

June 2 Navy Father's Day 2011 with 1st Lt. Matt Stetler No. 29-98 Finished.



ESTES INDUSTRIES (11-97) 84479
1295 H Street
Penrose, CO 81240 EST 2149

EXPLORER
SERIES

SKILL LEVEL 2
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SM-3 SEAHAWK™

FLYING MODEL ROCKET KIT INSTRUCTIONS

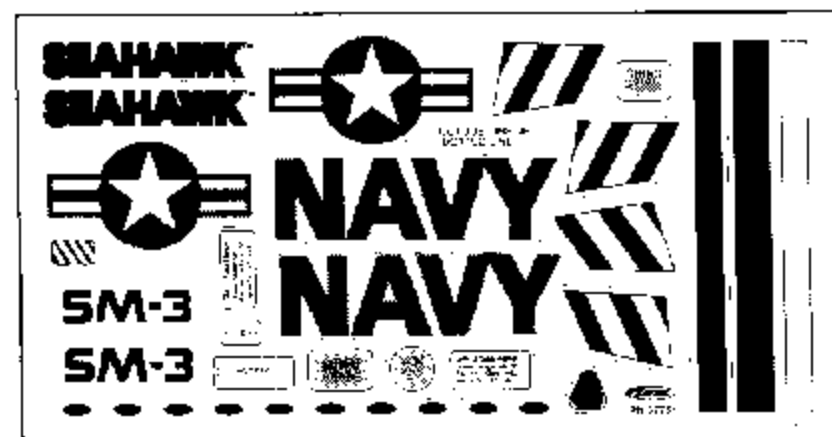
MATERIALS REQUIRED:

PENCIL, RULER, HOBBY KNIFE, SCISSORS, WHITE OR YELLOW GLUE, TUBE-TYPE PLASTIC CEMENT, MASKING TAPE, 320 GRIT SANDPAPER, MAXI™ ROD, AUTOMOTIVE SPRAY PRIMER (GRAY), GLOSS WHITE SPRAY PAINT, GLOSS BLUE SPRAY PAINT, PAPER TOWEL

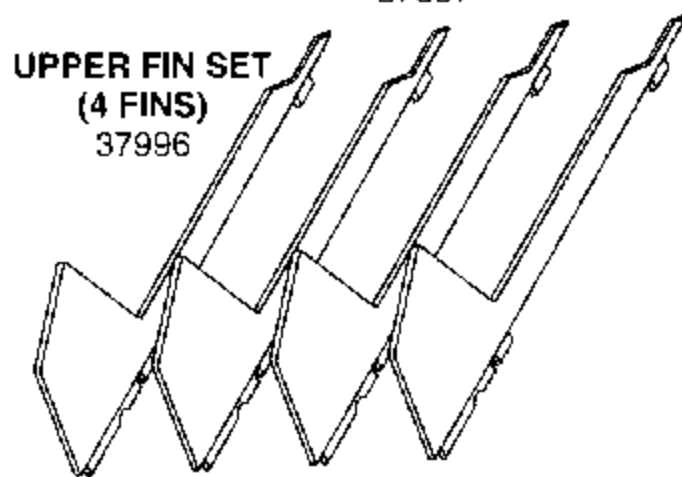
ALL GLUED AREAS ARE SHADED IN GRAY

BE SURE TO READ ALL INSTRUCTIONS, TEST FIT ALL PARTS, AND SAND IF NECESSARY BEFORE GLUING.

