

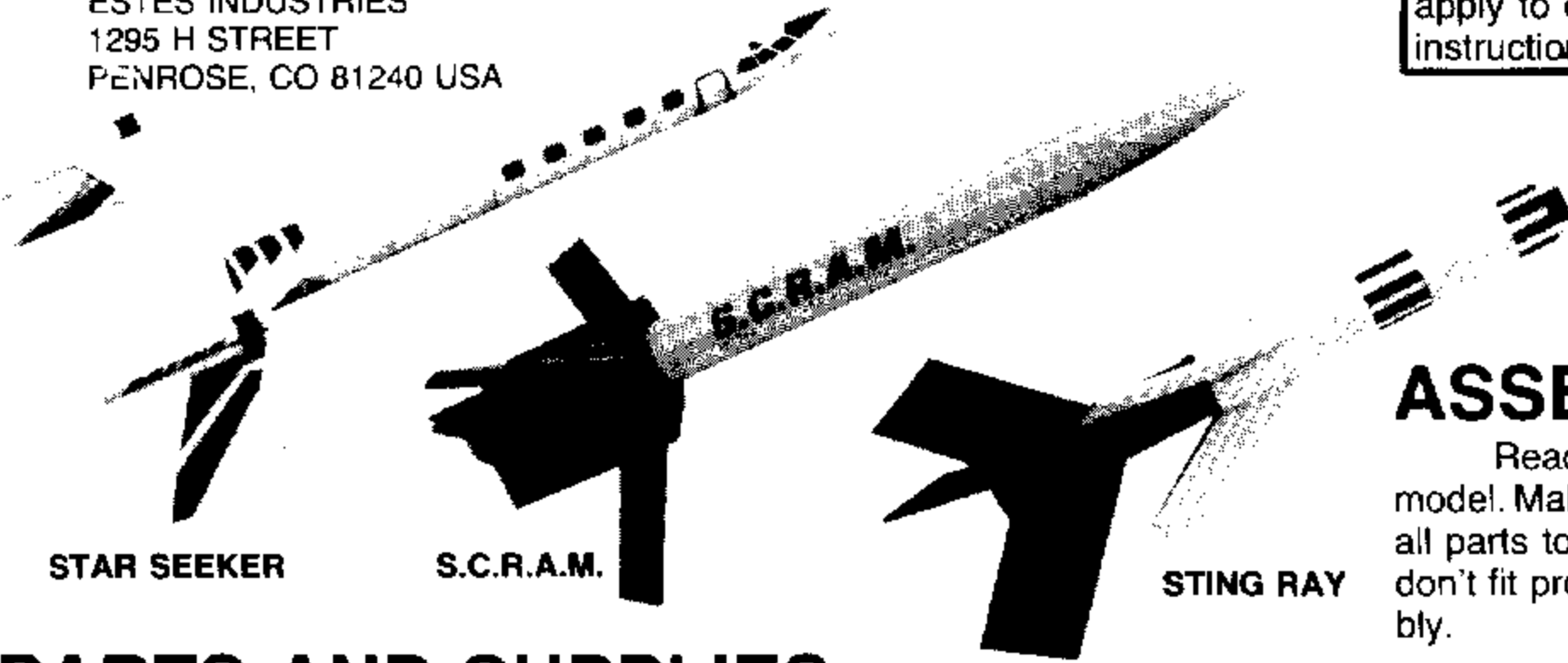


A DAMON COMPANY
ESTES INDUSTRIES
1295 H STREET
PENROSE, CO 81240 USA

MINI TRI PAK

#0866

SPECIAL NOTE: This instruction sheet covers construction of three different rockets. Many of the construction steps apply to all three rockets. Steps that apply to only one of the rockets will be noted in the instructions.



STAR SEEKER

S.C.R.A.M.

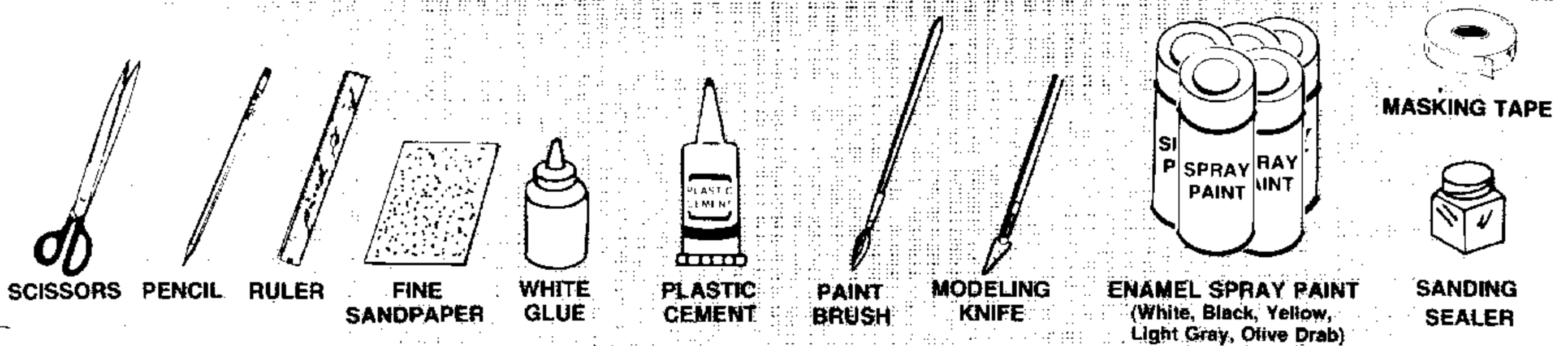
STING RAY

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.

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:



NOSE CONE BASES (3)

NOSE CONES (3)

6" LONG BODY TUBE

2" LONG BODY TUBE

SPACER TUBE (YELLOW)

4" LONG BODY TUBES (2)

DECAL

KIT PANEL (PATTERN ON BACK)

ENGINE BLOCKS (6)

SHOCK CORDS (2)

DIE-CUT Balsa Sheet

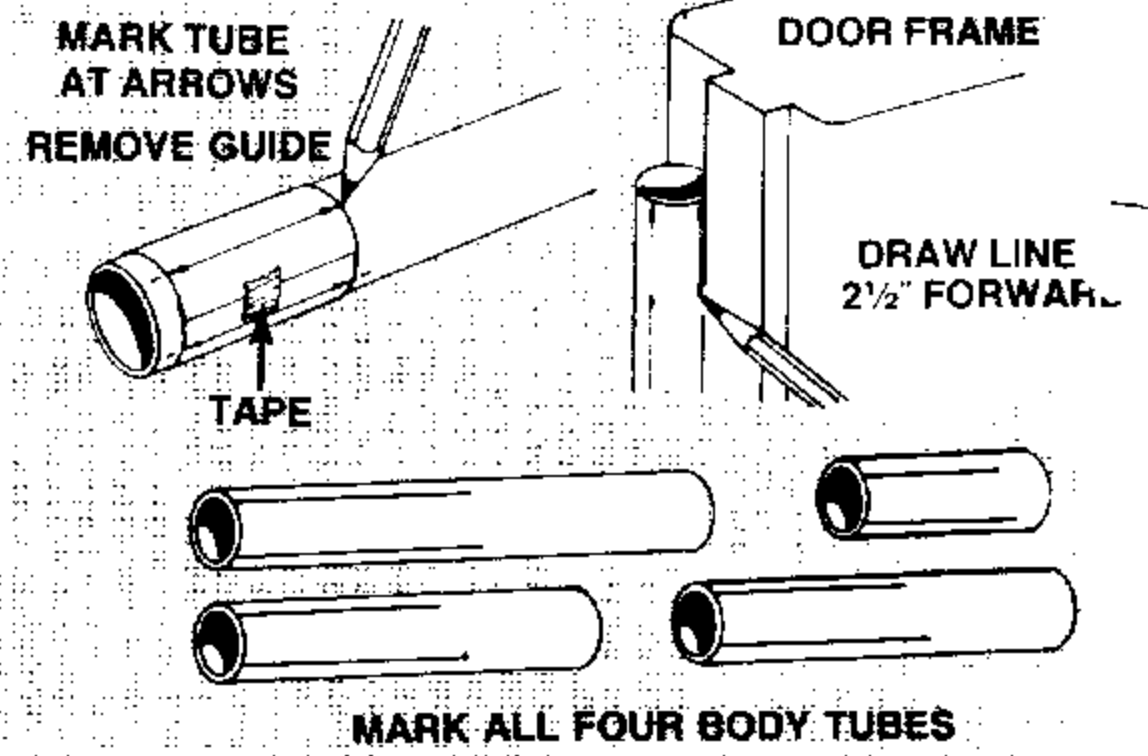
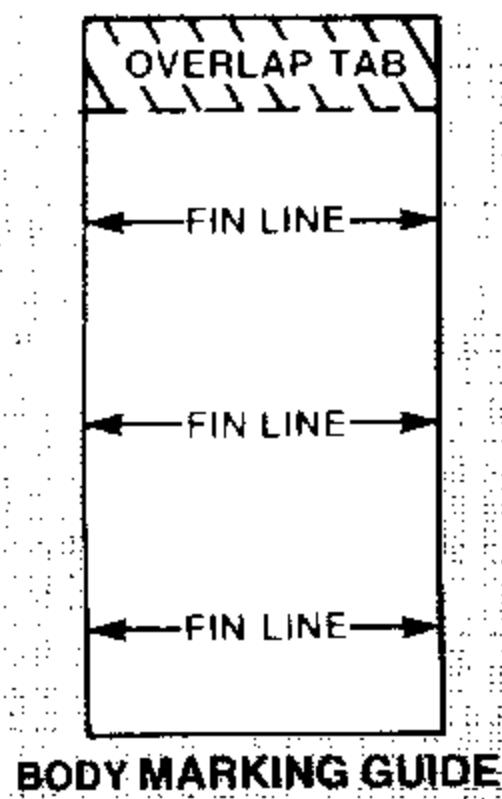
WOOD DOWEL

LAUNCH LUGS (7)

ROCKET ASSEMBLY

1.

