

CLIPPER

TWO-STAGE FLYING MODEL ROCKET

SKILL LEVEL 2

Recommended for the Experienced Modeler

- Booster Stage-Tumble Recovery
- Upper Stage-Streamer Recovery
- Plastic Nose Cone
- Die-Cut Balsa Fins

Length: 22.875 in. (58.1 cm)

Dia: .976 in. (24.8 mm)

Weight: 1.59 oz. (45 g)

Recommended Engines:

Upper Stage: A8-5 (First Flight),

B4-6, B6-6, B8-5, C6-5, or C6-7

Booster Stage: A8-0 (First Flight),

B6-0, or C6-0

**FLIGHTS
TO 1200
FEET!**

CLIPPER

This is a model kit requiring assembly. Glue and finishing supplies, launch system and engines for flight are not included.



A DAMON COMPANY

ESTES INDUSTRIES
PENROSE, CO 81240 USA



#1979



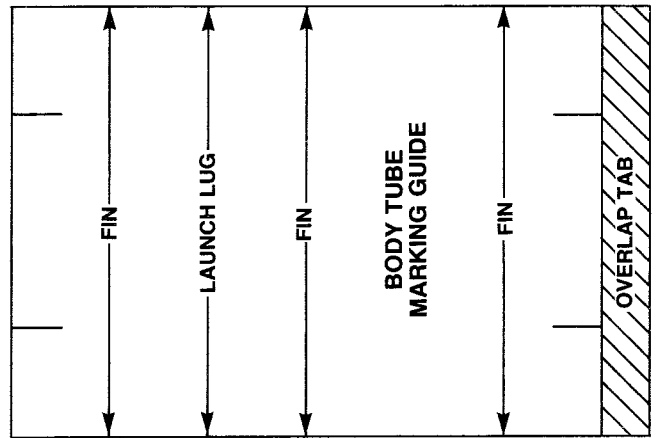
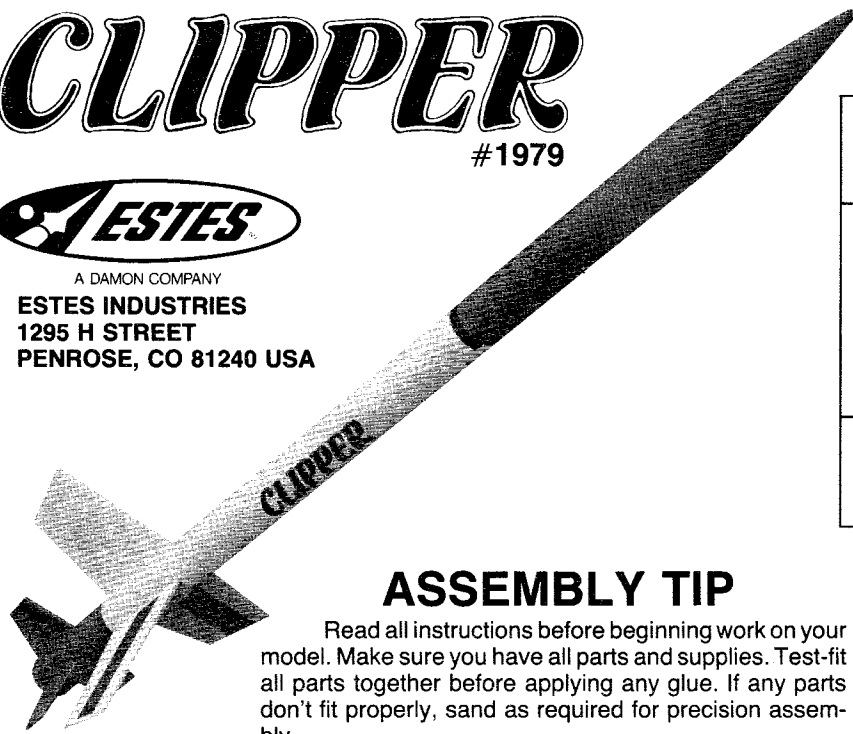
CLIPPER

