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MODEL No. 3099
LOCKHEED
16" ORION TRUE SCALE
SEAPLANE FLYING MODEL

GENERAL NOTES

Study plans and perspective sketches before starting any of the actual model work. As only one part of the plan will be used at a time, the remaining portion can be folded over for reference and study during the process of assembly. A small drawing board will be suitable upon which to assemble the model airplane.

STEP No. 1

Body Sides Material: Balsa 1/16"x1/16"

All construction work is done directly over or on paper plan. To prevent wood pieces from sticking to plan, obtain a piece of waxed paper, place it over the plan, and then pin the wood on strips directly over the lines which show through waxed paper. The heavy outlines represent the main part of the body. This part should be constructed first. A side view of the body is illustrated in the sketches. Make both sides exactly alike by placing another piece of waxed paper directly over the first set of wooden parts and building the other body side directly on top of the first.

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PILOT PASTE TOGETHER



INSTRUMENT PANEL

CUT OUT LETTERS AND GLUE IN POSITION.

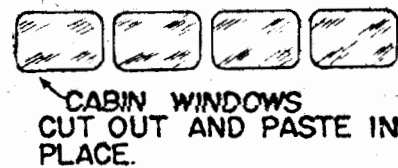
16 INCH LOCKHEED ORION SEAPLANE

DETAILED INSTRUCTIONS BY Joe Ott

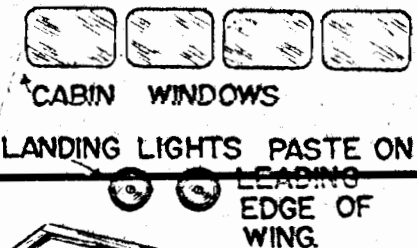
STEP No. 13

Covering Material: Tissue.

Cover body first. Fit tissue over all sections before cementing down. Be economical with tissue as only enough is supplied to cover model. For sticking tissue to framework, use a VERY THIN solution of flour or library paste, or ordinary glue thinned with water. Apply paste to a small portion of the framework and then place tissue on same. Be careful not to tear tissue when damp or wet from paste. The covering procedure is the same for both wings and tail units. (In some cases only small portions of the body or other parts can be covered without wrinkling.) Joints can be readily made without spoiling the appearance of plane. If covering is sprayed lightly with an atomizer containing clear water, the tissue, after drying will shrink smoothly over the entire framework. It is not necessary to soak the tissue. Practice on the rubber. Note results before spraying entire model.



CABIN WINDOWS CUT OUT AND PASTE IN PLACE.

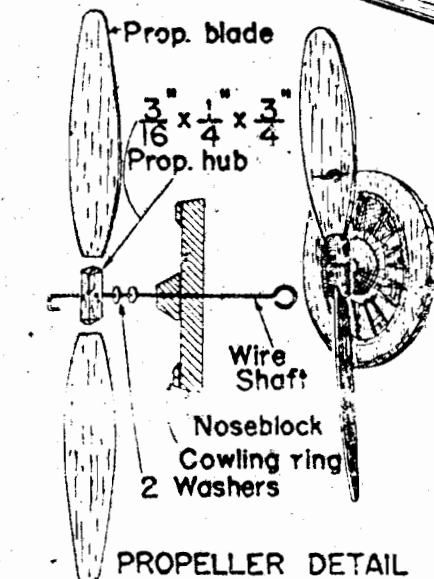


CABIN WINDOWS LANDING LIGHTS PASTE ON LEADING EDGE OF WING.

STEP No. 14

Landing Gear-Floats Material: Balsa 1/16"x1/8" strip

The landing gear design is very simple. Its construction should be studied from side and front plan views and also from sketches. Correct lengths should be copied from the plan views. Finish this assembly only after body has been completely covered with tissue. Waterproof the floats with thinned dope or banana liquid.



