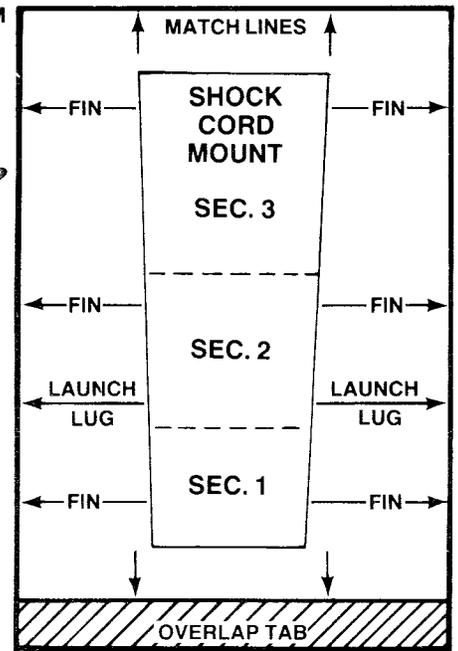




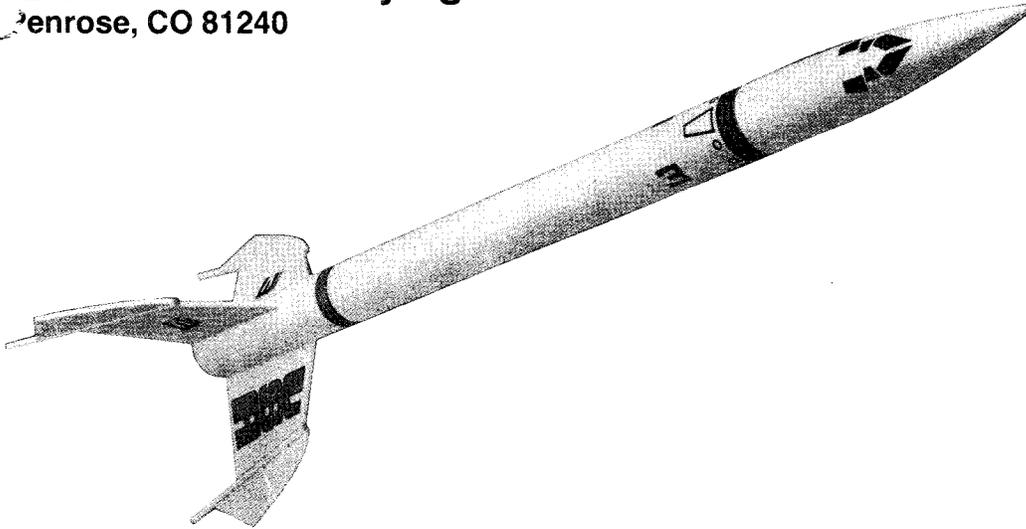
Estes Industries
1295 H Street
Penrose, CO 81240

