AEROBEE 300

A FLYING SCALE MODEL SOUNDING ROCKET

PARTS LIST

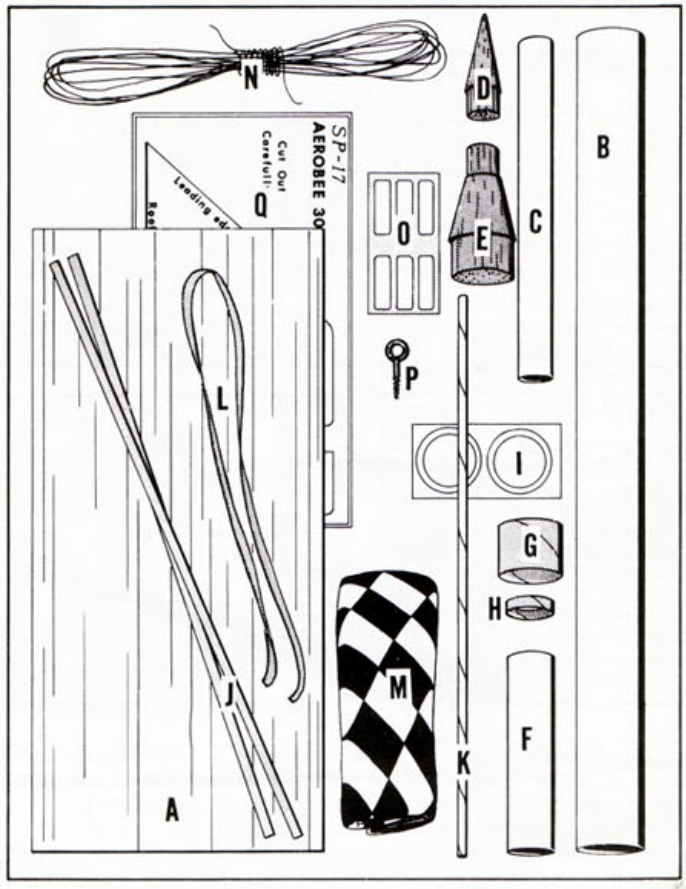
Your Aerobee 300 scale model rocket kit consists of the following parts as illustrated in the drawing at right:

(A) 1 sheet balsa fin stock--Part #BFS-30
(B) 1 body tube--Part #BT-50L
(C) 1 body tube--Part #BT-5P
(D) 1 nose cone--Part #BNC-5S
(E) 1 balsa adapter--Part #TA-550
(F) 1 engine holder tube--Part #BT-20J
(G) 1 stage coupler--Part #JT-50C
(H) 1 engine block--Part #EB-20A
(I) 2 adapter rings--Part #RA-2050
(J) 2 strips balsa stock--Part #BFS-10A
(K) 1 launching lug--Part #LL-1D
(L) 1 shock cord--Part #SC-1
(M) 1 parachute--Part #PK-12A
(N) 72" shroud line cord--Part #SLT-12
(O) 6 tape strips--Part #TD-2F
(P) 1 screw eye--Part #SE-1
(Q) 1 pattern sheet--Part #SP-17

In addition to the materials included with your kit you will also need the following tools and supplies:

1) Modeling knife or single edge razor blade
2) Scissors
3) Extra strong white glue
4) Ball point pen or pencil
5) Fine and extra fine grit sandpaper
6) Black, white and silver paint or dope

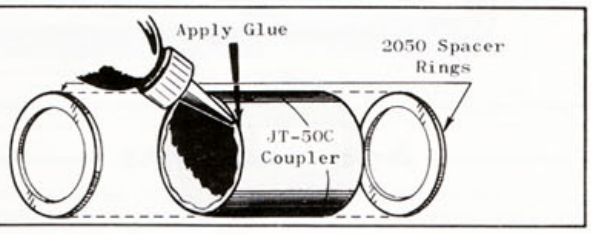
Read the entire assembly instructions carefully before beginning work on your rocket. Then start construction, following each step in order, checking off each step as it is completed.



