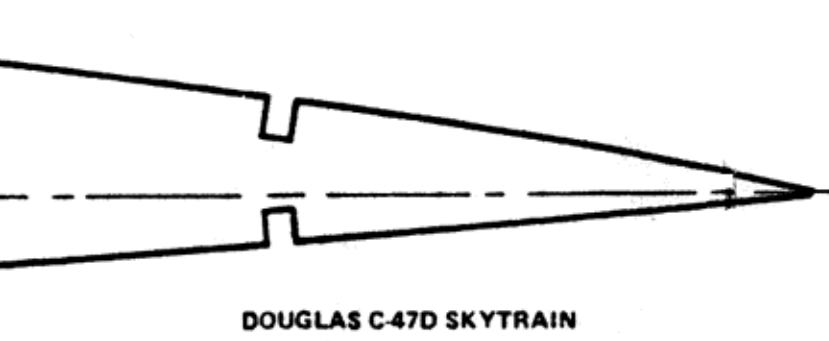
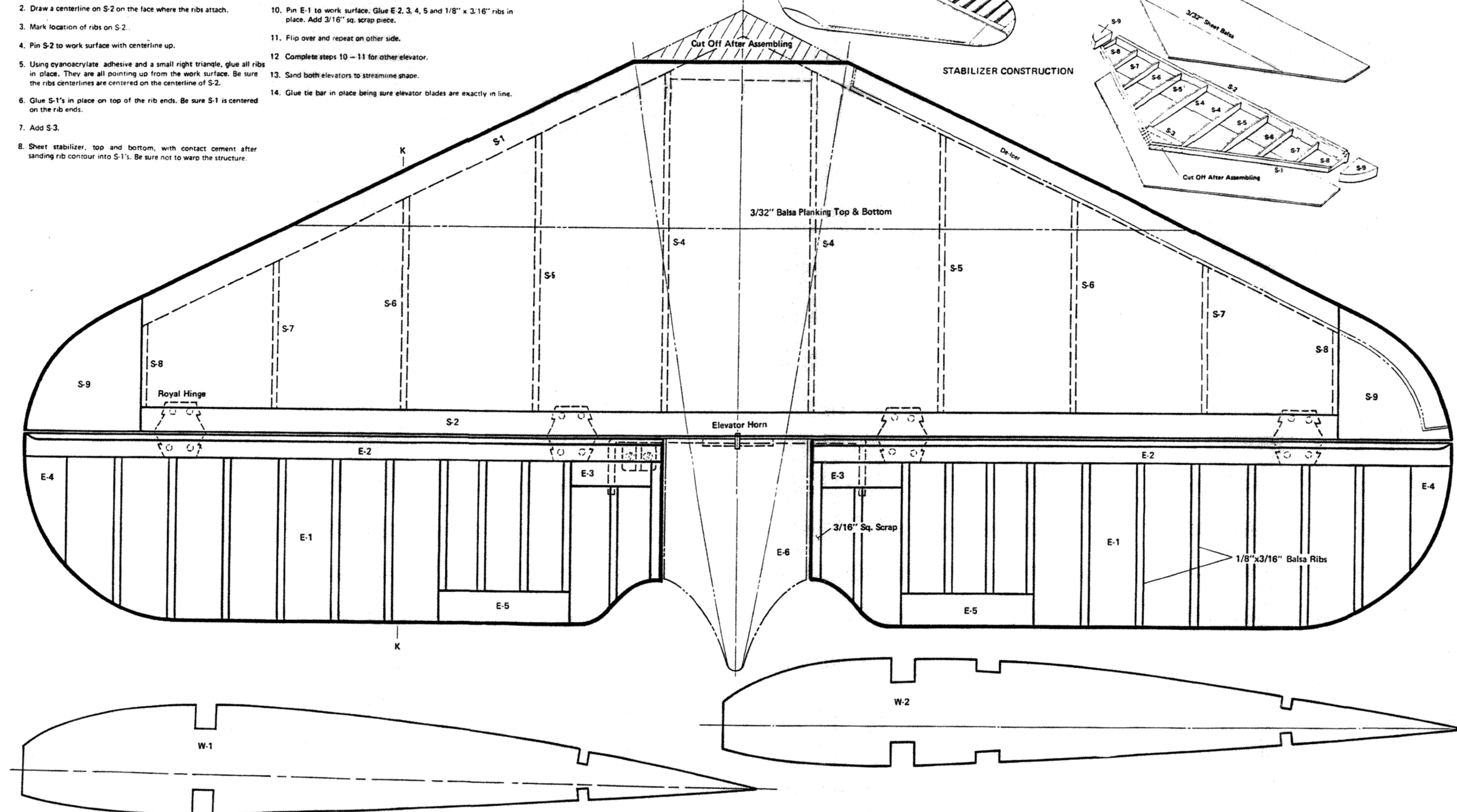
3/32" Scrap