- Cut out the body marking guide (to right). Wrap the guide around one end of the 6 inch body tube and tape ends together.
- Mark the body tube at each of the arrow points, then remove the guide.
- Using a door frame as a guide, draw lines on the tube connecting the marks. Lines should extend from end of tube for a distance of about 2½ inches.
- Repeat the marking process with the two 4 inch body tubes and the 2 inch body tube. Lay the 2 inch body tube aside. It will not be used until step 14.

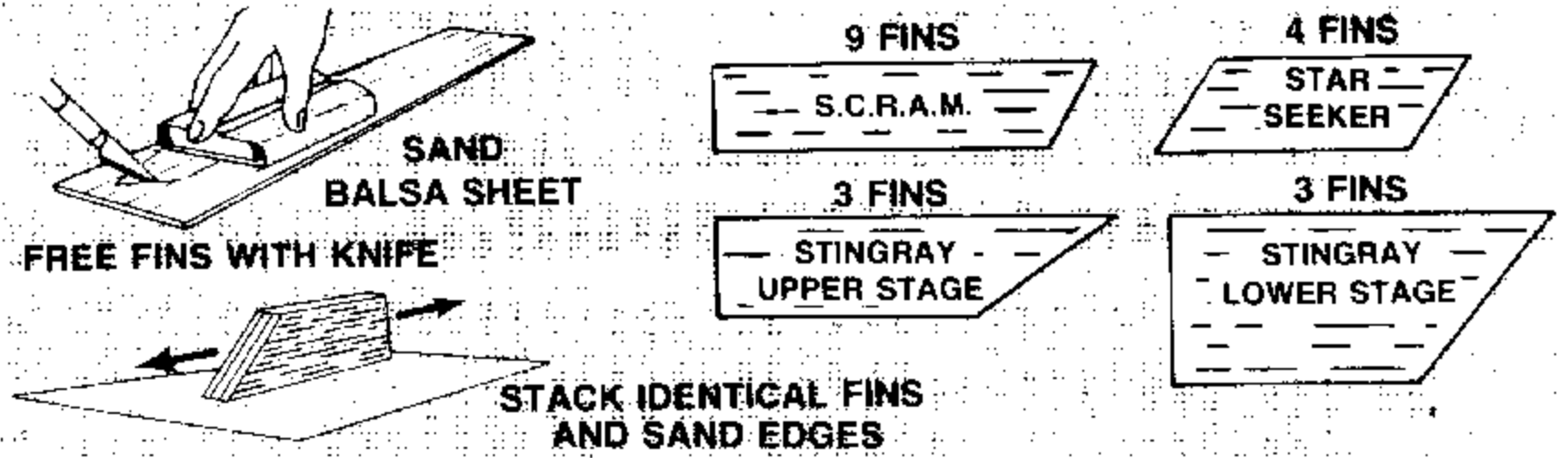


BODY MARKING GUIDE

MARK ALL FOUR BODY TUBES

2.

- Sand both sides of the balsa die-cut sheet.
- Run a sharp knife along the die-cut lines to free the fins from the sheet. (Do not punch fins from sheet.)
- Stack identical fins together and sand edges square.
- Cut a strip from one side of the scrap balsa to use as a glue applicator. Lay fins aside for now.

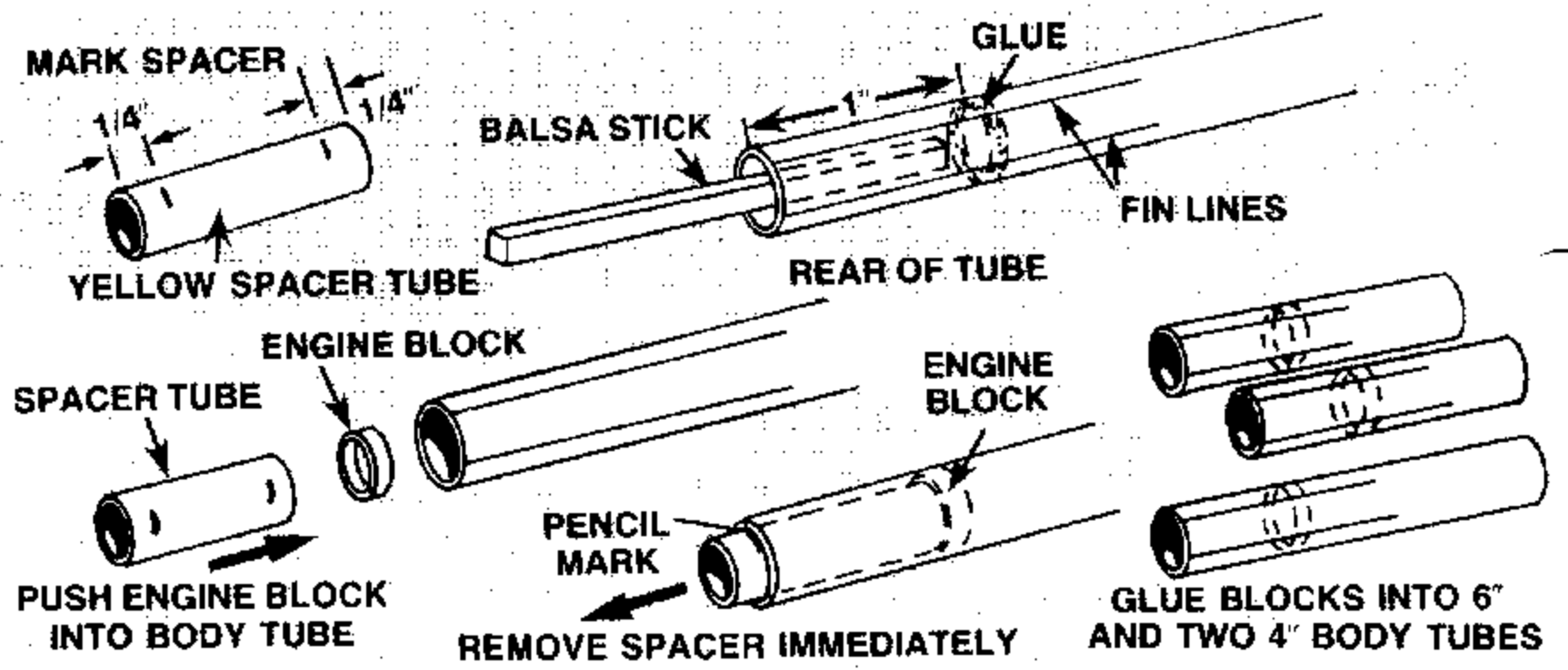


FREE FINS WITH KNIFE

STACK IDENTICAL FINS AND SAND EDGES

3.

- Mark the yellow spacer tube ¼ inch from each end.
- Apply a ring of glue around the inside of the 6 inch body tube about 1 inch from the rear end of the tube (same end of tube on which fin lines are drawn). Insert an engine block into the rear of the body tube. Insert the spacer tube into the body and push the engine block forward until the ¼ inch mark on the spacer is even with the end of the body tube. REMOVE THE SPACER TUBE IMMEDIATELY.
- Glue engine blocks into the two 4 inch body tubes in the same manner. DO NOT glue an engine block into the 2 inch body tube.



MARK SPACER

YELLOW SPACER TUBE

SPACER TUBE

PUSH ENGINE BLOCK INTO BODY TUBE

Balsa STICK

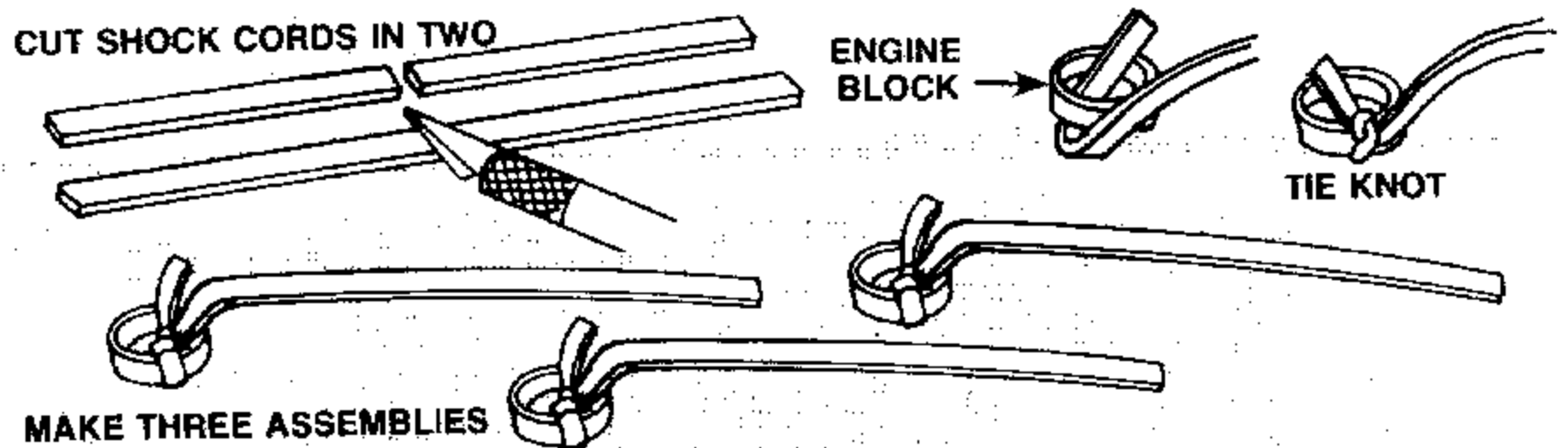
REAR OF TUBE

REMOVE SPACER IMMEDIATELY

GLUE BLOCKS INTO 6" AND TWO 4" BODY TUBES

4.

