

# Estes Industries Rocket Plan No. 57

## Little Beth X-2

DESIGNED BY  
**Hal Kritzman**

PUBLISHED AS A SERVICE TO ITS CUSTOMERS BY ESTES INDUSTRIES, INC., BOX 227, PENROSE, COLORADO 81240

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## ABOUT THIS 3-ENGINE BOOSTER PAYLOADER

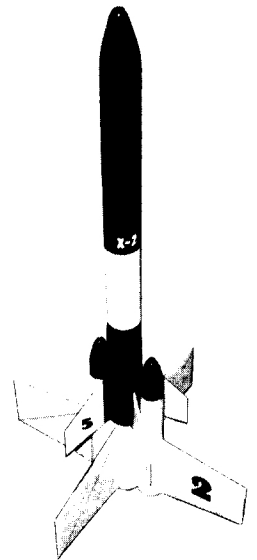
The Little Beth X-2, August 1968 Design of the Month Contest winner, is an outstanding high altitude payload model designed by Hal Kritzman of Canton, Mass. Recommended for experienced rocketeers who have good cluster ignition systems, the Little Beth X-2 is an ideal booster for heavy payloads.

For best results, study Estes Industries Technical Reports TR-2 and TR-6 before launching your model. If you do not have copies of these reports, they can be ordered—check your catalog. With proper care the Little Beth X-2 will give amazing performance in flight after flight.

In test flights at Estes Industries this model was able to carry payloads of 2 and 3 ounces out of sight consistently. The model should always be flown with a payload of at least 1 ounce for best performance.

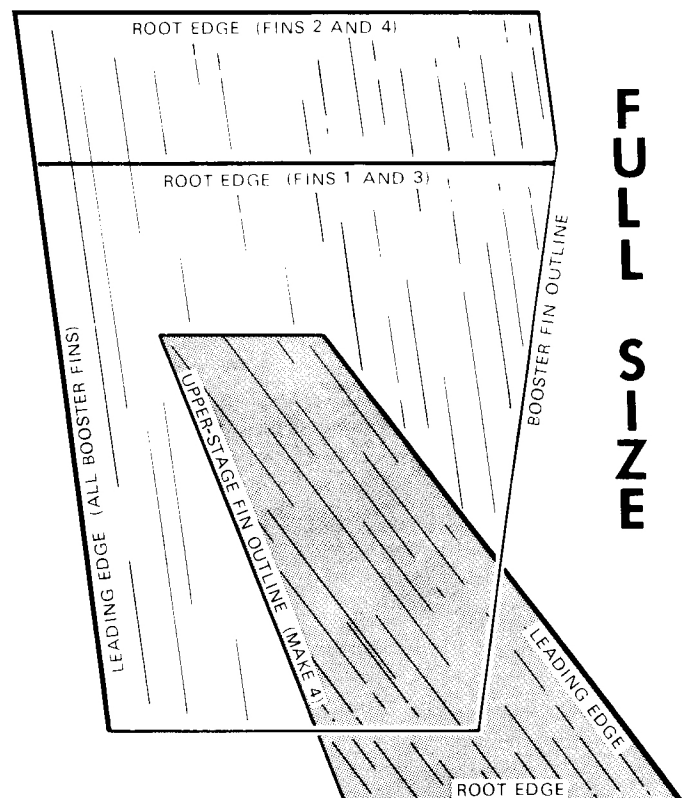
## PARTS LIST

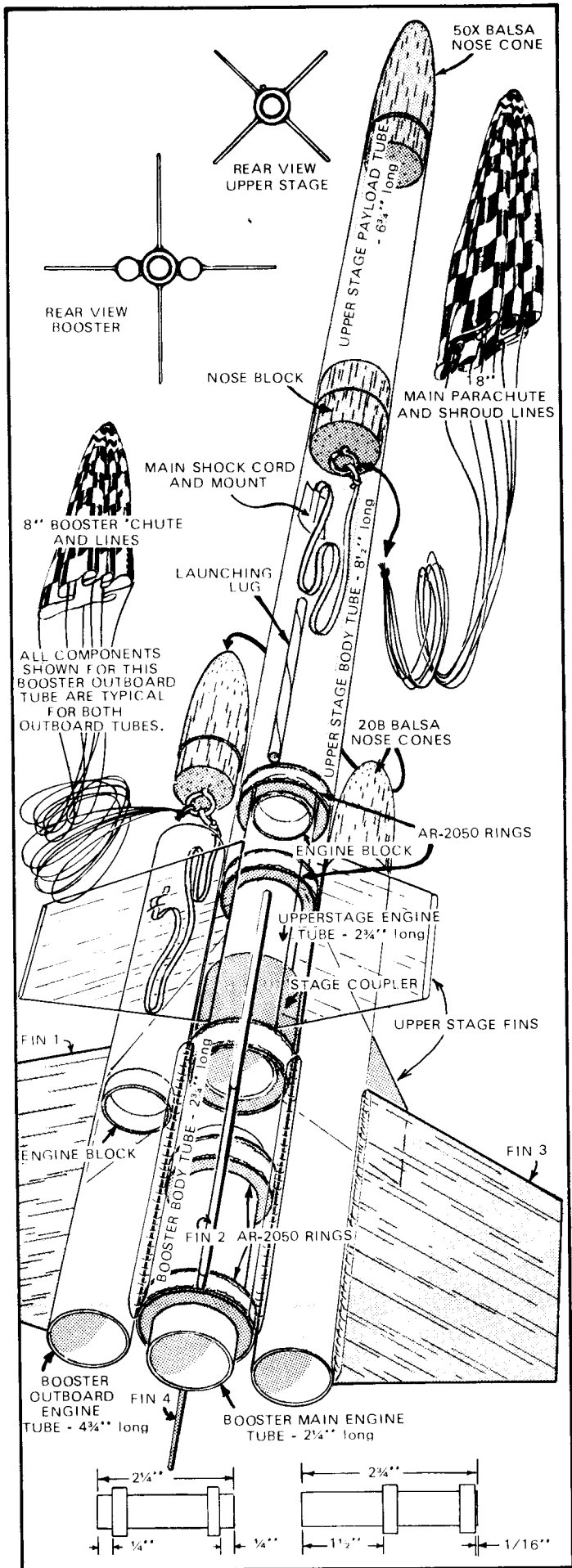
- 1 Body Tube--Part #BT-20M
- 1 Body Tube--Part #BT-20J
- 2 Body Tubes--Part #BT-20D
- 1 Body Tube--Part #BT-50
- 4 Adapter Rings--Part #AR-2050
- 1 Stage Coupler--Part #JT-50C
- 3 Engine Blocks--Part #EB-20A
- 2 Shock Cords--Part #SC-1
- 2 Nose Cones --Part #BNC-20B
- 1 Nose Cone--Part #BNC-50X
- 1 Nose Block--Part #NB-50
- 3 Balsa Stock--Part #BFS-40
- 3 Screw Eyes--Part #SE-2
- 2 12" Parachutes--Part #PK-12
- 1 18" Parachute --Part #PK-18
- 1 Launching Lug--Part #LL-2B