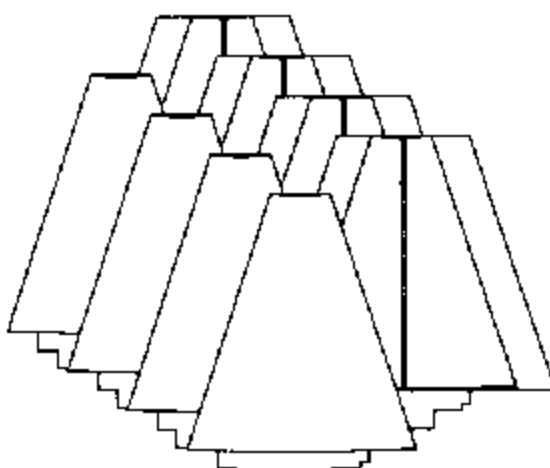
PARTS LAYOUT



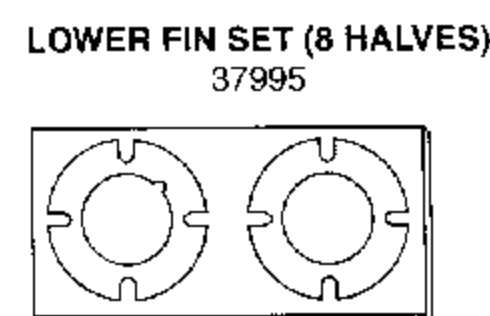
DECAL SHEET
37337



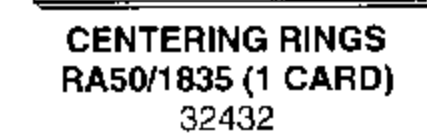
UPPER FIN SET
(4 FINS)
37996



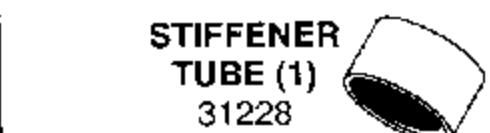
SLOTTED UPPER
TUBE BT 55 (1)
31188



LOWER FIN SET (8 HALVES)
37995



CENTERING RINGS
RA50/1835 (1 CARD)
32432



STIFFENER
TUBE (1)
31228



LAUNCH LUGS
12CF (2)
38166



SLOTTED LOWER
TUBE 1835 (1)
31181

NOSE CONE
55AC (1)
71070

UPPER TUBE
(4.3") BT55 (1)
30391

RED TUBE
COUPLER 55C (1)
30175-5

GREEN ADAPTER
RINGS 5055 (3)
30166-2

ADAPTER TUBE
50J (1)
30362

PLASTIC TUBE
ADAPTER 2083 (1)
72705

BROWN ENGINE
MOUNT TUBE
BT 50H (1)
30360

ENGINE HOOK
EH-2A (1)
35021

GREEN ENGINE
BLOCK RING (1)
30164-2

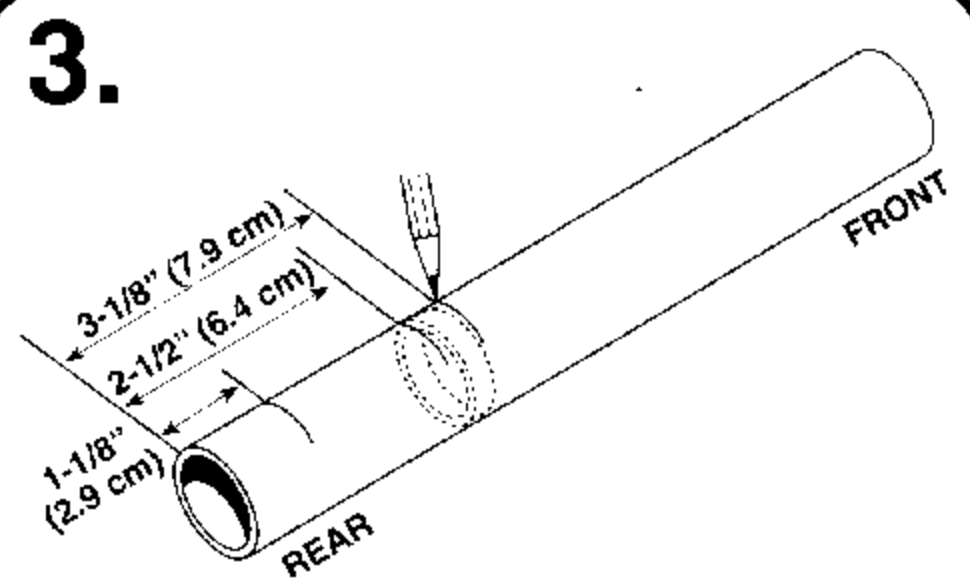
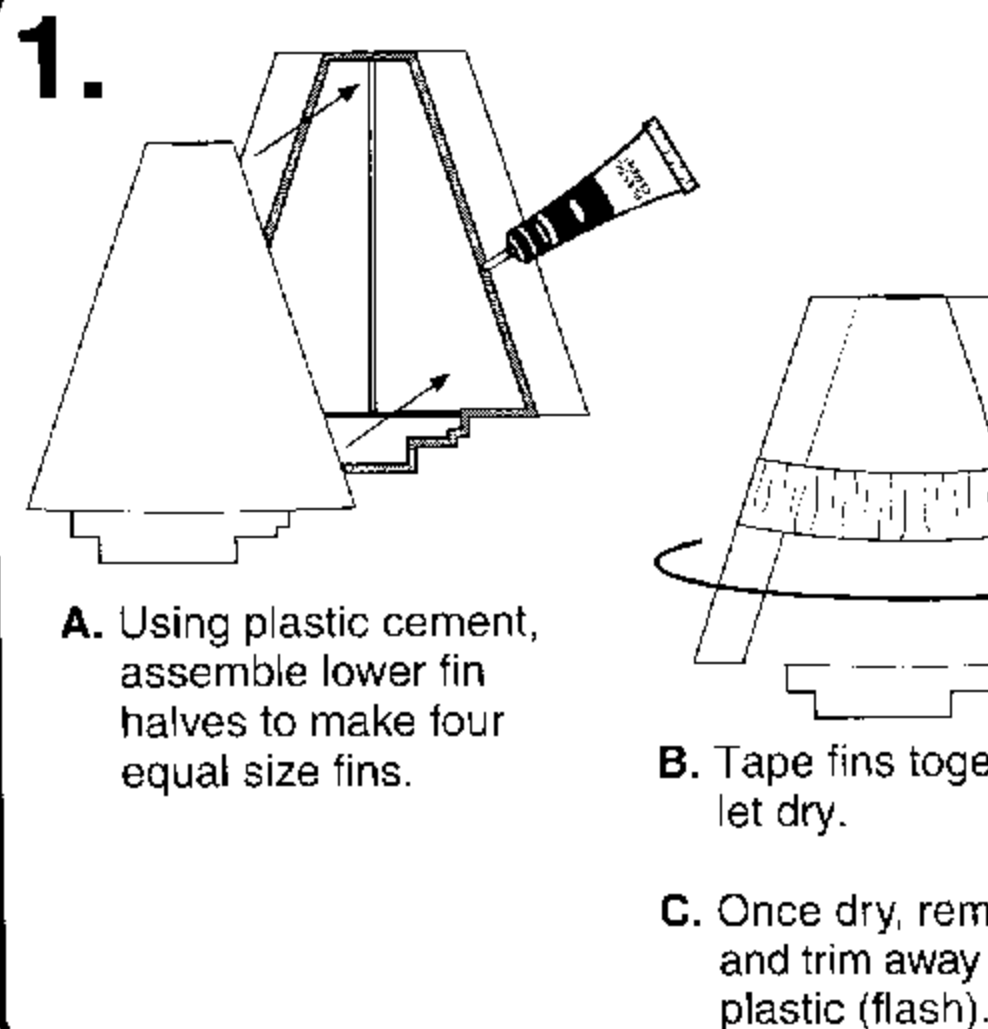
YELLOW ENGINE
SPACER TUBE (1)
35003

SHOCK CORDS 1/4 X 24 (2)
38383

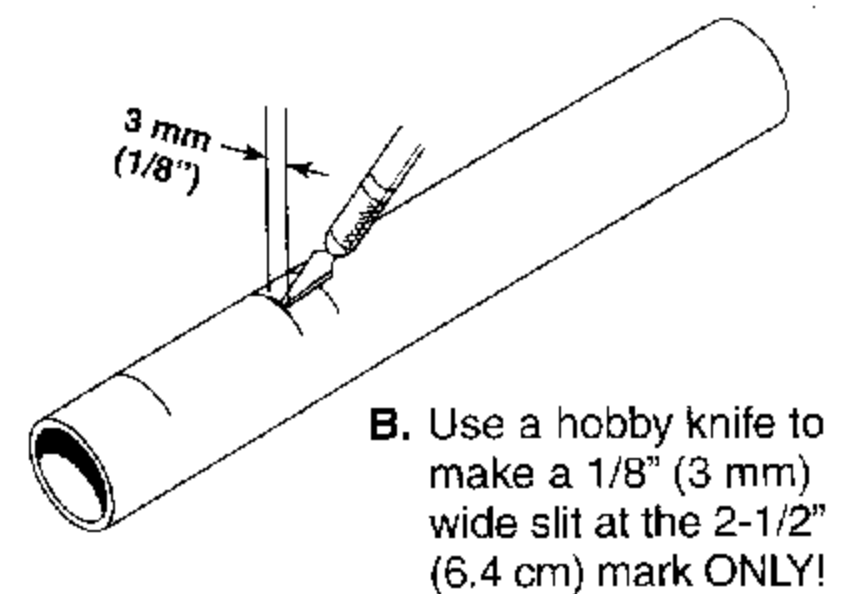


ASSEMBLED
PARACHUTES - 18 (2)
35802

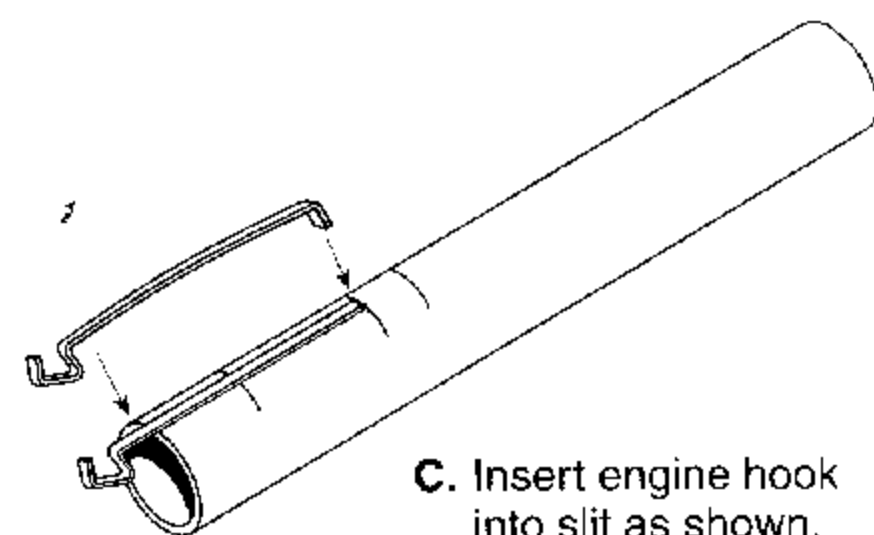
LOWER SECTION ASSEMBLY



A. Measure and mark the engine mount tube at 1-1/8" (2.9 cm), 2-1/2" (6.4 cm) and at 3-1/8" (7.9 cm) from the REAR (be sure to note position of engine block ring).