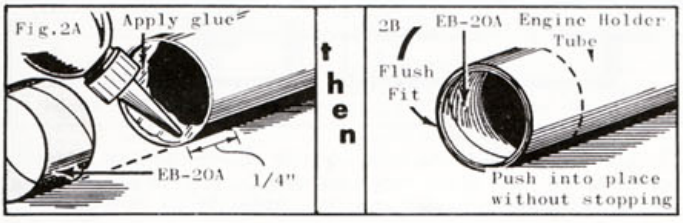
BEGIN CONSTRUCTION

☐ (1) Glue one adapter ring to each end of the stage coupler as shown in fig. 1. The rings should be centered perfectly on the coupler. Apply sufficient glue to insure a permanent, strong joint, but do not leave any excess glue on the outside of the unit. Set the assembly aside to dry thoroughly.

Fig. 1



☐ (2) Glue the engine block in one end of the 2-3/4" long engine holder tube. To do this, apply glue to the last 1/4" of the inside of the tube, then slide the engine block into the tube until the end of the block is even with the end of the tube (see fig. 2).



☐ (3) Cut out the fin pattern. Lay the pattern on the balsa fin stock with the grain of the wood and the grain shown on the pattern matched perfectly. Trace out three copies of the fin. Cut out the fins carefully. Be especially careful to make straight, clean cuts. Sand the fins to the shape shown in fig. 3.

Fig. 3A

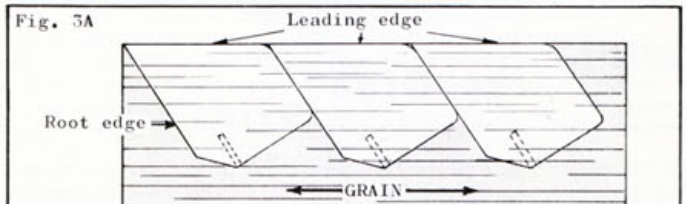
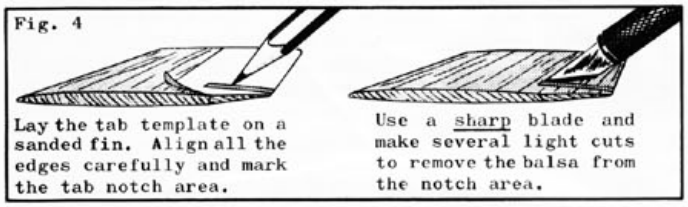


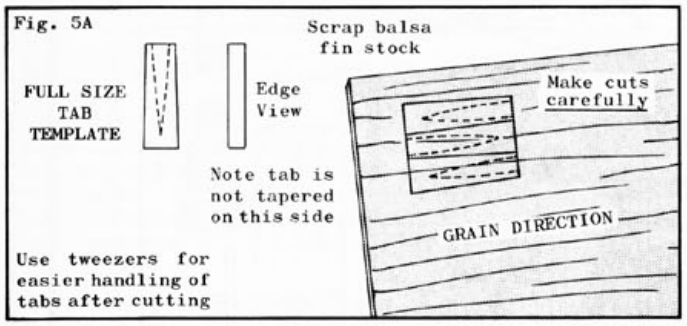
Fig. 3B

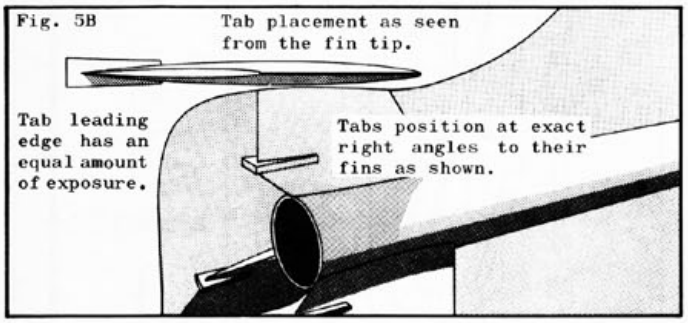
☐ (4) Cut out the tab notch template and lay it over one fin so the corresponding edges match perfectly. Mark the fin for the notch, then cut the notch carefully with an extra sharp blade, being careful to not crack the fin. (If the fin is cracked, glue it back together with white glue and complete the notch.) Repeat this operation with the other two fins.