#1979



A DAMON COMPANY

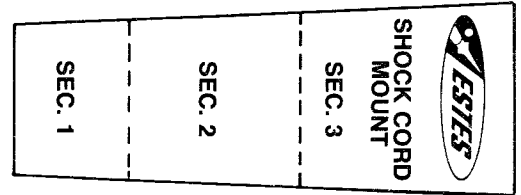
ESTES INDUSTRIES
1295 H STREET
PENROSE, CO 81240 USA



BODY TUBE MARKING GUIDE

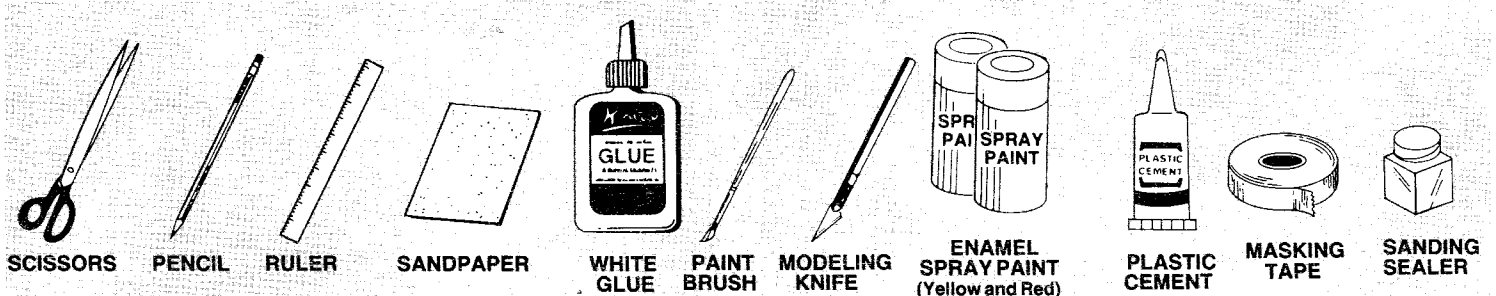
ASSEMBLY TIP

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.