- STABILIZER AND ELEVATOR**
1. Draw centerlines on all stab ribs.
 2. Draw a centerline on S-2 on the face where the ribs attach.
 3. Mark location of ribs on S-2.
 4. Pin S-2 to work surface with centerline up.
 5. Using cyanoacrylate adhesive and a small right triangle, glue all ribs in place. They are all pointing up from the work surface. Be sure the rib centerlines are centered on the centerline of S-2.
 6. Glue S-1's in place on top of the rib ends. Be sure S-1 is centered on the rib ends.
 7. Add S-3.
 8. Sheet stabilizer, top and bottom, with contact cement after sanding rib contour into S-1's. Be sure not to warp the structure.
 9. Add tip blocks S-9.
 10. Pin E-1 to work surface. Glue E-2, 3, 4, 5 and 1/8" x 3/16" ribs in place. Add 3/16" sq. scrap piece.
 11. Flip over and repeat on other side.
 12. Complete steps 10 - 11 for other elevator.
 13. Sand both elevators to streamline shape.
 14. Glue tie bar in place being sure elevator blades are exactly in line.

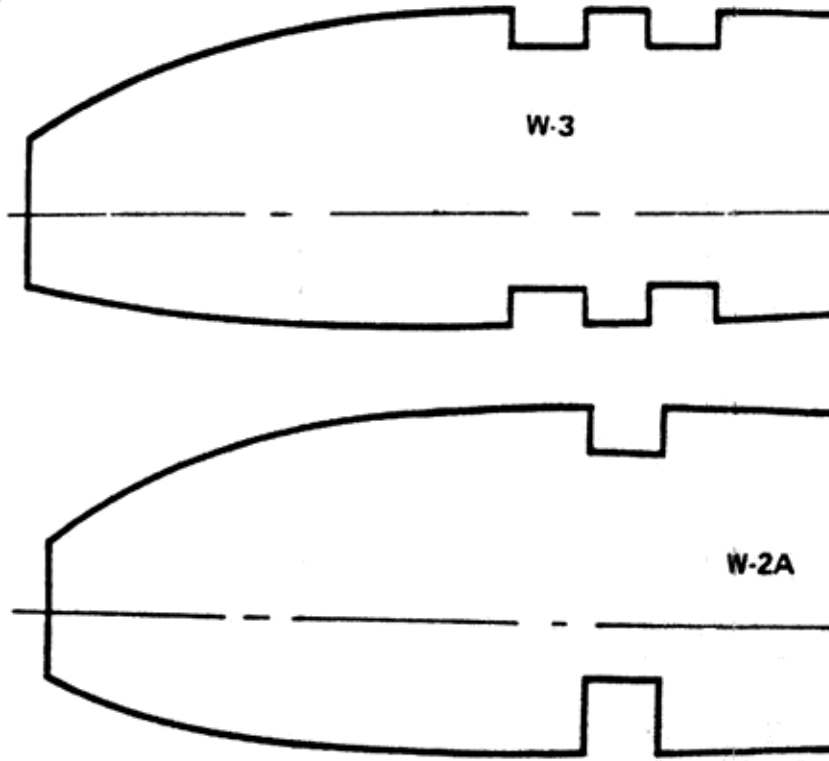


STABILIZER CONSTRUCTION

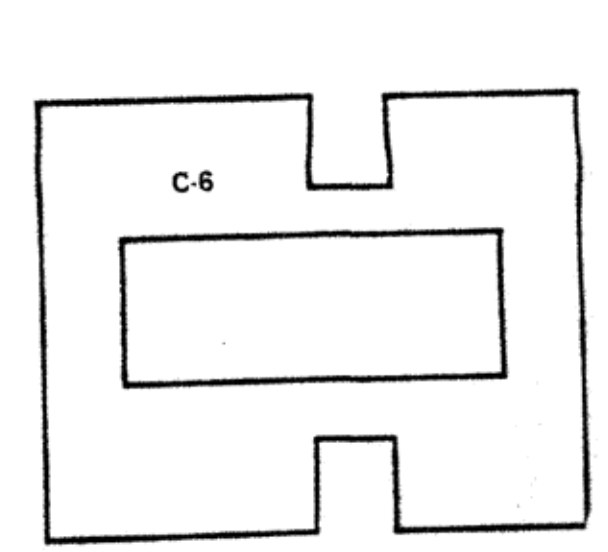
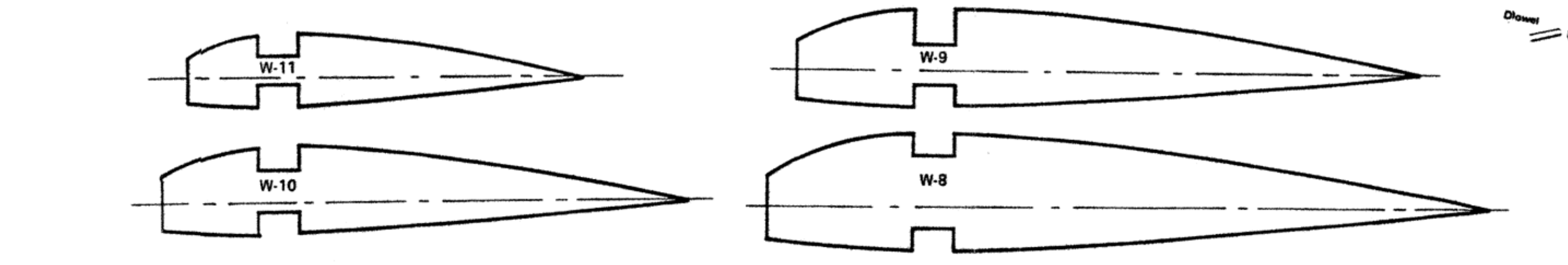


WING CONSTRUCTION

1. Obtain the motors and throttle cables you intend to use. We recommend the use of a fuel pump for the motors. Perry units are available for most motors and the Roberts In-Line units are ideal. The fuel line which travels from the motor to the fuselage area should be made from soft 1/8" brass tubing. Terminate at both ends so a short coupling may be made from standard silicone fuel line. Remember, when you set up the throttle cable/servo system, both engines must go to idle and full throttle simultaneously. Also, make provision to adjust both cables so the motors may be synchronized properly. Bench run both motors and be sure of its proper pump set-up.
2. Separate out the wing parts from the rest of the kit. Subdivide those into wing center-section, wing tip, and nacelle groups.
3. Draw centerlines on all wing ribs.
4. Begin construction on the wing center-section. Place a 3/8" sq. balsa spar over the plans (cover with clear plastic sheet) and an in place. Glue 4 W-1 ribs and four W-2 ribs in position. Shim the ribs so the centerlines are parallel to the work surface. Add the top 3/8" sq. spar, the top 3/16" sq. spar and the 3/16" x 3/8" top sub-spar. Glue the 3/8" x 1" leading edge in place.
5. When set, turn the wing over and add the bottom 3/8" x 3/8" sub-spar and the bottom 3/16" sq. spar. Flip-over and re-pin in position to dry.
6. Add 4 W-17 ply rib doublers with epoxy glue. At the same time glue 2 W-20 ribs between each pair of W-2 ribs.
7. Drill holes for the throttle cables, fuel lines and aileron pushrods.
8. Glue 2 W-16's in place as well as W-14.
9. Glue 2 W-19 blocks into notches in W-20.
10. Glue 2 W-19 blocks into place atop W-18. Glue W-18's into place between the W-2 ribs. Be sure the notches face down.
11. When dry, place center-section aside.
12. Begin tip assembly by pinning the spar in place on the ribs. Glue the ribs W-3 thru W-11 to the spar (shimming as necessary) keeping the centerlines parallel to the work surface.
13. Add the top 3/16" x 3/8" spar and the 3/16" sq. rear spar.
14. Glue W-2A in place angling with W-23 for the dihedral angle, add the top 3/8" x 3/16" sub-spar. Be sure to trim carefully for a tight fit where it intersects the main spar. Add W-23 and clamp tightly to the sub-spar.
15. Glue the leading edge in place. Add W-22.
16. When assembly is dry, turn over and add the bottom 3/16" sq. spar and the bottom 3/8" x 3/16" sub-spar.
17. Turn assembly over and re-pin to plans until dry completely.
18. Add W-28 between W-2A and W-3.
19. Drill holes for aileron push rod.