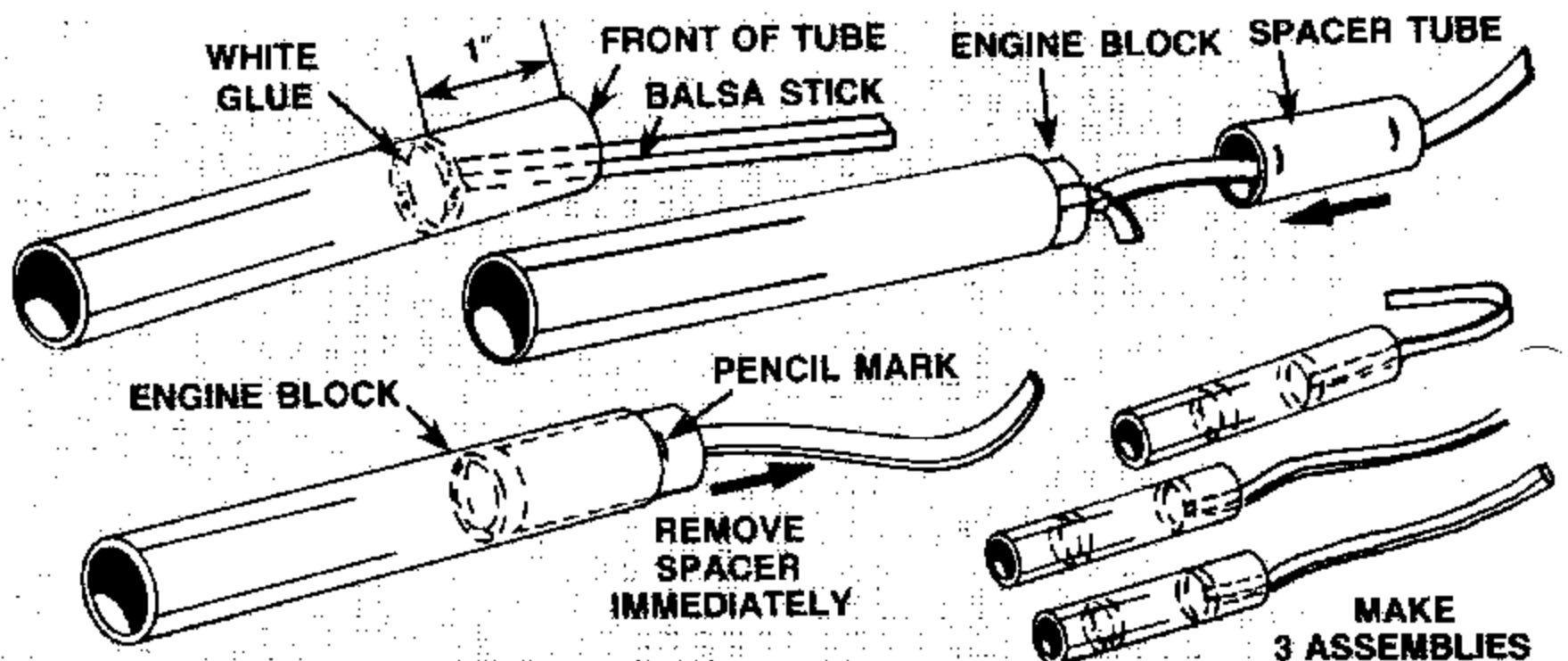
- Cut each of the two rubber shock cords into two equal lengths.
- Tie one end of a shock cord around one of the remaining engine blocks. Adjust the cord so the outside edge is flat against the outside of the engine block.
- Tie shock cords to the two remaining engine blocks in the same manner. The fourth piece of shock cord may be discarded.



MAKE THREE ASSEMBLIES

5.

- Apply a ring of glue around the inside of the FRONT of the 6 inch body tube about 1 inch from the end.
- Insert an engine block (with cord attached) into the end of the tube. Thread the end of the shock cord through the spacer tube. Use the spacer tube to push the engine block into the body tube until the ¼ inch mark on the spacer is even with the end of the body. REMOVE THE SPACER TUBE IMMEDIATELY.
- Glue the remaining shock cord units into the two 4 inch body tubes in the same manner.



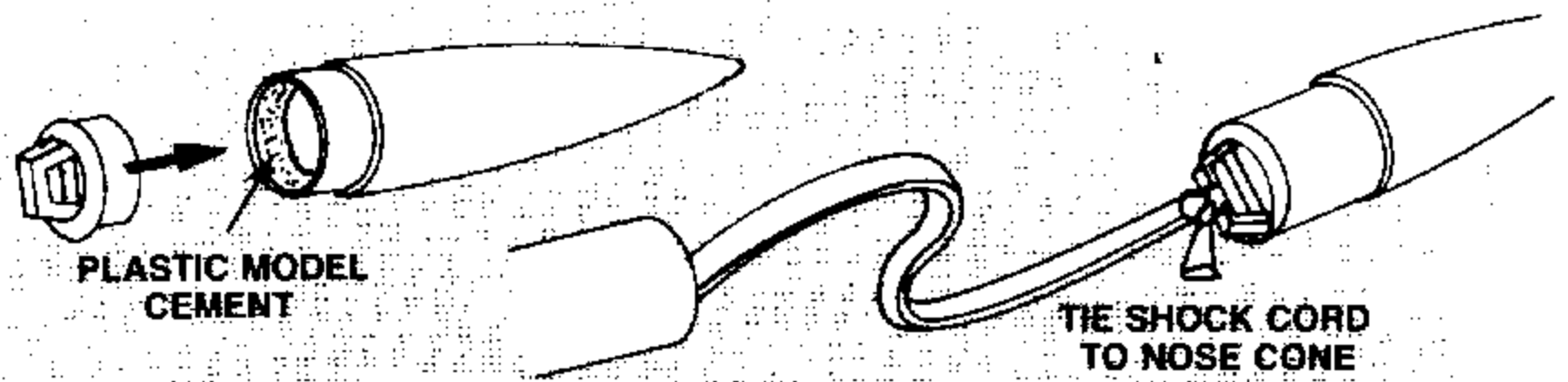
ENGINE BLOCK

REMOVE SPACER IMMEDIATELY

MAKE 3 ASSEMBLIES

6.

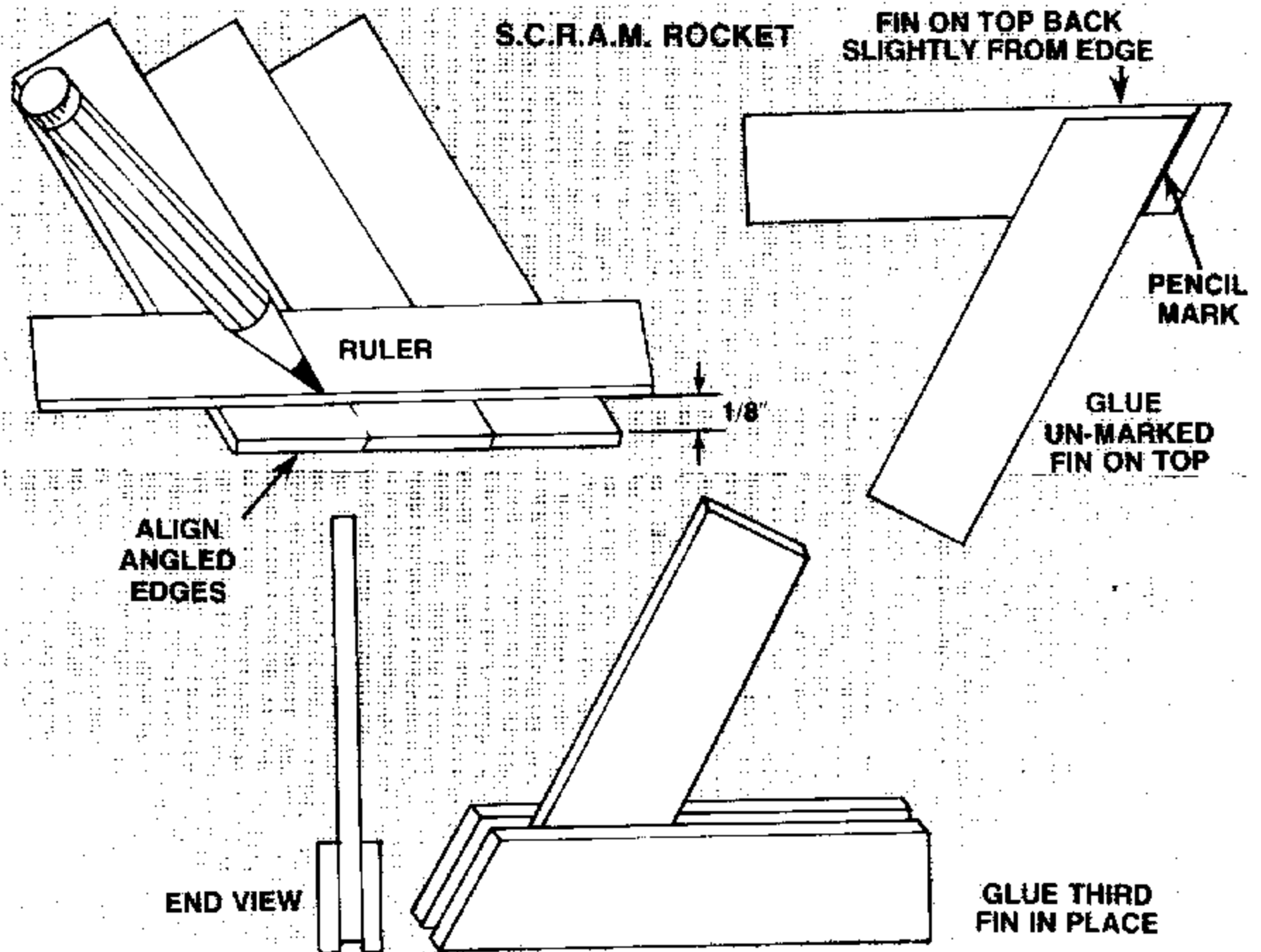
- A. Apply plastic model cement to the inside of the three nose cones and socket the nose cone bases into them.
- B. After the glue has dried, tie the ends of the three shock cords to the nose cones. Push the shock cords down into the body tubes and socket the nose cones into the ends of the tubes.