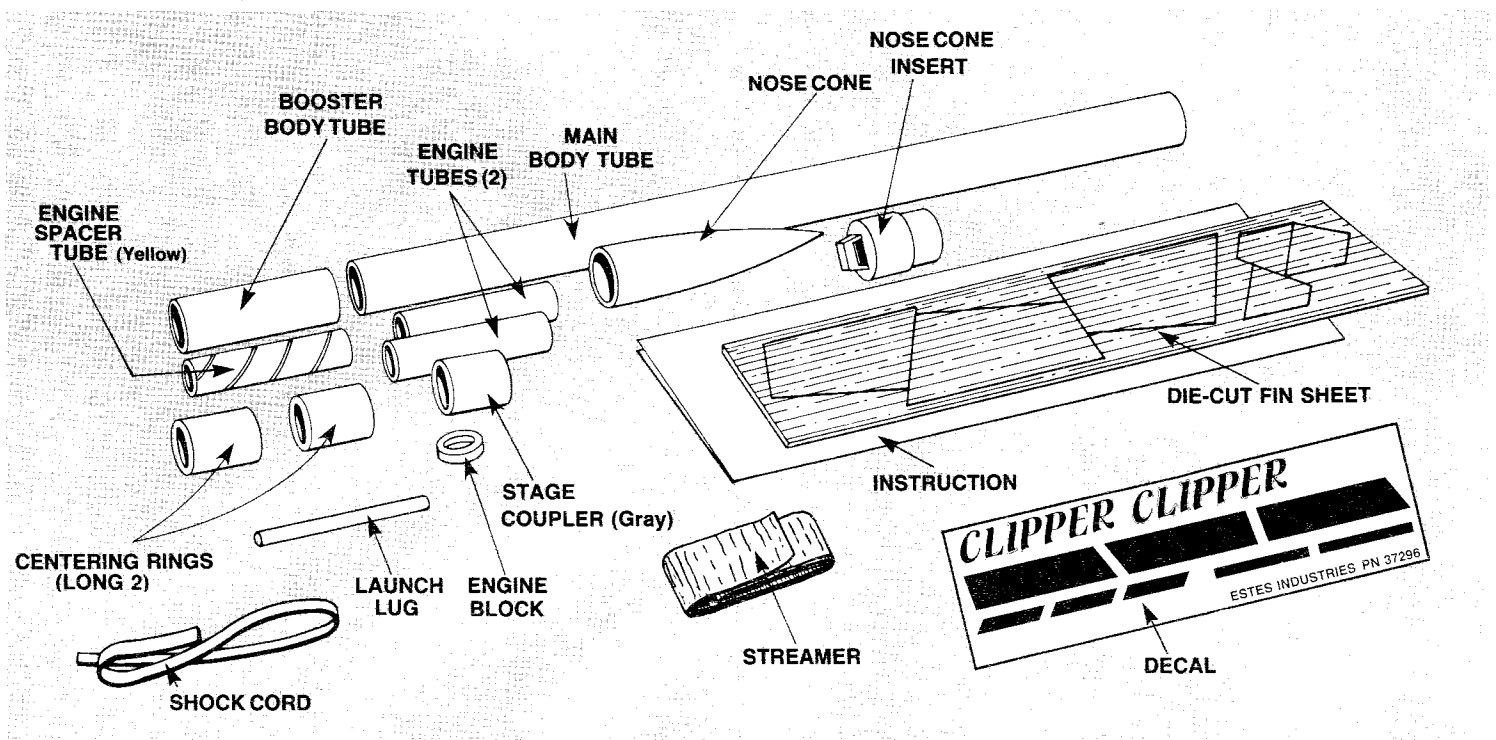


PARTS AND SUPPLIES

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:

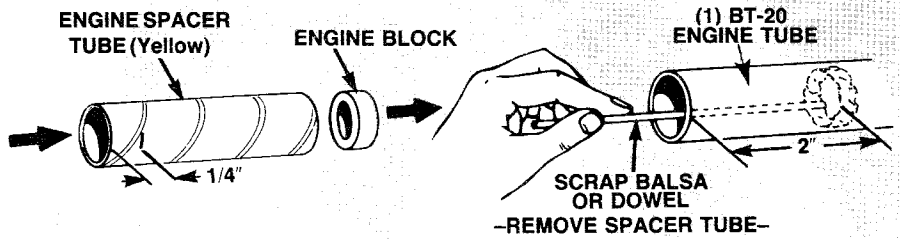


KIT PARTS

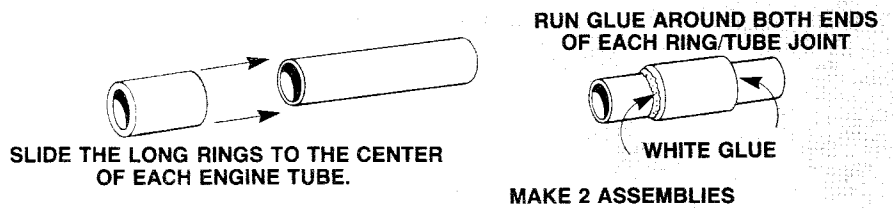


ROCKET ASSEMBLY

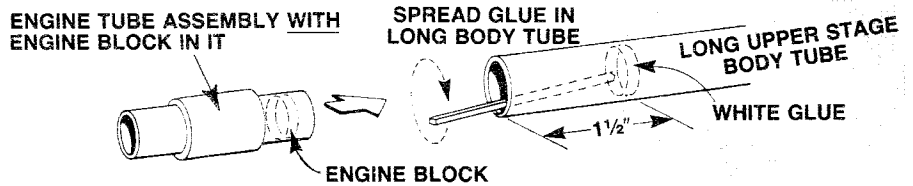
- 1 A. Mark the yellow engine spacer tube 1/4 inch from one end.
- B. Apply white glue inside the end of one of the 2 3/4 inch engine tubes 2 inches from one end.
- C. Using the engine spacer tube, push the engine block up into the end of the engine tube until the mark on the engine spacer tube is even with the end of the engine tube. Remove the engine spacer tube immediately!



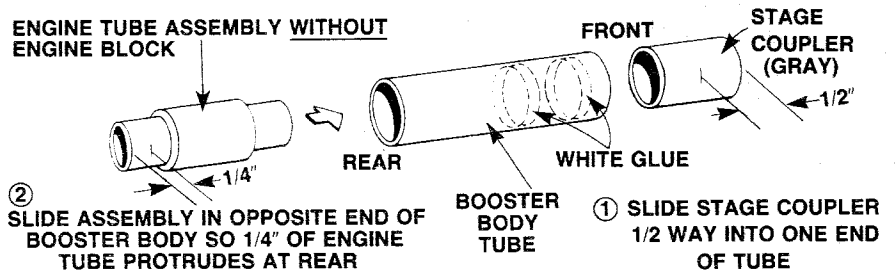
- 2 A. Locate the two engine tubes and the two long paper centering rings.
- B. Slide one centering ring over one engine tube and locate it at the middle of the tube. Run glue around both ends of the centering ring and smooth away excess glue.
- C. Repeat the operation with other centering ring and engine tube.