PROPELLER DETAIL

WINDSHIELD PATTERN



COCKPIT-COVER PATTERN

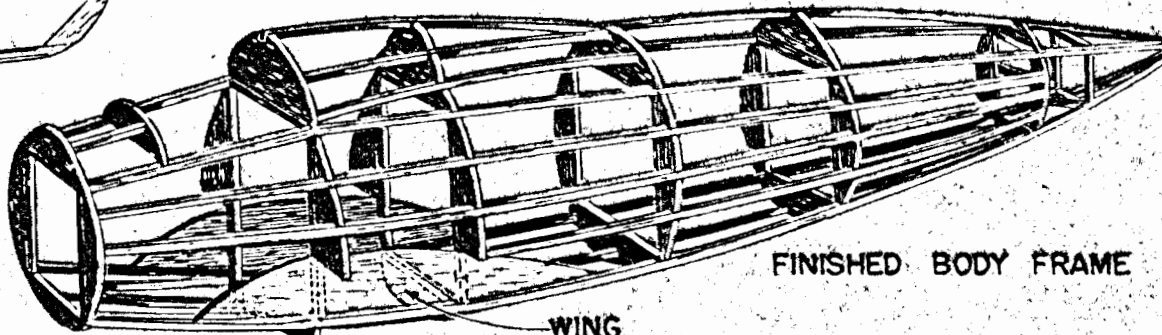


COWLING LOUVERS PASTE ON FRONT OF COWLING.

CROSS-BRACE

PAPER HINGE ELEVATOR

STABILIZER



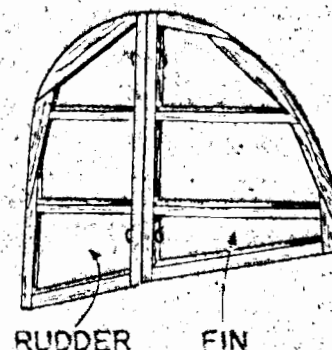
FINISHED BODY FRAME



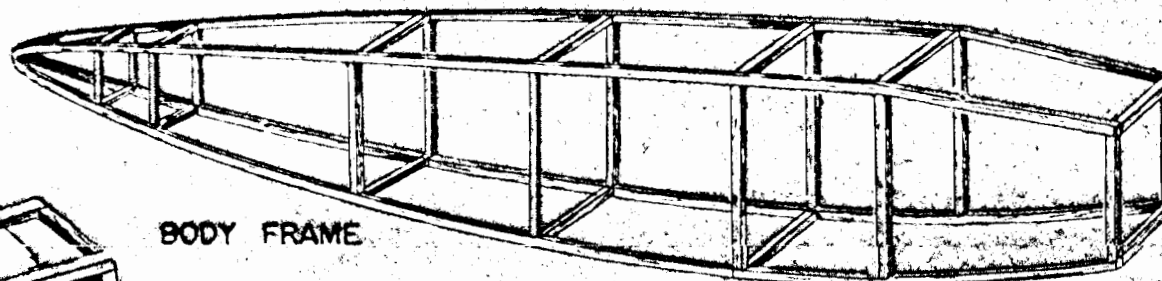
FINISHED FLOAT FRAME



WINDSHIELD DETAIL



RUDDER FIN



BODY FRAME

STEP No. 2

Body Top Material: Balsa 1/16"x1/16"

After the cement has thoroughly dried, separate the two sides. The two sides are then assembled on the Plan View to the correct widths as shown in the view of body sections. The method of doing this is also illustrated in the perspective sketches.

STEP No. 3

Formers Material: Printed balsa rib sheet.

The body formers are illustrated in full size on the plan and are also printed in outline on the rib sheet. With a razor blade, cut out body formers and fit them to the top part of the body.

STEP No. 4

Stringers Material: Balsa 1/16"x1/16"

The semi-circular shape of the body is secured by the formers. To fill out the roundness of the body, longitudinal stringers are placed in the small square cut-out sections of the formers. The stringers, as a rule, are always a trifle smaller than the main body longitudinal members.

STEP No. 5

Cockpit Material: Printed paper outline on plan.

The cockpit is illustrated in full size on back of plan. This may be cut out and used as shown, or, if plan is to be preserved, trace the outline on a stiff piece of paper to use as a guide for cutting.

STEP No. 6

Windshield Material: Transparent material.

A layout of windshield is illustrated on plan. The transparent material should be cut to size and cemented to front of cockpit as shown.

STEP No. 7

Wing-Ribs Material: Printed balsa rib sheet.