STARBIRD™

Flying Model Rocket #1954

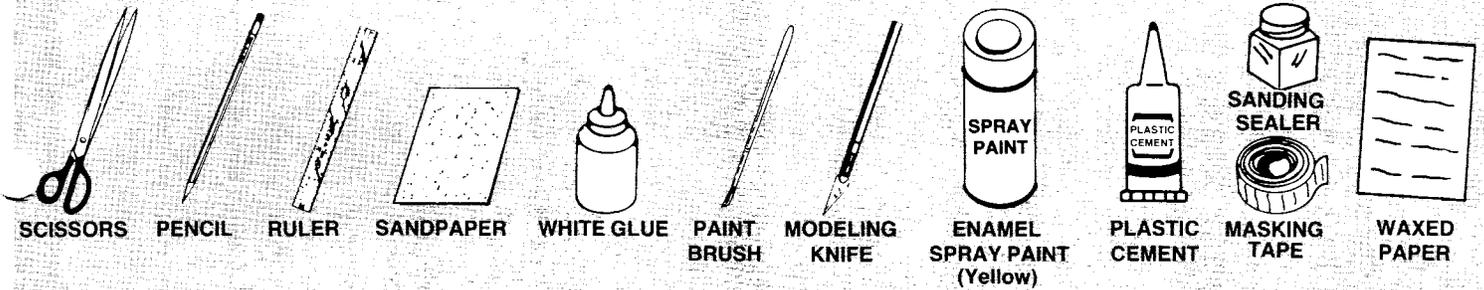


TUBE MARKING GUIDE



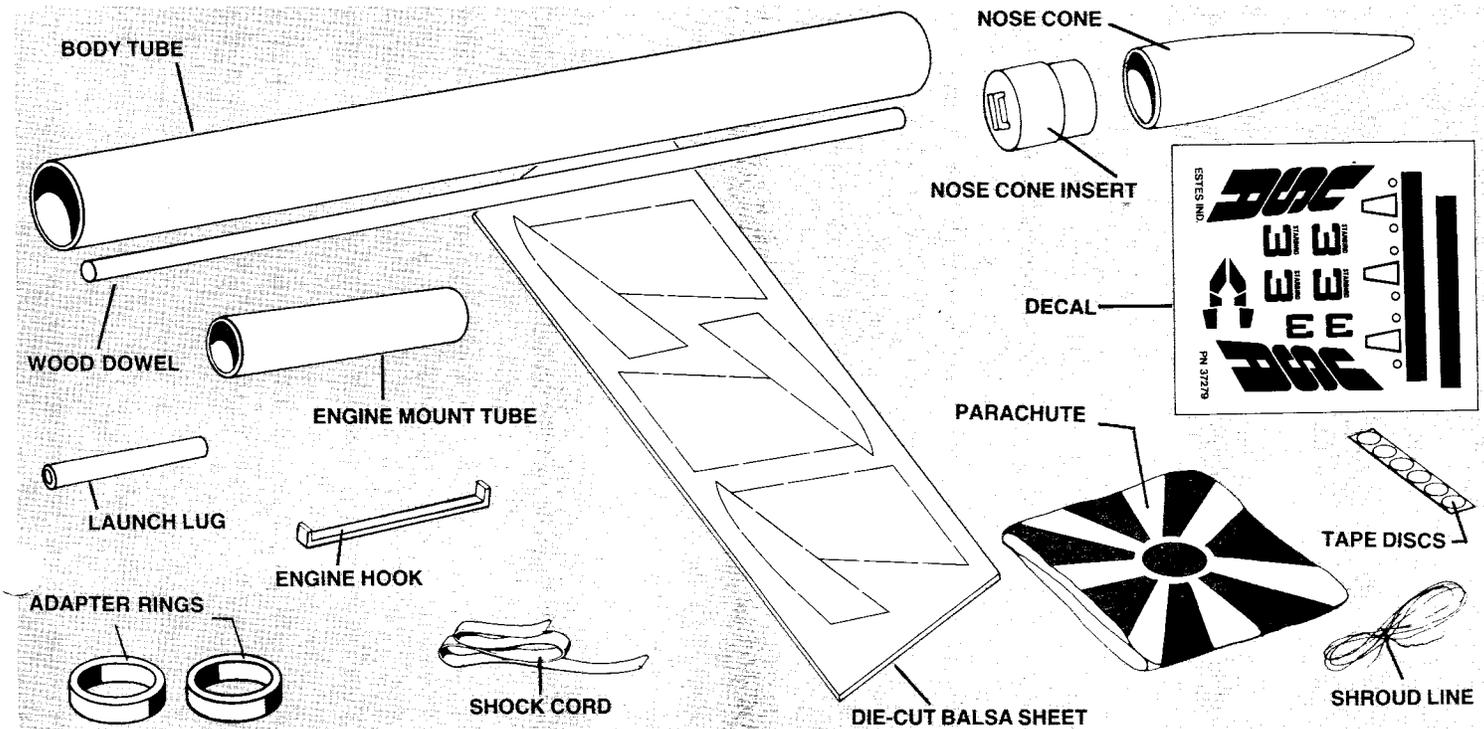
PARTS AND SUPPLIES

Locate the parts shown below and lay them out on the table in front of you. In addition to the parts included in the kit you will also need:



ASSEMBLY TIP

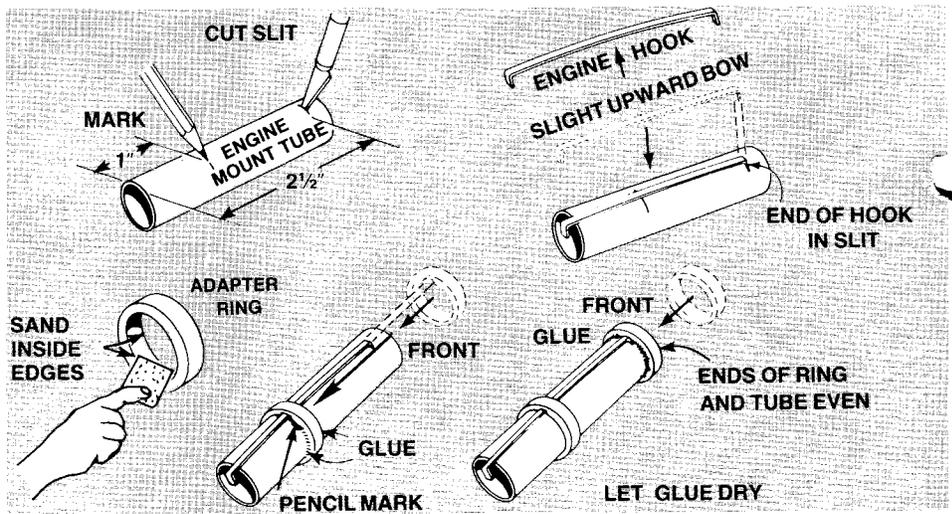
Read all instructions before beginning work on your model. Make sure you have all parts and supplies. Test-fit all parts together before applying any glue. If any parts don't fit properly, sand as required for precision assembly.