B. Use a hobby knife to make a 1/8" (3 mm) wide slit at the 2-1/2" (6.4 cm) mark ONLY!



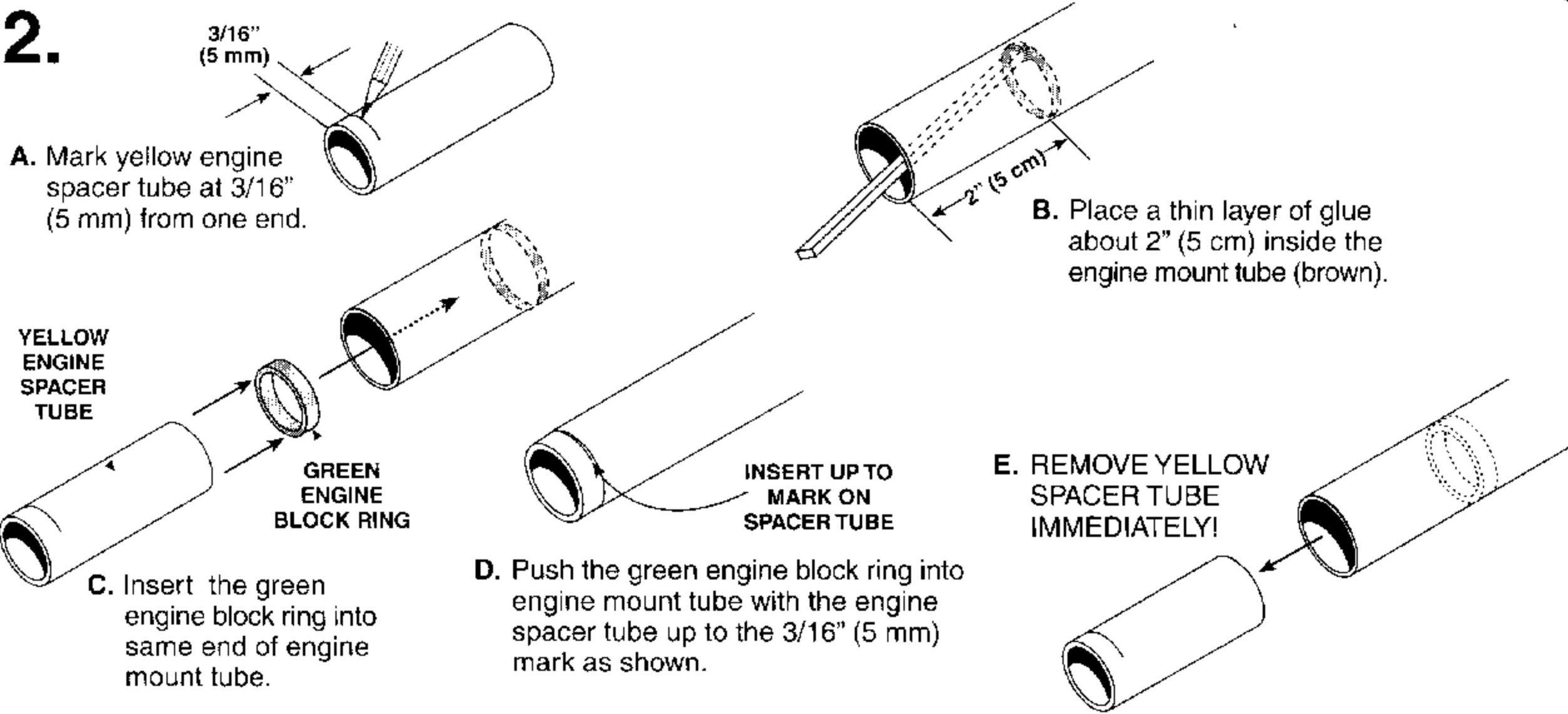
C. Insert engine hook into slit as shown.



together and

remove tape
away any excess
(sh).

2.



A. Mark yellow engine spacer tube at 3/16" (5 mm) from one end.

B. Place a thin layer of glue about 2" (5 cm) inside the engine mount tube (brown).

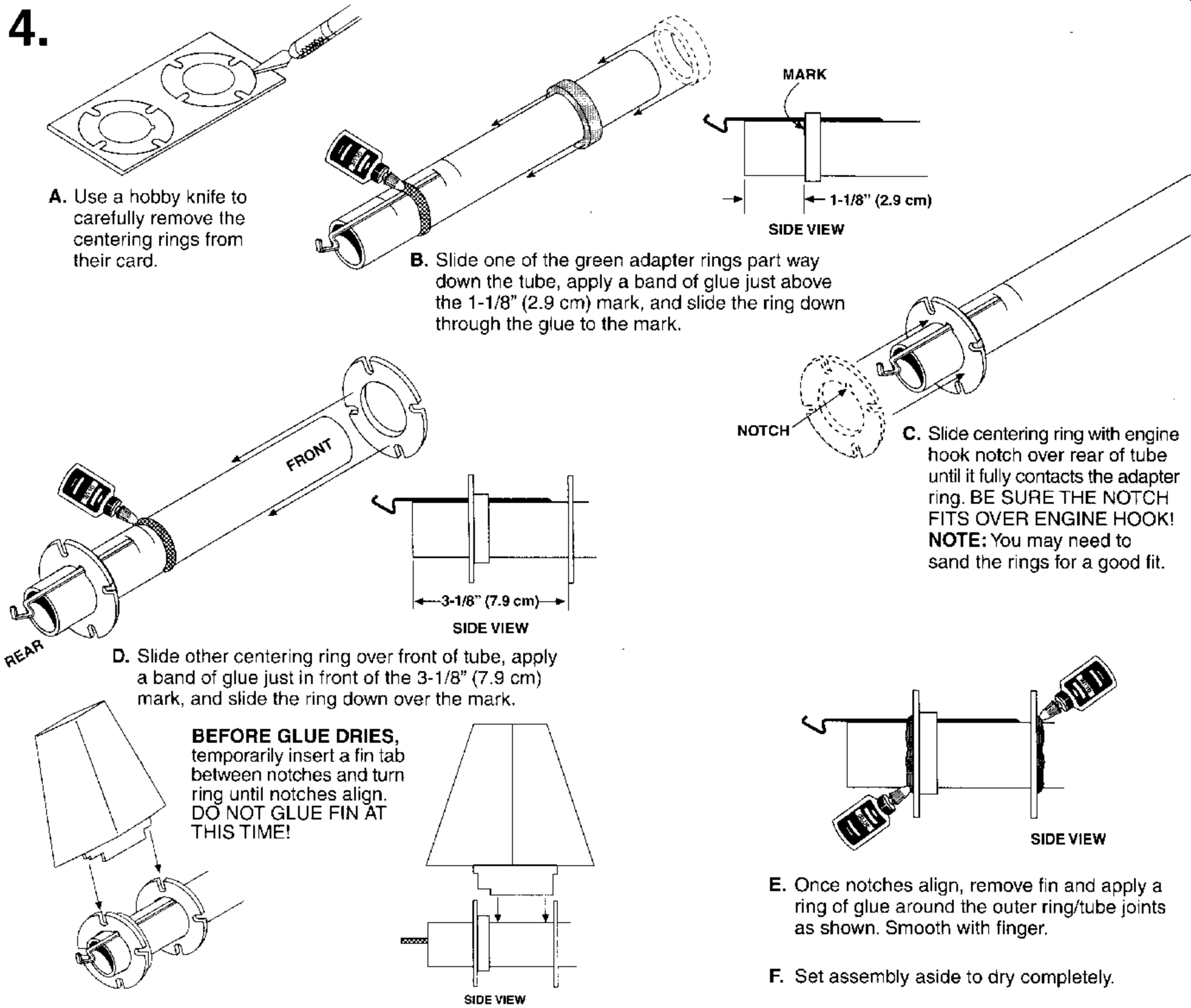
YELLOW ENGINE SPACER TUBE
GREEN ENGINE BLOCK RING

C. Insert the green engine block ring into same end of engine mount tube.

D. Push the green engine block ring into engine mount tube with the engine spacer tube up to the 3/16" (5 mm) mark as shown.