20. Mount aileron bellcrank to W-27 and glue into place with scrap 3/16" sq. supports. Install aileron pushrod and let the center-section length overhang the inboard end.
21. Repeat steps 12 thru 20 for left panel.
22. With both tip skeletons complete, pin the center panel in place on the plans. Shim so the centerlines on the ribs are parallel to the work surface. Carefully saw W-2 apart left of the sub-spar and ahead of the 3/16" sq. rear spar. Do this on both ends of the center-section. Likewise, saw W-2A apart on both tip panels.
23. Place one tip panel in place and block up the tip rib 2-9-16". Be sure the tip rib is parallel to the work surface. When satisfied, glue W-24 and W-25 in place. Clamp tightly to spars. Be sure to glue W-2 and W-2A together in this step. Add W-2 and W-2A removed portions between W-24 and W-25.
24. Repeat No. 23 for opposite tip.
25. When dry, add trailing edge sheeting, W-36, to top of center-section. Use contact cement for rapid assembly.
26. Trim the W-33 tip T.E. sheeting to the tip curve.
27. Contact cement a W-33 sheet to each top tip panel after pinning the panel flat to the work surface and being sure the rib centerlines are parallel to the work surface. Block the center-section up during this procedure to remove the strain of the rest of the wing on the pinned tip panel. Be sure you have a tight smooth joint at the dihedral break.
28. Bevel the lower tip T.E. sheet, W-33, as per the rib end views. Contact cement the sheet in place being sure not to wind the tip panels.
29. Add W-37 to bottom of center-section.
30. Relieve the aft center-section ribs for the flap W-35. Sand flap to shape as per end view. Glue 3 W-21 hinge supports in place.
31. Glue flap bay cap W-34 in place in center-section after adding 2 W-21 hinge supports.
32. Cut a slot in W-36 to clear the flap horn.
33. Glue C-17 in place between each pair of W-2 ribs.
34. Cut out ailerons with W-33 sheeting.
35. Add 3 W-28 hinge supports and the W-28 hinge supports and the W-29 cap.
36. Relieve the aileron for the thickness of W-29 and W-30 and then glue W-30 in place on the aileron. Be sure the aileron is not warped as you glue W-30 in place after gluing W-31 in place.
37. Add the scrap 3/32" caps to the ends of the aileron cutouts. Add 2 W-32's to the inner ends of the ailerons and a scrap piece to the outer ends of the ailerons.
38. Bevel I.E. of ailerons and sand to shape.
39. Sheet remainder of wing being careful not to build in warps.
40. Sand any overhang on W-11's and add the tip blocks W-12.
41. Sand and shape I.E. and cut a flat relief area for W-13. Glue W-13 in place and add the W-15 blocks. Sand to shape.
42. Build fuel tank boxes from W-41 floor, W-40 sides and W-38 and W-39 ends.