ROCKET ASSEMBLY

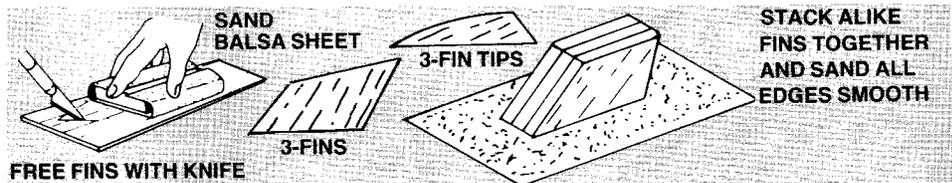
1

- Mark spacer tube 1" and 2½" from one end.
- Cut 1/8" long slit at 2½" mark.
- Insert one end of engine hook into slit.
- Slide ring onto front of tube and down to 1" mark and glue both sides of ring/tube joint.
- Apply glue around front of tube. Slide remaining ring into place.



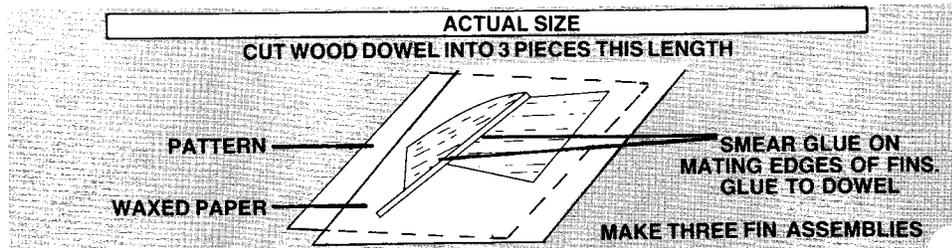
2

- Fine sand die-cut balsa sheet. Carefully remove fins by freeing edges with sharp knife.
- Stack alike fins together. Sand all edges smooth.



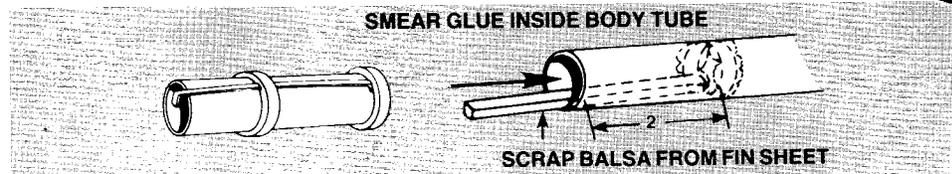
3

- Cut three 4" long pieces from 12" long wood dowel.
- Cover pattern sheet on back of panel with waxed paper and assemble fins and dowels with white glue.
- Set fin assemblies aside to dry.



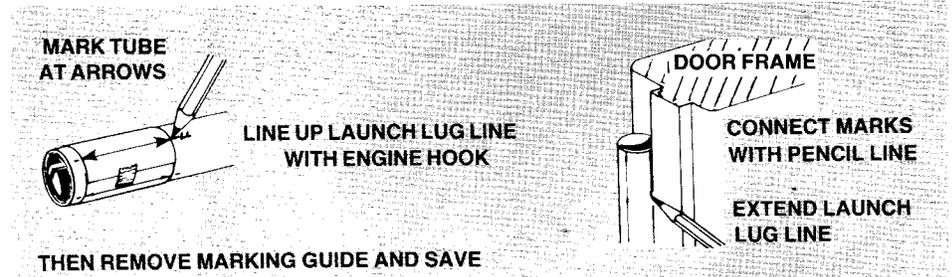
4

- Using a piece of scrap balsa, smear glue inside body tube 2" from one end.
- Push engine mount in tube until ends are even.



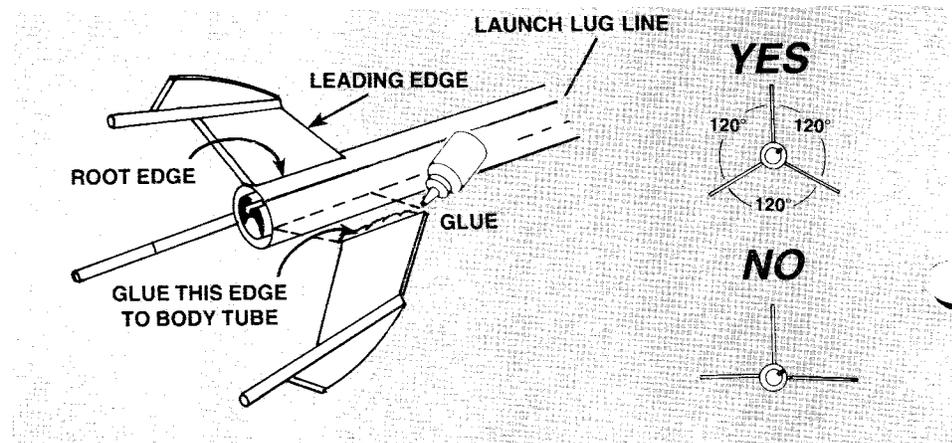
5

- Cut out tube marking guide from front of instructions.
- Wrap guide around the tube and tape. Mark tube at arrows. Remove guide and save.
- Draw straight lines connecting each pair of marks.
- Extend launch lug line full length of tube.