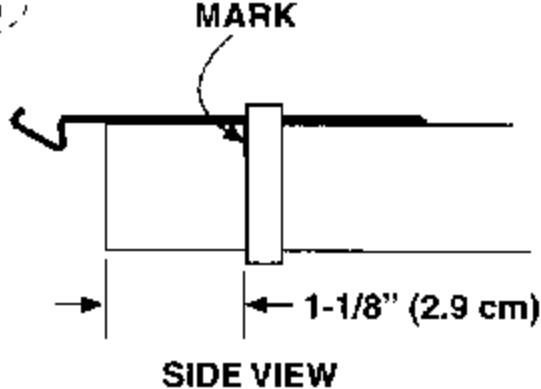
E. REMOVE YELLOW SPACER TUBE IMMEDIATELY!

4.

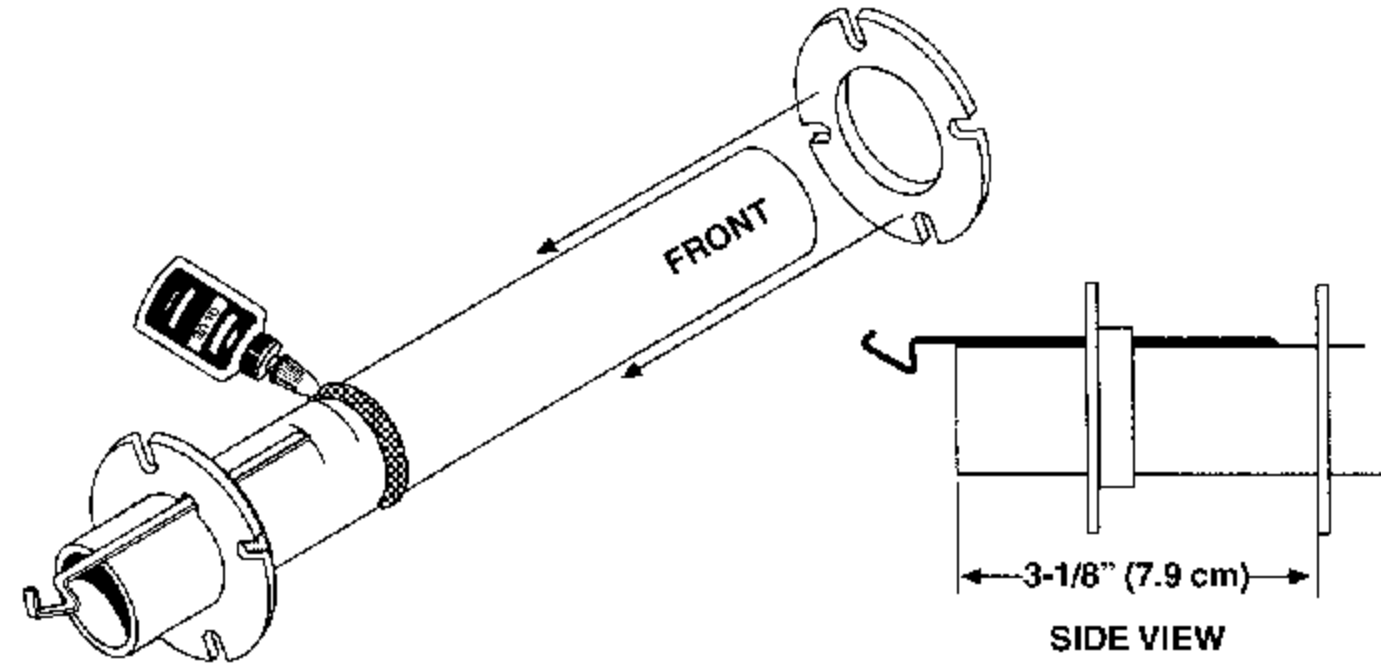


A. Use a hobby knife to carefully remove the centering rings from their card.

B. Slide one of the green adapter rings part way down the tube, apply a band of glue just above the 1-1/8" (2.9 cm) mark, and slide the ring down through the glue to the mark.

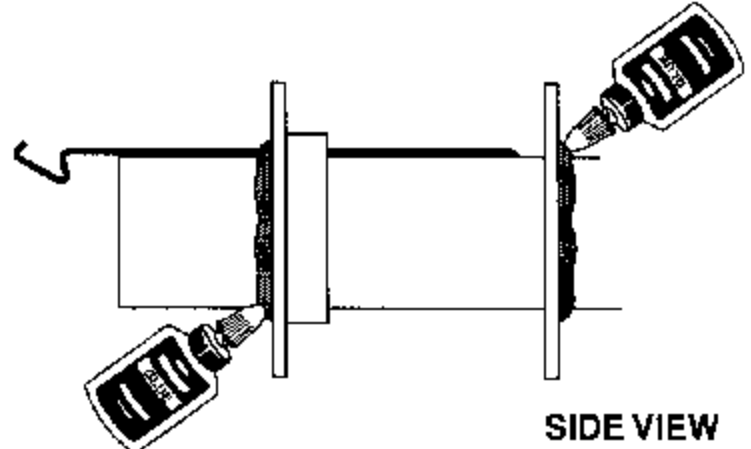


C. Slide centering ring with engine hook notch over rear of tube until it fully contacts the adapter ring. BE SURE THE NOTCH FITS OVER ENGINE HOOK!
NOTE: You may need to sand the rings for a good fit.



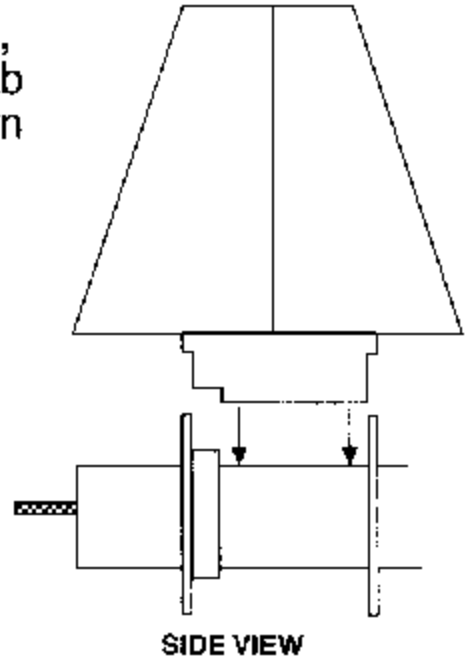
D. Slide other centering ring over front of tube, apply a band of glue just in front of the 3-1/8" (7.9 cm) mark, and slide the ring down over the mark.

BEFORE GLUE DRIES, temporarily insert a fin tab between notches and turn ring until notches align. DO NOT GLUE FIN AT THIS TIME!