☐ (5) Cut out the tab pattern. Trace three copies on the scrap

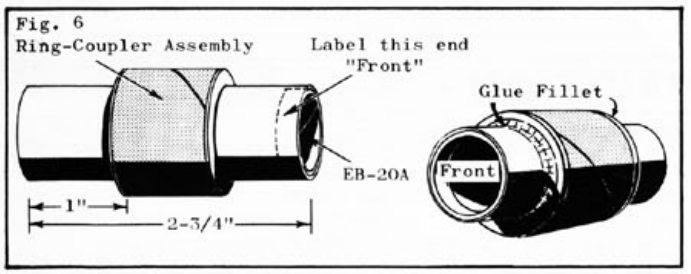


fin material as shown in fig. 5A. Glue the tabs in place in the notches as in fig. 5B.



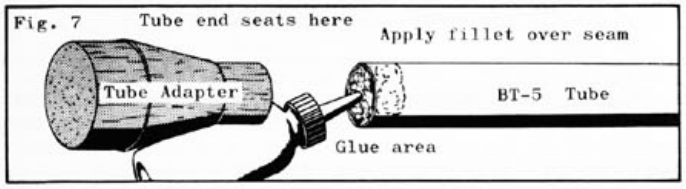


☐ (6) Slide the engine holder tube into the ring-coupler assembly so equal portions of the tube project on each side of the coupler. Apply a heavy glue fillet all the way around each ring-tube joint as shown. Set aside to dry.

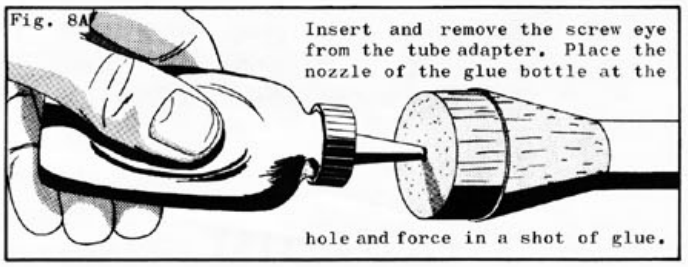


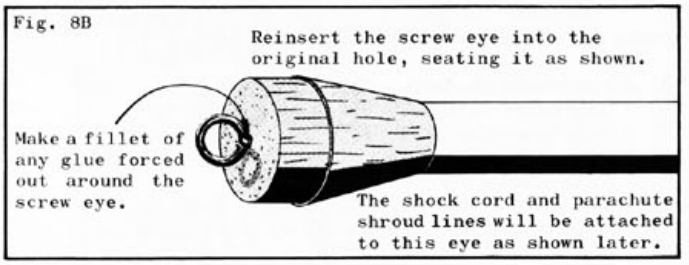
While the Glue Dries . . .

☐ (7) Apply a line of glue around the inside of one end of the BT-5 body tube. Insert the small end of the TA-550 adapter into the tube and push the two pieces together until they match perfectly (fig. 7).



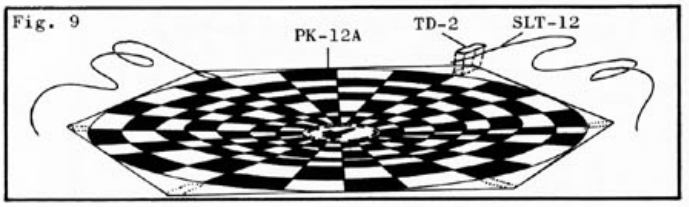
☐ (8) Insert the screw eye into the large end of the adapter. Remove the screw eye, press the nozzle of the glue bottle to the hole and squirt glue into the hole. Replace the screw eye and wipe away any excess glue.