6

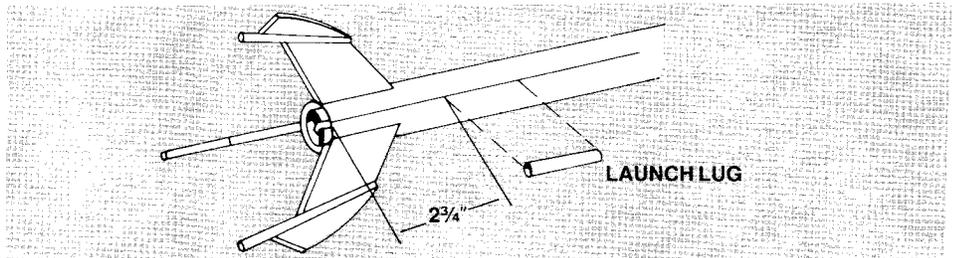
- Lay fins on pattern sheet on back of panel to determine the gluing (root) and front (leading) edges of each fin.
- Position and glue fins on alignment lines one at a time. Let each dry several minutes before applying the next one.
- Adjust fins to project straight out from tube.
- Do not set rocket on fins while glue is wet.



FINS MUST BE ATTACHED CORRECTLY FOR STABLE FLIGHT!

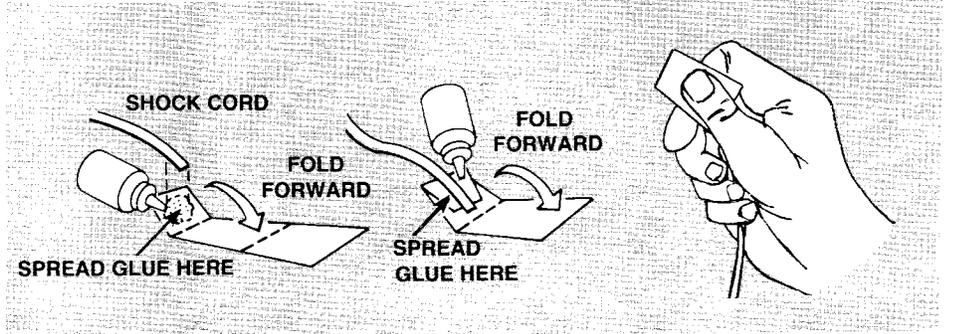
7

Glue launch lug straight on launch lug line 2 3/4" from rear of tube.



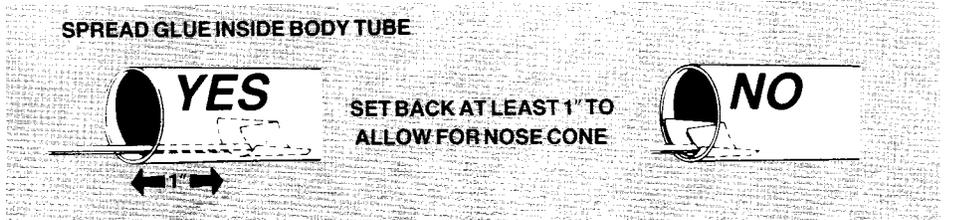
8

- A. Cut shock cord mount from tube marking guide.
- B. Crease on dotted lines by folding. Spread glue on section 1 and lay end of shock cord into glue. Fold over and apply glue to back of first section and exposed part of section 2. Lay shock cord as shown and fold mount over again.
- C. Clamp unit together with fingers until glue sets.



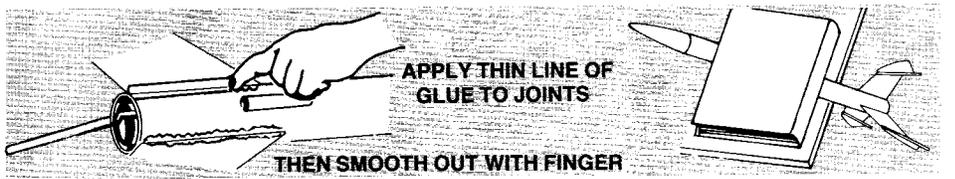
9

- A. Apply glue to inside front of body tube to cover an area no less than 1" to 2" from end. The glued area should be same size as shock cord mount.
- B. Press mount firmly into glue as shown.
- C. Hold until glue sets.



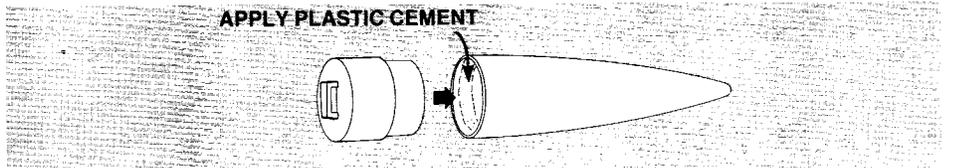
10

- A. Apply a glue reinforcement to each fin/body tube joint and each side of launch lug.
- B. Support rocket as shown until glue dries.



