



ESTES INDUSTRIES
1295 H Street
Penrose, CO 81240

4-11-98
(7-96) 82104 EST 2129

EXPLORER

SERIES
SKILL LEVEL 2

PYTHON™

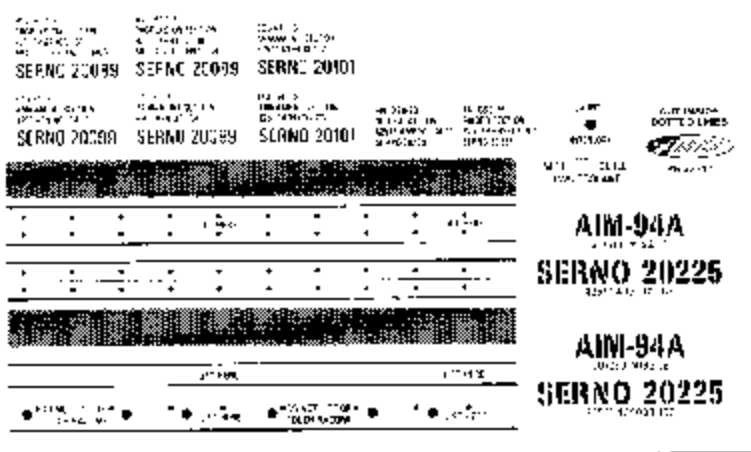
FLYING MODEL ROCKET KIT INSTRUCTIONS

TOOLS REQUIRED:

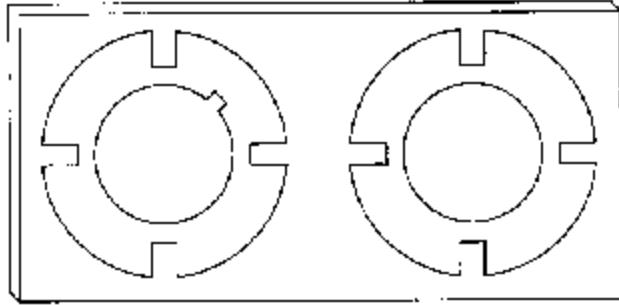
SCISSORS, PENCIL, RULER, HOBBY KNIFE, RAZOR SAW, WHITE OR YELLOW GLUE, TUBE-TYPE PLASTIC CEMENT, MASKING TAPE, 320 GRIT SANDPAPER

ALL GLUED AREAS ARE SHADED IN GRAY

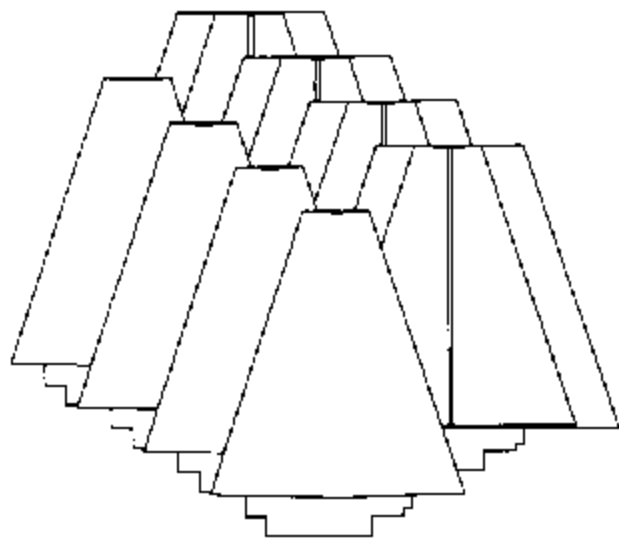
PARTS LAYOUT



DECAL (1)
37717



CENTERING RINGS #501835 (1)
32432



PLASTIC FIN SET (1)
37995

RETAINER RING - GREEN (1)
30166-2

ENGINE MOUNT TUBE #50H (1)
30380-1

ENGINE HOOK #2A (1)
35021

ADAPTER RING #2050 (1)
30164-2

ENGINE SPACER TUBE #6 (1)
35004

NOSE CONE WITH COUPLER #1835 (1)
72660

PAYLOAD TUBE (1)
31762

SLOTTED BODY TUBE #1835 (1)
31181

LAUNCH LUG #12 (1)
38166

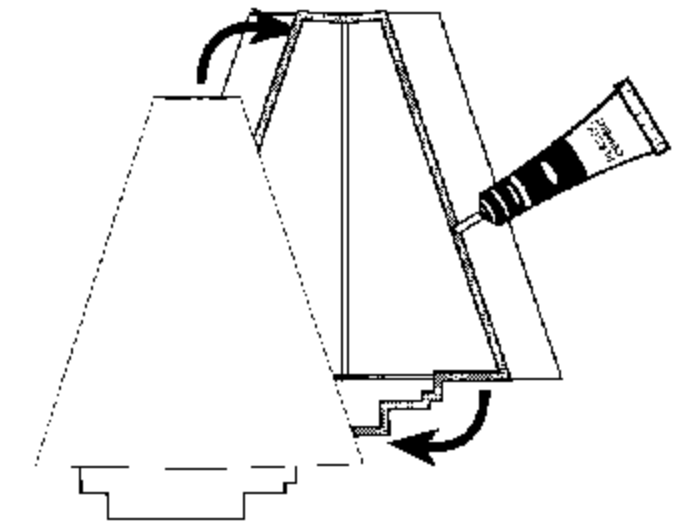
TAPE RINGS (1)
38407

SHOCK CORD #1/4 x 24 (1)
38383

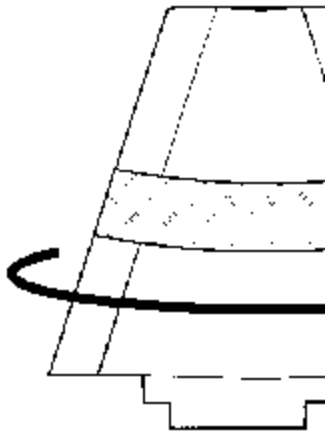
SHROUD LINES #108 (1)
38239

PARACHUTE #18 (1)
35821

1. FIN ASSEMBLY

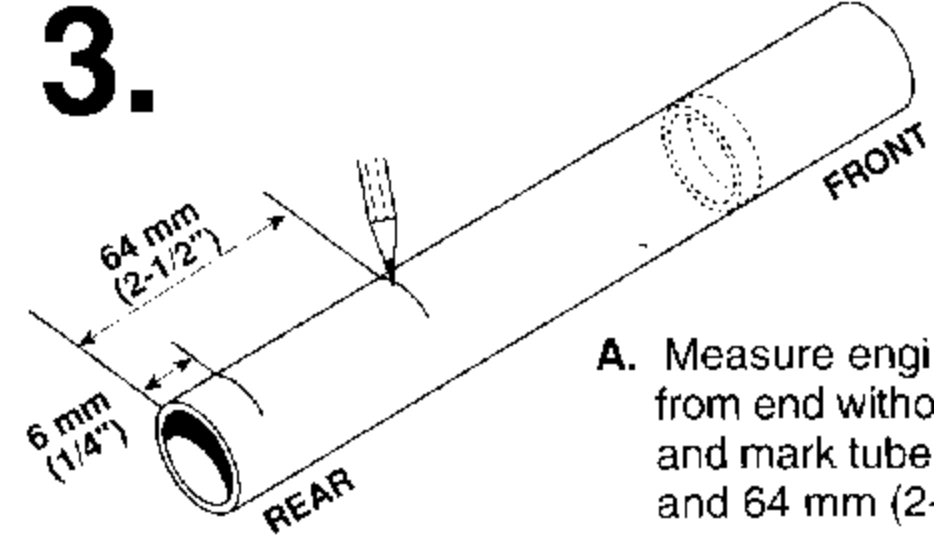


A. Using plastic cement, assemble halves to make four equal size fins.

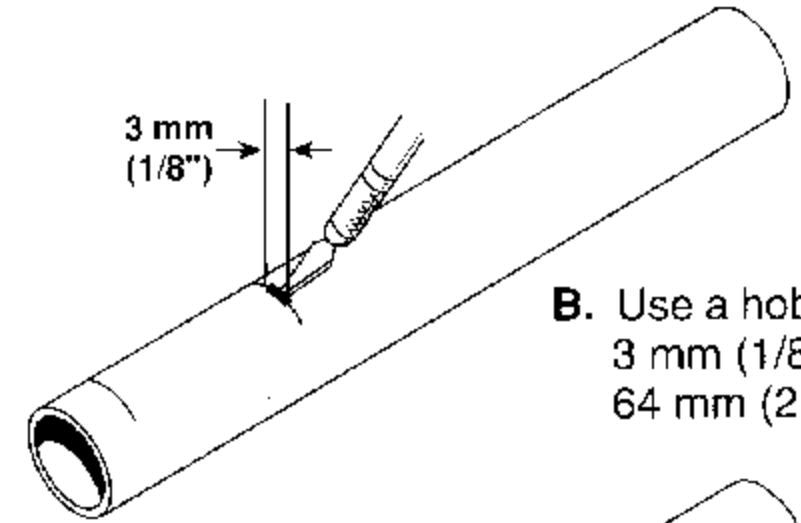


B. Tape fins together dry.
C. Once dry, remove

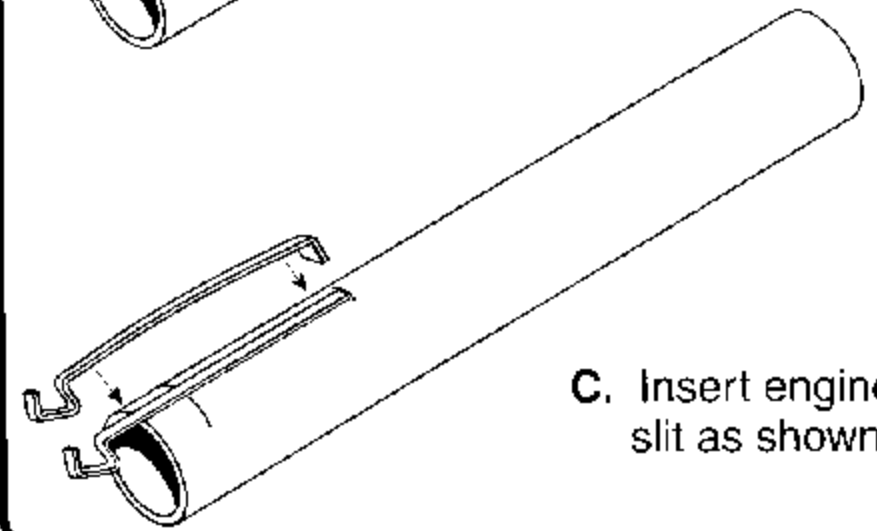
3.