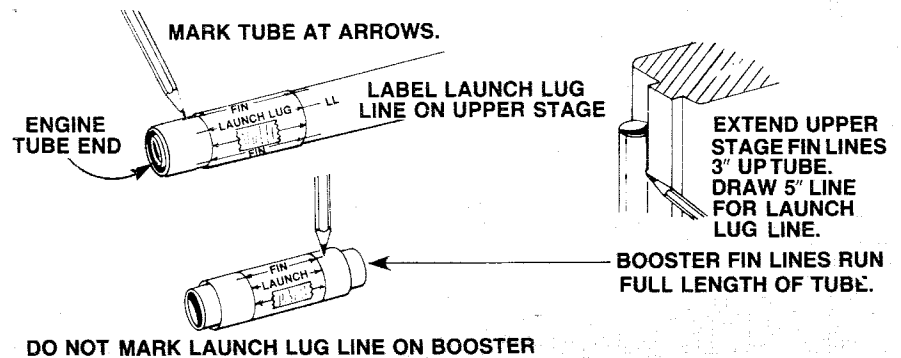
- 3 A. Using a piece of scrap balsa, run a ring of white glue 1 1/2 inches up into long (upper stage) body tube and slide the engine tube assembly with engine block into end with glue.
- B. Engine tube and body tube ends should be even.



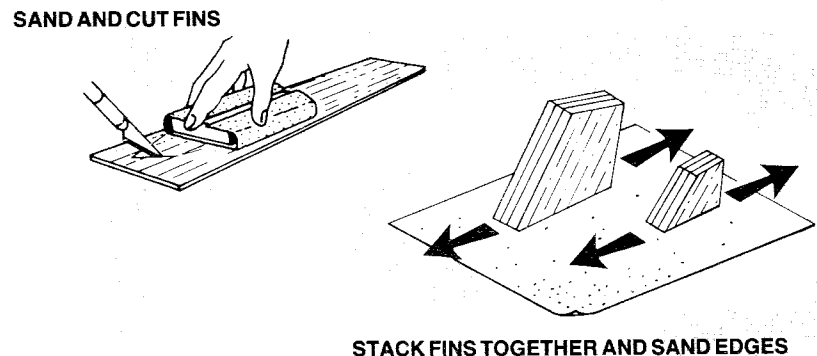
- 4 A. Run a ring of white glue around inside of one end of short (booster) body tube. Slide stage coupler (gray) into this end so 1/2 inch of coupler extends out of tube.
- B. Place mark 1/4 inch from one end of remaining engine tube assembly (no engine block).
- C. Run another ring of white glue in other end of booster body tube. Slide engine tube assembly (the one with no engine block) into end of tube opposite stage coupler. Be sure 1/4 inch of engine tube assembly extends out of tube.



- 5 A. Cut out body tube marking guide from front page.
- B. Wrap guide around engine tube end of long (upper stage) body tube and mark tube at all arrows. Indicate launch lug line with an LL. Draw 3 inch lines up the tube for the fins and a 5 inch line up the tube for the launch lugs. Remove guide.
- C. Wrap guide around "booster" body tube and mark at arrows for fin lines only. You will not need a launch lug line on booster, as launch lugs will only go on upper stage. Draw fin lines entire length of booster body.
- D. Remove body tube marking guide.



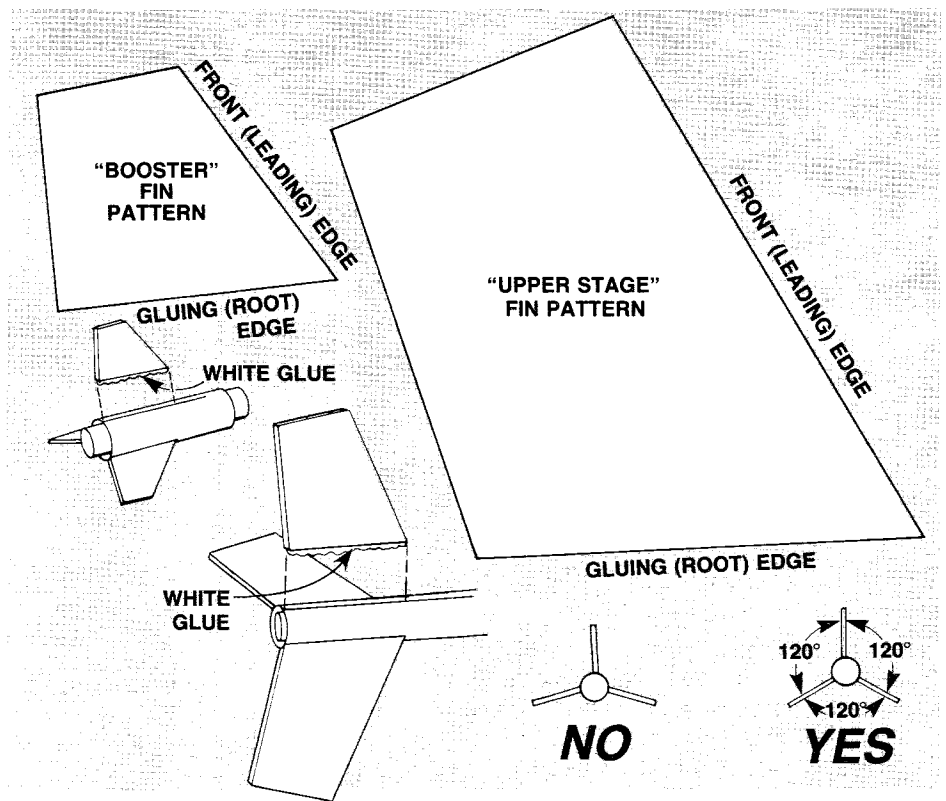
- 6 A. Fine sand balsa die-cut sheet. Carefully remove fins by freeing edges with sharp knife.
- B. Stack fins together. Sand all edges smooth.