THE NEXT THREE STEPS CONCERN THE S.C.R.A.M. ROCKET ASSEMBLY.

7.

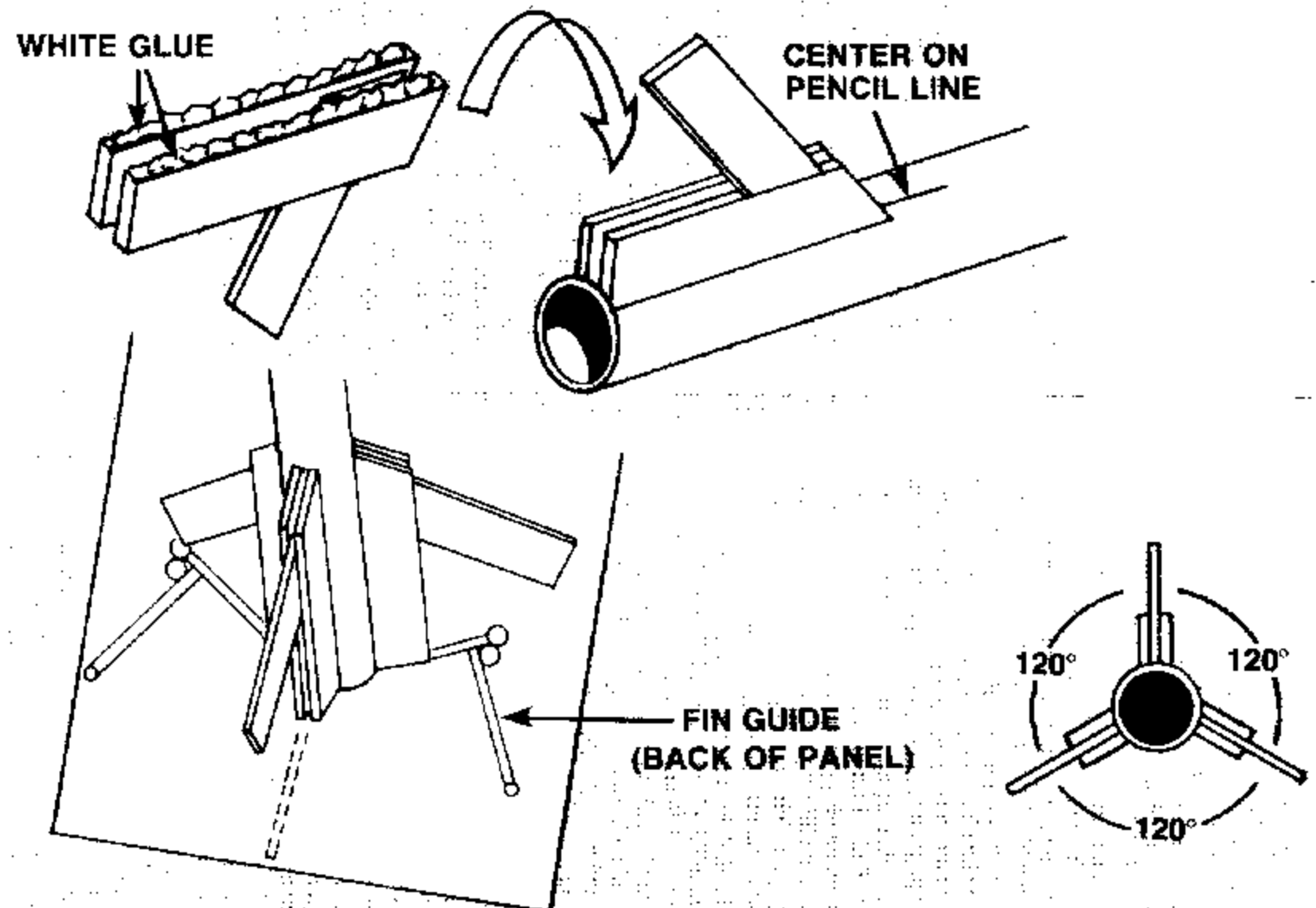
- A. The S.C.R.A.M. consists of the following parts: 6 inch long body tube (with nose cone), one launch lug and nine identical fins (see Step 2).
- B. Lay out three of the fins as shown. Mark and draw a line 1/8 inch down from the front (angled) edge.
- C. Glue a fin onto each of the three fins as shown. Allow glue to dry.
- D. Stand a fin unit upright and glue a third fin to the unit. Make sure the front and bottom of this fin is even with the front and bottom of the first fin. Complete the other two fin units in the same manner.



8.

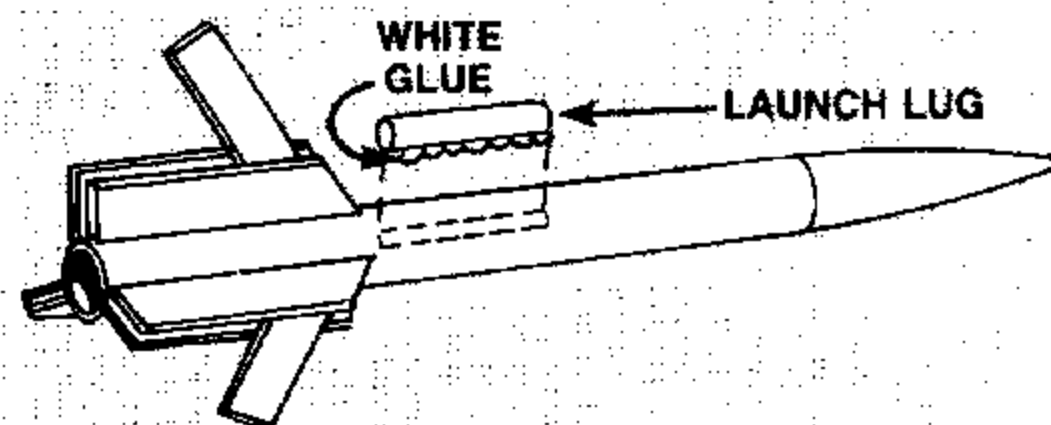
NOTE: You will be using the fin alignment guide (printed on back of panel) in this step. The guide is drawn for the Star Seeker rocket, but can be used for all three.

- A. Apply a bead of glue to the inside edges of a fin unit as shown.
- B. Attach the fin unit to the 6 inch body, centered on a fin line, and with the rear edge of fin even with rear of body tube. Adjust fin so it points straight away from the body. Support the body with fin pointing straight up and allow glue to dry completely.
- C. Attach a second fin unit to the body in the same manner. Place the assembly over the alignment guide, line up body and first fin on the guide and adjust second fin to fit guide. Allow glue to dry.
- D. Attach third fin unit, adjust on guide and allow glue to dry.



9.