A. Measure engine from end without and mark tube at and 64 mm (2-1/2")

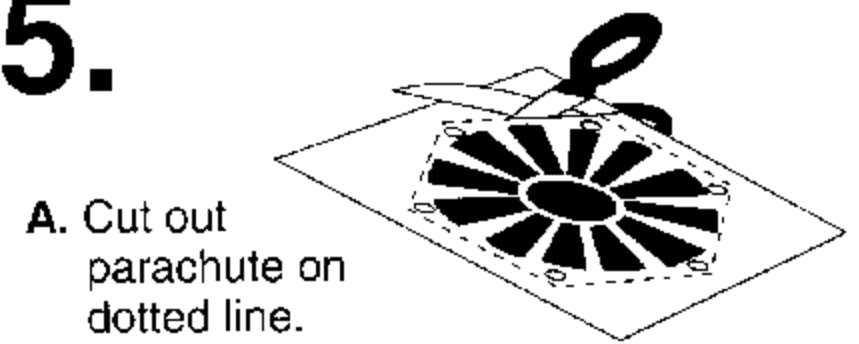


B. Use a hobby knife 3 mm (1/8") wide 64 mm (2-1/2") m

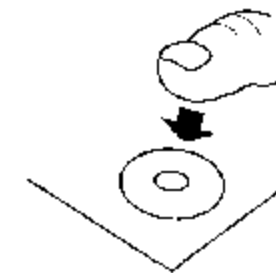


C. Insert engine hook slit as shown.

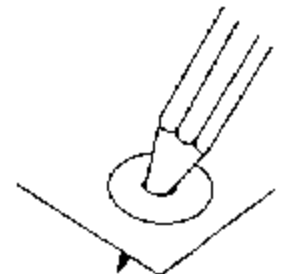
5.



A. Cut out parachute on dotted line.



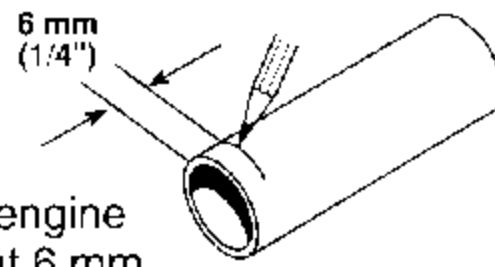
C. Press tape rings onto marks on corners.



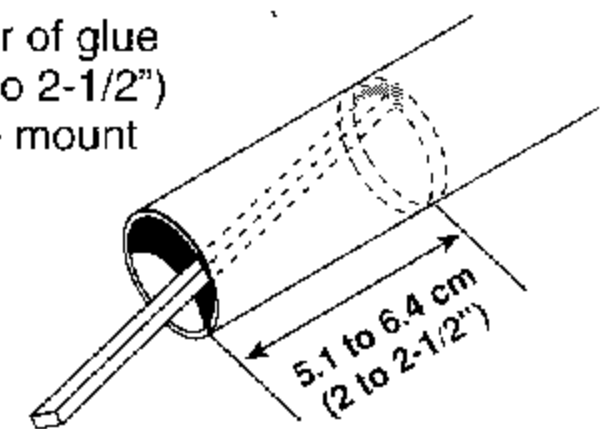
D. Punch holes with sharp pencil.

2. ENGINE MOUNT ASSEMBLY

A. Mark yellow engine spacer tube at 6 mm (1/4") from one end.

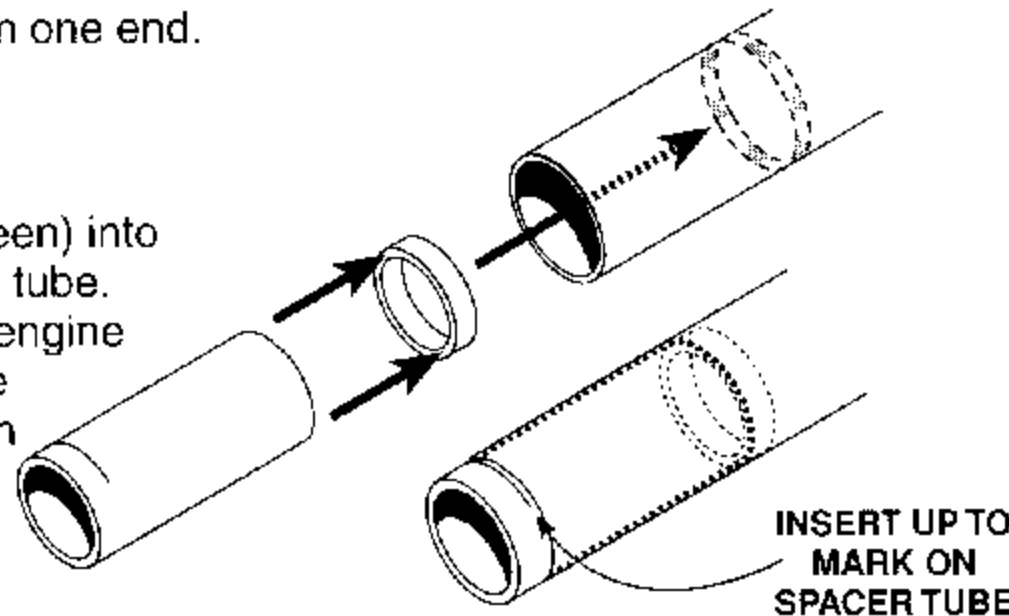


B. Place a thin layer of glue 5.1 to 6.4 cm (2 to 2-1/2") inside the engine mount tube (blue).



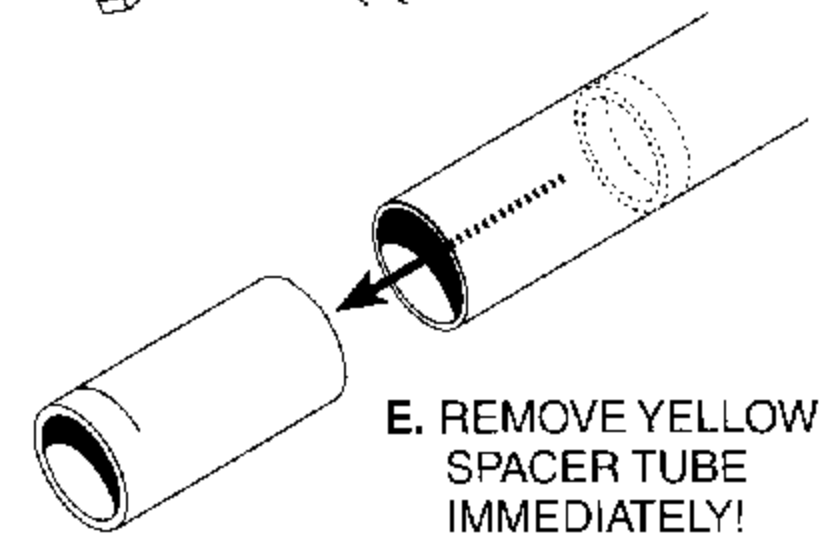
C. Insert the adapter ring (green) into same end of engine mount tube.

D. Push the adapter ring into engine mount tube with the engine spacer tube up to the 6 mm (1/4") mark on the engine spacer tube as shown.

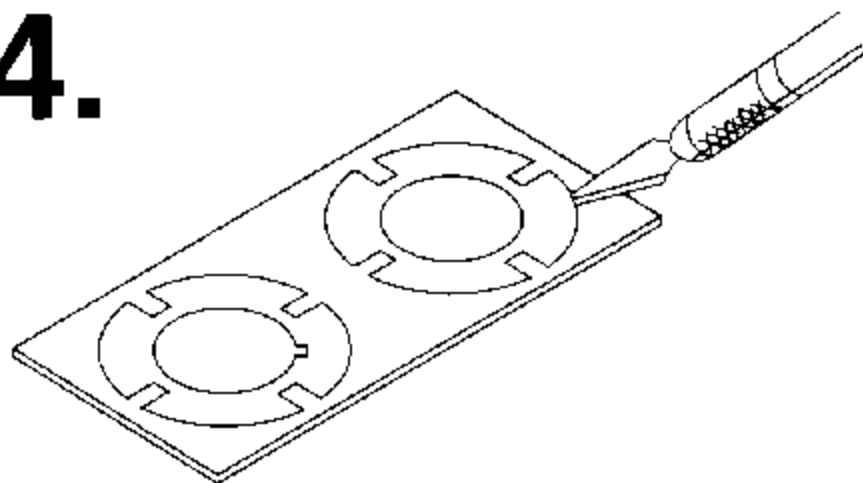


INSERT UP TO MARK ON SPACER TUBE

E. REMOVE YELLOW SPACER TUBE IMMEDIATELY!



4.



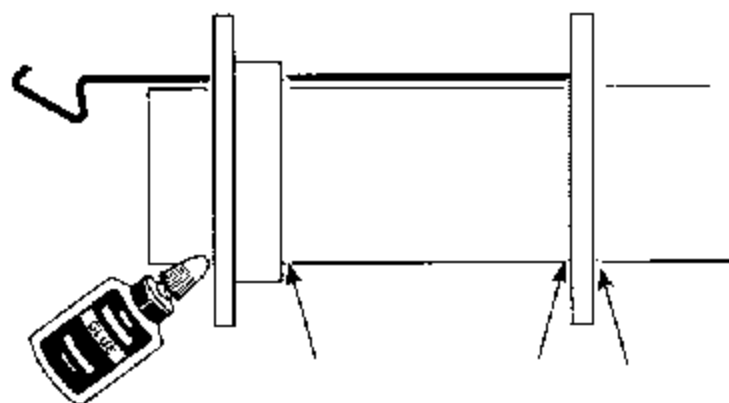
A. Carefully remove the centering rings from their card. Use a hobby knife to finish the cuts.

B. Slide centering ring with engine hook notch over rear of tube and onto 6 mm (1/4") mark.

ENGINE HOOK NOTCH

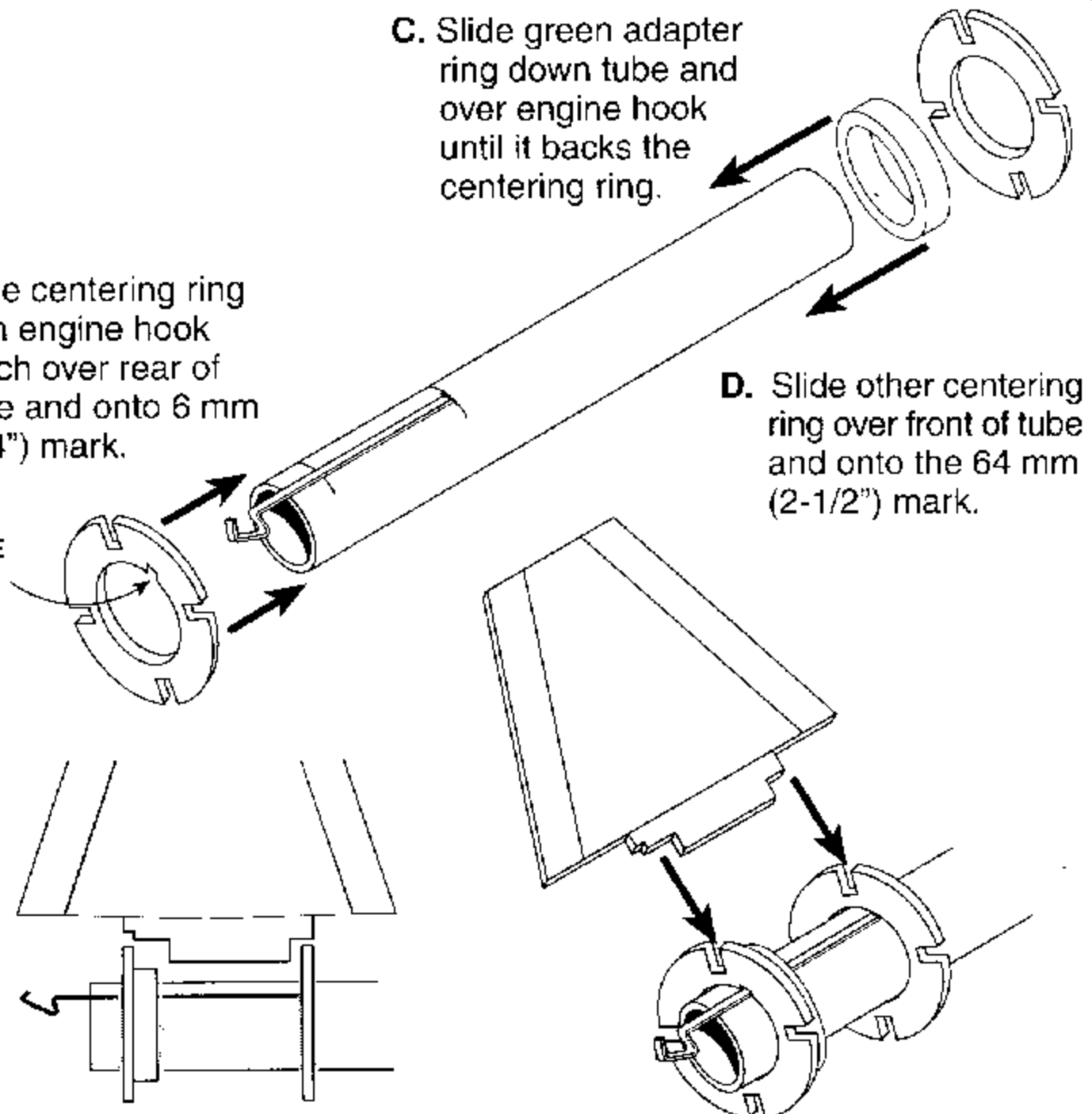
C. Slide green adapter ring down tube and over engine hook until it backs the centering ring.