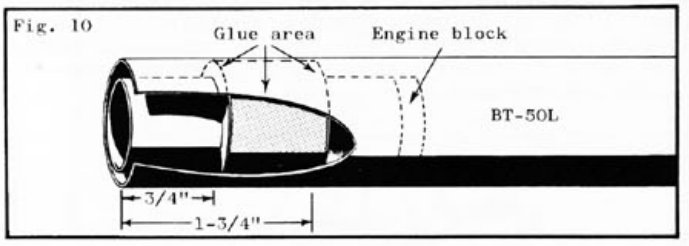
Assemble Parachute

☐ (9) Cut out the parachute on its edge lines as indicated on the plastic. Cut six 12" lengths of shroud line cord and attach one shroud line to each point of the parachute with a tape strip as shown in fig. 9. Tie the free ends of the lines together.



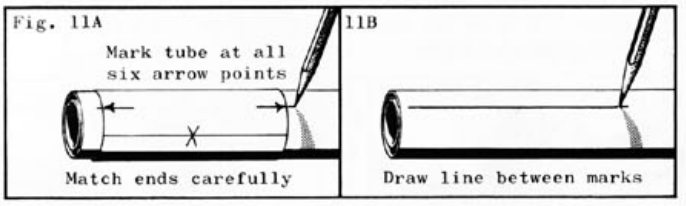
Install Engine Mount Unit

☐ (10) When the engine mount unit has dried completely check its fit in the BT-50L body tube. Sand the edges of the rings until they make a smooth slide fit inside the body tube. Smear glue around the inside of one end of the body to cover an area extending from 1/4" to 1-1/4" from the end. Insert the engine mount, engine block end first, until the rear end of the engine holder tube is flush with the rear end of the body. Do not pause during this operation or the glue may set with the mount in the wrong position.

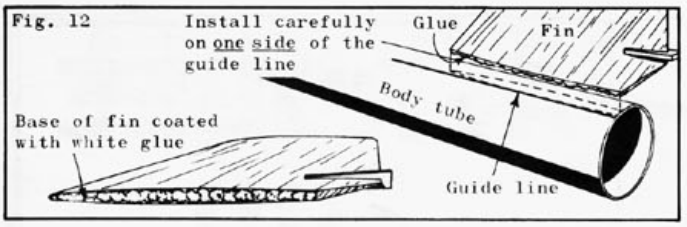


Add the Fins

☐ (11) Cut out the fin spacing guide, wrap it around the rear end of the body and mark the tube at each of the arrow points. Draw a straight connecting line between each matching front and rear mark (fig. 11).

