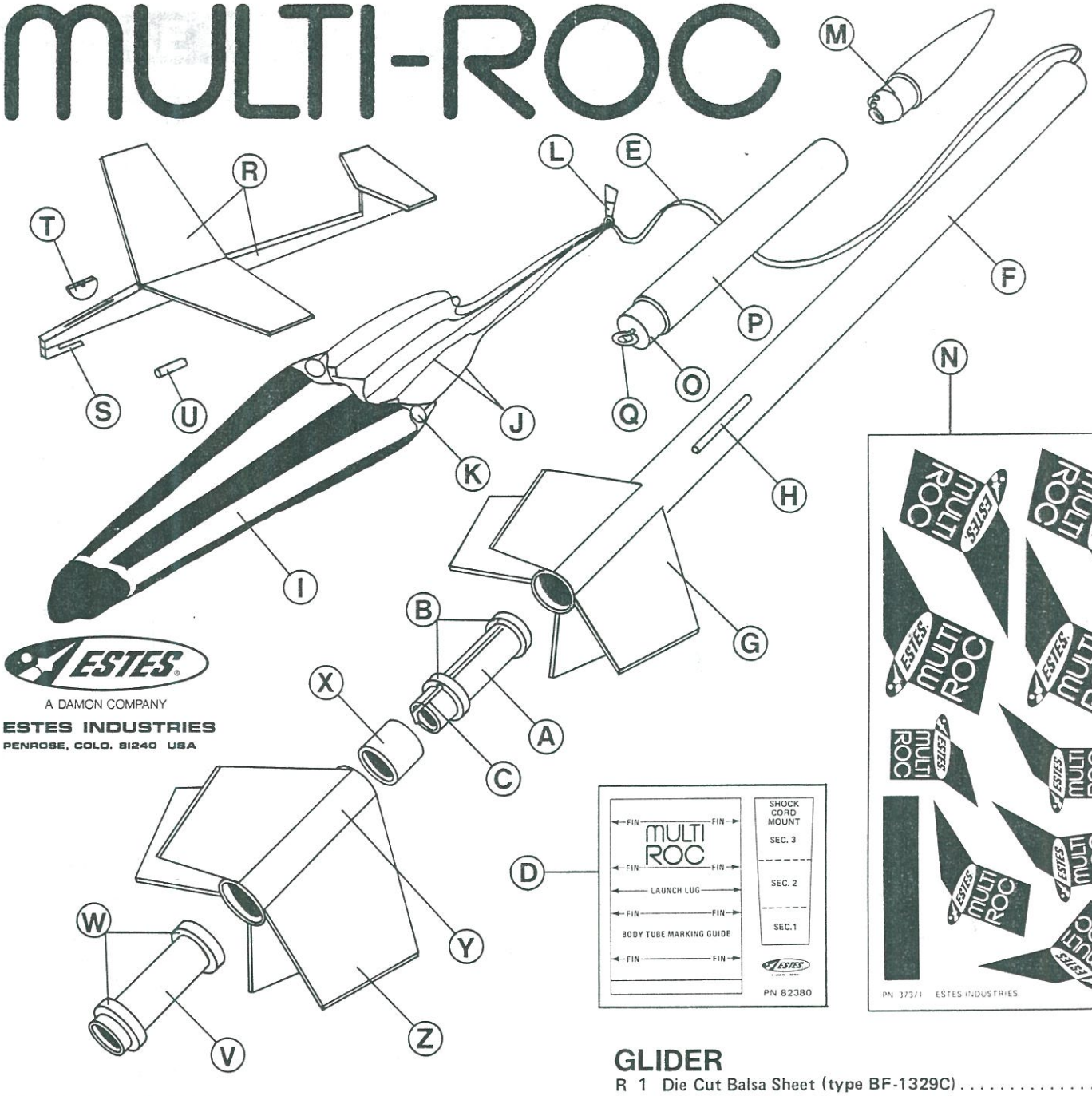
MULTI-ROC



ESTES
A DAMON COMPANY
ESTES INDUSTRIES
PENROSE, COLO. 81240 USA

PARTS LIST

BASIC MODEL 1329

A	1	Engine Mount Tube (type BT-20J) 2-3/4"	30326
B	2	Adapter Rings (type AR-2050) 1/4"	30164
C	1	Engine Hook (type EH-2)	35025
D	1	Pattern Sheet (type SP-1329)	82380
E	1	Shock Cord (type SC-1)	85730
F	1	Body Tube (type BT-50L) 12-3/4"	30366
G	1	Die Cut Balsa Sheet (type BF-1329A) 9"	32330
H	1	Launch Lug (type LL-2B) 2-3/8"	38178
I	1	Parachute (type PK-12A)	85564
J	1	72" Shroud Line Cord (type SLT-72)	38237
K	6	Self-Adhesive Tape Discs (type TD-3F)	38406
L	1	Line Clip (type SV-2)	38269
M	1	Plastic Nose Cone (type PNC-50X)	71010
N	1	Water Transfer Decal (type KD-1329)	37371