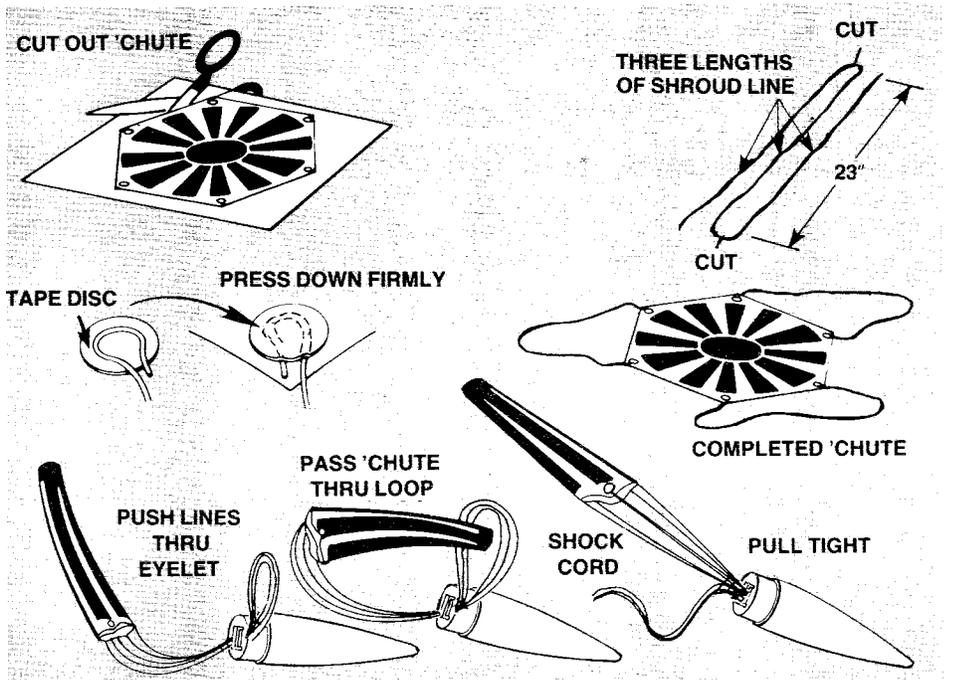
11

- A. Cement nose cone and nose cone insert together with plastic cement.
- B. Push nose cone insert firmly into nose cone end. Let dry.



12

- A. Cut out parachute on edge lines.
- B. Cut three 23" lengths of shroud line.
- C. Form small loops with shroud line ends and press onto sticky side of tape discs.
- D. Attach tape discs with line ends to top of parachute as shown.
- E. Firmly press tape discs into place until both tape discs and parachute material are molded around shroud line loops.
- F. Pass shroud line loops through loop on nose cone. Pass parachute through loop ends and pull lines against the nose cone.
- G. Tie free end of shock cord to nose cone loop.

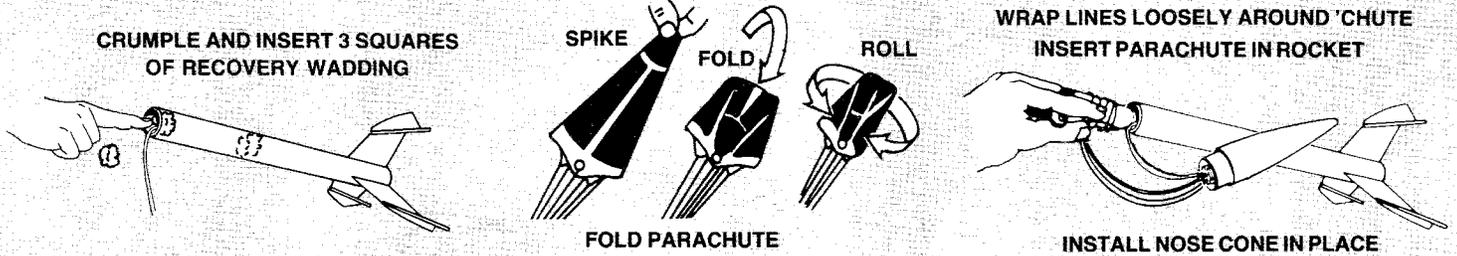


FINISHING YOUR ROCKET

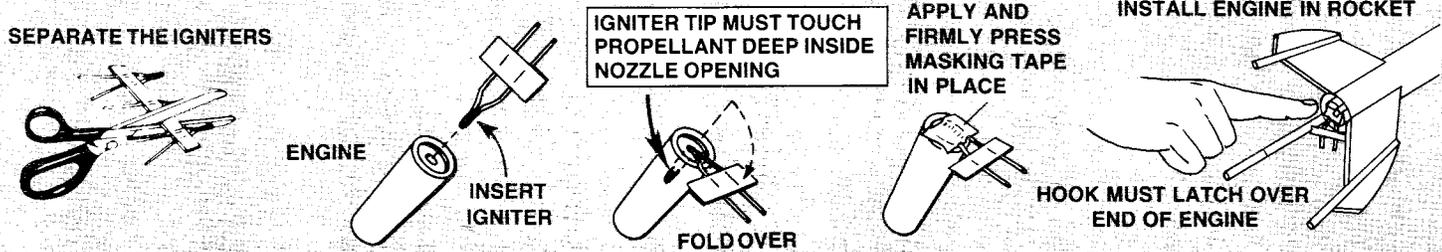
Apply sanding sealer to wood parts with small brush. When sealer is dry, lightly sand all sealed surfaces. Repeat sealing and sanding until balsa grain is filled and smooth. When sanding sealer and glue are completely dry, paint model with yellow spray enamel. Follow instructions on spray can for best results. Let paint dry. To apply decals, cut each out, dip in lukewarm water

for 20 seconds and hold until it uncurls. Refer to photograph on front page and/or on front of panel for decal placement. Slip decal off backing sheet and onto model. Blot away excess water. For best results, let decals dry overnight and apply a coat of clear spray paint to protect decals.