DOUGLAS C-47D

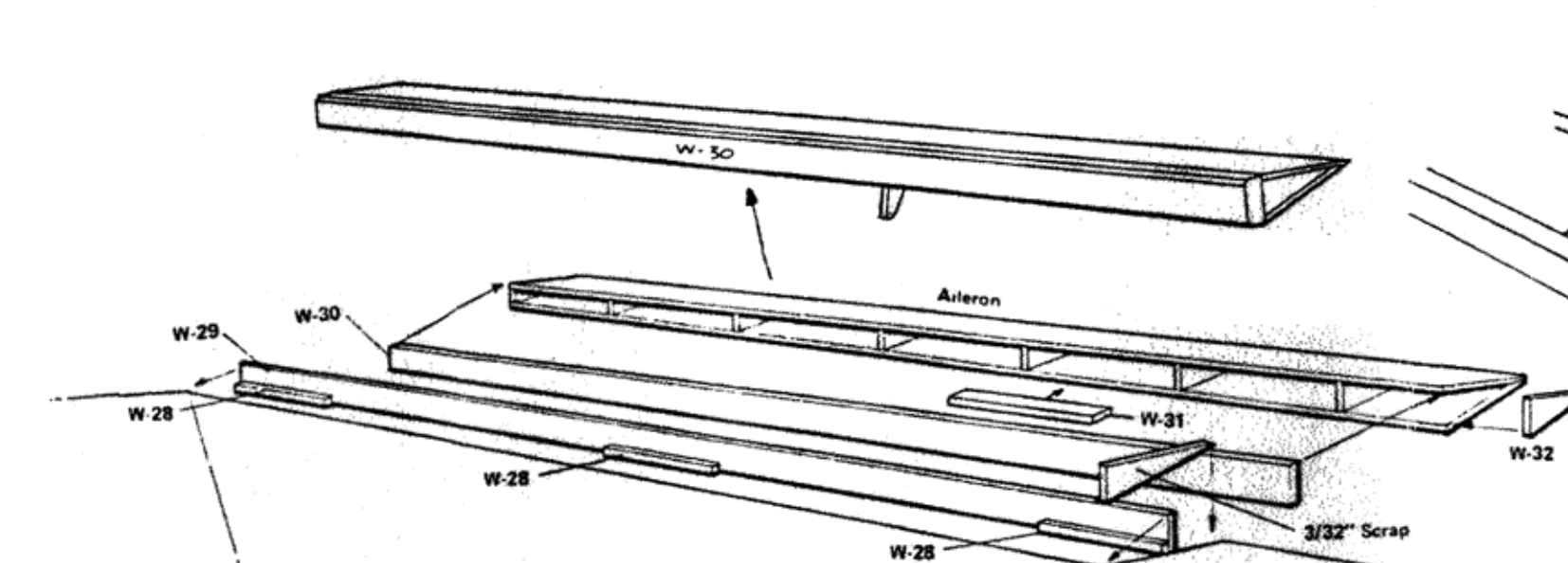


Figure 1 (outer wing assembly)