PAYLOAD SECTION

O	1	Balsa Nose Block (type NB-50)	70158
P	1	Payload Section Body Tube (type BT-50EE) 5-1/2"	30358
Q	1	Screw Eye (type SE-2A)	38252

GLIDER

R	1	Die Cut Balsa Sheet (type BF-1329C)	32332
S	1	Wood Dowel (type WD-2A) 1"	85909
T	1	Balance Weight (type NCW-1A)	38280
U	1	Glider Support Lug (type LL-2AM) 3/8"	38176

BOOSTER STAGE

V	1	Engine Mount Tube (type BT-20M) 2-1/4"	30334
W	2	Adapter Rings (type AR-2050) 1/4"	30164
X	1	Stage Coupler (type JT-50C) 1"	30260
Y	1	Booster Body Tube (type BT-50J) 2-3/4"	30362
Z	1	Die Cut Balsa Sheet (type BF-1329B)	32331

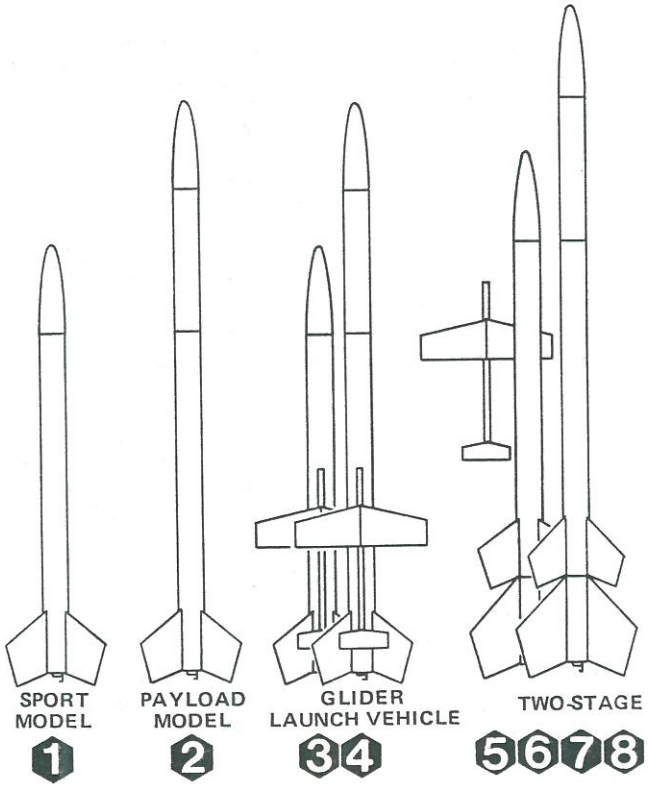
IN ADDITION

You will need a few tools and supplies, so collect them before you start. Here's the list:

A. White Glue: Estes Rocket Glue, Elmer's, or similar.
B. Knife: A sharp model knife or single edge razor blade.
C. Scissors: Almost anything which will cut paper is fine.
D. Pencil: A pencil's best; marker and ball point ink can show through the paint.
E. Ruler: Measure distances---don't guess.
F. Sandpaper: Fine and extra-fine for a smooth finish.
G. Sanding Sealer: Fills the holes in the balsa.
H. Paint: White, and flourescent green spray enamel for models.

BEFORE YOU START

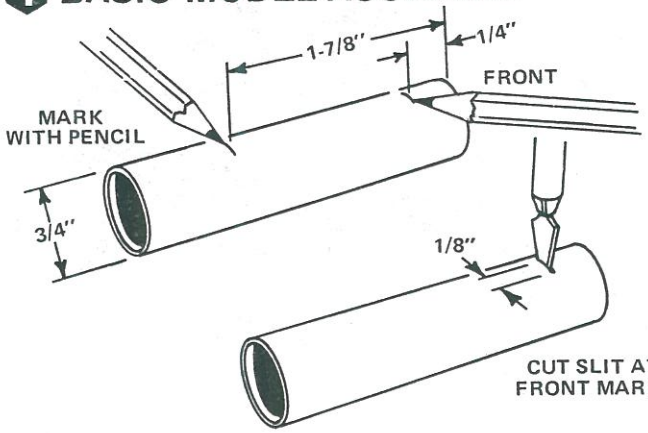
Your model can be assembled and flown eight different ways as shown below. Build and fly the sport model first. Next add the payload section and launch again. Move on to the other model systems as you follow the "Launching Procedures" at the end of these instructions.