ROCKET PREFLIGHT



PREPARE ENGINE



LAUNCH SUPPLIES

To launch your rocket you will need the following items:

- An Estes model rocket launching system
 - Estes Parachute Recovery Wadding (No. 2274)
 - Recommended Engines: A8-3, B4-4, B6-4, C6-3, and C6-5
- Use A8-3 engine for your first flight, to become familiar with your rocket's flight pattern.

FLYING YOUR ROCKET

Choose a large field away from power lines, tall trees, and low flying aircraft. Try to find a field at least 250 feet square. The larger the launch area, the better your chance of recovering your rocket. Football fields and playgrounds are great.

Launch area must be free of dry weeds and brown grass.

Launch only during calm weather with little or no wind and good visibility.

MISFIRES

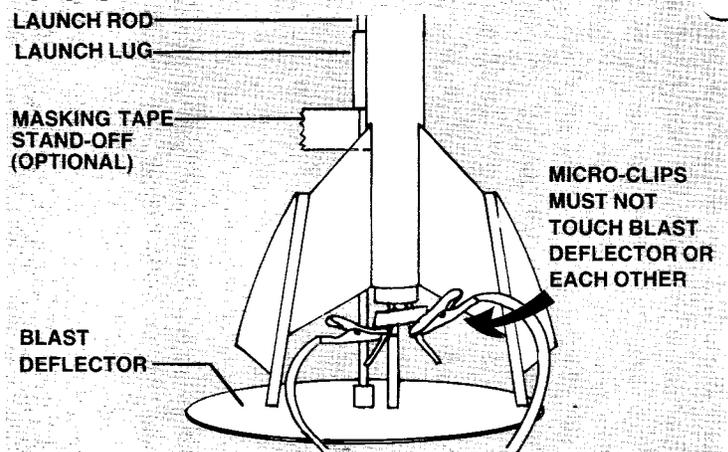
Failure of the rocket engine to function properly is nearly always caused by a failure to install the igniter correctly. This failure permits the igniter to heat and burn into two pieces without igniting the engine.

FOR YOUR SAFETY AND ENJOYMENT

Always follow the NAR-HIA* MODEL ROCKETRY SAFETY CODE while participating in any model rocketry activities.

*National Association of Rocketry—The Hobby Industry of America
page 4

COUNTDOWN AND LAUNCH



- 5 REMOVE SAFETY KEY to disarm the launch controller.
- 4 Remove safety cap and slide launch lug over launch rod to place rocket on launch pad. Make sure the rocket slides freely on the launch rod.
- 3 Attach micro-clips to the igniter wires. Arrange the clips so they do not touch each other or the metal blast deflector. Attach clips as close to protective tape on igniter as possible.
- 2 Move back from your rocket as far as launch wire will permit (at least 15 feet).
- 1 INSERT SAFETY KEY to arm the launch controller.