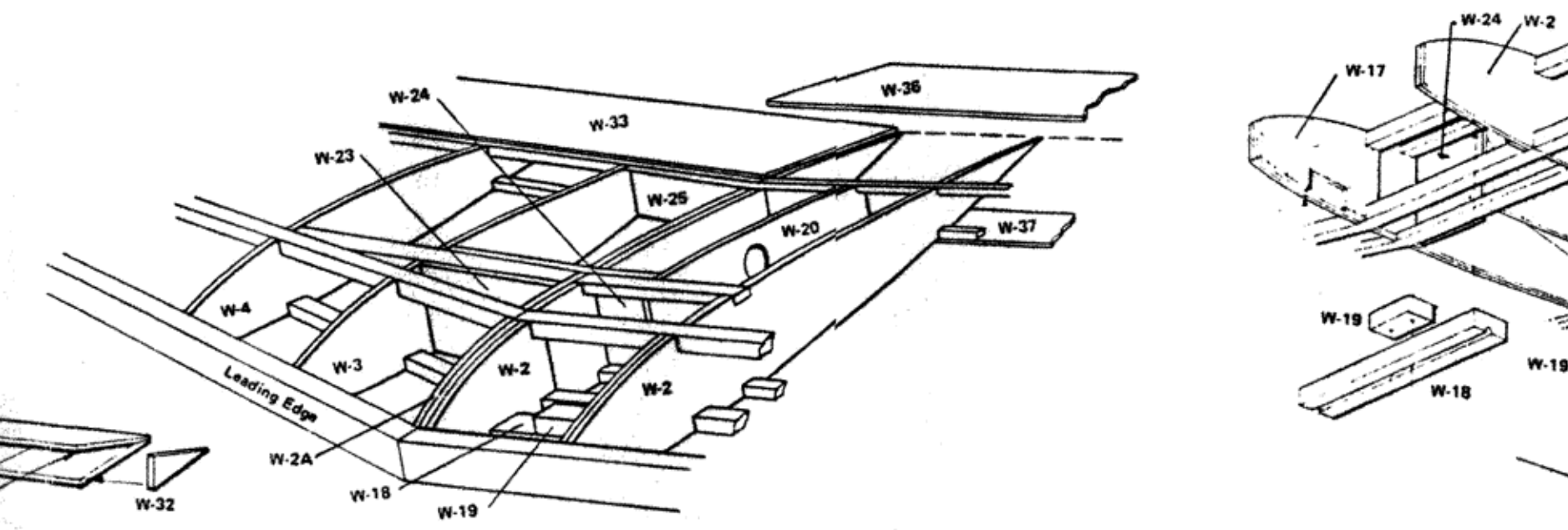


Figure 2 (center section)

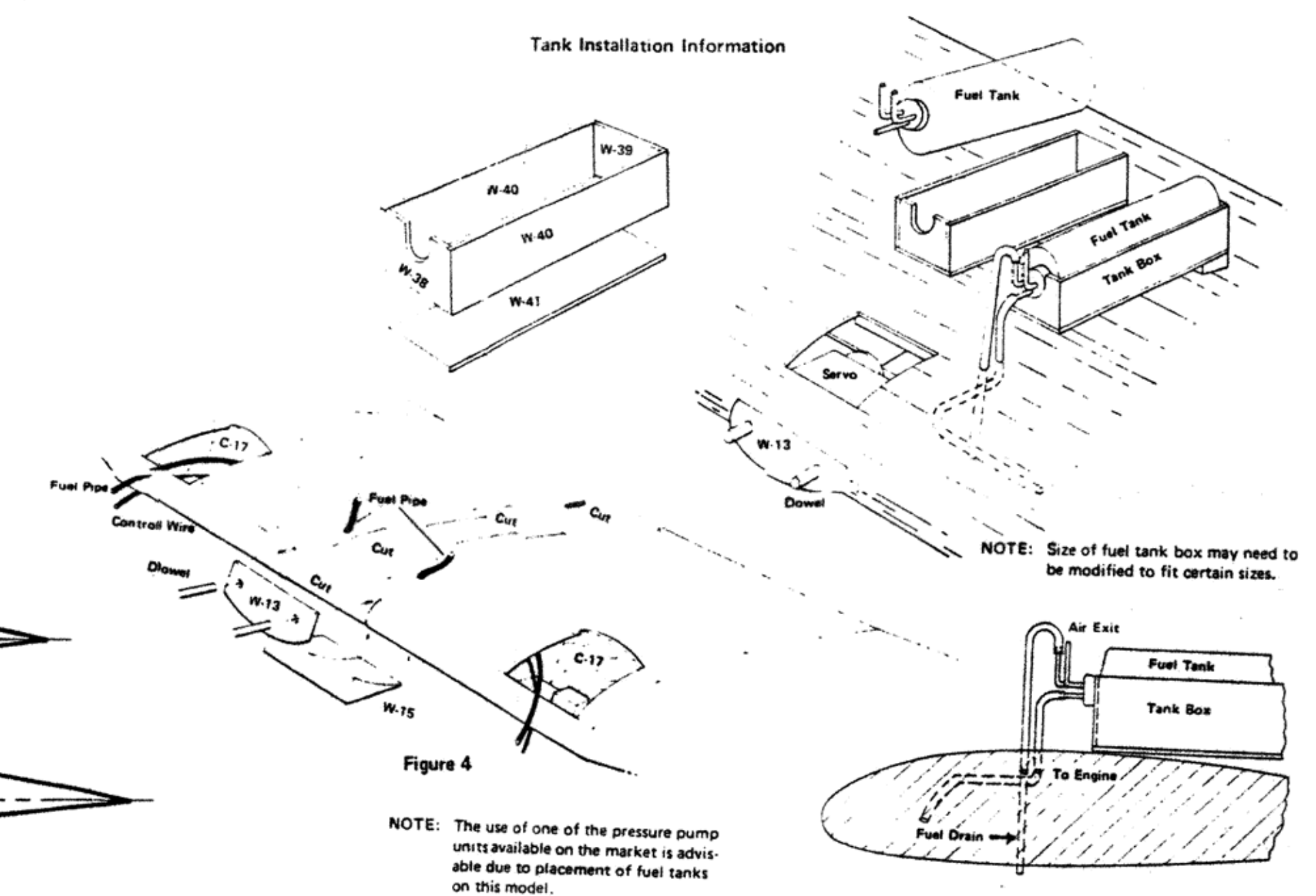