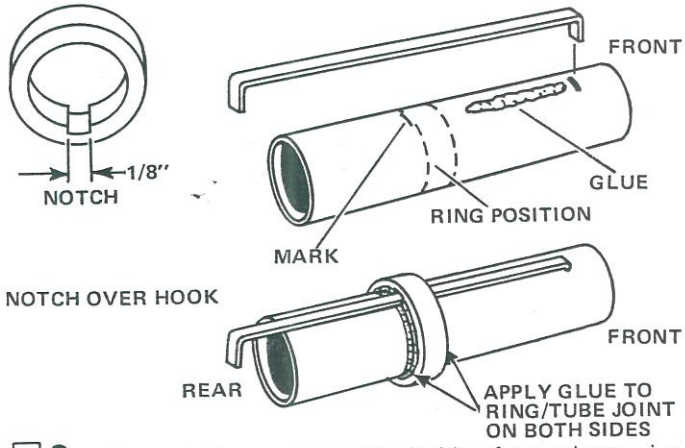
IMPORTANT:

Read all instructions before beginning work on your model. Make sure you have all parts and materials. When you are thoroughly familiar with the assembly procedure, begin construction. Check off each step as you complete it. In each step, test-fit the parts together before applying any glue. If some part doesn't fit properly, sand lightly or build up as needed for precision assembly.

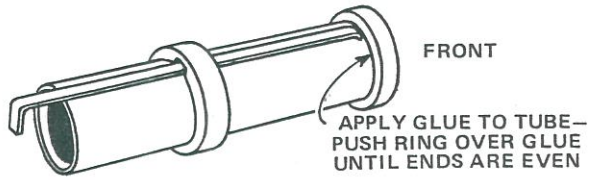
1 BASIC MODEL ASSEMBLY



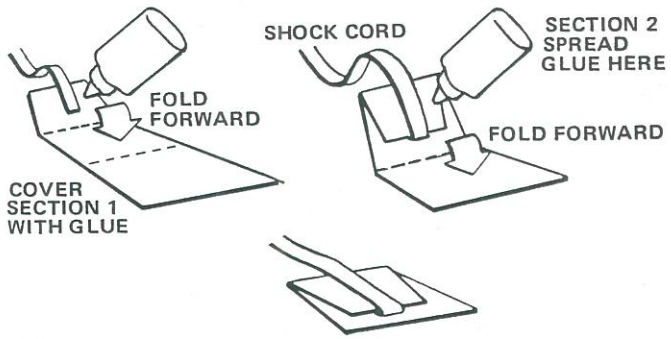
☐ **1** Locate the main stage engine mount tube (part A). Check its size (2-3/4" long and 3/4" diameter) with a ruler to be sure you have the correct tube. Mark the tube at 1/4" and 1-7/8" from one end. Cut a 1/8" long slit in the tube on the front mark as shown in the illustration.



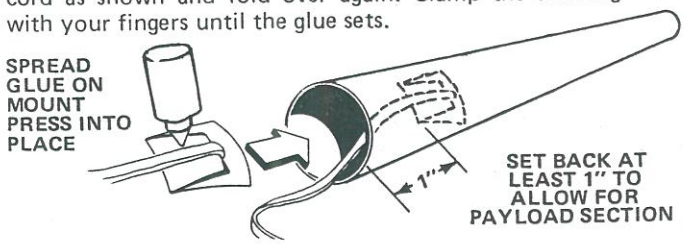
☐ **2** Cut a shallow notch in the inside of one adapter ring (part B) as shown. Apply a 1" long line of glue to the engine mount tube, starting at the slit as illustrated. Push one end of the engine hook (part C) into the slit and press the main part of the hook into the glue. Slide the notched adapter ring over the tube and hook so the rear of the ring is on the mark as shown. Apply glue around the ring/tube joint on both sides to hold the ring in place.



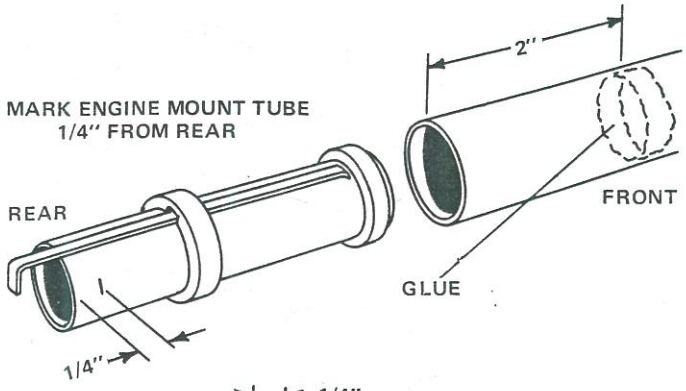
☐ **3** Apply a line of glue around the engine mount tube ahead of the engine hook. Slide a second adapter ring onto the tube and over the glue until the front end of the ring and the front end of the engine mount tube are even.