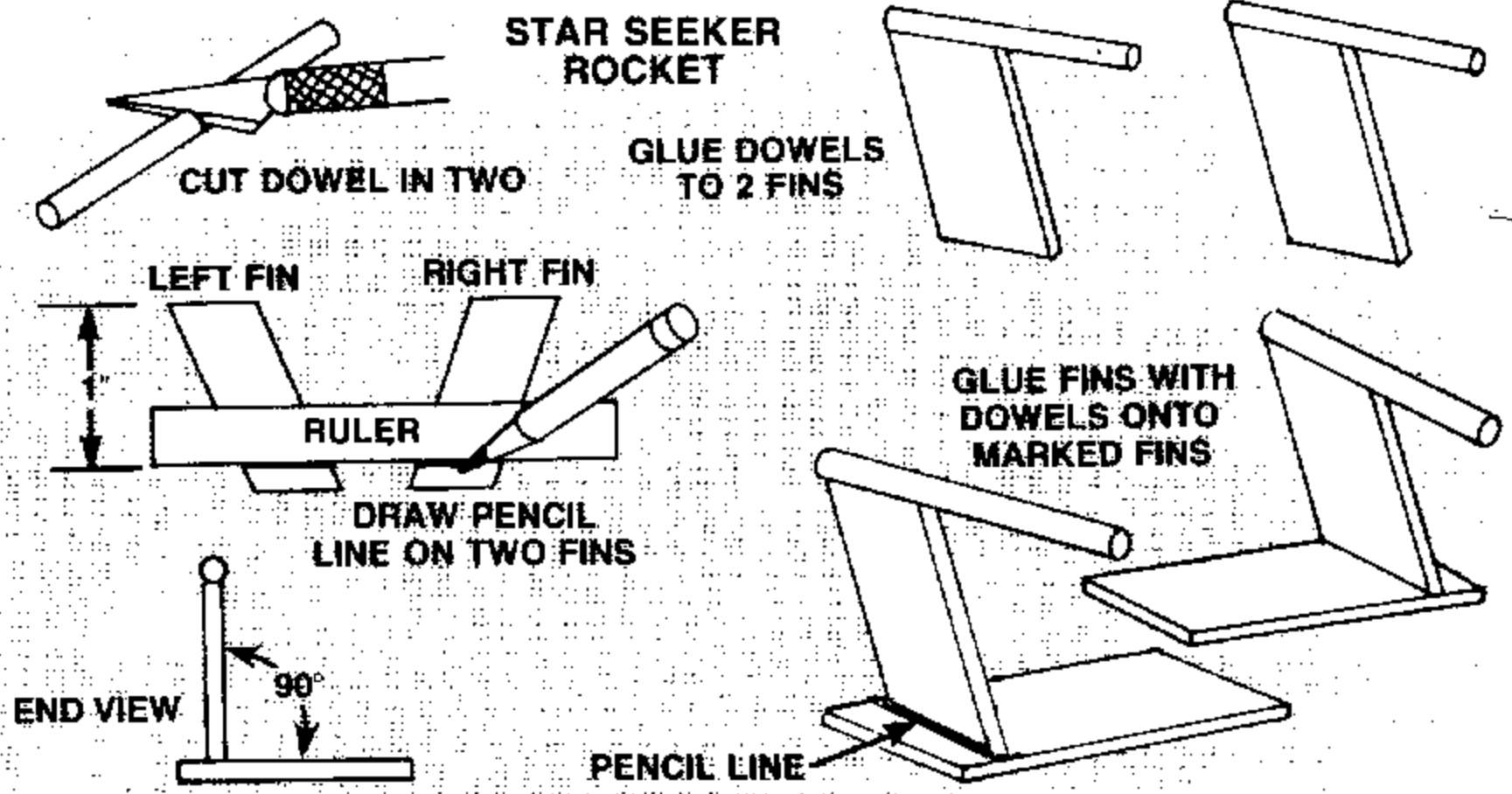
- A. Glue a launch lug to the body centered between two fins and with the rear of the lug even with the front of the fins.
- B. Sight down the body and adjust lug so it runs straight along tube.



THE NEXT FOUR STEPS CONCERN THE STAR SEEKER ROCKET ASSEMBLY.

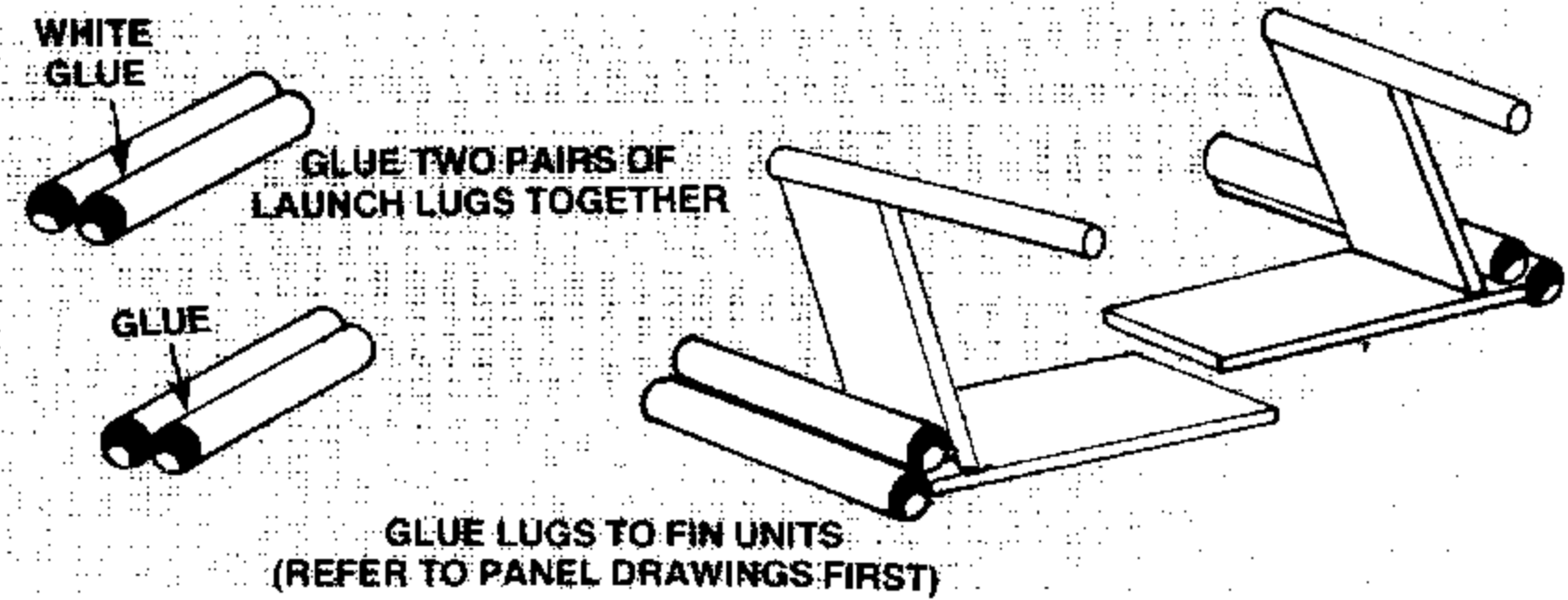
10.

- The Star Seeker consists of the following parts: 4 inch long body tube (with nose cone), five launch lugs, wood dowel and four identical fins (see Step 2).
- Cut wood dowel into two equal lengths (use side view drawing on back of panel as a guide). Glue the dowels to two of the fins, as shown. Set these aside.
- Draw a pencil line across the two remaining fins as shown. Note that the fins are positioned as a right and left fin.
- Glue the two fins with the dowels onto the two marked fins as shown. The fins with dowels should be pointing straight up. Allow glue to dry.



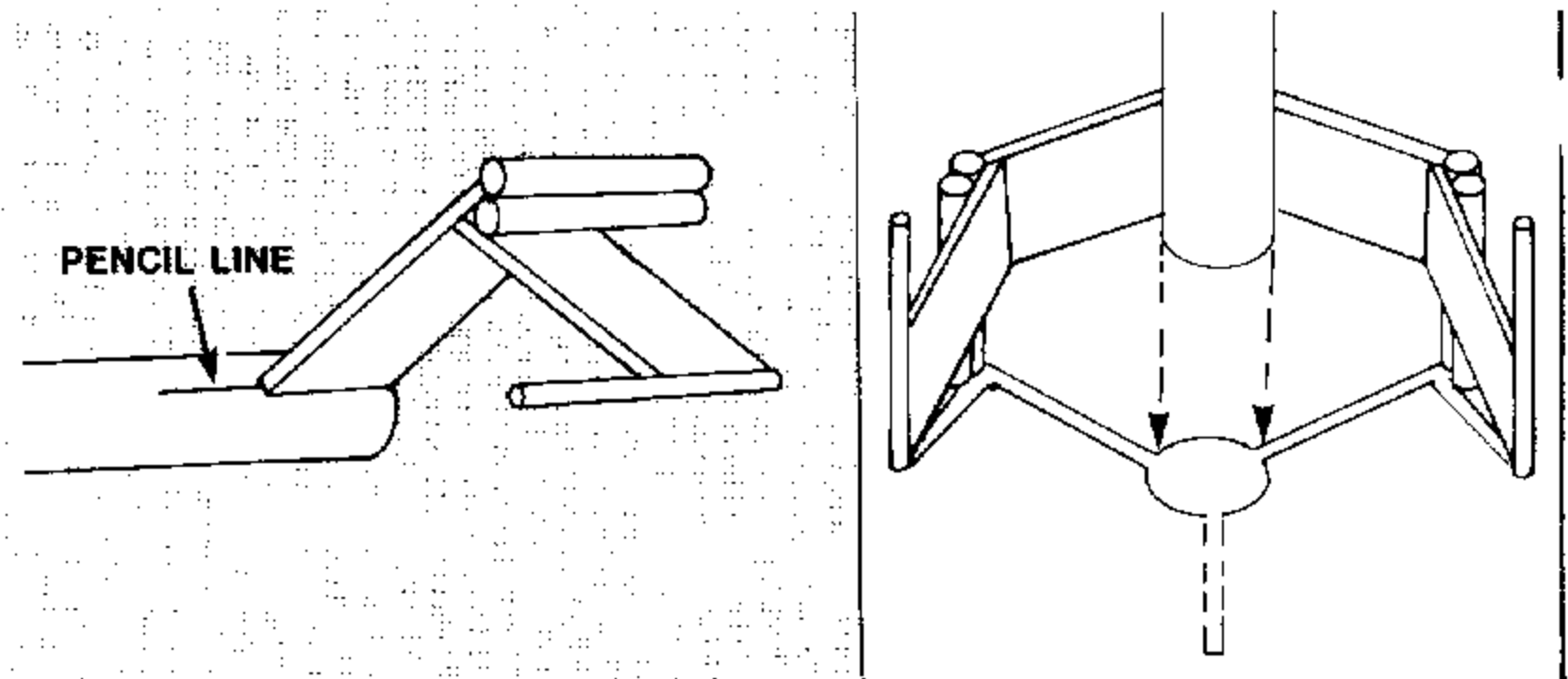
11.