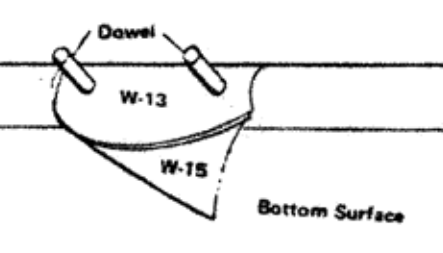
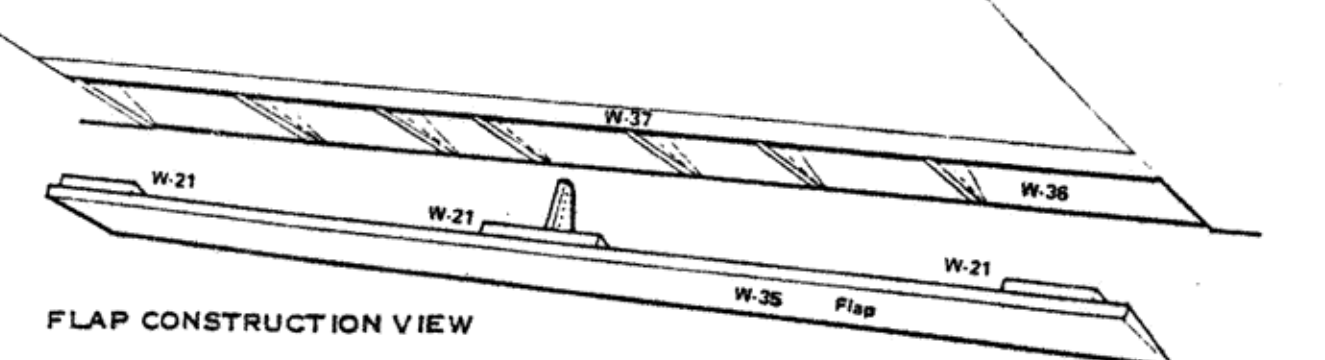