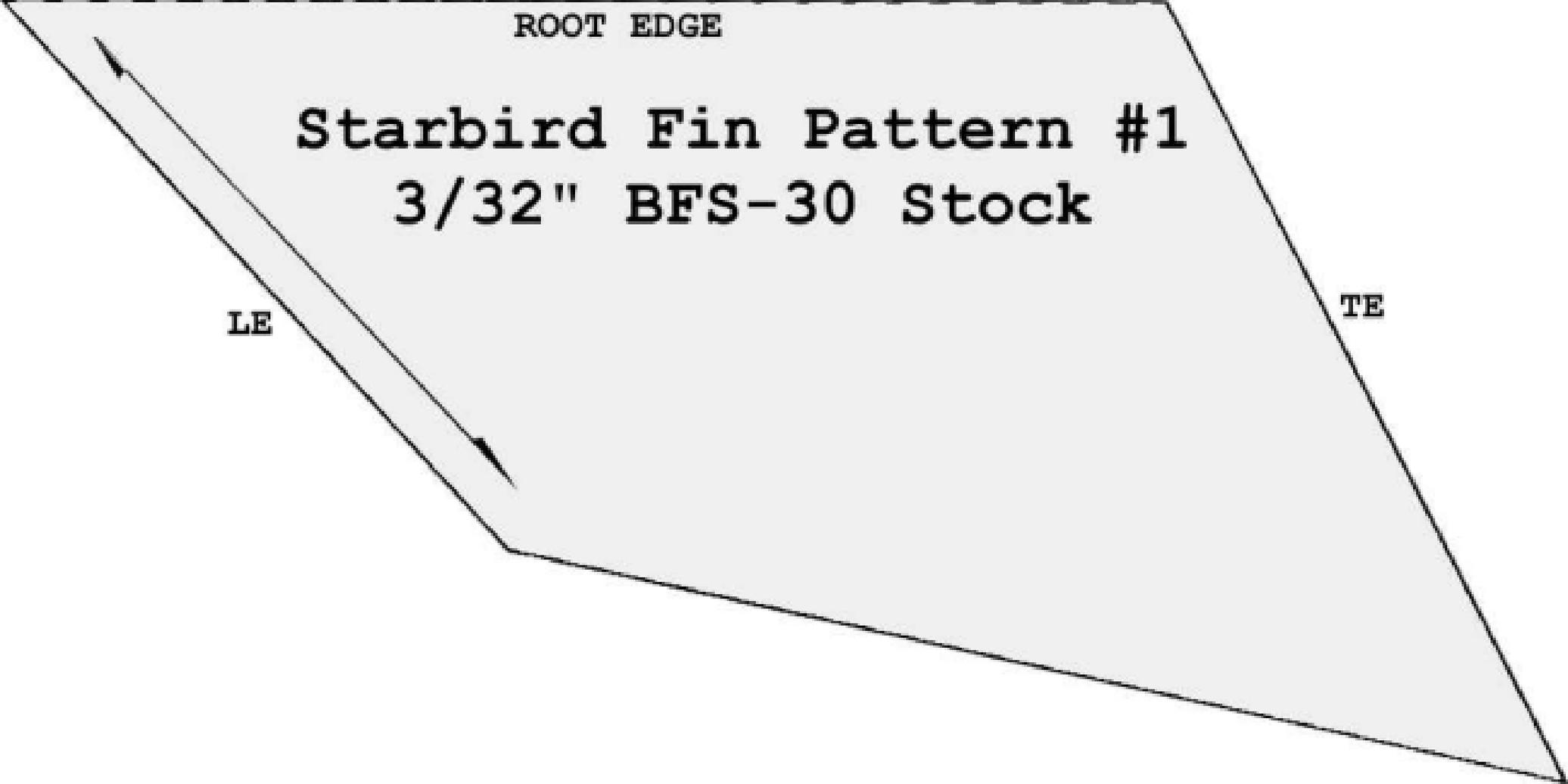
LAUNCH!!! PUSH AND HOLD LAUNCH BUTTON UNTIL ENGINE IGNITES
Remove safety key—Replace cap on rod.

ROOT EDGE

Starbird Fin Pattern #1
3/32" BFS-30 Stock

LE

TE



ROOT EDGE

Use this pattern for laying out
fin components.

Glue pieces together with epoxy.

Sand completed unit flat after epoxy
hardens, then sand dowel back to
a round shape.