Cut out all ribs as illustrated. Notch them for assembly to leading edge, spar and trailing edge. The top wing should be assembled and cemented in one piece across the Plan View. Use waxed paper underneath wooden parts. After wing is completely assembled and thoroughly dry, crack it at the middle. Place blocks near wing tips to raise ends. Pin down firmly, cement cracked joints and allow to dry in this position. The incline of the wing is called dihedral. It helps to give the model airplane inherent stability.

STEP No. 8

Stabilizer Material: Balsa 1/16"x1/16" 1/16"x1/8"

Two sizes of balsa are required for the stabilizer. The wider pieces are used for the curved parts. Assemble to outline illustrated in plan view.

STEP No. 9

Rudder Material: Balsa 1/16"x1/16" 1/16"x1/8"

Material and construction are the same as used for stabilizer. Make part over side view as illustrated on plan. Set aside until final assembly. Controls are added just as on the full sized machine except for the operating method. Stiff paper is used for hinges and the controls can then be moved up and down or back and forth. Check on plan and sketches for details.

STEP No. 10

Propeller Material: Printed balsa rib sheet.

Hub 3/16"x1/4". The blades of propellers are cut from the printed rib sheet. Outlines are shown. Corners only should be sanded lightly to a rounded shape. Make hub from a 3/16"x1/4"x3/4" piece of balsa. Be sure that material furnished is cut down to the exact hub size. This size will give the correct thickness for propeller blade angle. The propeller blade SLOTS, in opposite ends of hub, should be at nearly right angles when viewed from end of hub. Cement blades into place. It may be advisable to use a thin coping saw blade to cut the slots.

STEP No. 11

Nose Block Material: Balsa 1/4"x1-5/8"x2"

Cut nose block to shape illustrated in front views of plan. Then shape it as shown in side view. The general appearance of nose block is circular as viewed from the front. Its outside dimensions should conform to the front shape of the body.

STEP No. 12

Shaft Material: Steel wire—.018"

After propeller has been assembled and nose block carved to fit front of body, insert propeller shaft through nose block, slip 2 washers over shaft and then push shaft through propeller hub. (Before pushing shaft through hub, make a small hole with a pin or needle slightly thinner than the shaft diameter.) After assembly has been completed, push shaft farther through hub and bend protruding end over as illustrated in propeller sketch. Pull hook back into the hub, cement securely and allow to dry. This complete nose block unit should now be cemented to front of body.

STEP No. 15

Wing Struts Material: Balsa 1/16"x1/8" strip.

All wing struts should be roundly sandpapered on both leading and trailing edges. Wings should be completely covered before they are attached to body by means of struts. As the cement dries rapidly, struts will soon become secure. All corners and edges on entire model should be gently smoothed or rounded with sandpaper.

STEP No. 16

General Assembly Material: Various finished parts.

Cement stabilizer in place on top of longerons at rear. Rudder is then to be cemented in place. Landing gear and wing struts can now be attached in their proper places over covered tissue sections.

The most important point to keep in mind when assembling, is the relation of the leading edge to the trailing edge of the wing. In any event, the under surface of the wing should be nearly parallel to the center line of the body. The position of the wing can be checked best by sighting the entire model from the side during the assembly process. It is safe to place the trailing edge of the wing 1/16 of an inch lower than the leading edge.

STEP No. 17

Motor Material: Rubber band 1/32"x3/32"x7"

The rubber band is held in front by hook in shaft and at rear by hard balsa cross piece. Band can be easily inserted by threading or pulling into position with a piece of string. A small opening in the side at front and at rear of body should be left uncovered for inserting rubber. DO NOT crush plane while affixing rubber.

STEP No. 18

Decorations Material: Figures and black lines on plan.

Instrument panel with motor picture, pursuit pilot and gunner to fit this plane are provided on the plan. Cut them out and paste on plane as shown. (Or trace them and make copies if you do not wish to cut plan.) Near the edge of the plan is printed a set of small black lines. Cut them out and use them for outlining ailerons, elevators, and rudder.