D. Slide other centering ring over front of tube and onto the 64 mm (2-1/2") mark.



E. Apply a ring of glue to both sides of ring/tube joints.

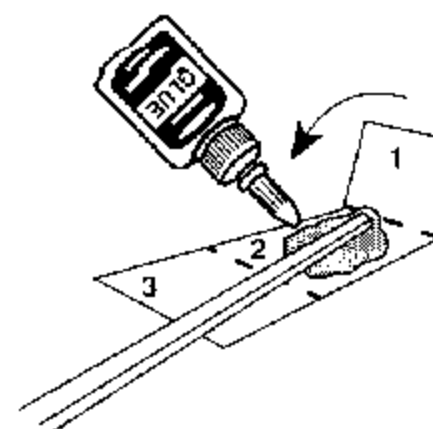
F. Before glue dries, align notches in rings by temporarily inserting a fin tab between notches and turning rings until notches are aligned.
G. Remove fin and set assembly aside to dry completely.



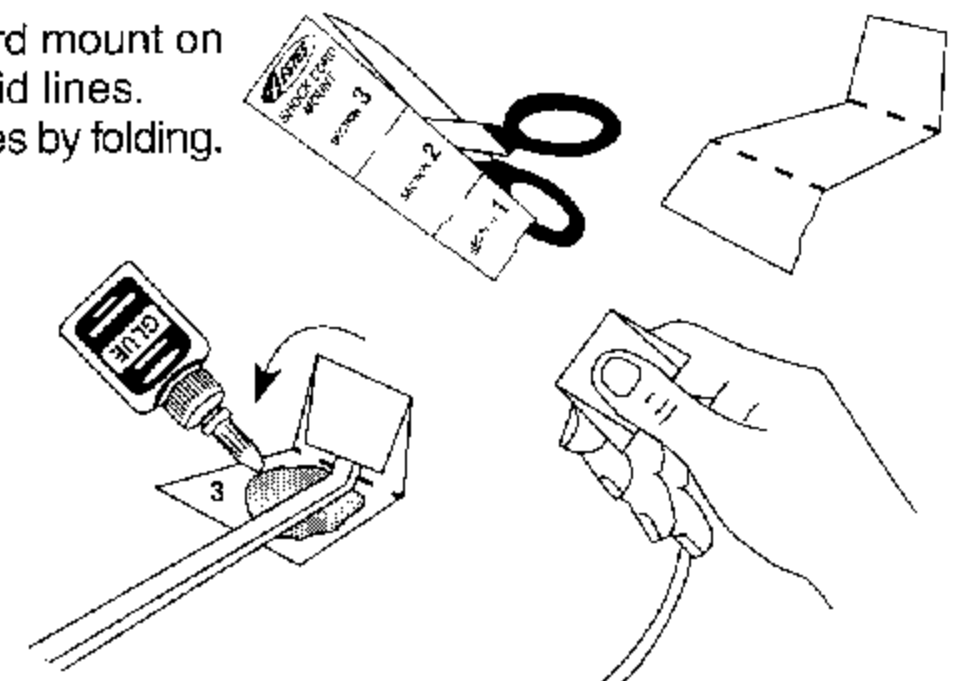
B. Find shroud line material. Remove tape. Using all of the shroud line, fold and cut into three equal lengths.

6.

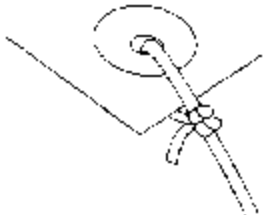
A. Cut out shock cord mount on page 2 along solid lines. Crease dotted lines by folding.



B. Spread glue on section 2 and lay shock cord into glue at a slight angle as shown.



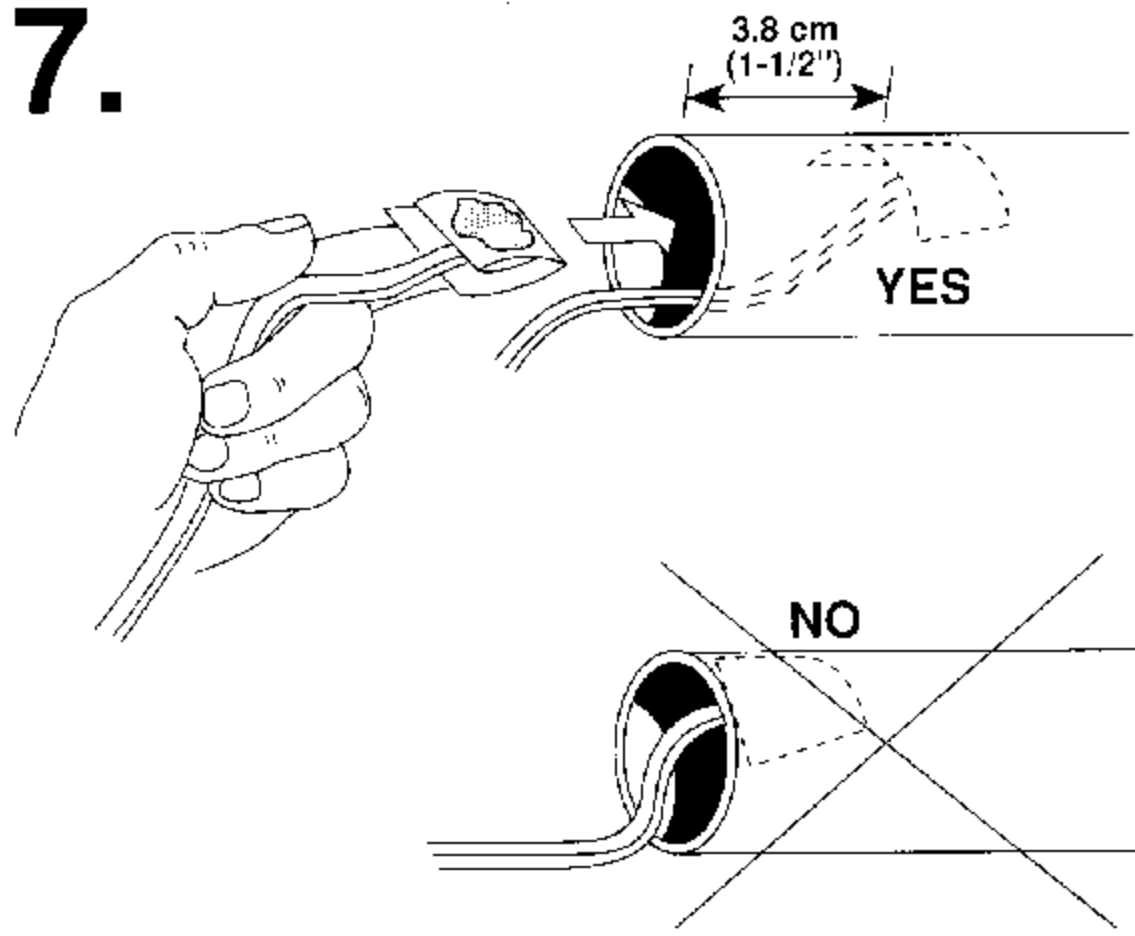
C. Apply glue to section 3. Fold forward again. Clamp firmly until glue sets.



E. Tie lines off with double knots.

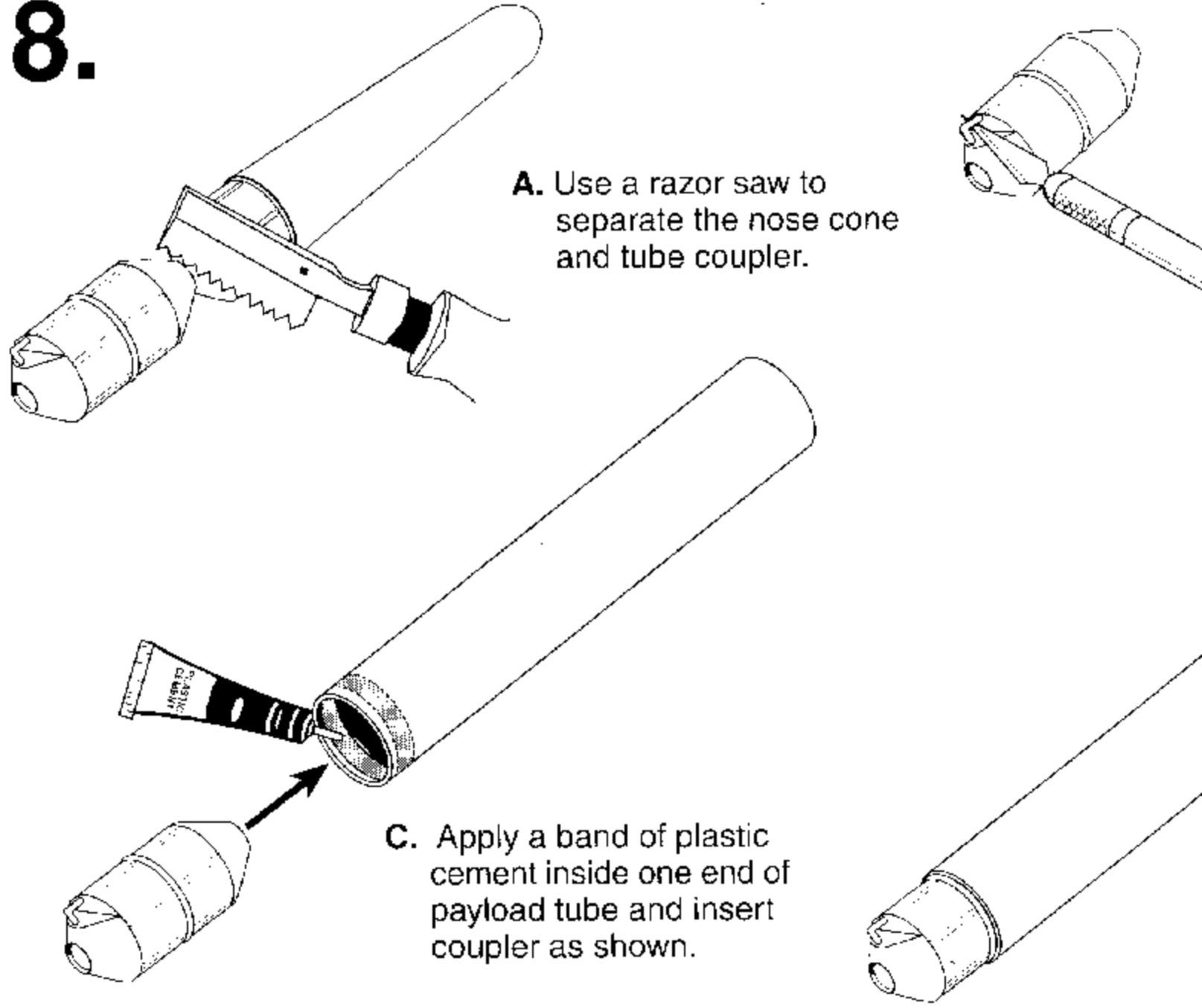
COMPLETED PARACHUTE

7.