LE

TE

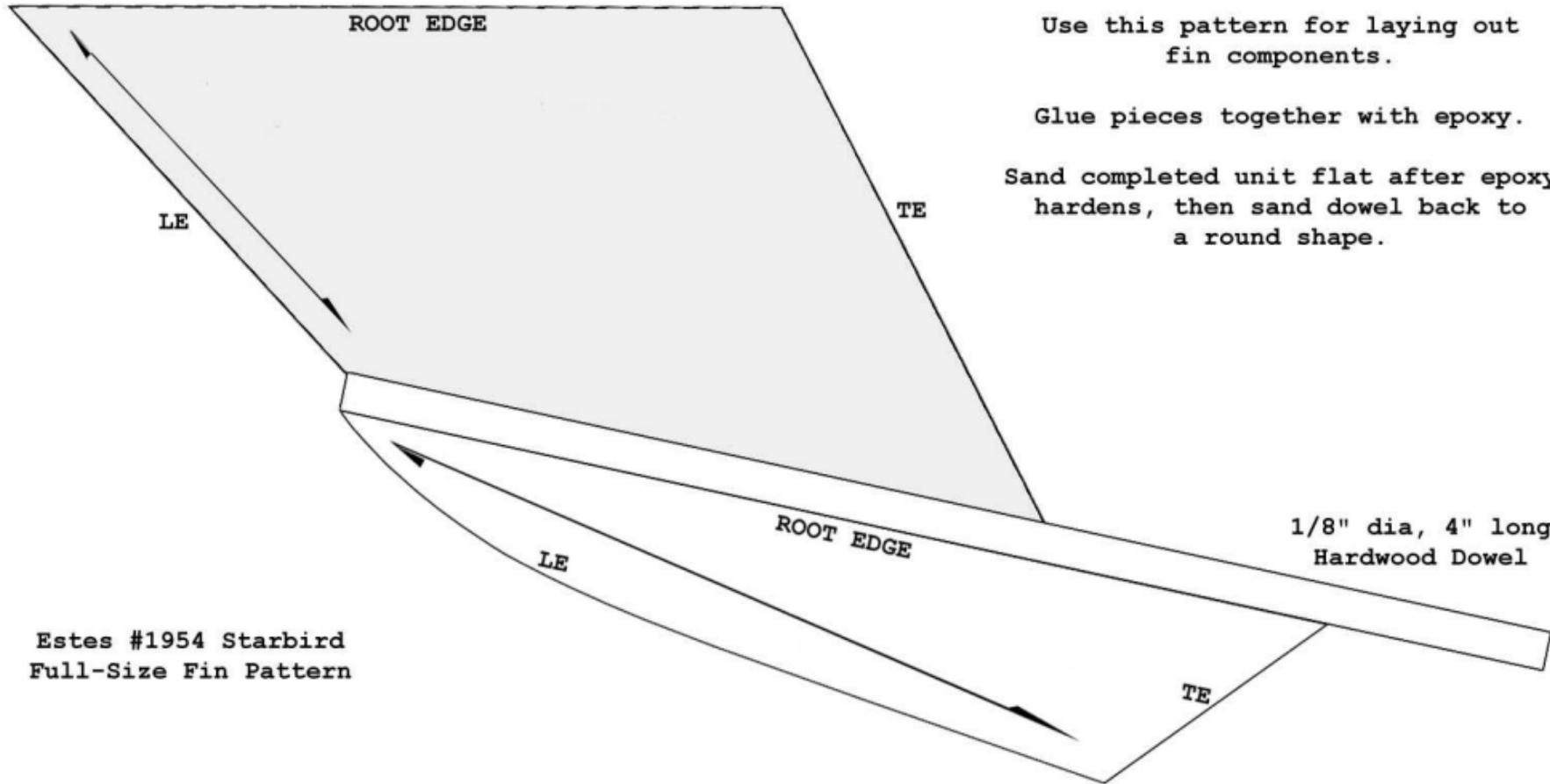
ROOT EDGE

1/8" dia, 4" long
Hardwood Dowel

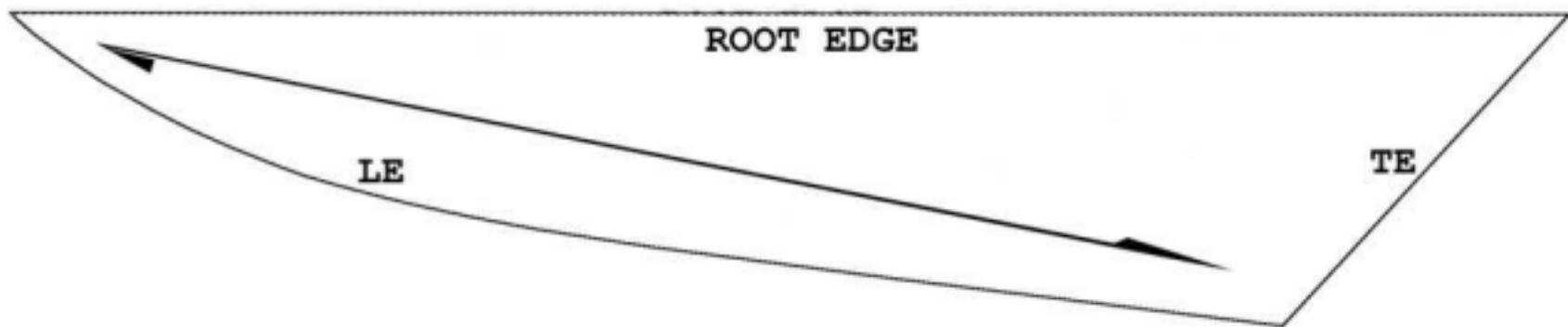
LE

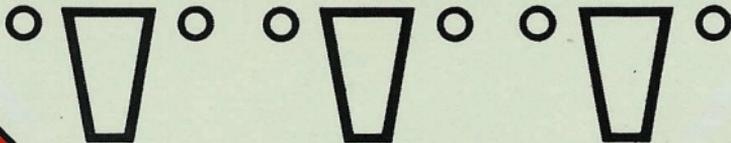
TE

Estes #1954 Starbird
Full-Size Fin Pattern



Starbird Fin Pattern #2
3/32" BFS-30 Stock





STARBIRD



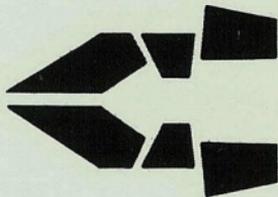
STARBIRD



STARBIRD



STARBIRD



ESTES IND.

PN 37279

Estes #1954 Starbird -- Parts List

Nose Cone	BNC-50Y or PNC-50Y
Body Tube	BT-50L
Motor Mount	BT-20J
Engine Hook	EH-2
Centering Rings	(2) CR-2050
Engine Block	CR-520
Fin Stock	BFS-30 (3/32" thick balsa)
Dowels	(3) 1/8" diameter, 4" long
Parachute Kit	PK-12
Launch Lug	LL-18-125

Construction tips

1. Trailing edge of fin unit is flush with bottom of tube.

2. Standard motor mount construction. Motor sticks out 1/4" and is retained by EH-2. Mount one CR-2050 1/8" down from top of motor tube, and other CR-2050 3/4" up from bottom. This ring should have a flat notch on the inside diameter to accept EH-2. The CR-520 is used as a thrust ring inside the top of the motor tube, pushed in until it meets with the EH-2. Bottom of motor tube should be flush with the bottom of the body tube.

3. The bottom of the launch lug should be positioned at about the same height up on the body tube as the top of the fins, and mounted half-way between two fin centerlines.

4. Original paint color was bright yellow. No trim color -- decals took care of secondary colors.