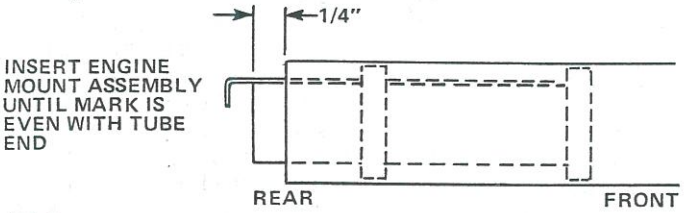


☐ **4** Cut out the shock cord mount from the pattern sheet (part D). Crease it on the dotted lines by folding. Spread glue on the first section (1) and lay one end of the shock cord (part E) into the glue. Fold over and apply glue to the back of the first section and the exposed part of section 2. Lay the shock cord as shown and fold over again. Clamp the unit together with your fingers until the glue sets.

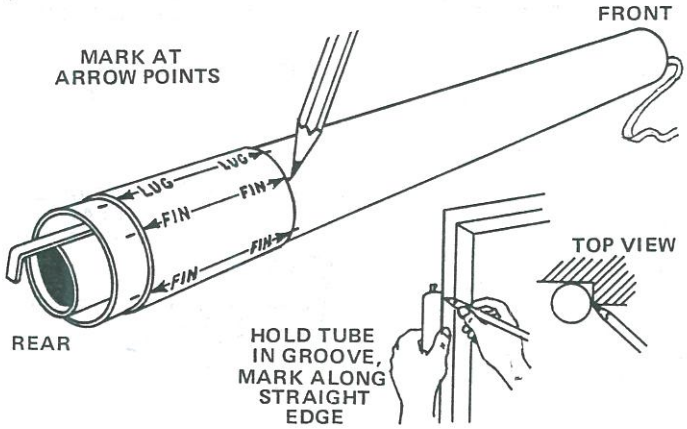


☐ **5** Apply glue to the back side of section 2 and the exposed part of section 3 of the shock cord mount. Hold the mount (wide end toward tube) as shown, and press it into place in the main body tube (part F). Make sure the front of the mount is at least 1" from the end of the tube. Hold the mount in place until the glue sets.

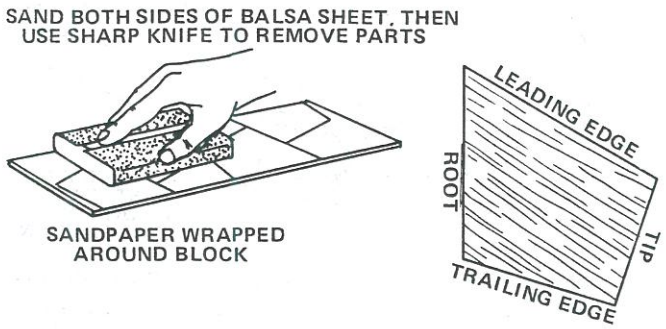




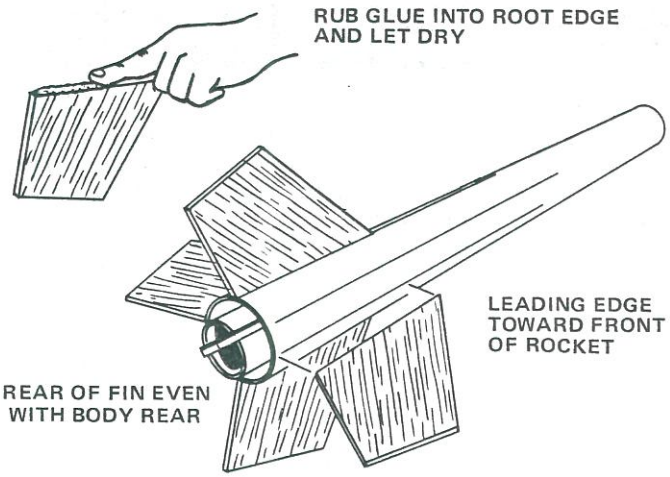
☐ **6** Mark the engine mount tube 1/4" from the rear (the end with the overhanging hook). Apply a line of glue around the inside of the main body about 2" from the rear of the tube (the end opposite the shock cord mount). Slide the engine mount unit into the body until the mark is even with the body end. (The engine mount is in the right place when 1/4" of the engine holder tube sticks out of the body.) Do not pause when pushing the mount in, or the glue may "grab" at the wrong place!