7

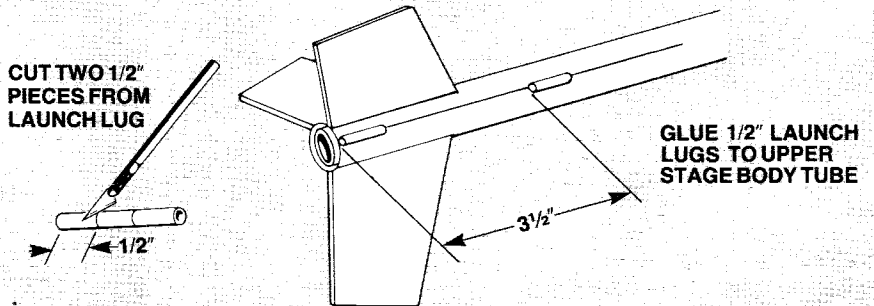
- A. Lay fins on patterns to find gluing (root) and front (leading) edges.
- B. Position and glue fins on alignment lines one at a time. Let each dry several minutes before applying the next one.
- C. Adjust fins to project straight out from tube.
- D. Do not set stages on their fins while glue is wet. Use a dowel or pencil to hold up booster as fins dry.

FINS MUST BE ATTACHED CORRECTLY FOR STABLE FLIGHT!



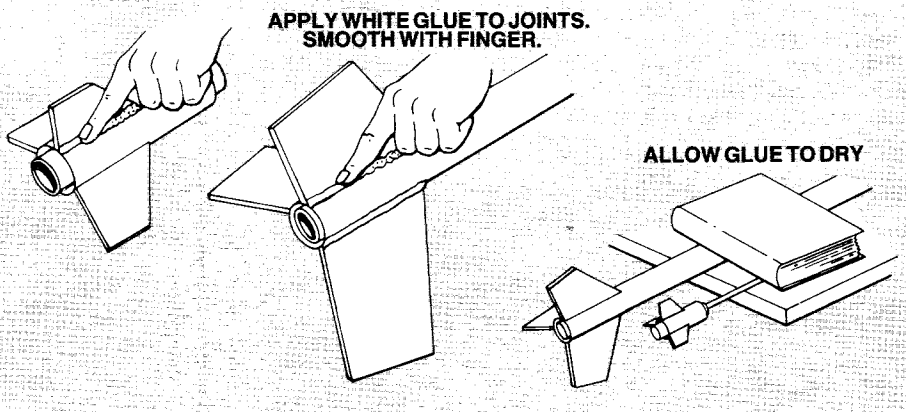
8

- A. Cut two (2) 1/2 inch pieces from the launch lug.
- B. Glue one 1/2 inch lug to the rear edge of the upper stage body tube on the launch lug line. Glue the back edge of the forward lug to the launch lug line 3 1/2 inches from the rear edge of the body tube.