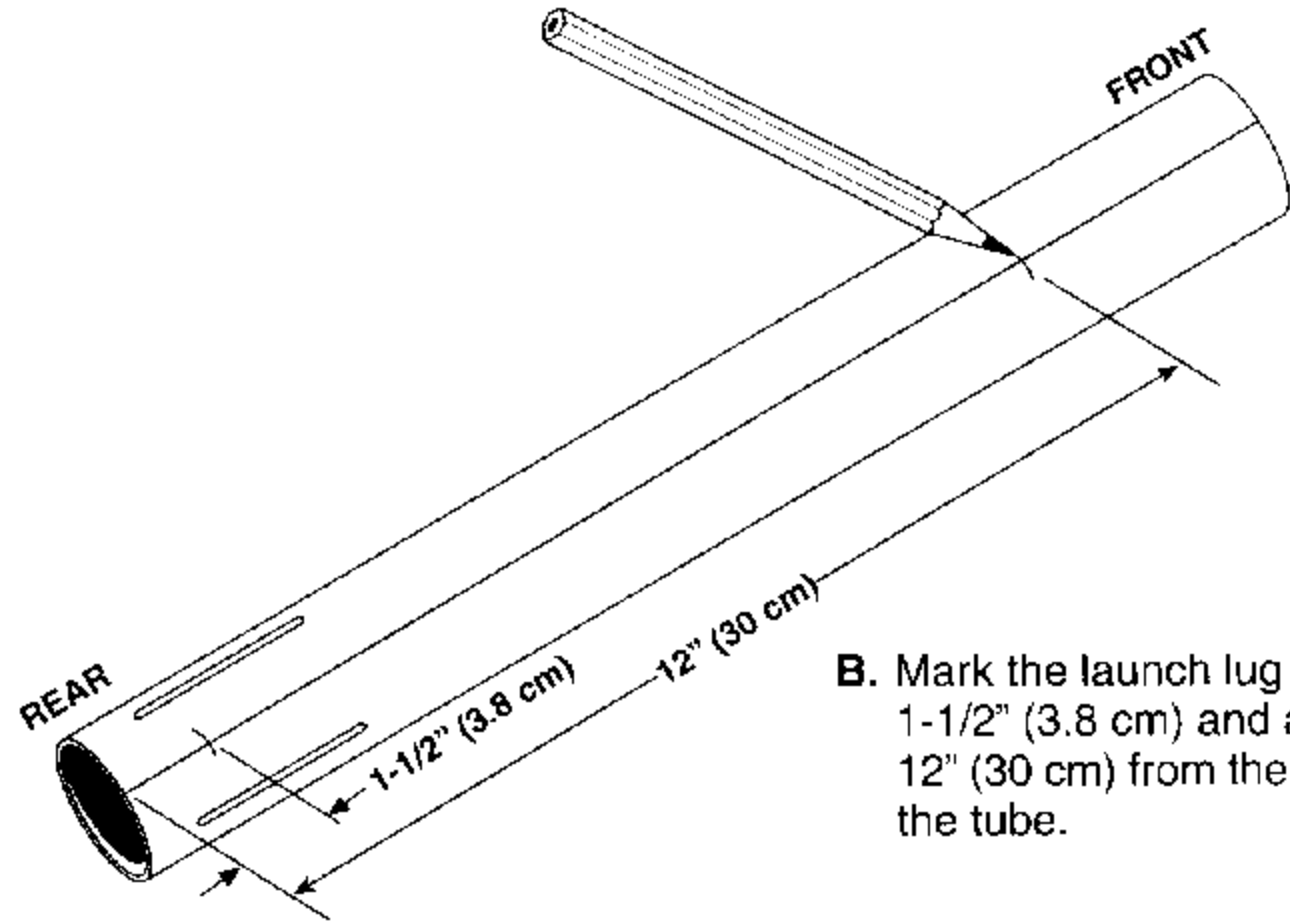
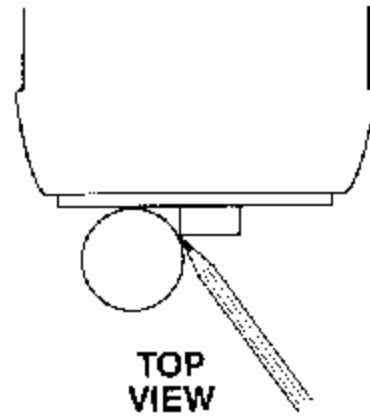
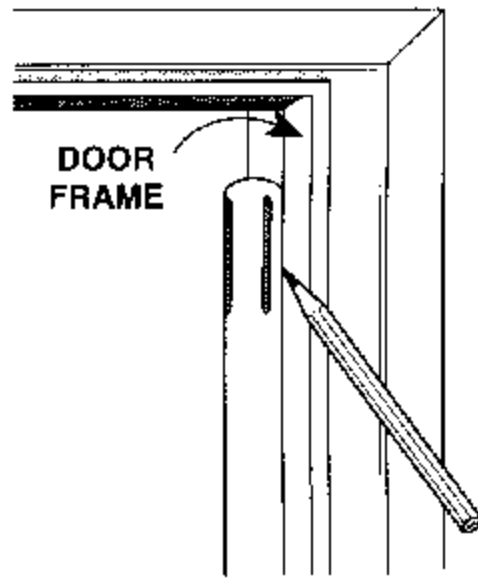


E. Once notches align, remove fin and apply a ring of glue around the outer ring/tube joints as shown. Smooth with finger.

F. Set assembly aside to dry completely.



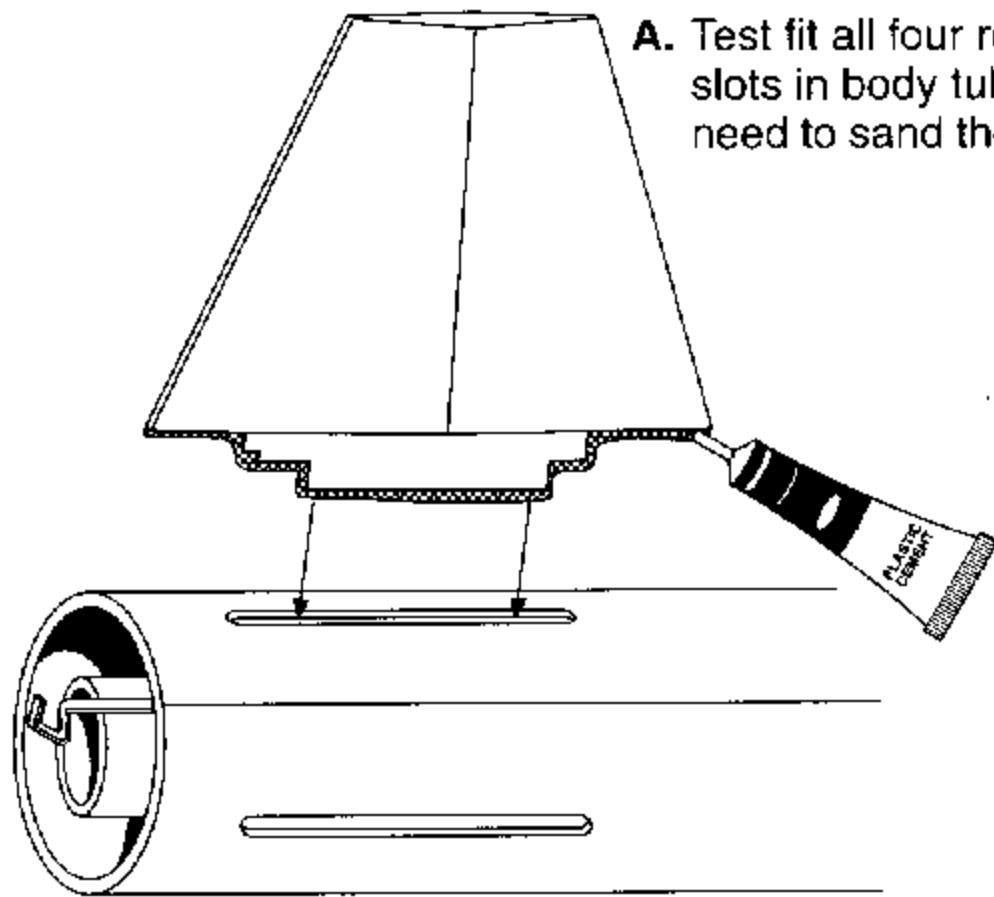
5.



A. Use a door frame to draw a straight line down the length of the lower body tube centered between two fin slots. (This is the launch lug line.)