STEP No. 19

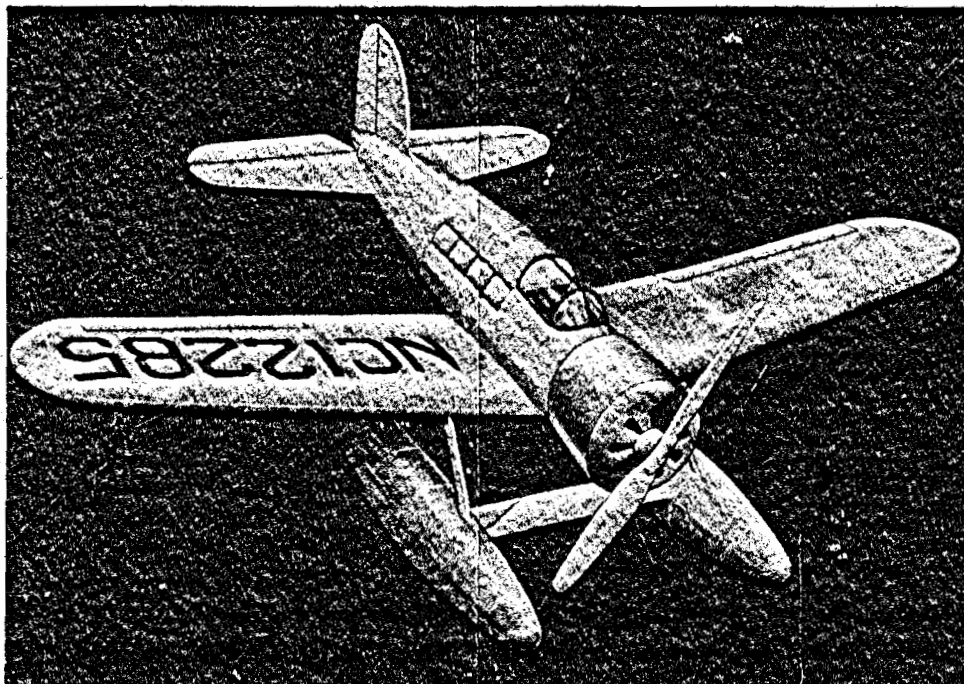
Pilot Material: Sketches on rear of plan.

Printed pilots' heads are furnished on back of plan. Cut them out and paste a left and right side together. Then cement to a small balsa cross brace and cement in position in cockpit. The instrument panel should also be cut out and cemented in place in front of the cockpit on the former provided for this.

STEP No. 20—Flying

When model has been completely assembled, it should be checked for center of gravity balance before any trial flight is attempted. Place the forefingers at the midpoint of the wing tips and lift the model to see whether it balances. If the tail has a tendency to drop, it denotes tail heaviness, which may be overcome by adding a small buckshot or a few heavy pins or light-weight nails to the nose block on the lower side. If the nose has a tendency to point downward, the procedure for balancing is reversed (that is, the tail should be slightly weighted.) When the plane remains horizontal while suspended on the fingertips it may be considered balanced.

A few small trial glides should be made AFTER the model has been balanced and not before. In gliding, if the nose of the ship has a tendency to climb, and if it does not make a gradual glide to the floor or to the ground, the tail is still a little heavy. This must be offset by additional weight at the front part of the ship. To be certain that the model is balanced correctly, hold it ready for launching unwound, and when the glide after leaving the hand is steady and consistent, and goes forward 10 to 15 feet, it may be considered a normal glide. The model is then ready for its first trial flight. When gliding a model do not launch it upward and forward. Instead, launch it with the nose pointed slightly downward, permitting gravity to take effect. Before trying a powered flight, it is advisable to test the motor by turning the propeller with the right forefinger and permitting the rubber to be unwound two or three times. While winding the propeller be sure to hold the model firmly directly behind the propeller hub and bearing. Always grasp the model at a point where there are cross braces. The proper number of turns for the rubber may be checked by looking through the space in the cockpit. When you see that the coils or twists are fairly small and tight, after approximately 100 to 150 turns, the motor is wound on enough for flying.



ACTUAL PHOTOGRAPH OF MODEL MADE FROM THIS KIT

CUT OUT BLACK LINES BELOW TO USE IN OUTLINING CONTROLS