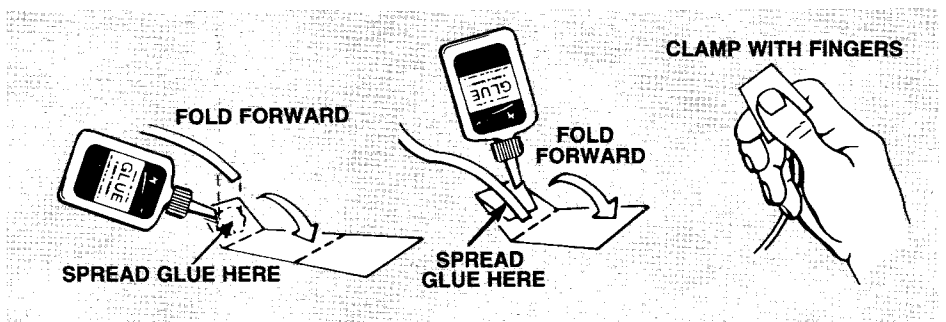
9

- A. Apply a white glue reinforcement to both sides of all fin/body tube joints on both stages, and to both sides of the launch lugs on the upper stage.
- B. Support stages as shown until glue dries.



10

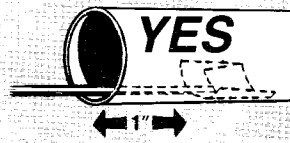
- A. Cut shock cord mount from front page of instructions.
- B. Crease on dotted lines by folding. Spread glue on section 1 and lay end of shock cord into glue. Fold over and apply glue to back of first section and exposed part of section 2. Lay shock cord as shown and fold mount over again.
- C. Clamp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



11

- A. Apply glue to inside front of upper stage body tube to cover an area no less than 1 inch to 2 inches 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.

SPREAD GLUE INSIDE BODY TUBE

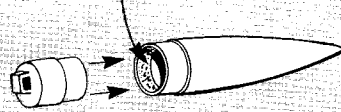


SET BACK AT LEAST 1" FOR NOSE CONE

12

- A. Assemble nose cone and nose cone insert with plastic cement.
- B. When dry, tie free end of shock cord to eyelet with double knot.

(A) APPLY PLASTIC CEMENT



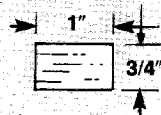
DOUBLE KNOT



(B) TIE CORD TO LOOP

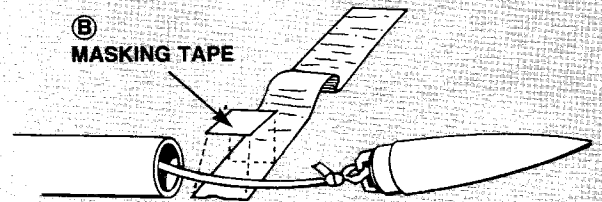
13

- A. Cut a 1 inch long piece of 3/4 inch wide masking tape.
- B. Lay center of shock cord over end of streamer material as shown. Tape shock cord and streamer together.
- C. Press tape down firmly to assure a strong bond.



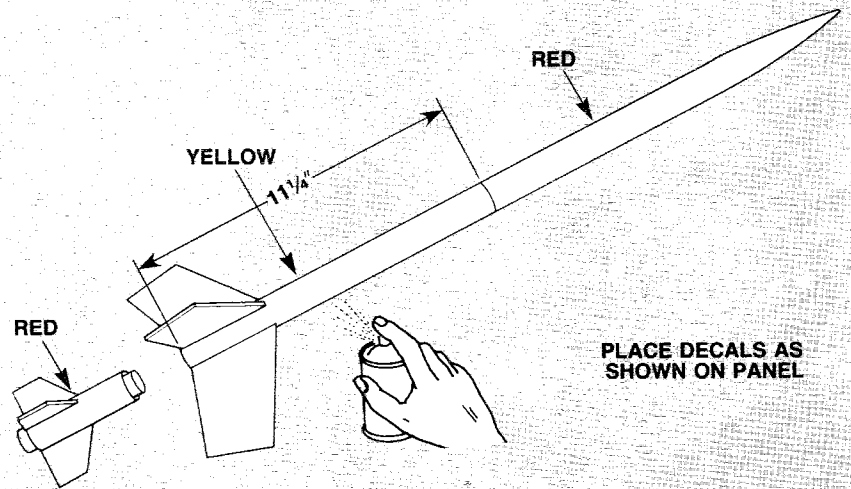
(A) CUT MASKING TAPE

(B) MASKING TAPE



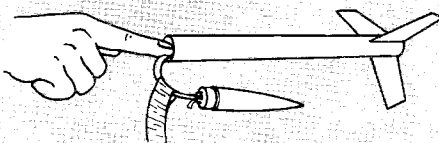
FINISHING YOUR ROCKET

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 booster red and upper stage yellow. Follow instructions on spray can for best results. Let paint dry overnight before masking off bottom 11 1/4 inches of upper stage and painting upper portion red. 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.