## ASSEMBLY

1. Cut the BT-50 body into three pieces, one 2-3/4" long, one 8-1/2" long and one 6-3/4" long. Use the procedure shown under "Construction Information" in your Estes Catalog. Also cut the two BT-20D tubes to a length of 4-3/4" each.
2. Glue the AR-2050 rings to the 2-1/4" long BT-20M and the 2-3/4" long BT-20J in the positions shown in the overall view. Glue an EB-20A engine block into the forward end of the BT-20J.
3. Mark the 2-3/4" long piece and the 8-1/2" long piece of BT-50 for four fins on each. (See "Construction Tips" in your catalog.) Mark the two 4-3/4" long pieces of BT-20D with two lines directly opposite each other. (Use two of the "X" lines on the marking guide in your catalog).
4. Glue the longer engine mount unit into the marked end of the 8-1/2" long section of BT-50. The end of the mount that does not have the engine block should project from the body 1/4". Glue the other engine mount into the 2-3/4" long BT-50 so one ring is even with one end of the tube.
5. Glue the JT-50C stage coupler into the front of the booster body tube (the 2-3/4" BT-50). The coupler should project 1/2" from the tube.





6. Glue the two 4-3/4" long pieces of BT-20D to the booster body tube. The ends of the side tubes should be even with the end of the engine mount tube. Check to be sure all three tubes are aligned perfectly, then set the unit aside to dry.

7. Mount an 18" long shock cord in the front of the 8-1/2" long upper stage body tube. Use the "Fold & Glue" anchor shown in the "Recovery Information" in your catalog.

8. Glue an engine block in each of the booster "side pod" tubes. The engine blocks should be 2-1/2" from the rear ends of the tubes. To do this, mark an expended engine casing 1/4" from one end. Smear glue around the inside of the tube, then push the engine block forward in the tube with the engine casing until the mark is even with the end of the tube.

9. Make 2 booster fins to each pattern and 4 upper stage fins. Make sure the grain of the balsa is parallel to the fins' leading edges. Sand the fins until smooth, then glue them in place. The smaller pair of booster fins should be attached to the BT-20 tubes and the larger booster fins to the BT-50 tube.

10. Mount a nine inch length of SC-1 shock cord in the front of each booster side pod tube. Use the slit system shown in "Recovery Information" in your catalog.

11. Cut out two 12" plastic parachutes, then trim them down to 8" diameter. Attach six 8" shroud lines to each parachute. Assemble an 18" parachute for the upper stage.

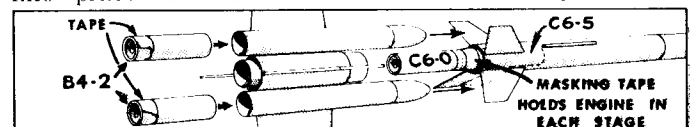
12. Glue an NB-50 nose block into one end of the 6-3/4" long BT-50 payload section tube. One half of the block should project from the tube. Glue a screw eye into the end of the nose block. Glue screw eyes into the ends of both BNC-20B nose cones.

13. Glue an LL-2B launching lug to the upper stage body tube in the position shown in the overall view. Apply a fillet of glue to each fin-body joint and support the units horizontally as the glue dries.

14. After the glue is dry connect an 8" chute and a BT-20B nose cone to the shock cord on each booster pod. Connect the 18" chute and the payload section to the upper stage shock cord.

## FLIGHT PREPARATION

In preparing the Little Beth X-2 for flight, tape the C6-0 and C6-5 (or C6-7) together as you would for any multi-stage model. After taping the B4-2's to fit tightly in the side pods, insert the taped pair of C's into the upper stage and, secure with a wrap of tape overlapping the engine and the engine holder tube. Slide the booster into place and secure it with another wrap of tape.



Only one combination of engines is recommended for this rocket—a C6-0 center booster, two B4-2 engines in the side pods, and a C6-5 or C6-7 in the upper stage. This combination will give the model a real ride.