- A. Apply glue to back side of shock cord mount.
- B. Push the shock cord mount against the **front end** (no slots) inside of the **body tube** about 3.8 cm (1-1/2") down. (This will ensure there is room for nose cone insertion.)
- C. Be sure mount is securely glued to inside of body tube and let dry.

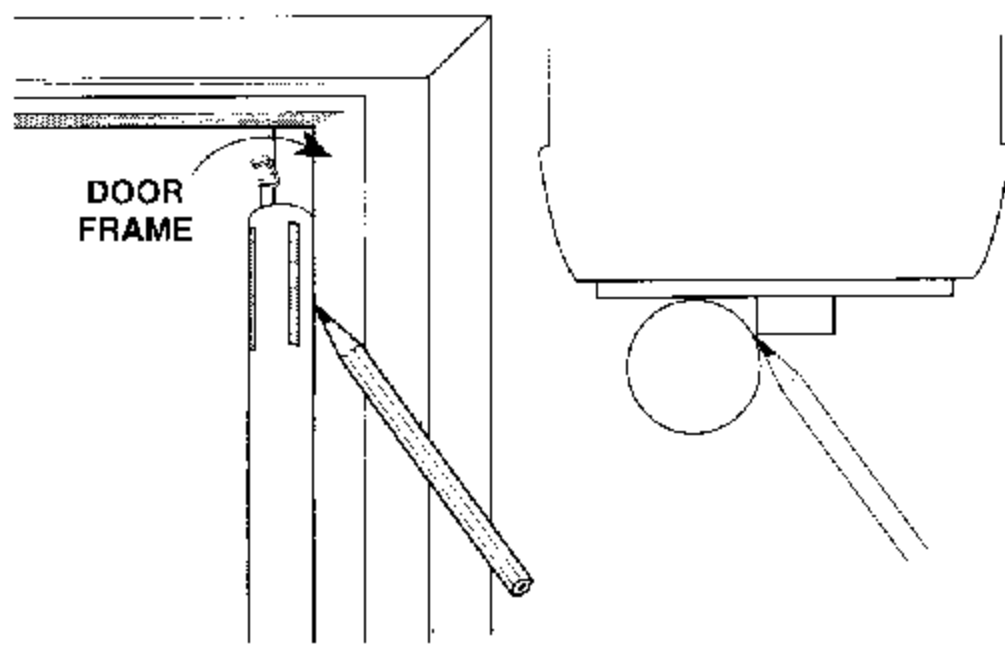
8.



- A. Use a razor saw to separate the nose cone and tube coupler.

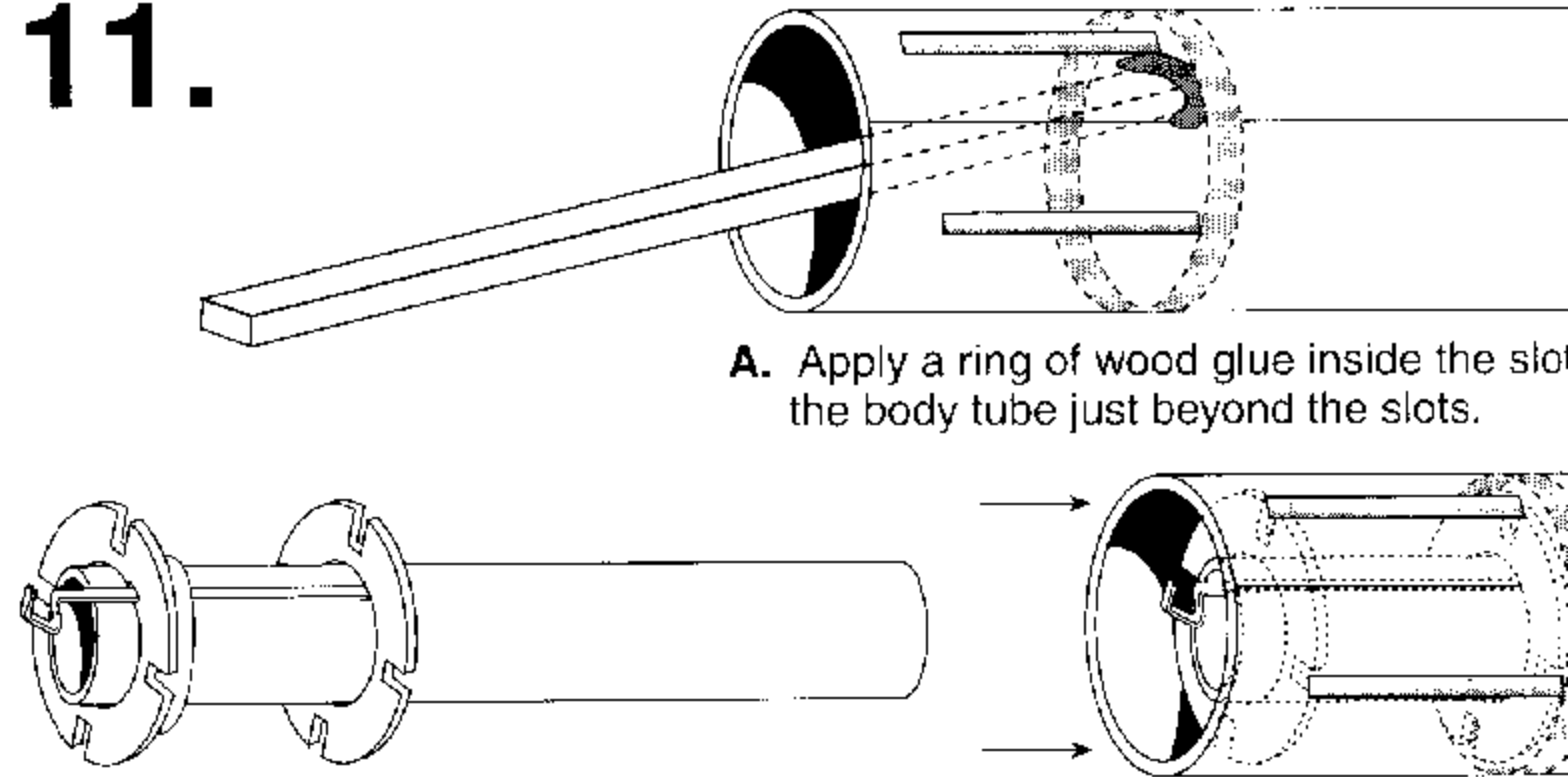
- C. Apply a band of plastic cement inside one end of payload tube and insert coupler as shown.

10.



- A. Pencil a line the length of the slotted body tube centered between any two fin slots. A door frame can be used for this, but we recommend the Estes® Rocket Builder's Tube Marking Guide (EST 302227).

11.

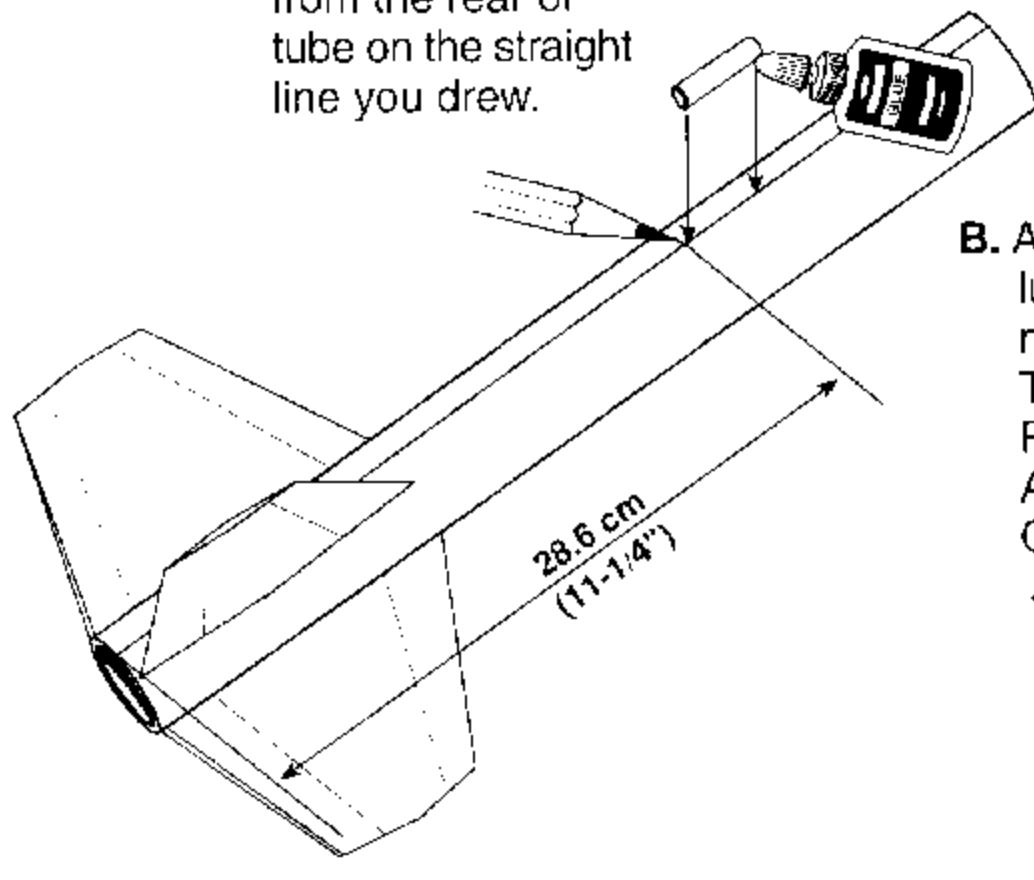


- A. Apply a ring of wood glue inside the slots of the body tube just beyond the slots.

- B. Insert the engine mount assembly into the slotted end of body tube and rotate until the fin notches line up with slots.