- Place two launch lugs on a flat surface and glue them together. Glue two more launch lugs together to form a second set.
- Glue the two pair of lugs to the ends of the fins as shown. Remember to refer to the drawings on the panel. Allow glue to dry.



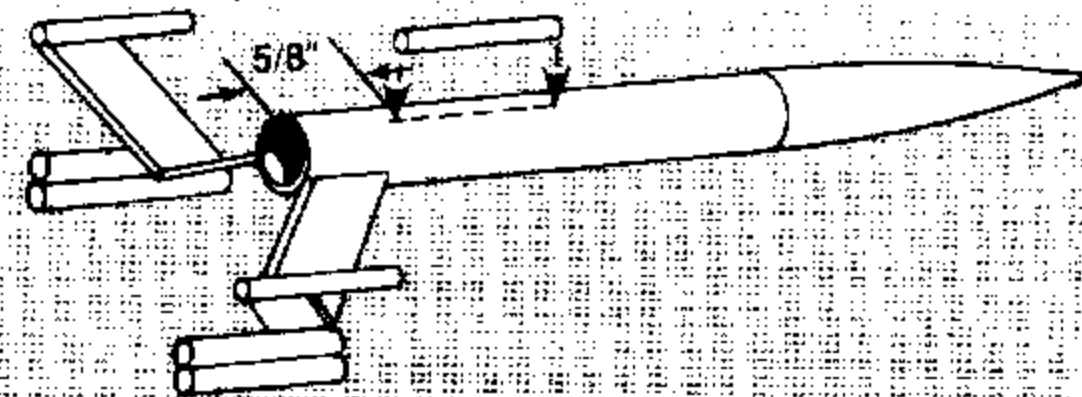
12.

- Glue one of the fin units to the body, centered on a pencil line. Hold the assembly above the end view drawing on the panel, sight down body and align fin unit so it matches drawing.
- Hold the assembly with the body tube pointing straight up until the glue is almost dry, then lay the unit aside to allow glue to dry completely.
- Attach the remaining fin unit to the body. Carefully align the unit to match the end view drawing. Hold the fin unit in place until the glue begins to set. Leave the rocket in place on the panel until the glue has completely dried.



13.

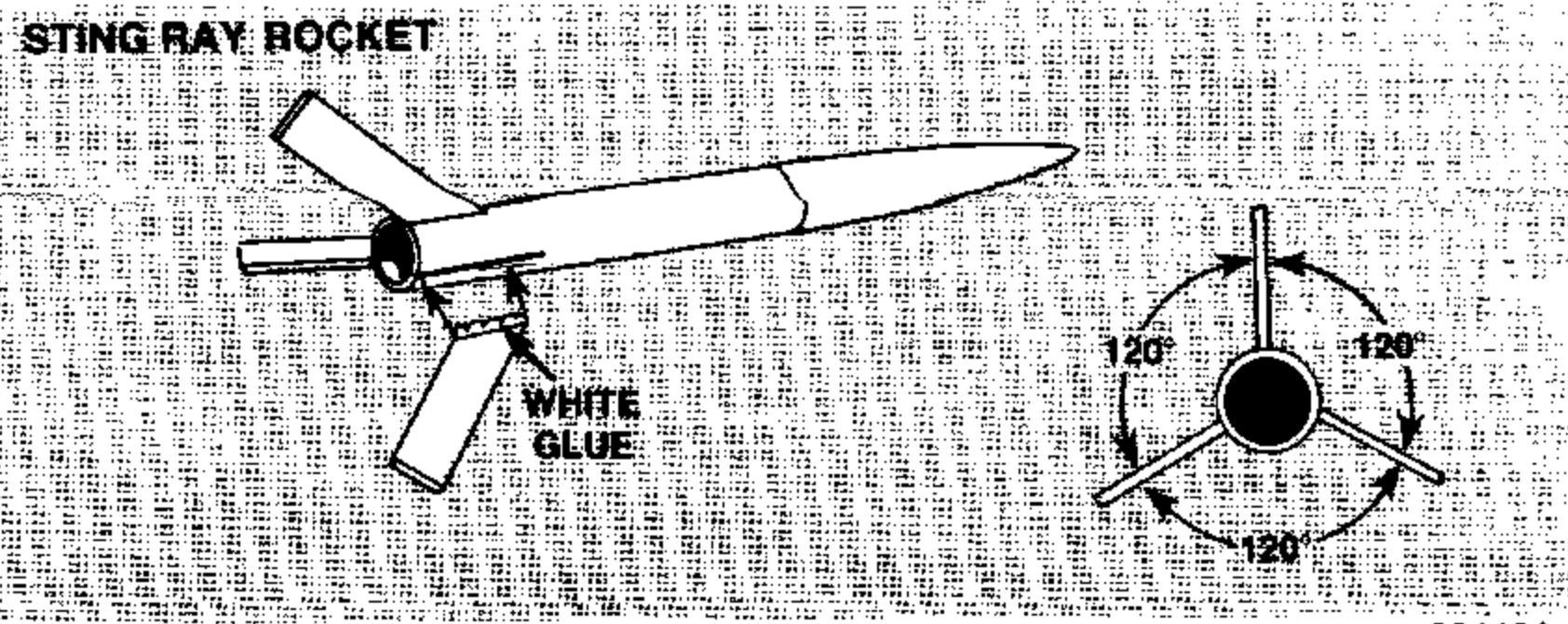
- Glue a launch lug to the body, centered on the remaining pencil line with the rear of the lug 5/8 inch from the rear of the body.



THE NEXT THREE STEPS CONCERN THE STING RAY ROCKET ASSEMBLY.

14.

- The Sting Ray consists of the following parts: 4 inch long body tube (with nose cone), 2 inch long body tube, one launch lug and two different sets of three identical fins (see Step 2).
- The upper stage (smallest set) fins are glued to the rear of the 4 inch long body. As you did with the S.C.R.A.M., align fins on panel drawing and allow glue to dry on one fin before attaching the next fin.



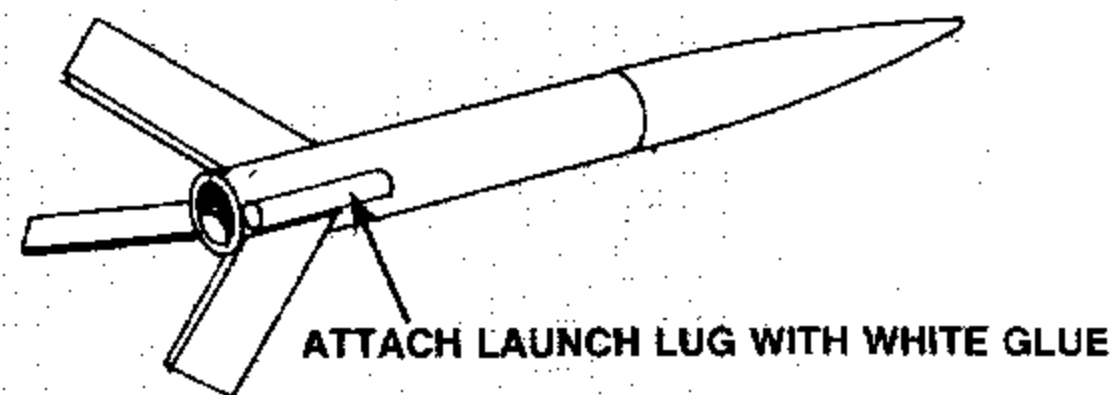
15.

The lower stage fins are glued to the rear of the 2 inch body tube in the same manner.



16.

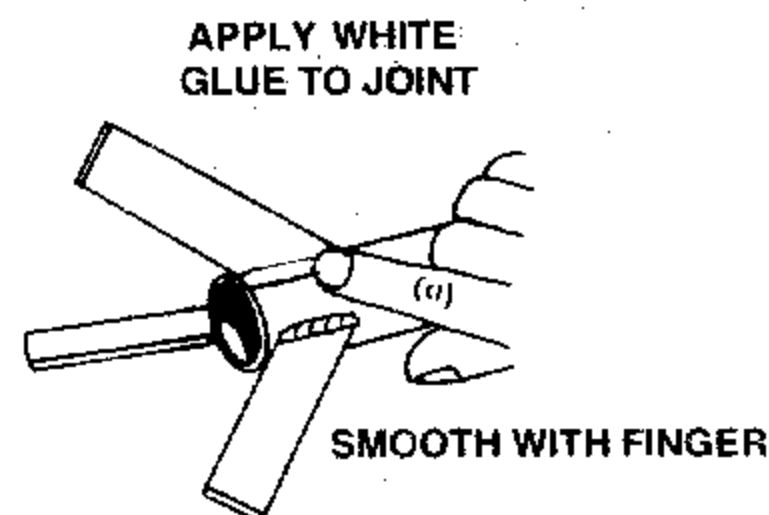
Glue the launch lug to the UPPER STAGE BODY next to one of the fins.



THE REMAINDER OF THE INSTRUCTIONS CONCERN ALL THREE ROCKETS.