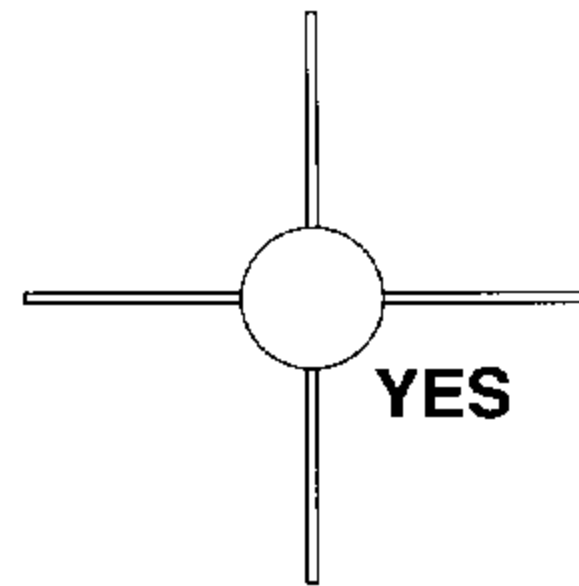
B. Mark the launch lug line at 1-1/2" (3.8 cm) and at 12" (30 cm) from the rear of the tube.

7.



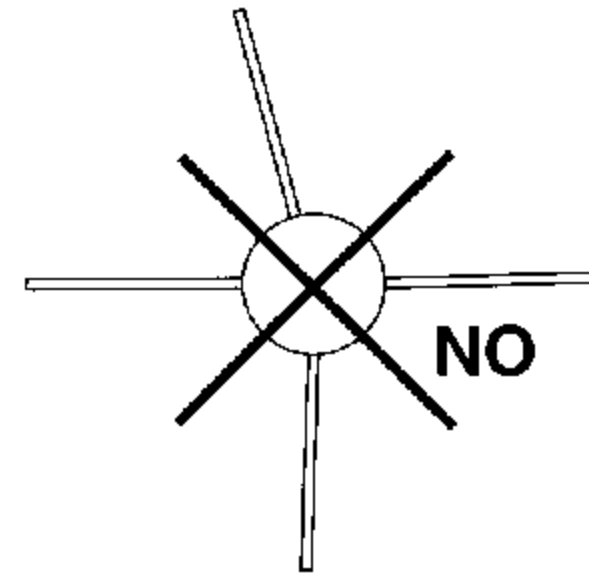
A. Test fit all four rear fins into slots in body tube. (You may need to sand the slots for fit.)

B. Apply plastic cement to the fin tabs and insert into slots in body tube.

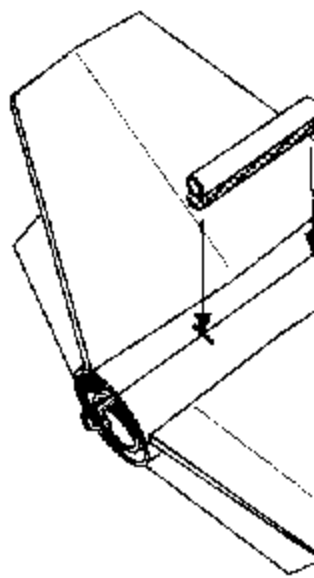


NOTE: Be sure the fins are correctly aligned.

END VIEW

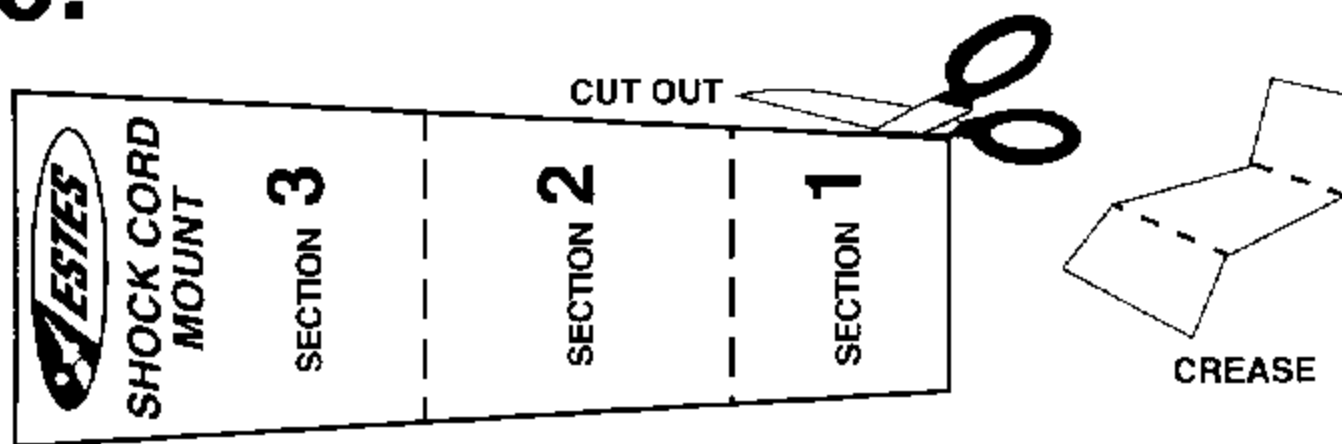


8.

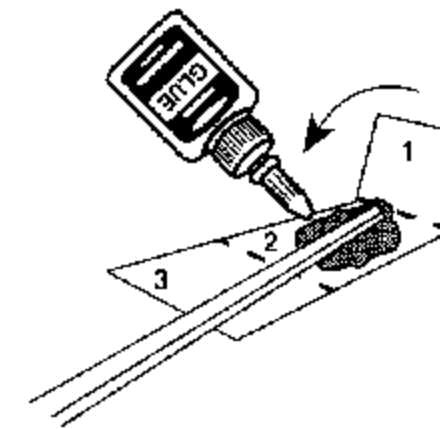


A. Apply glue to end of the marks on the tube.

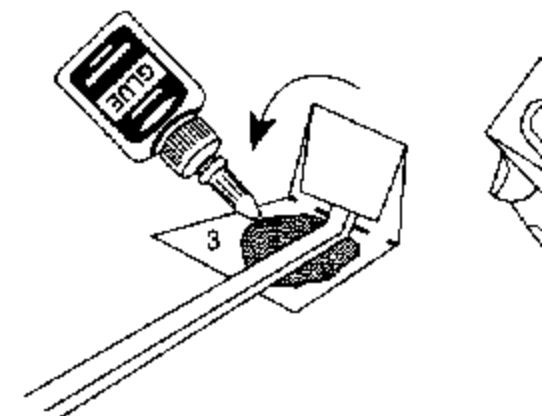
9.