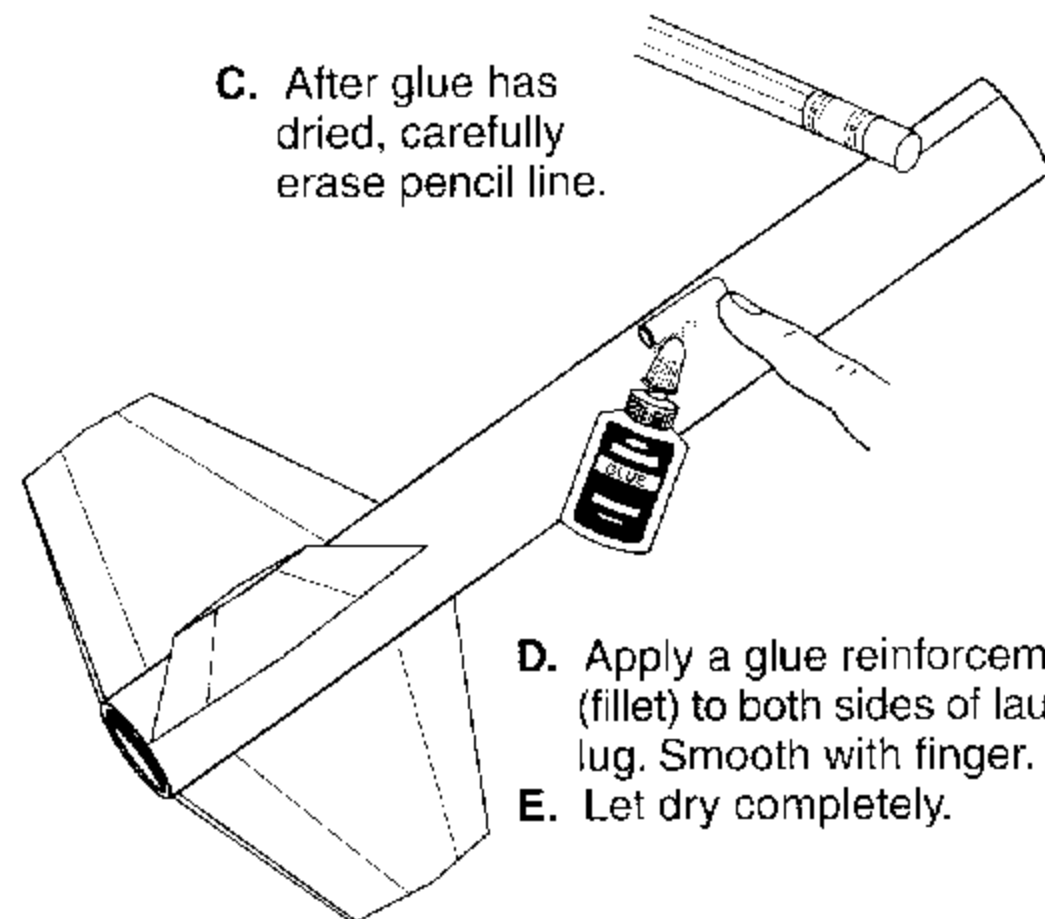
13.

- A. Mark the tube at 28.6 cm (11-1/4") from the rear of tube on the straight line you drew.



- B. Apply glue to launch lug and apply at this mark. **BE SURE THE LUG IS PERFECTLY ALIGNED BEFORE GLUE SETS.**

- C. After glue has dried, carefully erase pencil line.