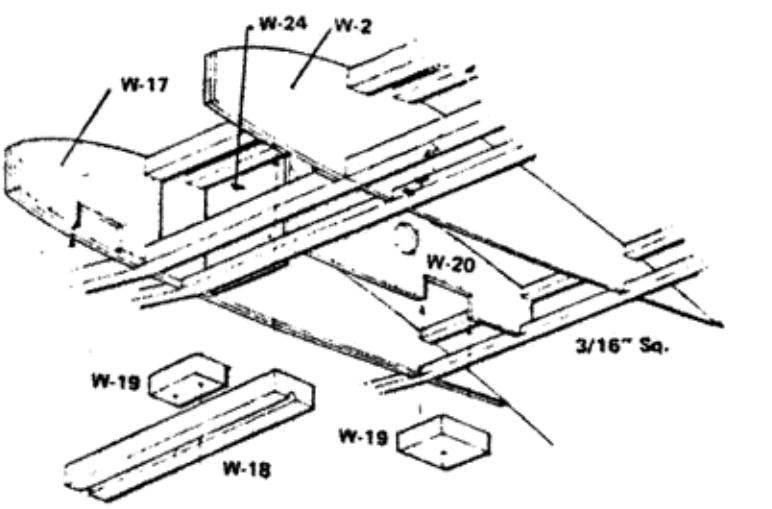
Figure 4



Bottom Surface



FLAP CONSTRUCTION VIEW



Fixed Gear Installation