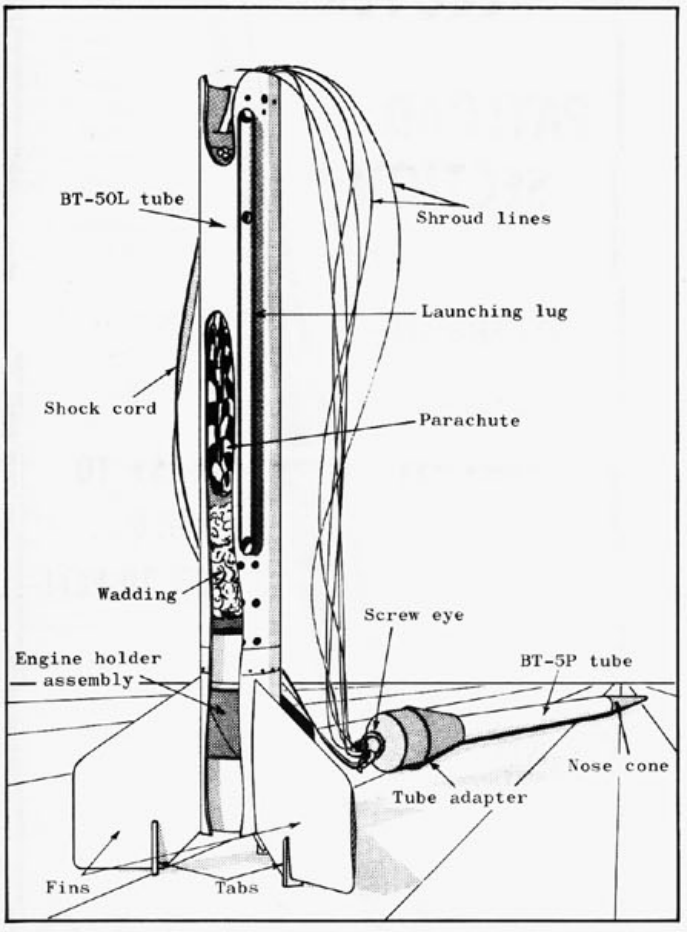


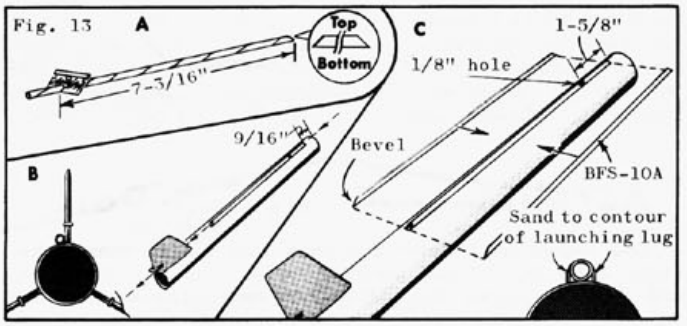
☐ (12) Apply glue to the root edge of one of the fins. Attach the fin to the rear of the body tube with the edge of the fin along one of the lines drawn in step 11. Align the fin so it projects



straight away from the body tube. Following the same procecure, attach the other two fins. Do not set the rocket on its fins while the glue is wet.

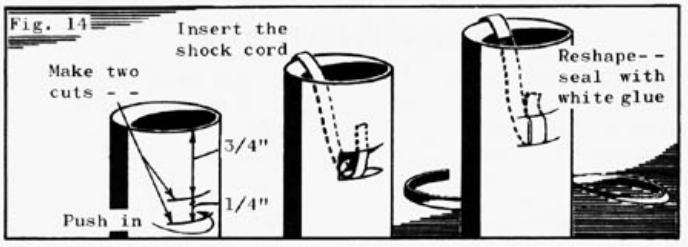
☐ (13) Cut the launching lug to a length of 7-3/16". Bevel both ends at a 45° angle as shown. Glue the launching lug to the body in a position 9/16" from the front of the tube and just to the left of a fin (fig. 13B). Cut two 7-3/16" lengths of BFS-10A and bevel each end to match the launching lug. Glue one to each side of the lug. Cut a 1/8" diameter hole in the launching lug 1-5/8" from the front of the lug. When the glue is dry, carefully sand the top edge of the balsa to match the contour of the launching lug.



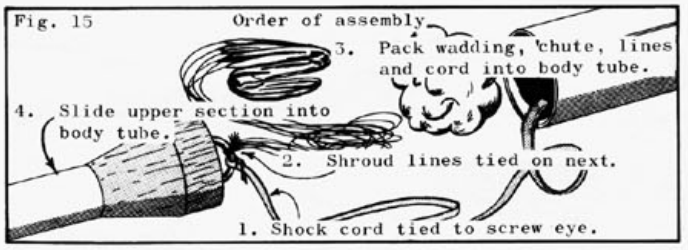


Install Shock Cord

☐ (14) Cut two 3/8" wide slits in the forward end of the body as shown in fig. 14. Cave in the section between the slits and hook the shock cord through the slits as shown. For an extra secure attachment, knot the inside end of the shock cord. Press the caved-in portion of the tube outward until it is round again and apply glue to the cut edges and to the shock cord to anchor it in place.