A. Cut shock cord mount out of instruction sheet above. Crease lines by folding.

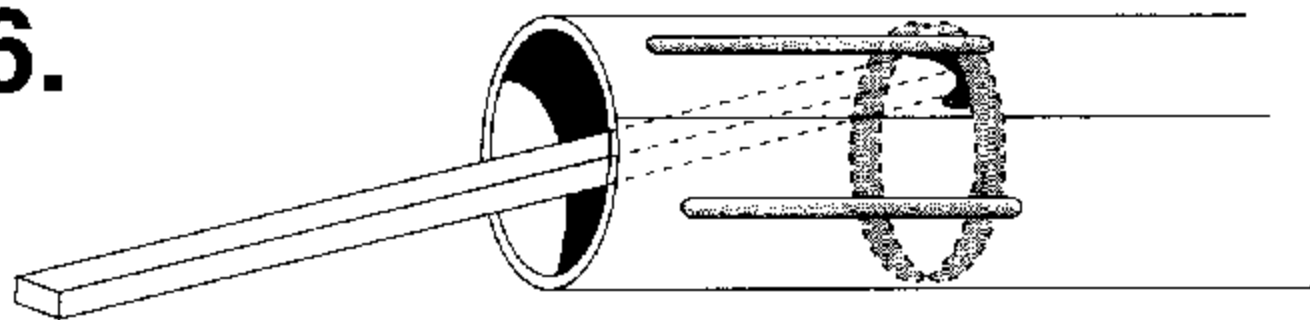


B. Spread glue on section 2 and lay the end of one of the shock cords into glue at slight angle as shown. Fold forward.

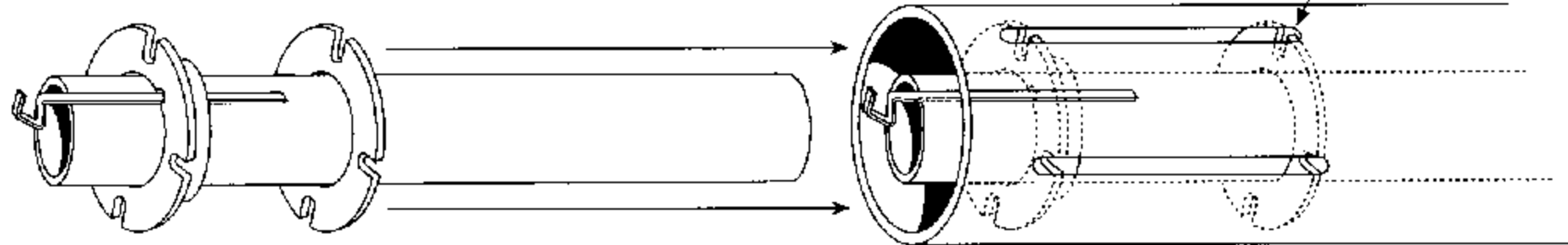


C. Apply glue to section 3. Fold again. Clamp firmly until dry.

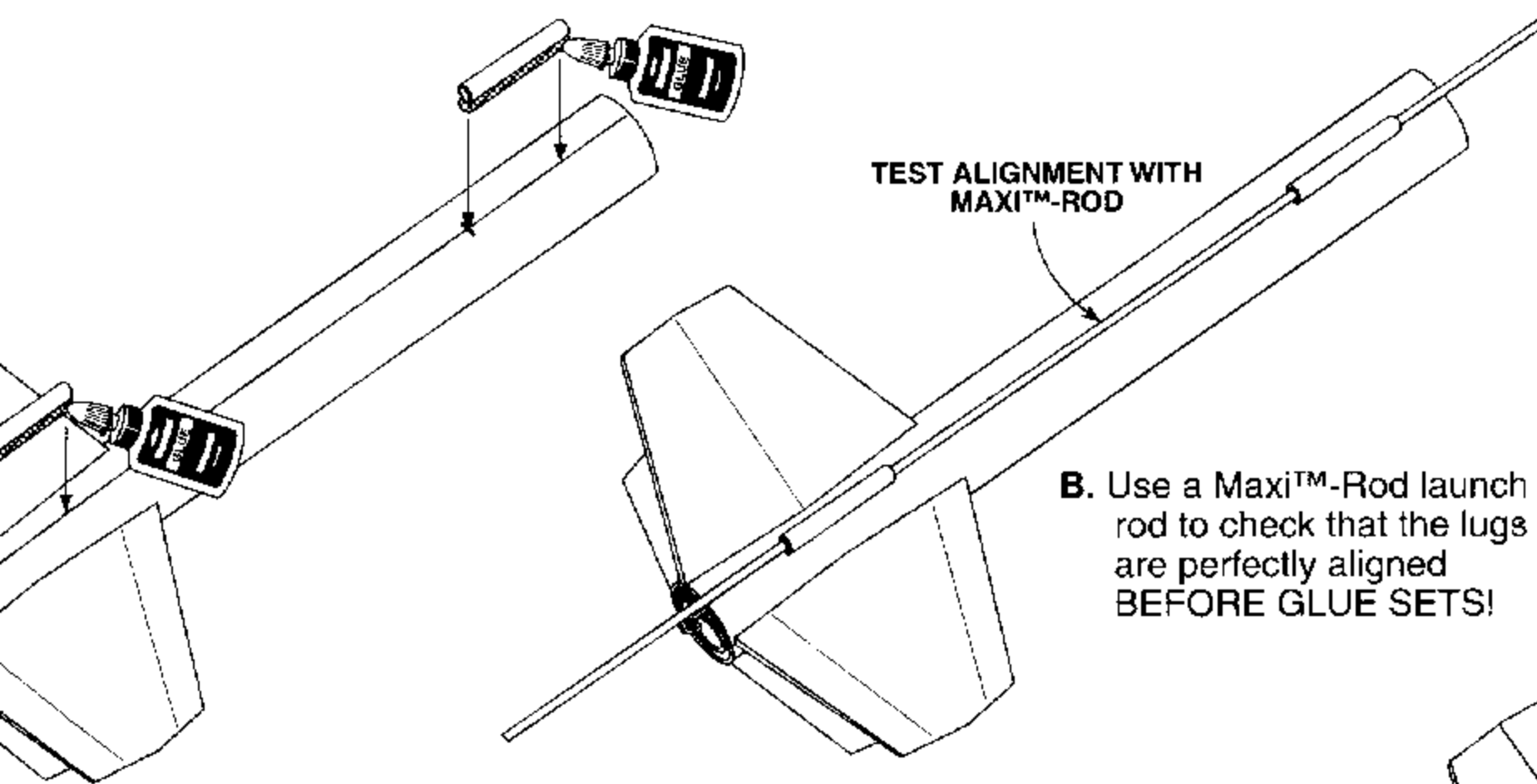
6.



A. Apply a ring of glue inside the slotted end of the body tube at the top of the slots as shown.



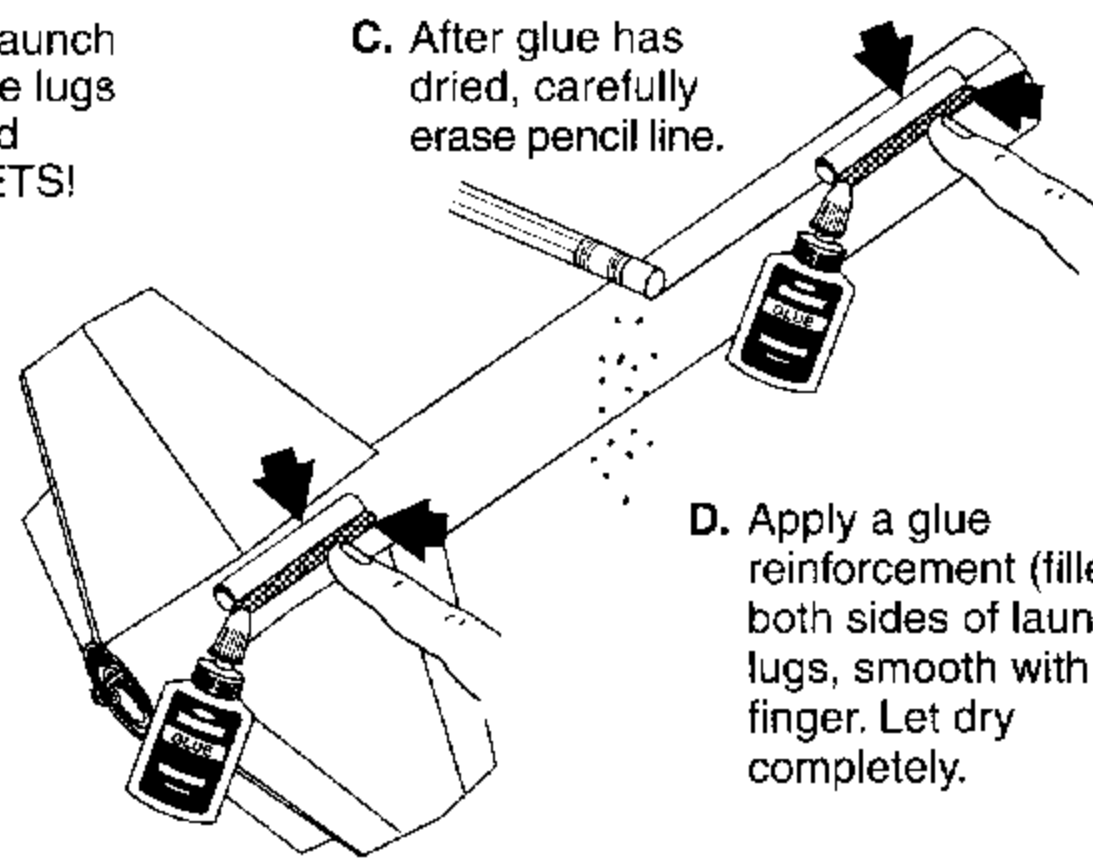
B. Insert the engine mount into the slotted end of body tube until the rear edges of the tubes are even, then rotate as needed until the fin notches line up with slots. (You should be able to see the rings in the slots.)