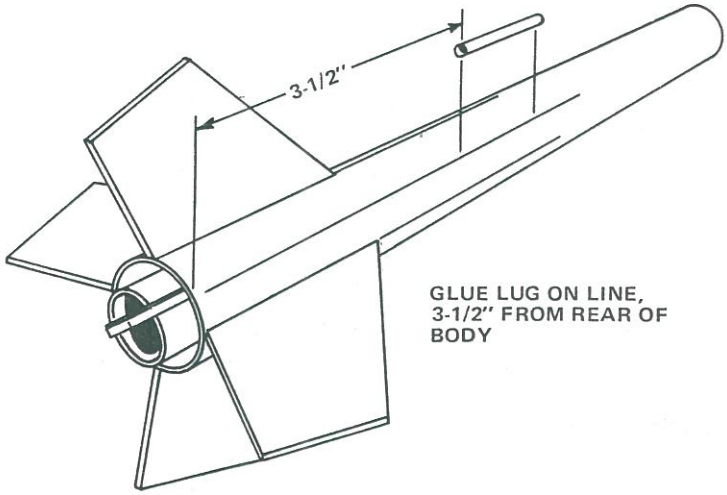
☐ **7** Cut out the body tube marking guide from the pattern sheet. Wrap it around the rear (engine mount end) of the main body tube. Mark the tube at each arrow point, front and rear. Draw a straight line connecting each matching front and rear mark. The "V" formed by the side of the stop on a door frame makes a good guide for drawing straight lines on a tube. Extend the launch lug line forward 7".



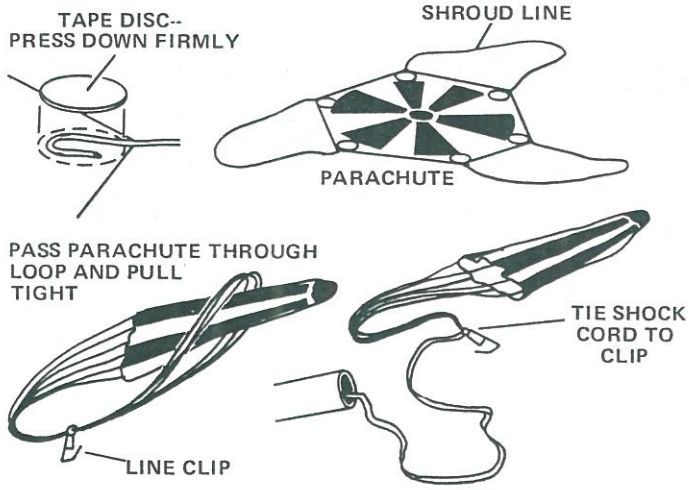
☐ **8** Fine-sand the 9" long upper stage fin die-cut sheet (part G), then carefully remove the fins from the sheet. Free the edges with a sharp knife. Sand all edges except the root edge to a rounded shape. Make sure the root edge stays square.



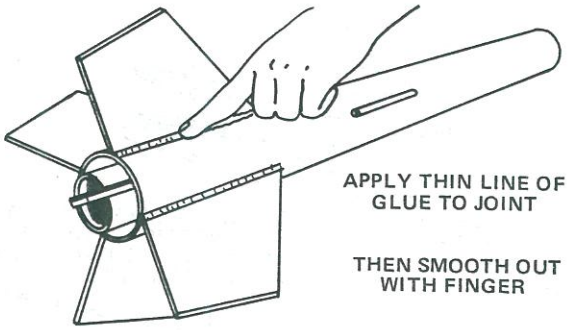
☐ **9** Rub a line of glue into the root edge of each fin and allow to dry. Glue the fins to the main body on the alignment lines, with the rear of each fin even with the rear of the body tube. Adjust the fins so they stick straight out from the body. Do not set the rocket on its fins while the glue is wet.



☐ **10** Glue the launch lug (part H) to the body on its line. The rear of the lug should be 3-1/2" from the rear of the main body. Align the lug straight on the body.