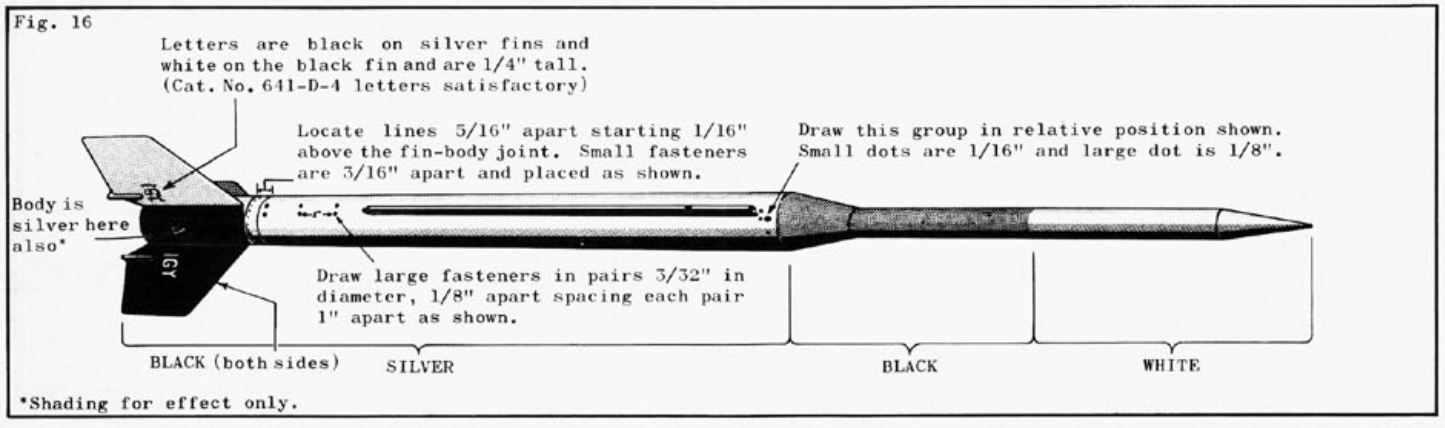


☐ (15) Connect the shock cord, parachute and screw eye as shown in fig. 15. Push the parachute into the body tube, packing the shroud lines and shock cord over it. Push the base of the adapter into the forward end of the body tube. Place the nose cone on the forward end of the BT-5 (if it is loose, wrap its base with masking tape until it makes a tight fit).



PAINTING

☐ (16) Before finishing let all the glue on the outside of the rocket dry so it is hard and clear. Cover all balsa surfaces with a coat of sanding sealer. Let it dry completely and sand lightly with extra fine sandpaper. Apply a second coat, sand and apply still another coat until all the pores in the balsa are filled and the surfaces look and feel smooth. Paint the rocket following the color scheme shown in fig. 16. Apply the lightest color first, then the next lightest, etc. for best results. Apply detail



markings with a lettering pen and india ink or a very fine brush and black paint or dope. (If one color is applied in dope, all the others should also. If one color is enamel, use enamel all the way through. Under no circumstances should dope be applied over enamel, though enamel may be applied over butyrate dope.)

Aerobee 300 Design Data

Your completed Aerobee 300 model rocket is an exact scale model of the high altitude sounding rocket used by the Air Force and NASA for upper atmosphere research. The Aerobee 300 was first launched in October, 1958, and reached a peak altitude of 260 miles. The maximum altitude capability of the design is 300 miles with a 35 pound payload.

