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B-25 Instructions

Introduction: Before starting the building of your new aircraft, make certain you have obtained all necessary materials. I would suggest having the spinner, the engine and the landing gear on hand also. If they are available, the engine and gear will be useful for some important measurements and fittings. Also, have some scrap wood or foam available to build a cradle for the fuselage. This will be very helpful to you as you work on your model. Finally, a fiberglass cowl and plastic canopy are available from us. Having these items on hand as well as the engine and landing gear makes your building project significantly easier.

Balsa should be carefully selected for grade and applicability. If you are scratch building, make templates and cut all parts before construction. If you are going to use fiberglass cloth on the fuselage or wings, make certain to use the proper weight. A variety of glues will also be necessary.

Sheeted areas on the fuselage with difficult curves should be strip planked for best results. Large sheeted areas should use pre-glued sheets, joined by a sandable glue such as Ambroid. These sheets should be pre-sanded before being place on the model. In addition, before starting construction cut out all the parts. Having parts available as you need them reduces building time considerably.

Before beginning construction of your B-25, a few decisions must be made. You have the option of building the wing center section including engine nacelles as part of the fuselage width and make the outer wing panels removable. Radio would then access through the bomb bay. Another choice is to make the wing removable from the fuselage; thus keeping the wing either one piece or making it have removable tips. In this configuration the wing is fastened to the fuselage with four 1/4" bolts from the bottom. Moreover, the bottom section and bomb bay are bolted in as a separate section.

I prefer the one-piece approach. The only reason I would not build the wing this way would be if I did not have room to build or transport its larger size. The center section is similar either way except for the addition of mounting bolt-hard points for the removable center section. However, it should be noted that the fuselage crutch is different in the two configurations. The one-piece wing and fuselage use WS-l's in the crutch and the wing is inserted from the top of the fuselage before the sheet balsa covering is completed. The removable wing version is bolted from the bottom into the wing saddle formed by WS-3 and WS- 4.

WING - Start with the wing center section.

( ) 1. Join wing spar halves together over the front view with joiner SP-2. Be accurate in this procedure.

( ) 2. Assemble ribs W-5, W-6 and W-7 into the proper slots on the spar.

( ) 3. Slide the 1/4"x 1/2" spruce bottom spar in place through W-5 and W-7.

( ) 4. Place this assembly over the center section plan. With the bottoms of W-5, W-7 and the tail end of W-6 sitting on the plan the top of these ribs should be even with each other at the trailing edge. Sand away or add to the bottom tail end of W-6 to make the ribs even.

( ) 5. Place the nacelle bottoms, NB's, in place between W-5 and W-7 and glue the assemblies on each side together.

( ) 6. Insert N-2 in place and glue.

( ) 7. Hold the nacelle bottoms to the plan with weights or pins.

( ) 8. Glue W-lB with rear leg W-lC in place.

( ) 9. Make certain all ribs are aligned over the plan. If necessary, use temporary diagonal braces to hold them square.

( ) 10. Add the remaining ribs and top spars. Note that W-2 is 1/8" plywood for the removable wing.

( ) 11. Install the 1/4" square inner leading edge and tapered 1/8", balsa cap.

( ) 12. The trailing edge of each rib between W-1 and W-8 should line up with each other on each half.

( ) 13. Remove the wing from the plan and add the bottom spars and add the bottom spars and sub ribs W-5A&B and W7A&B.

( ) 14. Cover the bottom of the wing with3/32" sheet balsa.

( ) 15. If flaps are being included, be certain to crack and angle the rear of ribs W-5 and W-7 to match the plan. Include the top 1/8" X 1/4" spar.

( ) 16. Cut slots between rear spars to locate the flap separation later.

( ) 17. Add flap ribs W-2A, 5C and 7C.

( ) 18. Install the nacelle formers and retract mounts. Epoxy the center mount in place first and then the mount against W-5, being positive it is In line with the first one. Use a flat plate for alignment.

( ) 19. Mount the firewalls with #8-32 screws and blind "T", nuts. Epoxy the nuts securely in place. The firewalls are 1/8" larger than the N-1 formers to allow for the 1/8" balsa sheeting.

( ) 20. Install the retracts or fixed gear mounting blocks. Use #6 sheet metal screws or machine screws and "'T" nuts to hold the retracts. Full retraction with a wheel mounted will not be possible until W-6 has been cleared away for clearance.

( ) 21. Determine position of the engines that will be used and locate throttle bellcranks to best suit carburetor locations. You may prefer a servo on each engine. If so, locate them for best carburetor alignment.

( ) 22. Sheet and strip-cover as much of the nacelle as possible with 1/8" balsa.

( ) 23. Install the flap bellcranks and linkage. Again you may prefer a servo in each wing. I prefer one large servo. A World Engines S-16 or Futaba S-34 or S-134 will operate all the flaps. By using one servo an asymmetrical, one flap up the other down, situation is not apt happen.

( ) 24. If the outer wing panels are to be removable via the plug in tubes trial fit them into the center section. The 1" diameter holes In W-6, 7 and 8 should line up well if the holes were drilled accurately. A 1" flat bit is best for these.

I don't use any guide tubes for the plug- in tube. If they are desired, sand the holes larger and use a rolled tube of 1/64" plywood or cardboard tube of the proper size. Two #6-32 screws secure each outer panel with 1/4" dowel pins keeping them from rotating on the tube.

( ) 25. When all control and Inside construction is satisfactory, sheet over the top of the wing with 3/32" sheet balsa and the nacelles with 1/8" balsa strips.