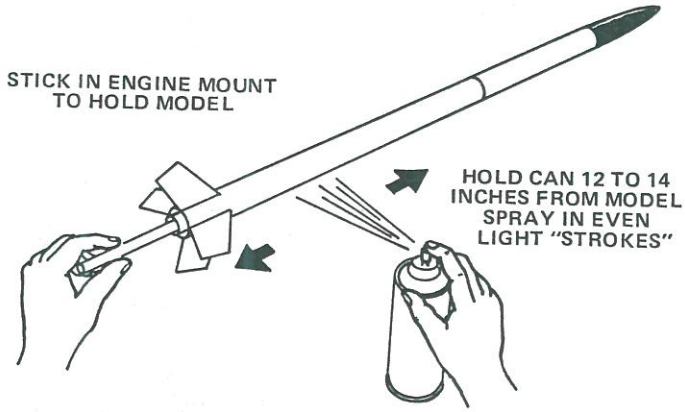


☐ **11** Cut out the parachute (part I) on its edge lines. Cut three 24" lengths of shroud line (part J). Attach line ends to the top of the parachute with tape discs (part K) as shown. Pass the shroud line loops through the small loop on the line clip (part L). Pass the parachute through the loop ends and pull the lines tight against the clip. Set the knot with a drop of glue. Tie the free end of the shock cord to the clip as shown.

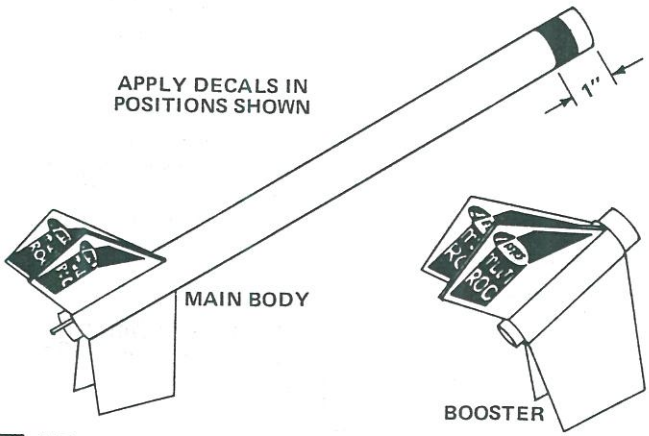


☐ **12** When the fin joints have dried, apply glue reinforcements to each joint. Holding the model level, apply a narrow line of glue to both sides of each fin joint. Smooth out the glue with your finger. Keep the model level until the glue dries.

☐ **13** When all glue on the outside of the body is dry, prepare the fins for painting. Apply at least two coats of sanding sealer to the fins. Let dry and sand thoroughly between coats. Do this until the tiny holes in the wood are filled and everything looks and feels smooth.



☐ **14** Give the entire rocket two or three coats of white enamel spray paint. Let the paint dry thoroughly, then paint only the nose cone with flourescent green. Let the paint dry overnight.

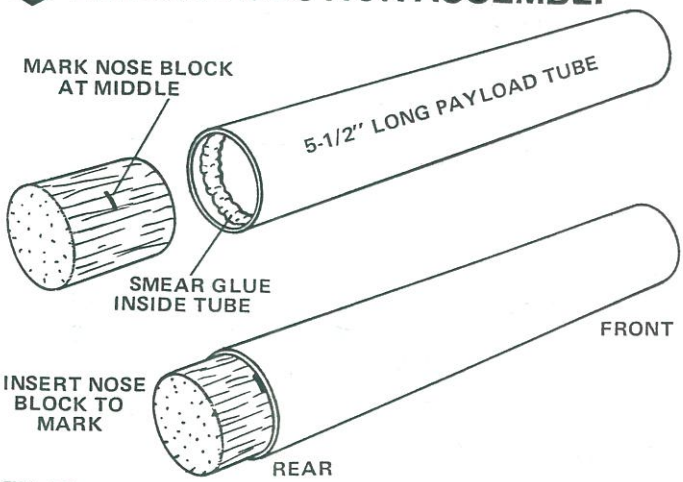


☐ **15** When all paint is completely dry, clip the shock cord and shroud lines to the nose cone. Next, apply decals (part N) in the positions shown. To apply the decals, cut out a decal section, dip it in lukewarm water for 10 seconds, and hold it until it starts to uncurl. Slip the decal off the backing sheet and onto your model. Blot excess water away. When all decals are in place, let the model dry overnight. After drying, apply a coat of clear spray to protect the decals.

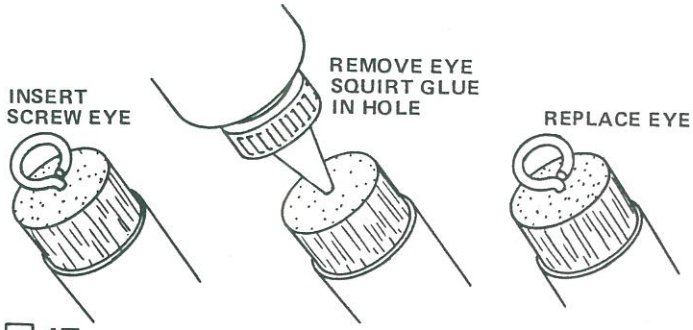
Your model is now ready for launch. Follow the Basic Countdown Checklist (list #1) as you send your bird on its first flight.