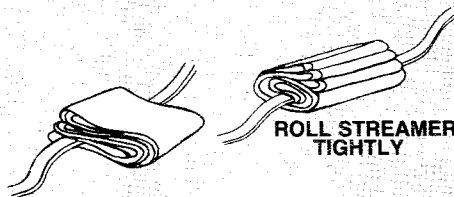


PLACE DECALS AS SHOWN ON PANEL

ROCKET PREFLIGHT



CRUMPLE AND INSERT 6 SQUARES OF RECOVERY WADDING IN UPPER STAGE

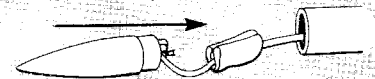


ROLL STREAMER TIGHTLY

FOLD STREAMER IN HALF 6 TIMES

NOTE: If streamer fits too tightly into body, remove and reroll. A too-tight fit could cause an ejection malfunction during flight.

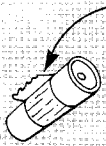
NOTE: If nose cone fits too loosely, wrap tape around the shoulder until a snug but not tight fit is achieved.



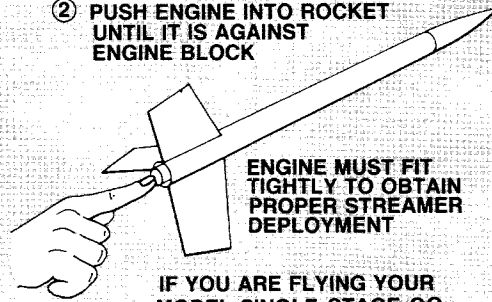
INSERT SHOCK CORD, STREAMER, AND NOSE CONE INTO ROCKET.

PREPARE ENGINES

① WRAP MASKING TAPE AROUND MIDDLE OF UPPER STAGE ENGINE FOR FRICTION FIT.



② PUSH ENGINE INTO ROCKET UNTIL IT IS AGAINST ENGINE BLOCK



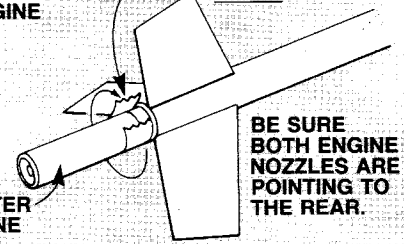
ENGINE MUST FIT TIGHTLY TO OBTAIN PROPER STREAMER DEPLOYMENT

IF YOU ARE FLYING YOUR MODEL SINGLE STAGE, GO TO ⑥ AT THIS POINT.

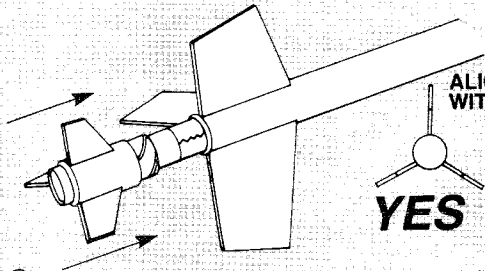
③ TAPE BOOSTER ENGINE TO UPPER STAGE ENGINE

BOOSTER ENGINE

USE 1 WRAP OF MAGIC TAPE.

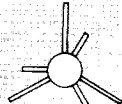


BE SURE BOTH ENGINE NOZZLES ARE POINTING TO THE REAR.



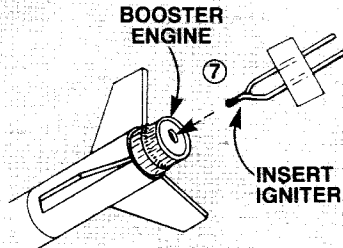
ALIGN BOOSTER FINS WITH UPPER STAGE FINS

YES



NO

④ PUSH BOOSTER UP OVER BOOSTER ENGINE UNTIL FRONT EDGE OF BOOSTER TUBE IS AGAINST REAR EDGE OF UPPER STAGE TUBE.

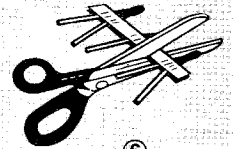
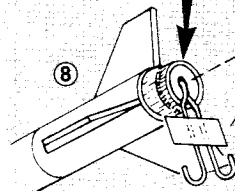


BOOSTER ENGINE

INSERT IGNITER

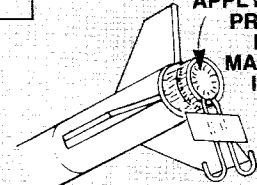
⑤ WRAP MASKING TAPE TIGHTLY AROUND EXPOSED END OF BOOSTER ENGINE AND ENGINE TUBE.

