**AEROBEE 300**

**PARTS LIST**

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

A) 1 Sheet balsa fin stock ........................................ 32108
B) 1 Body tube .................................................. 30366
C) 1 Body tube .................................................. 30306
D) 1 Nose cone .................................................. 70214
E) 1 Balsa adapter ............................................... 70064
F) 1 Engine holder tube ........................................ 30226
G) 1 Engine block ............................................... 30224
H) 2 Adapter rings .............................................. 30164
I) 3 Strips balsa stock ......................................... 32112
J) 1 Launching lug .............................................. 38178
K) 1 Shock cord ................................................ 85730
L) 1 12" parachute ............................................. 85564
M) 1 12" shroud line cord ...................................... 38237
N) 6 Tape discs ................................................ 38406
O) 1 Screw eye .................................................. 38252
P) 1 Pattern sheet .............................................. 82887
Q) 1 Decal sheet ............................................... 37032

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 as it is completed.

**BEGIN CONSTRUCTION**

![Diagram of Aerobee 300](image)

**Fig. 1**

(1) Slide one adapter ring over the end of the engine holder tube, exposing about 1/2" of the tube end beyond the ring. Apply a film of glue the width of the ring around the outside of the tube-end - then while the glue is wet, slide the ring to the end of the tube. Make sure the edge of the ring is even with the end of the tube.

**Fig. 2**

(2) Apply a film of glue to the inside end of the engine holder tube - the same end on which you worked in step 1. Install the engine block as shown, making sure its edge is also even with the end of the tube. Mark the other end of the engine holder tube 1" from the end - apply a film of glue around the tube at that point and slide the adapter ring into place. Before the glue sets, position the ring as shown in Fig. 2 above.

**Fig. 3A**

(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 as to direction. Save yourself one cut by letting the edge of the stock serve as leading edge for your fins. Trace out three fins as shown. Cut them out carefully making straight, clean cuts. Sand all the fins to the shape shown in Fig. 3B.

**Fig. 3B**

(4) Cut out the telemetry notch locator 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 knife blade.
being careful not to crack the fin. (If the fin is cracked, glue it back together with white glue – let dry – then complete the notch.) Repeat this operation with the other two fins.

(5) Cut out the telemetry antenna mount pattern. Trace three copies on a piece of scrap fin material as shown. Cut them out and sand each mount for a slip-fit into its notch. Glue each mount in place, aligning it as pointed out in the figure above.

(6) Apply glue inside one end of the main body tube to a depth of about two inches (as far as you can spread the glue with your little finger). Pick up the engine holder tube and ring assembly and insert it ENGINE BLOCK END FIRST into the body tube. DO NOT pause during this operation or the glue may set with the mount in the wrong position. The rear end of the engine mount should be even with the rear edge of the body tube and perfectly centered within it.

(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. You may glue the nose cone into the open end of the BT-5 body tube at this time or leave it free for accessibility to a payload.

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

(See fig. 8 - top of next column.)

(9) Cut out the parachute on its edges as indicated on the patterns. 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 above. Tie the free ends of the shroud lines together.

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

(11) Apply glue to the root edge of one of the fins. Attach the fin to the rear of the body tube, centering the root edge on one of the lines drawn in Step 10. Align the fin so it projects straight away from the body tube. Repeat this step with the other two fins.
Fig. 12

10.95" (about 10-31/32"
BFS-30L A

Align strip so it is parallel to tube centerline.

Skip tapered end into leading edge slot.

(12) Cut each of the 3/32" x 5/32" balsa strips to 10.95" (about 10-31/32") then shape them as shown. Apply glue to the full length of one strip on the bottom surface. Skip the back end of the strip into the slot at the leading edge-root joint of one fin and align the strip so it is perfectly parallel to the centerline of the body tube. Repeat this part of this step with the other two strips.

Fig. 13

Trace shock cord anchor pattern onto typing paper stock and cut out.

Sec. 1 Sec. 2 Sec. 3
Prelod anchor at the dotted lines.

Fold Forward

Glue areas Fold again

Install Center the cord here

Press into place.

(13) Trace and cut out the shock cord anchor and assemble it on the shock cord as shown. Glue the shock cord anchor into the top end of the body tube with the forward edge of the anchor 1" below the forward edge of the body tube.

Fig. 14

Order of assembly

3. Pack wadding, ’chute, lines and cord into body tube

4. Slide base of adapter into the front of body tube

2. Tie on shroud lines

1. Tie shock cord to screw eye

(14) Tie the shock cord and parachute shroud lines to the screw eye in the base of the adapter. Loosely crumple three squares of flame-resistant wadding and insert them into the body tube. Fold the ’chute as shown and insert it into the body tube on top of the wadding. Coil the shroud lines and shock cord and insert them in order, followed by the tube adapter of the nose section.
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 the general assembly view. Apply the lightest color first, then the next, etc. for best results. Apply detail markings with a lettering pen and India ink or a very fine brush and black paint or dope.

**AEROBEE 300 DESIGN DATA**

Your completed Aerobee 300 model rocket is a true scale model of the upper two stages of the vehicle first launched in October, 1968, which reached a peak altitude of 290 miles. The entire vehicle is initially boosted out of the launching tower by the Aerobee 2.5/8-1800 motor.

Once underway, the Aerobee 150 liquid propellant rocket second stage takes the 300 well on the way to the maximum altitude capability of the design which is listed as 300 miles with a 35 pound payload. At staging, an Aerobee Sparrow solid propellant motor carries the payload for the balance of the flight. The maximum velocity attained is 4,100 miles per hour. At this writing, the APGC has launched seven of the Aerobee 300 series vehicles.

**SPECIFICATIONS**
- Dimensions (in inches):
  - Length: 96
  - Diameter (1st stage): 15
  - Diameter (2nd stage): 8
  - Fin Span (from center of rocket to outermost point on fin): 31
  - Weight: 2,103 lbs.

**COUN TDOWN 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. Fold 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. 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 and 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-contacts 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.

- **5-1** LAUNCH!
PATTERN SHEET

AEROBEE 300

3-FIN MARKING TEMPLATE
and cutting guide for B-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.

TELEMETRY ANTENNA MOUNT PATTERN

Make three from scrap fin stock

CUT CAREFULLY
Stay on the lines

Use tweezers for easier handling of tabs after cutting

Use to mark fin for locating telemetry mount notch

See text for layout on balsa fin stock.

Lay the template on the fin trailing edge. Match the three outer edges and mark all three sides of the notch cut-out.

Full size fin pattern (Make 3)

Leading edge

Chord direction

Telemetry Antenna Mount Location

Root edge