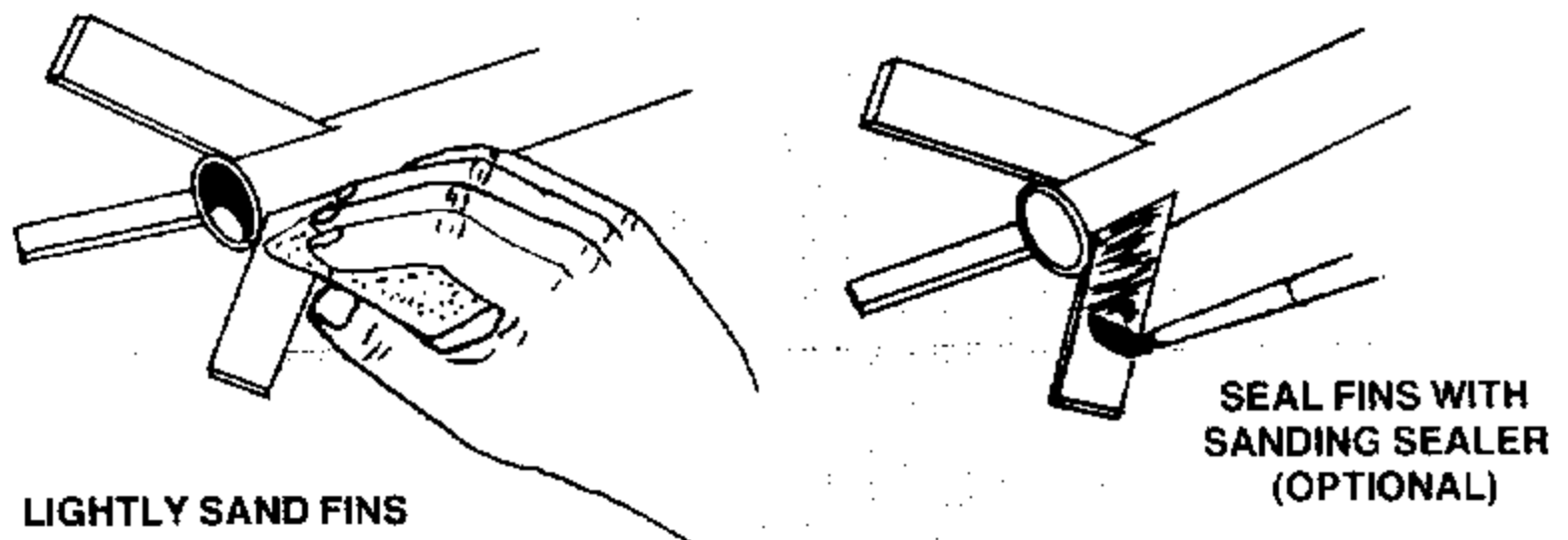
17.

- For adequate strength, it is important that all glue joints be reinforced in the following manner.
- Apply a light bead of glue to a fin/body tube joint. Pull your finger along the joint to smooth the glue into an even fillet and to remove excess glue.
- Apply glue reinforcements to both sides of all fin/body joints and to both sides of each launch lug joint. In addition, the fin to fin extension joints on the Star Seeker should be reinforced in the same manner. All models should be supported vertically while the glue dries.



18.

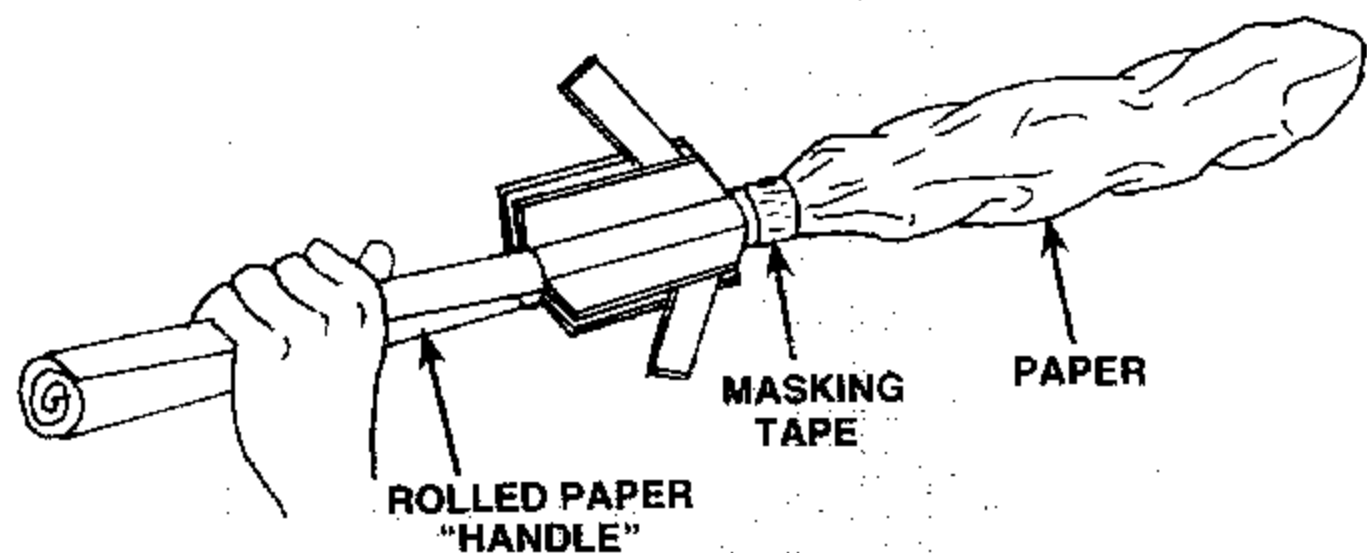
- Do not proceed with this step until all joints are THOROUGHLY dry.
- The balsa fins should be lightly sanded again before painting. For a really smooth finish, you may wish to seal the balsa.
- (Optional) Apply a coat of balsa sanding sealer to all fins. Allow the sealer to dry, then lightly sand. Apply a second coat of sealer and sand again.



19.

The models may be brush painted with enamel, but enamel in spray cans produces the best results. Paint the Star Seeker gloss white. Paint the upper stage of the Sting Ray yellow and the lower stage black. Paint the S.C.R.A.M. light gray. Allow the paint to dry overnight. Mask the upper portion of the S.C.R.A.M. rocket and paint the lower portion olive drab.

Refer to photos on front of instructions and on panel for decal placement. Cut an individual decal from the sheet. Dip in lukewarm water for 20 seconds and hold until it uncurls. Slip decal off backing sheet and onto model. Blot away excess water.



RECOVERY SYSTEM

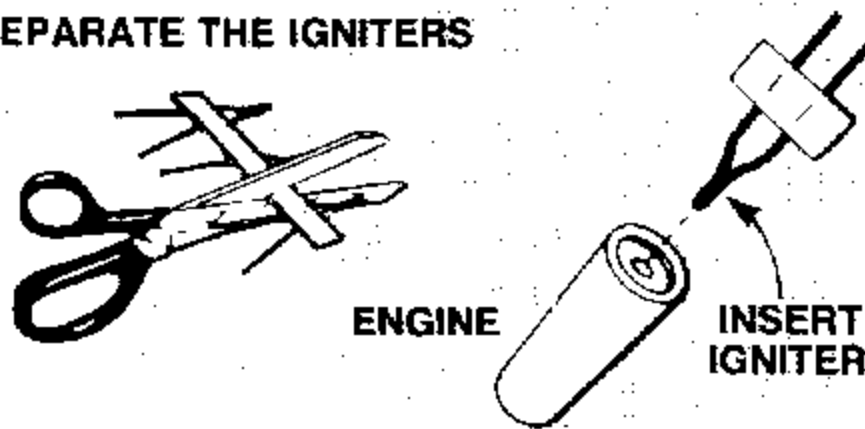
These three rockets use a break apart recovery system. When the engine ejection charge fires, the nose cone is pushed out of the body. Held together by the shock cord, the rocket and nose cone tumble and fall slowly to Earth. The lower stage of the Sting Ray, after separation from the upper stage, tumbles end over end, slowing its descent.

LAUNCH SUPPLIES:

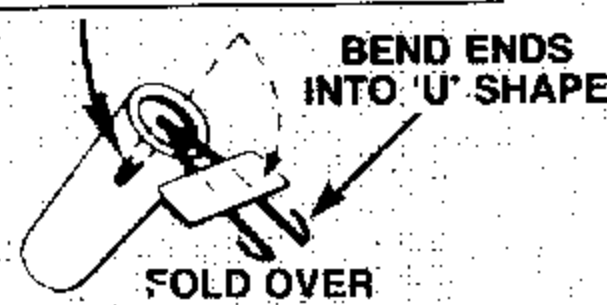
To launch the rockets, you will need the following items:
 —An Estes model rocket launching system
 —Estes 1/2A3-2T, 1/2A3-4T, A3-4T or A10-3T model rocket engines. Also A10-0T engine for the lower stage ONLY on the Sting Ray rocket.
 Use 1/2A3-2T engines for first flights to become familiar with the rocket's flight pattern.