( ) 26. The outer wing panels are built in the conventionally over the plan. Pin the 1/4"x 1/2" balsa bottom spars to the plan
and glue the wing ribs to it.

( ) 27. Slide the 1/4" square rib shim under the aft edge of the wing to the location shown on the plan. The shim might lift the spar off the plan at the tip but that's acceptable as long as the ribs touch the plan. The shim builds in about 2 degrees of washout in each panel.

( ) 28. Add the top spars, 1/4" square leading edge and 1/8" tapered balsa leading edge cap.

( ) 29. Taper the end of the top spar so the tip will fit as shown in the front view and glue the tip in place.

( ) 30. If the outer panels are being made removable epoxy the 1/4" plywood mounting tabs WMT in place and brace with a plate of thin plywood.

( ) 31. Remove the wing from the plan and sheet cover the bottom with 3/32" balsa.

( ) 32. Add aileron tip ribs and horn mounting plates.

( ) 33. Cut a slot in the bottom between the aileron and wing so it can be found and separated easily later.

( ) 34. Epoxy the mounting tube in place and trial fit the panel to the center section. Make sure rib W-9 fits flush against W-8. Adjust W-9 if necessary. Dihedral should be such that if a straight edge Is place across W-8's the tip should be 1/4" lower. The outer panel tops droop a little.

( ) 35. Place the panel back over the plan with the rib shim in place and cover the top with 3/32" sheet balsa.

( ) 36. Sand off the front flat and add the 1/4" balsa leading edge.

( ) 39. Cut away the ailerons and flaps if they are being used. Cap the openings front and back.

FUSELAGE - The fuselage is started by building the crutch. If the wing is to be permanently fixed to the fuselage, use FS-1 between front and rear crutch. FS-4 is not required. With FS-1 the crutch is actually assembled upside down.

Making the wing removable requires WS4 **~~FS-4~~** and no WS1 ~~FS-1~~.

( ) 40. Arrange three or four blocks 6" high to place the crutch on while the formers are glued In place. Start at F-7 and work outwards each way installing each former square to the crutch.

( ) 41. Add FB box sides between F-5 and F-6.

( ) 42. Add SS-I's between F-12 and F-13.

( ) 43. Add some stringers to hold the formers square.

( ) 44. Epoxy 1/2" square retractable nose wheel mounts in place. If a fixed nose wheel is being used bolt nylon mounts that have been opened up to 1/4" to the 1/4" F-3B.

( ) 45. Apply some sheet covering along the sides below the wing. Leave enough open area to install pushrods and wing center section.

( ) 46. Cut away the stringers and top of formers F-6 and F-7 to allow assembly of the wing to the fuselage.

( ) 47. Trial fit the wing. Be certain the incidence angle, two degrees, is correct. The leading edge should be 5/8" higher than the trailing edge.

( ) 48. Glue the center section securely and most important squarely in place in the fuselage.

( ) 49. Install servo mounts and controls making sure that there is access to them through the bomb bay opening.

( ) 50. If the removable wing has been chosen, epoxy the hardwood mounting blocks between FS-3 and FS-4. These blocks will be drilled and tapped when the center section 15 fitted.

( ) 51. Build the stabilizer-rudder assembly. The stabilizer frame is built over the plan.

( ) 52. Cut rib S-7 to the contour of the fins so they can be epoxied in place later.

( ) 53. Install the rudder bellcranks and pushrods. Make sure they are all In the same position relative to each other and operate freely.

( ) 54. Add the hinge tabs EH-1 and EH-2 and 1/16" vertical webbing between the spars.

( ) 55. Cover with 1/16" sheet balsa.

( ) 56. The fins are of similar construction but are built up standing on the trailing edge R-7.

( ) 57. Glue ribs R-1, 2 and 6 squarely to R-7.

( ) 58. Add the 1/4" square leading edge, remaining ribs, spars, and hinge tabs. Cover with 1/16" sheet balsa and add the tips.

( ) 59. Rudders and elevators are built as shown on the plan and sanded to shape. This Is easier than cutting out individual ribs. The elevator and rudder are fabric covered.

( ) 60. Finish the surfaces of the stabilizer and fins and make them ready for paint.

( ) 61. Epoxy the fins squarely to the ends of the stabilizer.

( ) 62. Assemble and connect the rudder push rods. Fit this assembly to the fuselage. Be sure the incidence angle is zero degrees.

( ) 63. Epoxy in place and connect pushrods.

( ) 64. Finalize control, retract and any other internal systems that have not been completed.

( ) 65. Cover any areas that have been left open for inside access.

( ) 66. Prepare the surface for finishing. Light glass cloth, 3/4 ounce, and polyester or epoxy surfacing resin Is the best finishing material for this plane.

( ) 67. Work to keep the finish and construction as light as practical behind the wing. More than likely weight will be required in the nose. After balancing the plane, put whatever weight is necessary in before the nose glass Is permanently installed. Make sure the balance point is as

shown on the plan, no farther than 5 1/2" aft of the leading edge at the fuselage.

There are many attractive color schemes for the B-25. Some sources are listed on the plan.

Before flying make sure the engines are reliable and in sync through their speed range. Engine failure is a twins worst enemy. If the engines are reliable, the rest is easy.

One other caveat: set the nose gear so that your B-25 sits on the ground with a positive attitude. This will help your takeoff considerably.

Flying is no different than any WW-II type model. The B-25 flies as solid as any single engine aircraft and lands with no more difficulty than any other warbird.

Enjoy your flights without fear of taking off or landing.