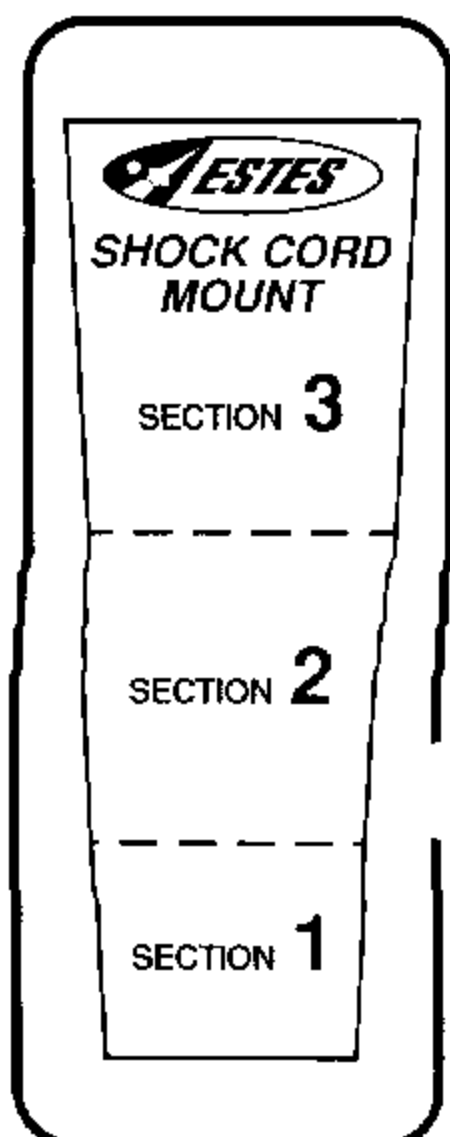
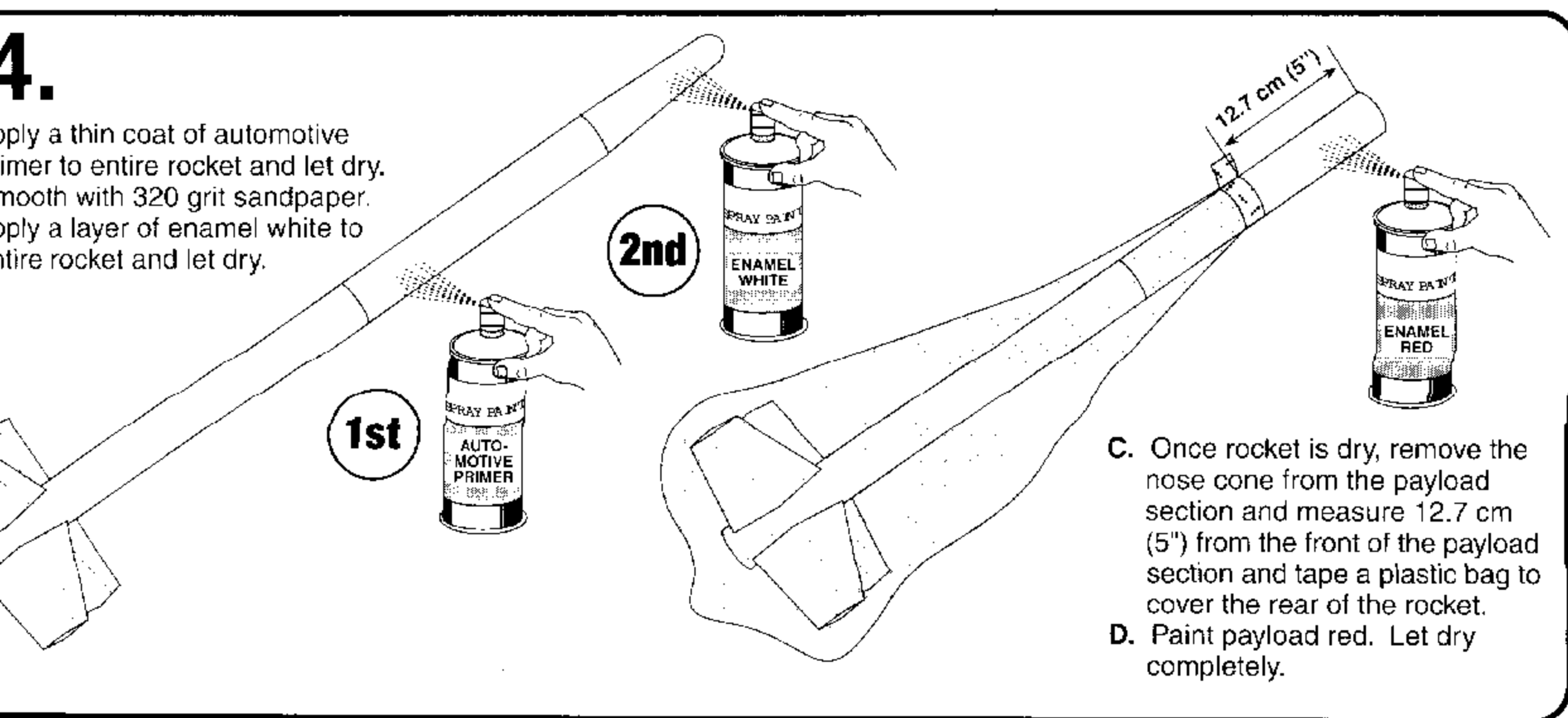
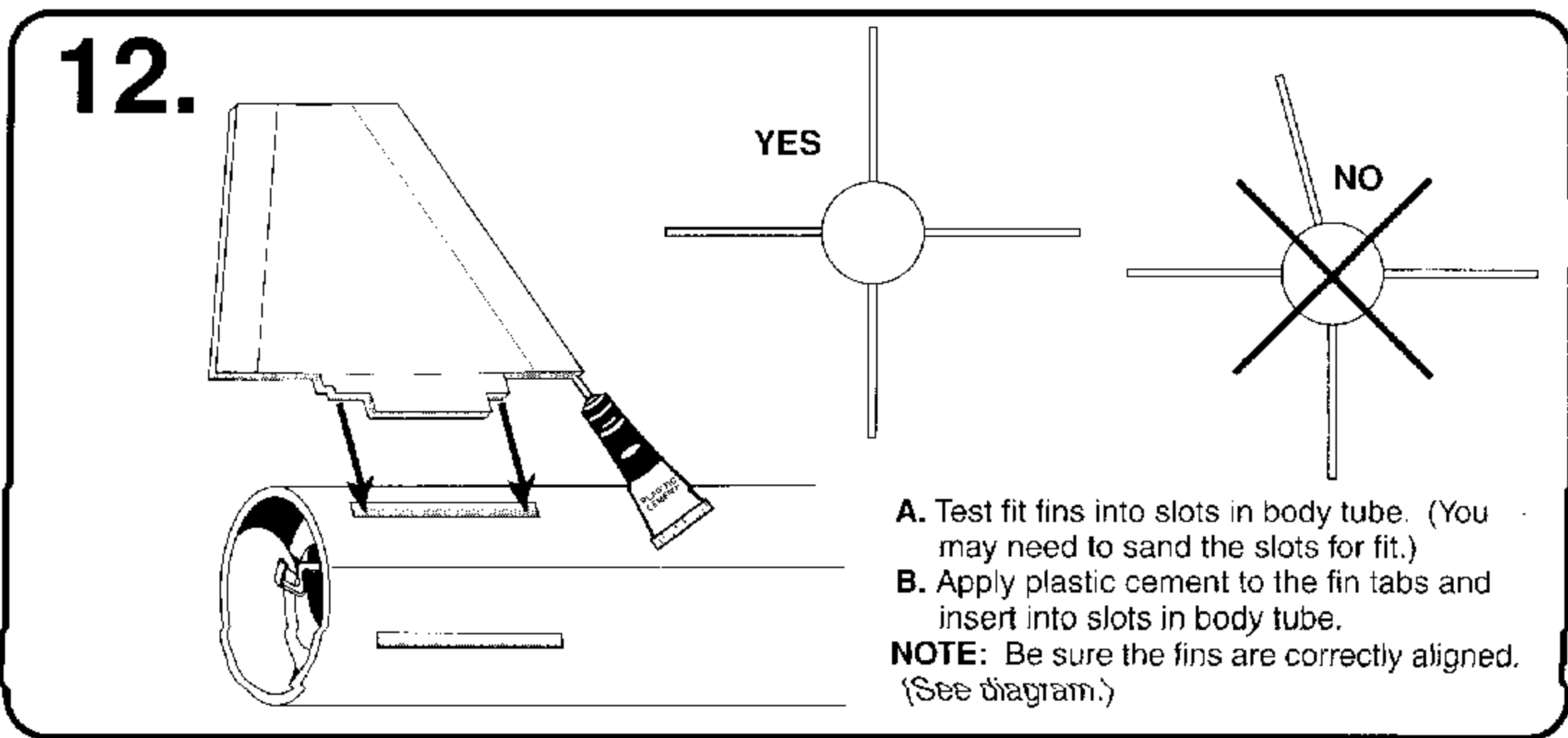
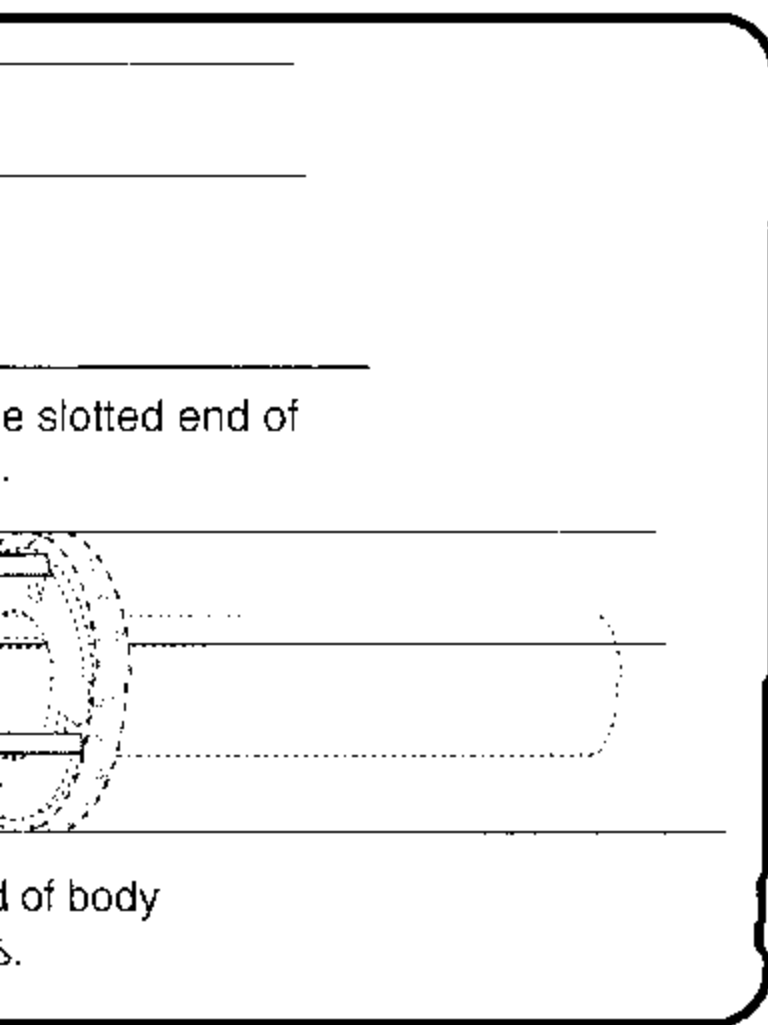
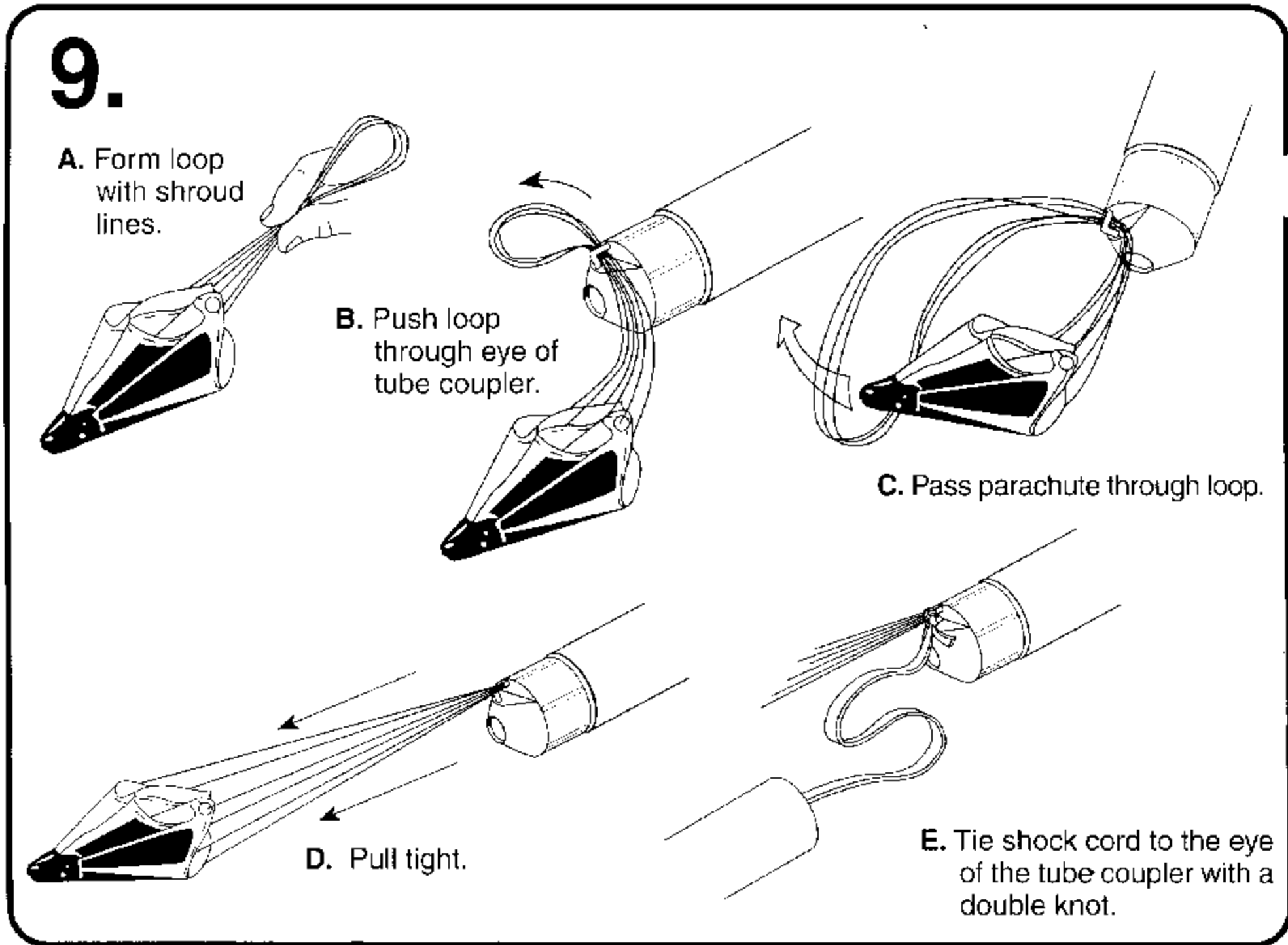
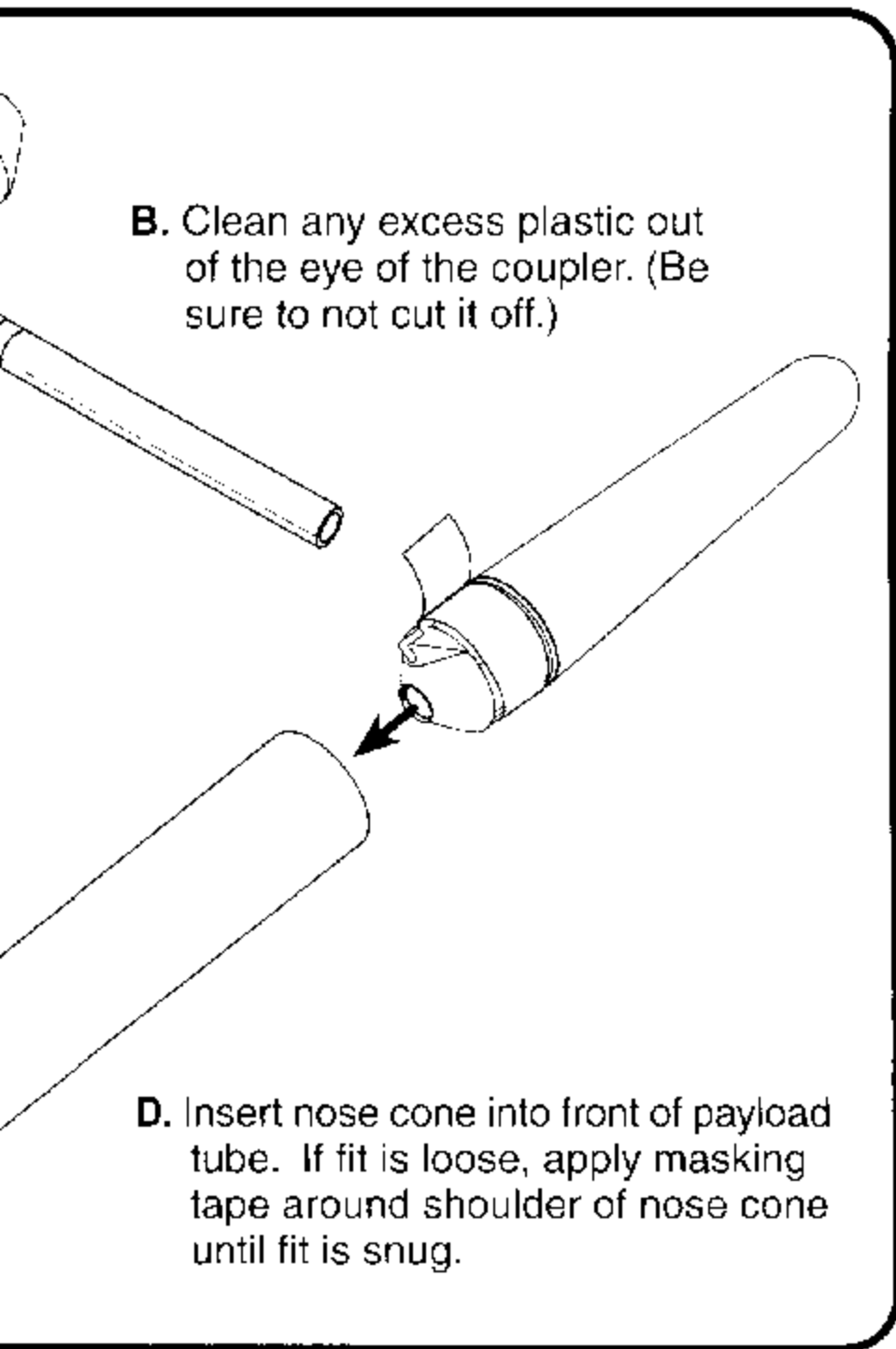


- D. Apply a glue reinforcement (fillet) to both sides of launch lug. Smooth with finger.
- E. Let dry completely.