IGNITER TIP MUST TOUCH PROPELLANT DEEP INSIDE NOZZLE OPENING



⑥ SEPARATE THE IGNITERS

⑨ APPLY AND FIRMLY PRESS TAPE DISC OR MASKING TAPE IN PLACE



LAUNCH SUPPLIES

To launch your rocket you will need the following items:

- An Estes model rocket launching system
- Estes Recovery Wadding (No. 2274)
- Recommended Engines:
 - Single Stage: A8-3 (1st Flt.), B4-4, B6-4, B8-5, C6-5, C6-7.
 - Upper Stage: A8-5 (1st Flt.), B4-6, B6-6, B8-5, C6-5, C6-7.
 - Booster Stage: A8-0 (1st Flt.), B6-0, C6-0.

FLYING YOUR ROCKET

Choose a large field away from power lines, tall trees, and low flying aircraft. Try to find a field at least 500 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

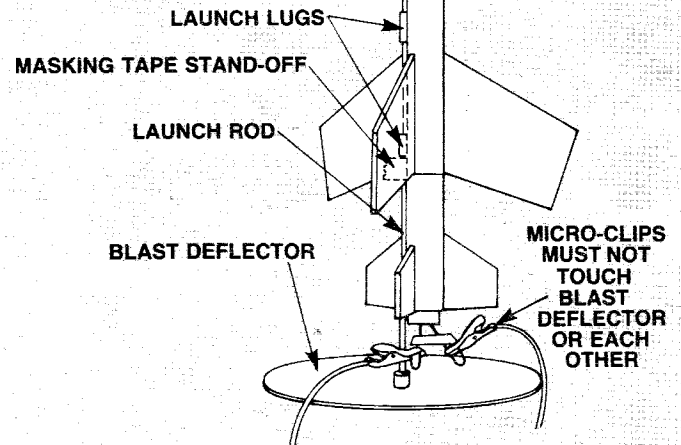
Failure of the rocket engine to function properly is nearly always caused by a failure to install the igniter correctly. This failure permits the igniter to heat and burn into two pieces without igniting the engine.

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

COUNTDOWN AND LAUNCH

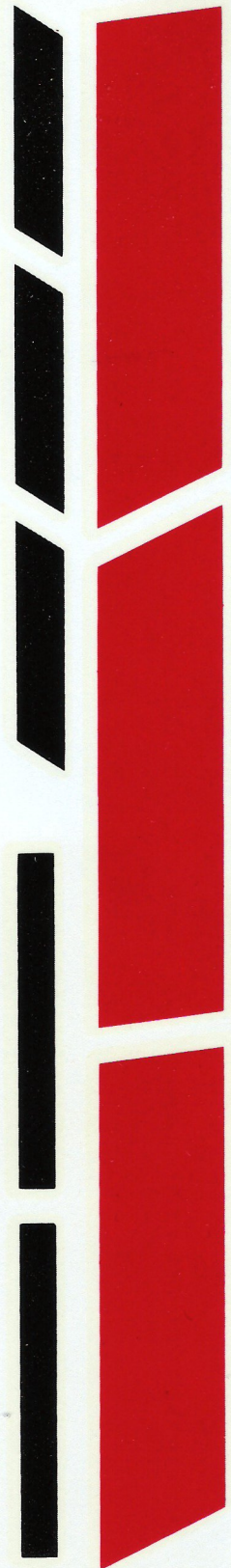


- ⑤ REMOVE SAFETY KEY to disarm the launch controller.
- ④ Remove safety cap and slide launch lugs over launch rod to place rocket on launch pad. Make sure the rocket slides freely on the launch rod.
- ③ Attach micro-clips to the igniter wires. Arrange the clips so they do not touch each other or the 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.

CLIPPER CLIPPER



ESTES INDUSTRIES PN 37296



Estes Clipper Parts List

1. Booster Body Tube 2.75" BT50
2. Main Body Tube 16" BT50
3. Engine Tubes 2.75" BT20
4. Nose Cone PNC-50YR
5. Centering Rings BT20-50 CR, 1 1/8" long
6. Stage Coupler JT-50
7. Launch Lug 1/8" X 2 3/8"
8. Engine Block EB20
9. Die-Cut Fin Sheet 3/32" thick (full size fin patterns page 3 of instructions.)
10. Shock Cord 1/8" X 22" rubber
11. Streamer 1 1/4" X 28" plastic
12. Decals Works are royal blue
Thick stripes are dark red
Remaining stripes are black.