As a basic single stage model your rocket is ideal for holding parachute duration contests (use a stopwatch to see whose model can stay aloft the longest) and spot landing contests (see whose model can land by parachute nearest a target on the ground). You'll find these contest events really sharpen your rocket flying skills.

2 PAYLOAD SECTION ASSEMBLY

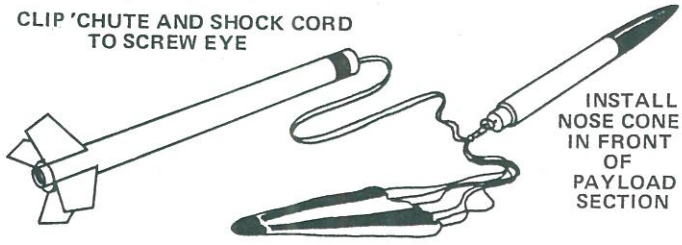


☐ **16** Mark the nose block (part O) at its middle. Glue it in one end of the 5-1/2" long payload section tube (part P) so the mark on the block is even with the end of the tube.



☐ **17** Insert the screw eye (part Q) into the rear of the nose block. Remove the screw eye and squirt a small amount of glue into the hole. Re-insert the screw eye.

☐ **18** Paint the payload section body with two or three even, light coats of white spray enamel paint. Let the paint dry thoroughly between coats.

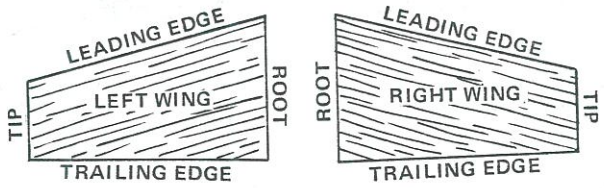


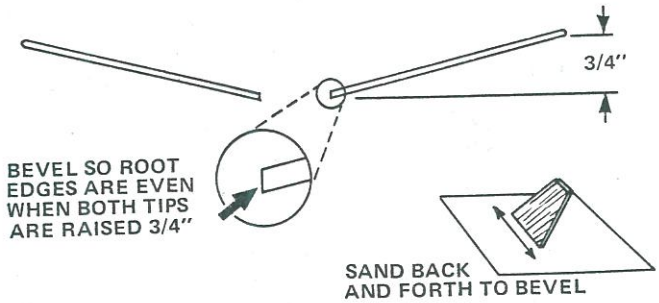
☐ **19** Unclip the parachute and shock cord from the nose cone. Snap the clip in place on the payload section's screw eye. Check the fit of the nose cone in the front of the payload section. If it is loose, wrap the shoulder of the cone with masking tape until it makes a snug fit. Make sure the nose cone will not come loose when the model is turned upside down and shaken.

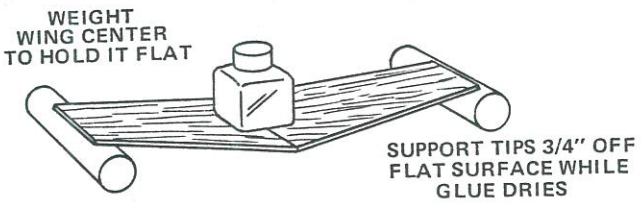
In its payload launch form, your model can carry instruments such as miniature radio transmitters, or biological specimens. (Send a grasshopper on a really high hop!) When launching a payload, special care in preparing the model for flight is important to insure the safety of the payload. Follow the steps in Payload Countdown (list #2) when you fly your model in this configuration.

3 GLIDER ASSEMBLY

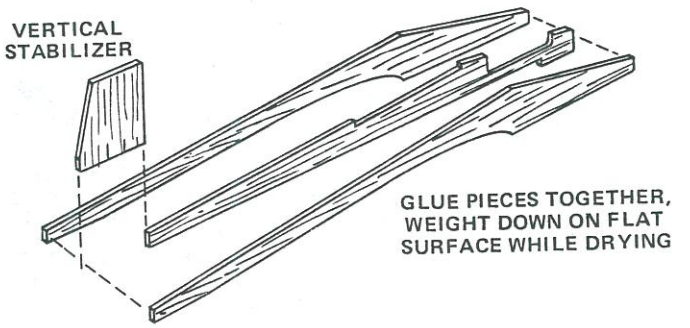
☐ **20** Fine-sand both sides of the die-cut balsa glider parts sheet (part R), then carefully remove the parts from the sheet. Free the edges with a sharp knife.