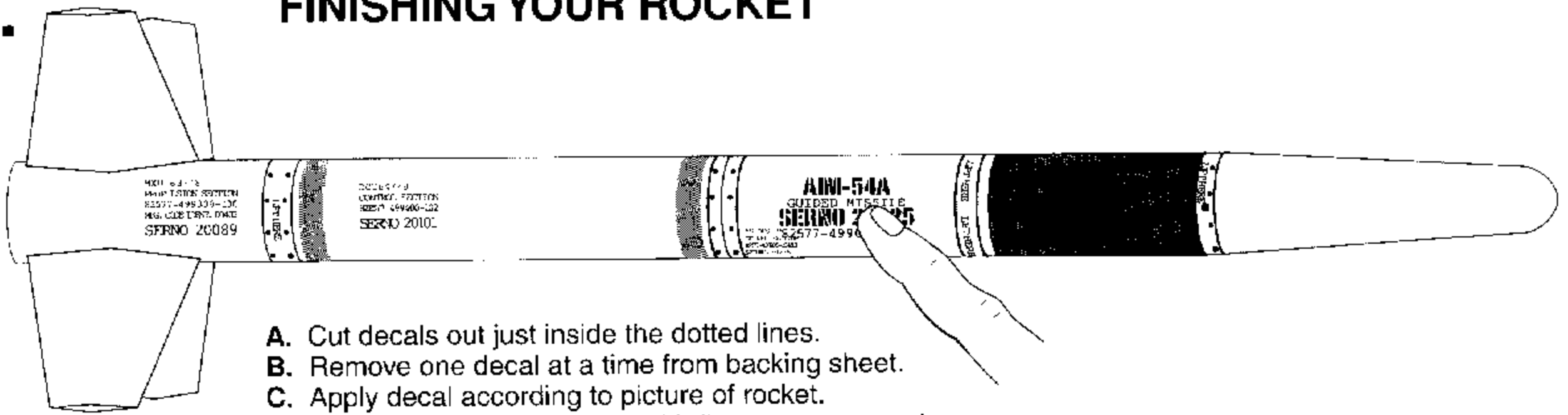
14.

- A. Apply a primer. Smooth.
- B. Apply a primer to entire surface.



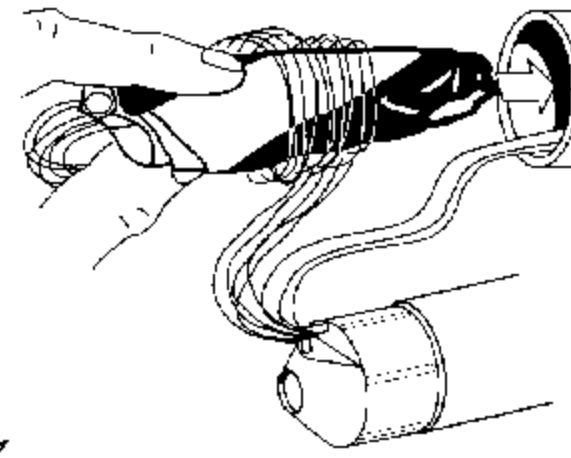
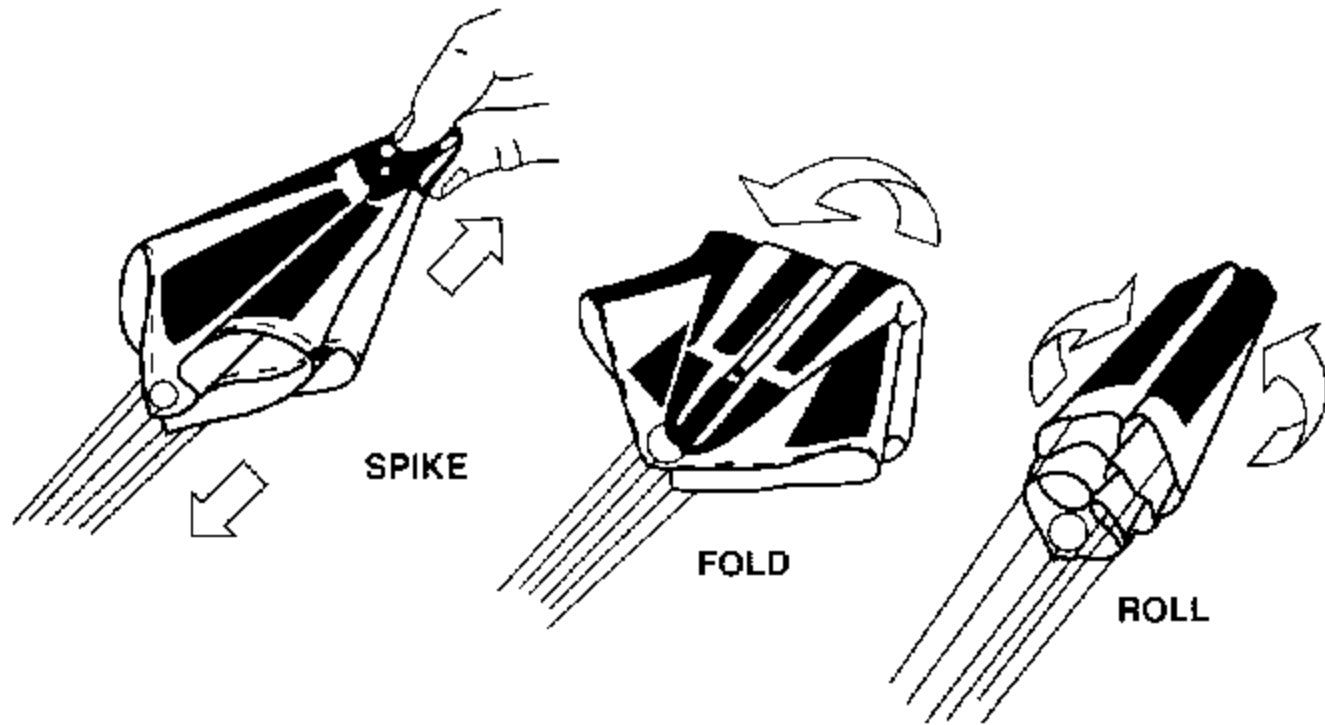


15. FINISHING YOUR ROCKET



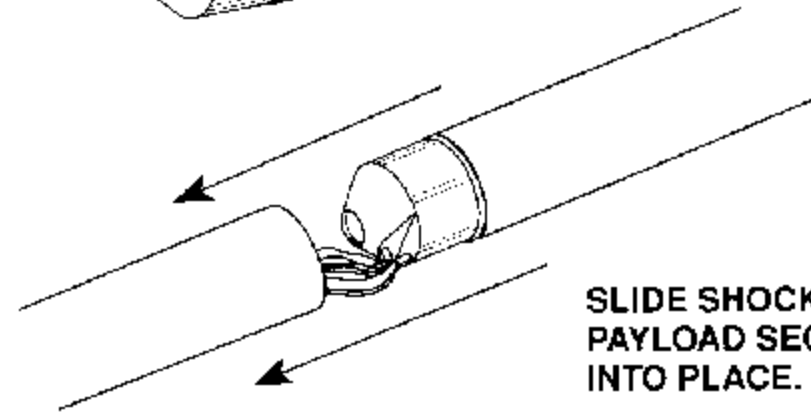
- A. Cut decals out just inside the dotted lines.
- B. Remove one decal at a time from backing sheet.
- C. Apply decal according to picture of rocket.
- D. Once decal is in place, rub with finger to remove air bubbles and to secure decal to rocket.

16. PACKING PARACHUTE



Wrap lines loosely around 'chute. Insert parachute into main body tube.

Recovery device should slide easily into body tube. If fit is too tight, unfold and repack again.



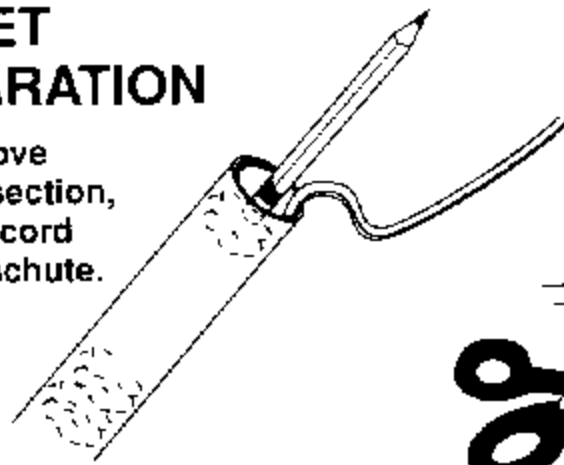
SLIDE SHOCK CORD AND PAYLOAD SECTION TUBE INTO PLACE.

17. FLYING YOUR ROCKET

ROCKET PREPARATION

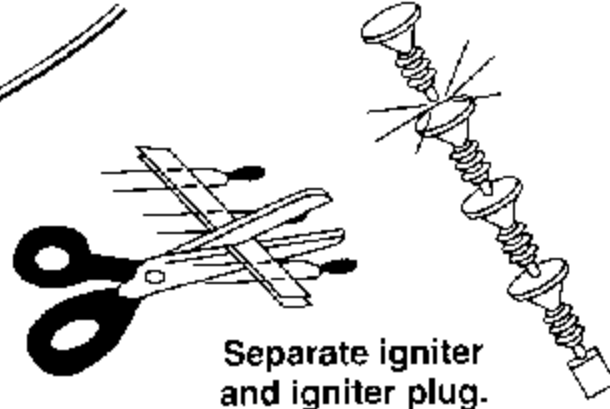
Remove payload section, shock cord and parachute.

Crumple and insert four squares of recovery wadding. Repack and insert parachute, shock cord and payload section.



ENGINE PREPARATION

Separate igniter and igniter plug.



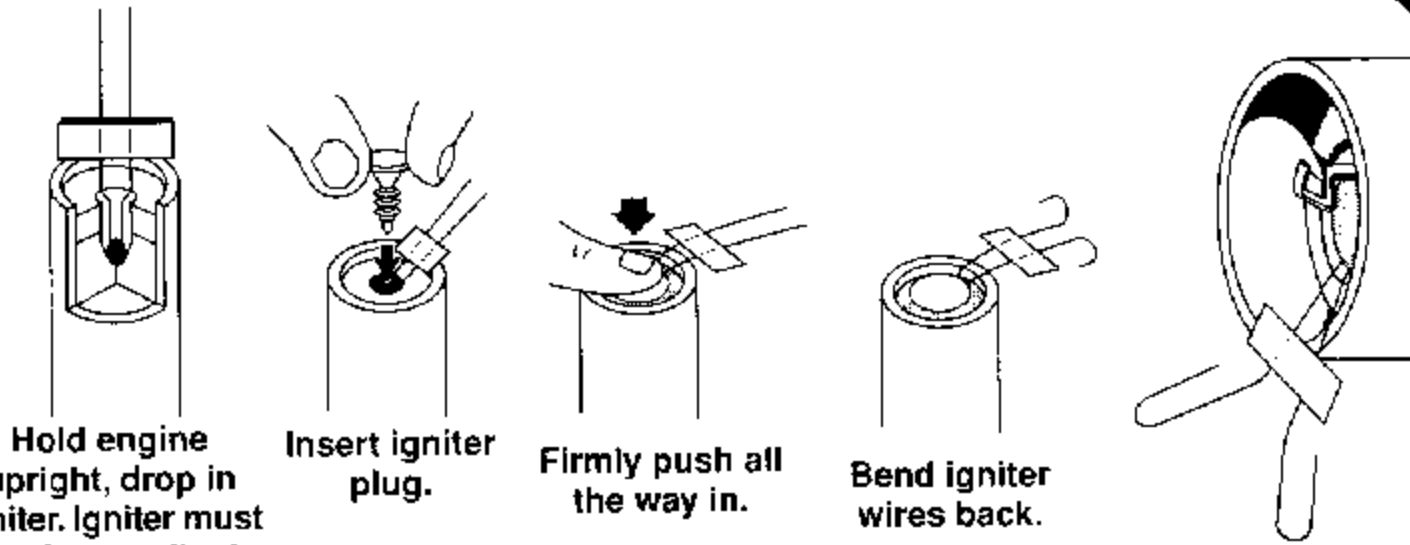
Hold engine upright, drop in igniter. Igniter must touch propellant.