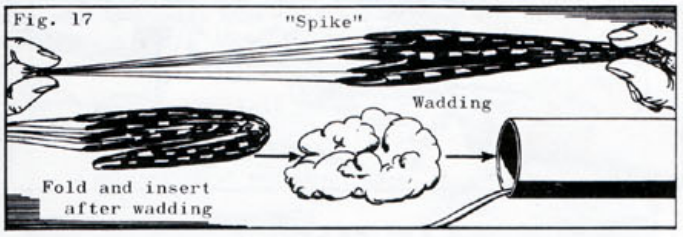
An Aerobee 150 liquid propellant rocket is used for the first stage of the 300 and an Aerojet Sparrow solid propellant motor for the second stage. The entire vehicle is initially boosted out of the launching tower by the JATO 2.5KS-18000 motor. The maximum velocity for the Aerobee 300 is 4,100 miles per hour. The upper stage on your model is a non-operating dummy.

Specifications

Dimensions (in inches)	Fin Span (from center of
Length. 396	rocket to outermost point
Diameter (1st stage). . . 15	on fin). 31
Diameter (2nd stage). . . 8	Weight. . . . . 2,103 lbs.

— COUNTDOWN CHECKLIST —

☐ -11- Pack flameproof recovery wadding into the body tube from the top. The wadding should fill the tube for a distance of about 1-1/2 inches and seal tightly along the sides of the tube. Hold the parachute between two fingers at its center and pass



the other hand down it to form a "spike" shape. Fold this spike in two or three sections as shown in the illustration. Push the folded parachute down into the tube on top of the wadding and pack the shroud lines and shock cord in on top of the parachute. Slide the adapter into place.

☐ -10- Select an engine. Use a 1/2A6-2 for the first flights. For later flights A8-3, B6-4 or even C6-5 engines may be used. Wrap the engine with masking tape until it makes a tight fit in the engine holder tube. This fit must be tight so the engine will not blow out when the ejection charge is activated.

☐ -9- Insert the engine into the engine holder tube so the rear of the engine projects 1/4" from the rear of the rocket. Install an electrical igniter in the engine as directed in the instructions which came with the engine.

☐ -8- Place the rocket on the launcher. Check to be sure the panel is disarmed. Clean the micro-clips and attach them to the igniter.

☐ -7- Clear the launch area, check for low flying aircraft and alert recovery crew and trackers.

☐ -6- Arm the launch panel.

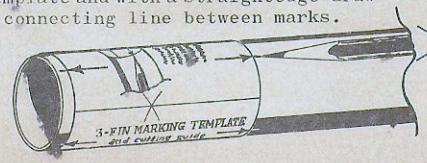
☐ -5- ☐ -4- ☐ -3- ☐ -2- ☐ -1- LAUNCH!

PATTERN SHEET

AEROBEE 300

3-FIN MARKING TEMPLATE and cutting guide for BT-50

Wrap template around body tube matching ends carefully. Mark body tube opposite tip of each arrow. Remove template and with a straightedge draw a connecting line between marks.



CUT CAREFULLY
Stay on the lines

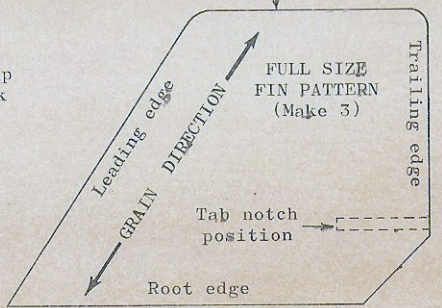
Use tweezers for easier handling of tabs after cutting

TAB PATTERN

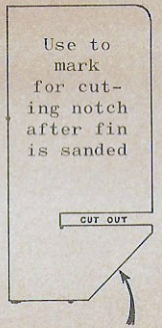
Make 3 from scrap fin stock

How template is placed on fin for marking notch

See text for layout on balsa fin stock.



Use to mark for cuting notch after fin is sanded



Lay tab notch template on fin trailing edge, matching all outer edges. Mark all 3 sides of notch as shown.

SP-17

Form No. 64107