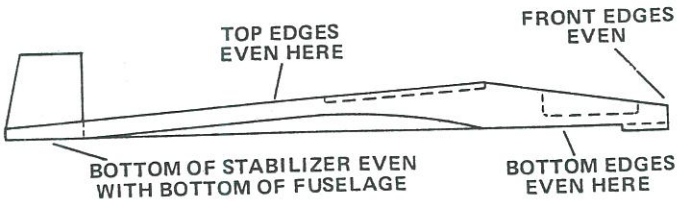




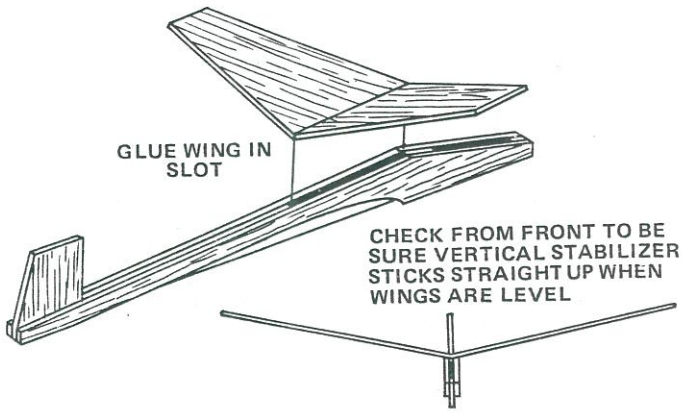


☐ **21** Bevel the root edges of the wing halves exactly as shown. Use a sheet of sandpaper face-up on a flat, smooth surface, and run the wing root back and forth on the sandpaper until the edge is beveled. Notice that one wing bevels to the right, the other to the left. Glue the wing halves together, with the root edges resting on a flat surface and the tips supported 3/4" above the root. Weight the center of the wing to hold it flat on the surface.

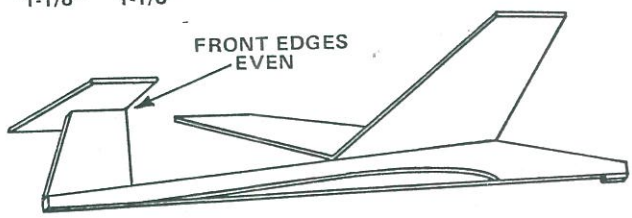


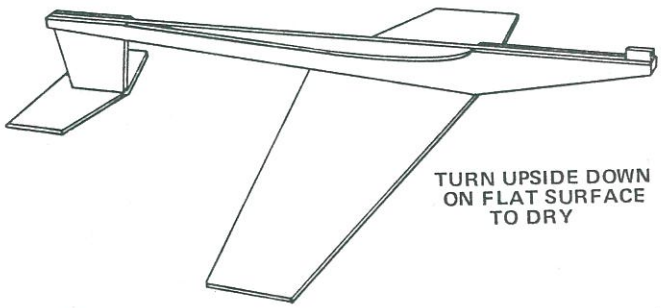


☐ **22** Glue the vertical stabilizer and the three fuselage pieces together as shown. Lay the fuselage assembly on a flat surface and weight it down (small paint bottles make good weights) to hold it flat while the glue dries.

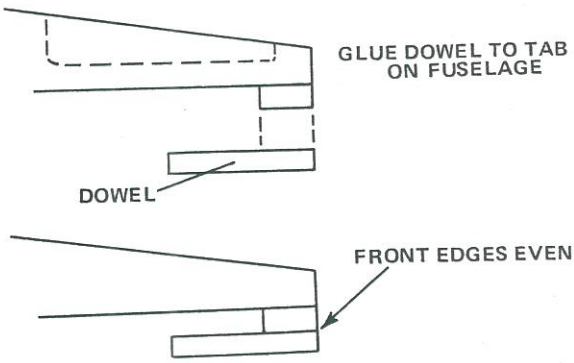


☐ **23** When the fuselage and the wing assemblies have dried thoroughly, glue the wing to the fuselage. Notice that there is a slight slot in the fuselage where the wing fits. Check to make sure the wing is lined up straight on the fuselage, then hold it tightly in place until the glue sets.





☐ **24** Draw a straight line between the front center and the rear center of the horizontal stabilizer. Glue the horizontal stabilizer to the top of the vertical stabilizer as shown. Turn the glider upside-down on a flat surface to hold the stabilizer straight while the glue dries.



☐ **25** Glue the dowel (part S) to the fuselage at the front to form a hook.