Insert igniter plug.

Firmly push all the way in.

Bend igniter wires back.

Insert engine into rocket.



LAUNCH SUPPLIES

To launch your rocket, you will need the following:

- Launch Pad (Estes Porta-Pad® II) with Maxi™ Rod (5 mm - 3/16") launch rod
- Launch Controller (Estes Electron Beam®)
- Recommended Estes Engines: D12-5 and D12-7. Use a D12-5 engine for your first flight to become familiar with your rocket.
- Recovery Wadding (EST 302274)
- Igniters and Igniter Plugs (included with Estes engines) Use only Estes products to launch this rocket.

TIPS FOR FLYING YOUR ROCKET

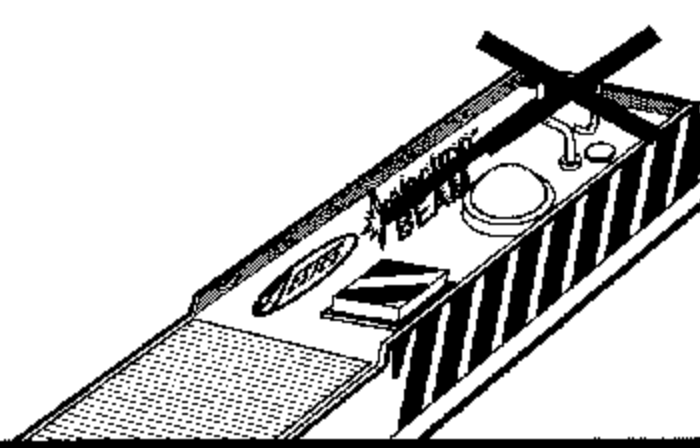
- Choose a large field away from power lines, buildings, tall trees, and low flying aircraft. Try to find a field at least 152 meters (500 feet) square. The larger the launch area, the better your chance of recovering your rocket.
- Launch area must be free of dry weeds and brown grass.
- Launch only during calm weather with little or no wind and good visibility.
- Don't leave parachute packed more than a minute or so before launch during cold weather (colder than 4° Celsius [40° Fahrenheit]). Parachute may be dusted with talcum or baby powder to avoid sticking.
- Always follow the National Association of Rocketry (NAR) MODEL ROCKETRY SAFETY CODE while participating in any model rocketry activities. The safety code is enclosed with this kit.

ENGINE	PROJECTED ALTITUDE	
	Feet	Meters
D12-5/D12-7	555	169

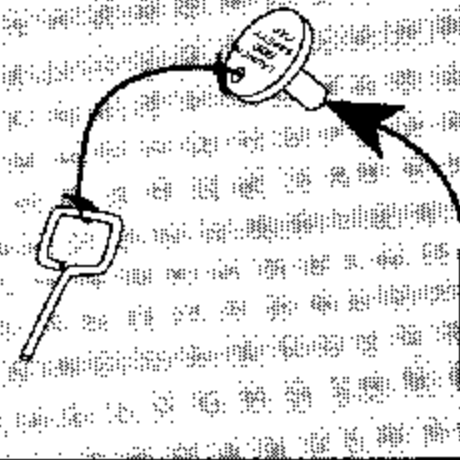
Igniter Plugs - U.S. Patent Nr. 5,509,354

COUNTDOWN AND LAUNCH

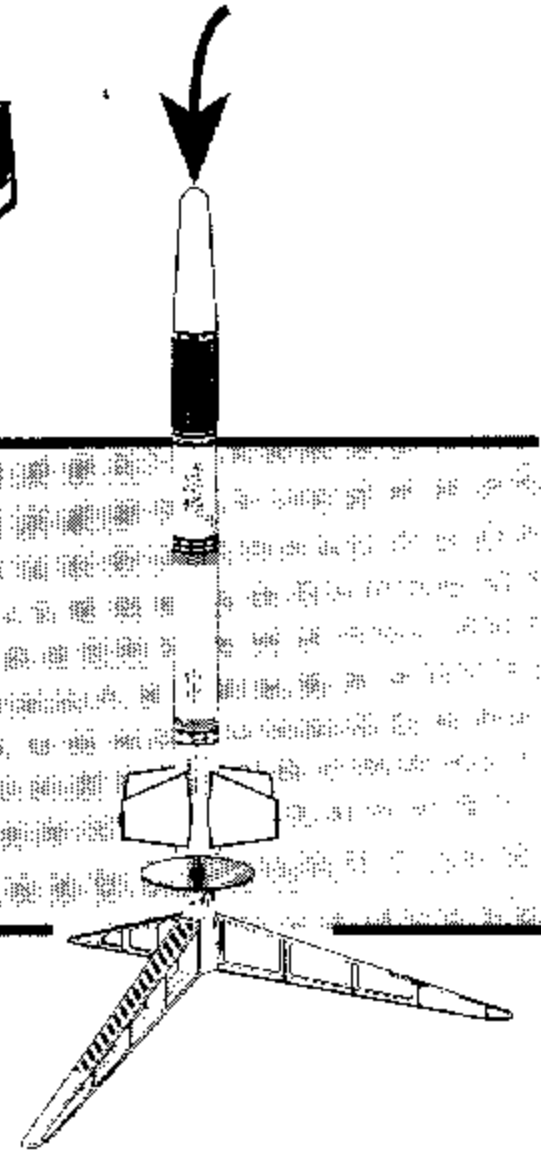
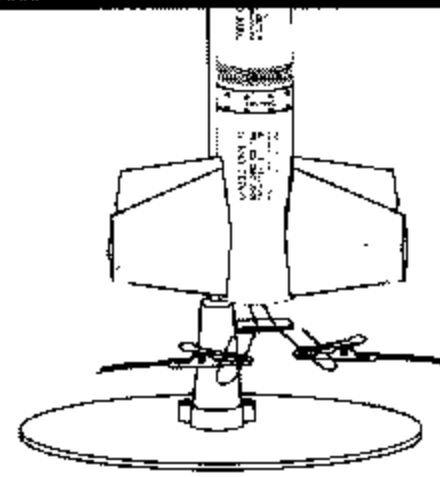
10... Safety key must not be in launch controller. The safety cap with safety key attached should already be on the launch rod.



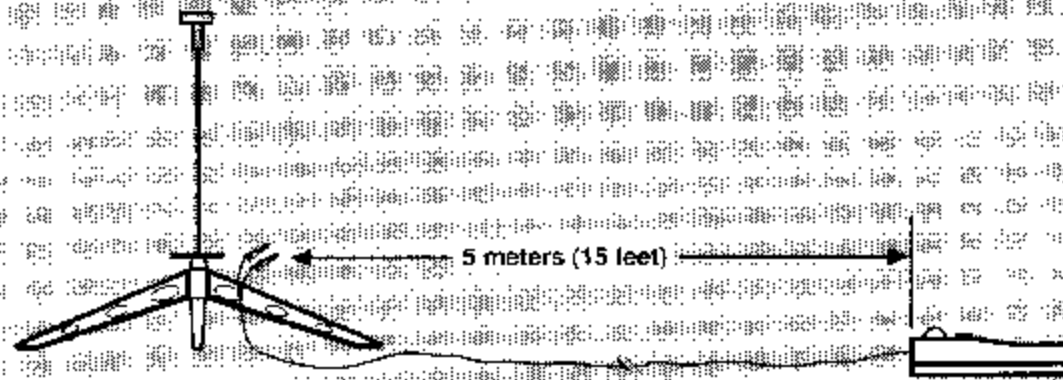
9... Remove safety cap from launch rod, slide launch lug over rod. Make sure rocket slides freely and micro-clips are clean for good electrical contact.



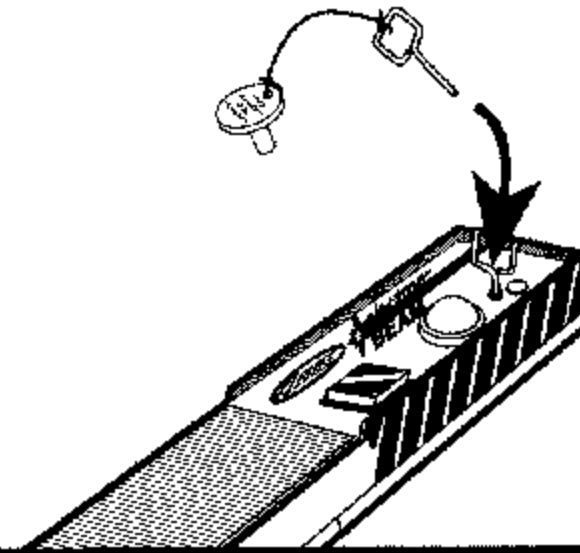
8... Attach micro-clips to the igniter wires. Arrange the clips so they do not touch each other or the metal blast deflector. Attach clips as close to protective tape on igniter as possible.



7... Move everyone back from your rocket as far as launch wire will permit (at least 5 meters - 15 feet).

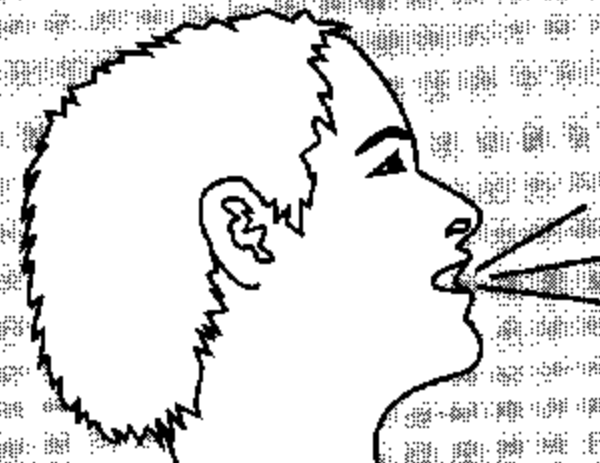


6... Insert safety key to arm the launch controller.



5... Start audible countdown.

4...3...2...1.....



LAUNCH! Push and hold button until engine ignites. For safety, immediately remove safety key from launch controller and replace safety cap on launch rod.

MISFIRES

When an ignition failure occurs, remove the safety key from the launch control system and wait one minute before approaching the rocket. Remove the expended igniter from the engine and install a new one. Be certain the coated tip is in direct contact with the engine propellant. Broken or chipped coating will not affect the performance of the igniter. Reinstall the igniter plug as illustrated previously. Repeat the countdown and launch procedure.