PREPARE ENGINE - S.C.R.A.M. and STAR SEEKER

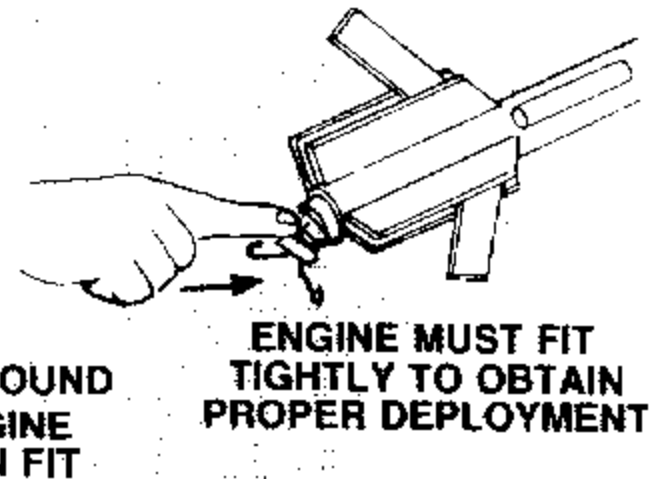
SEPARATE THE IGNITERS



IGNITER TIP MUST TOUCH PROPELLANT DEEP INSIDE NOZZLE OPENING

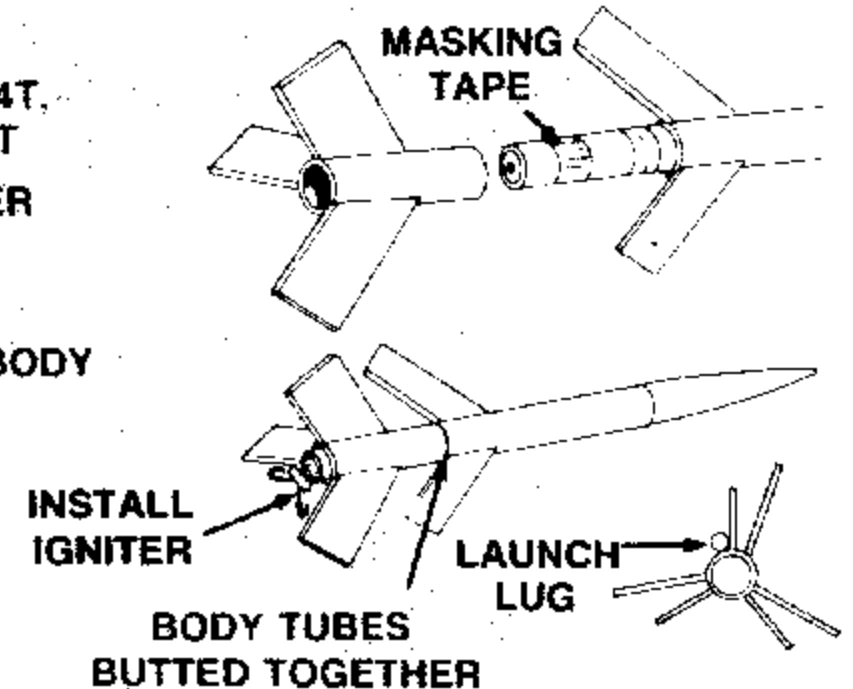
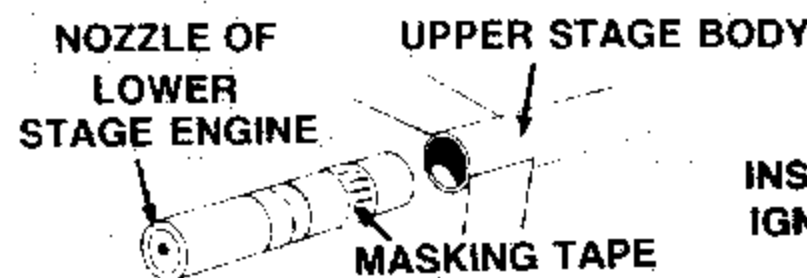
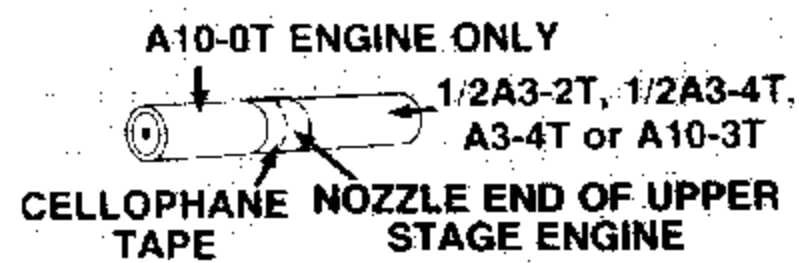


APPLY AND FIRMLY PRESS MASKING TAPE IN PLACE

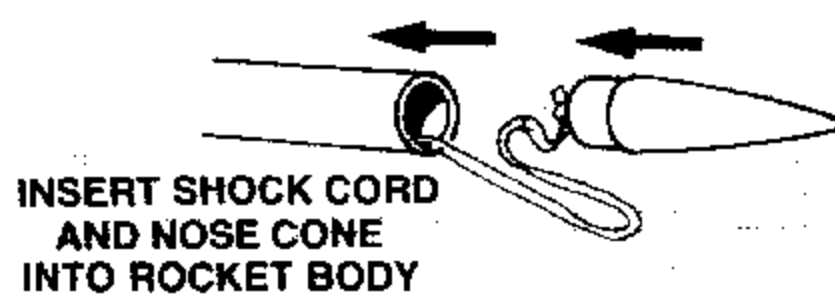
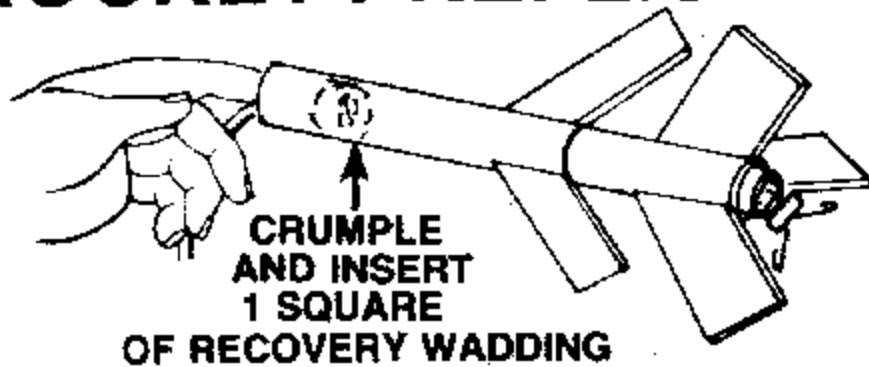


PREPARE ENGINE - STING RAY

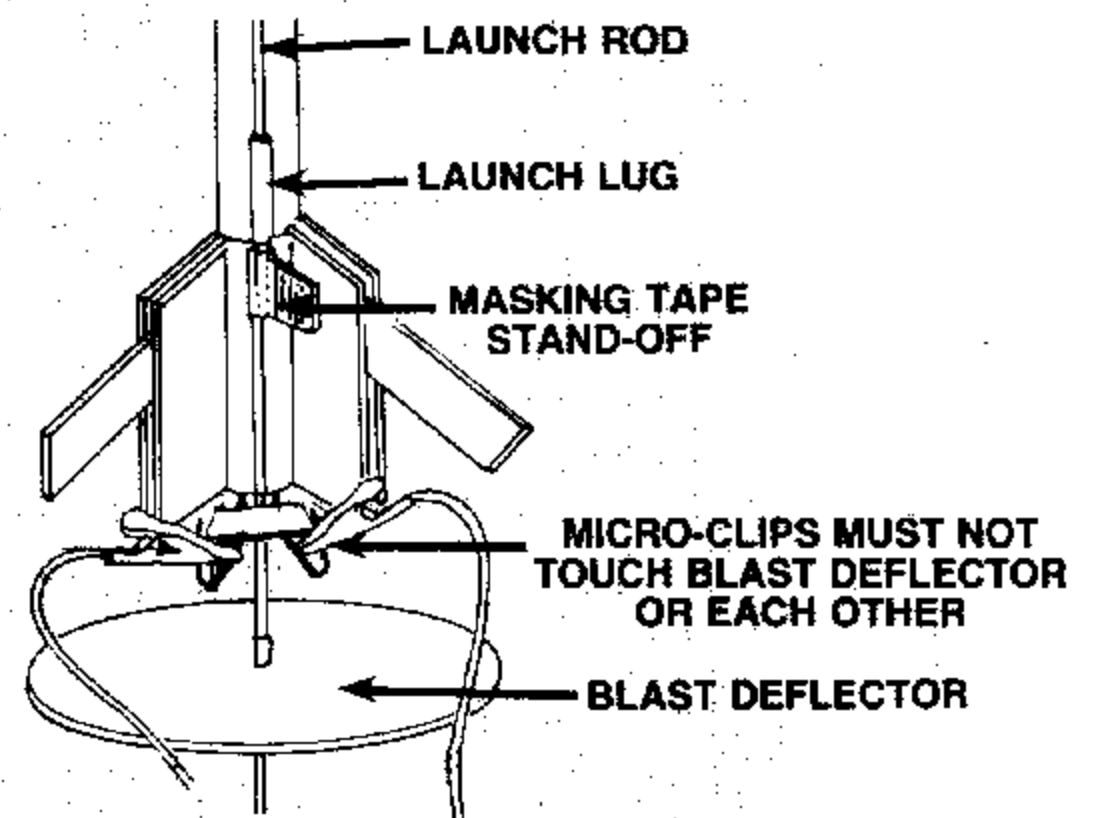
Place the nozzle end of an upper stage engine against the top of an A10-0T engine. Tape the engines together with cellophane tape. Wrap enough masking tape around upper stage engine so it will fit tightly in the upper stage body. Wrap masking tape around the lower stage engine and push the lower stage body onto the engine. Install igniter in booster engine as described above. NOTE: When installing the lower stage body, make sure that a fin will not be directly under the upper stage launch lug.



ROCKET PREFLIGHT



COUNTDOWN AND LAUNCH



FLYING YOUR ROCKETS

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
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- 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.