TEST ALIGNMENT WITH
MAXI™-ROD

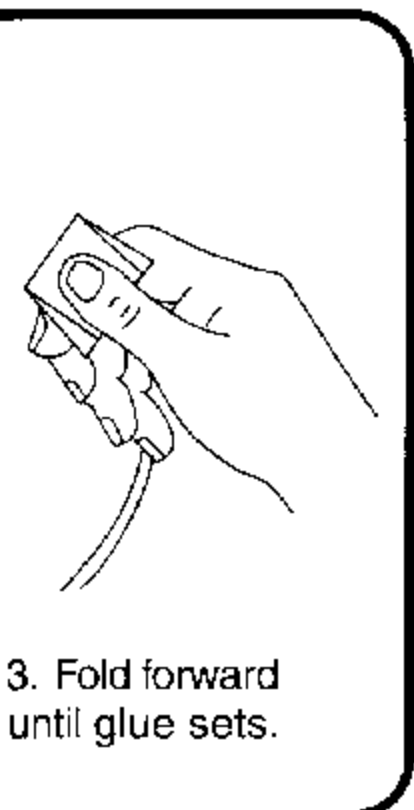
B. Use a Maxi™-Rod launch rod to check that the lugs are perfectly aligned BEFORE GLUE SETS!

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



D. Apply a glue reinforcement (fillet) to both sides of launch lugs, smooth with finger. Let dry completely.

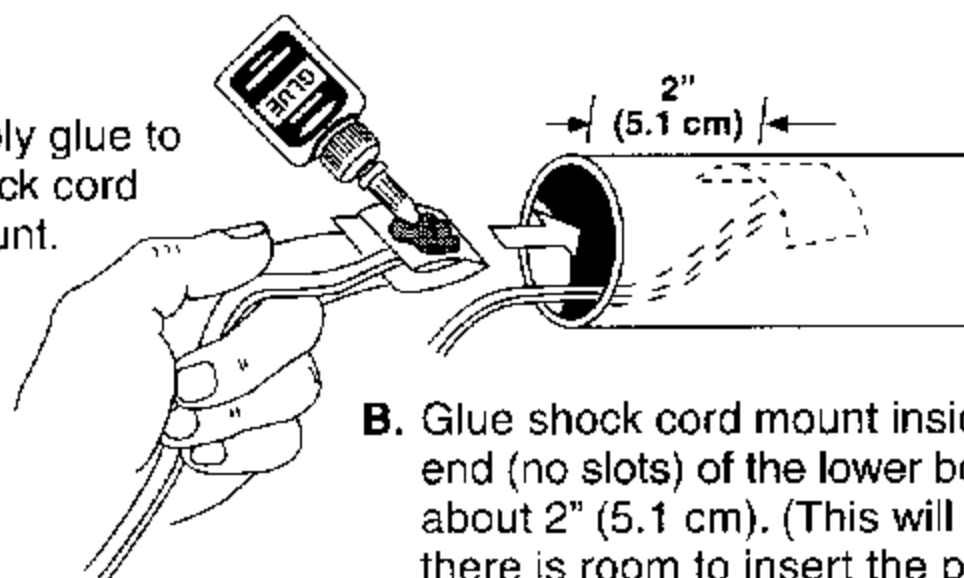
Apply glue to each of the launch lugs and apply in front of the launch lug line as shown.



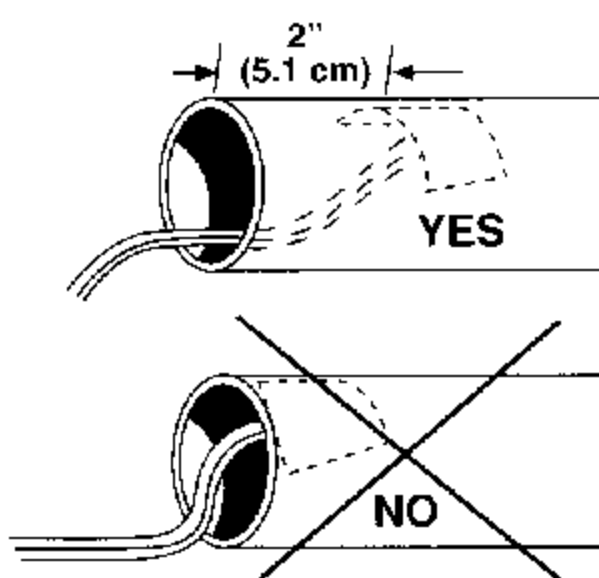
3. Fold forward until glue sets.

10.

A. Apply glue to shock cord mount.

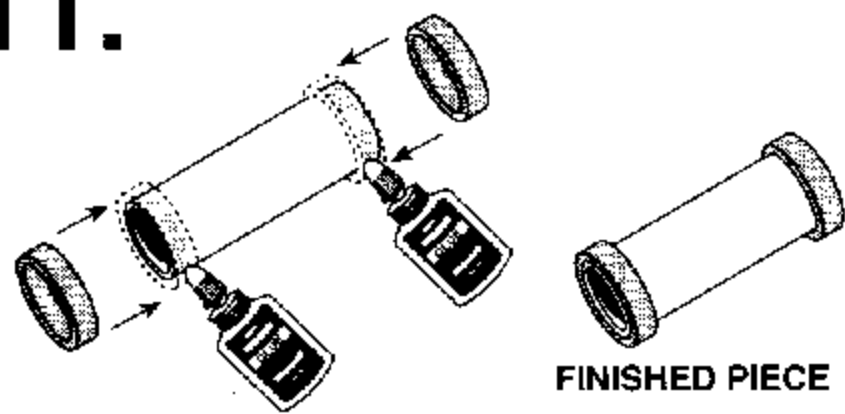


B. Glue shock cord mount inside front end (no slots) of the lower body tube about 2" (5.1 cm). (This will ensure there is room to insert the plastic adapter.) Let dry.



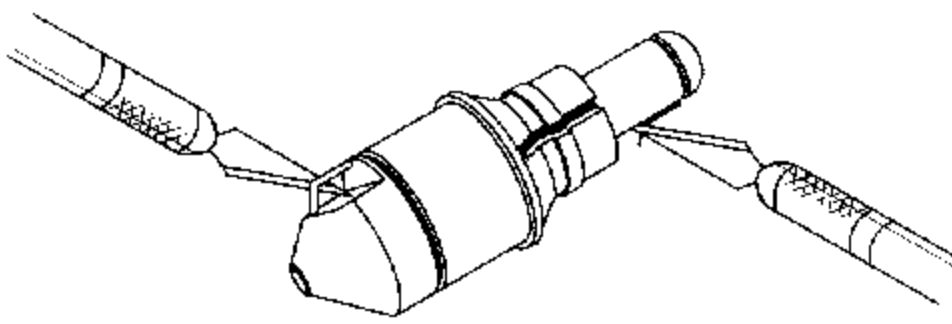
C. Tie a triple knot at the free end of the shock cord.

11.

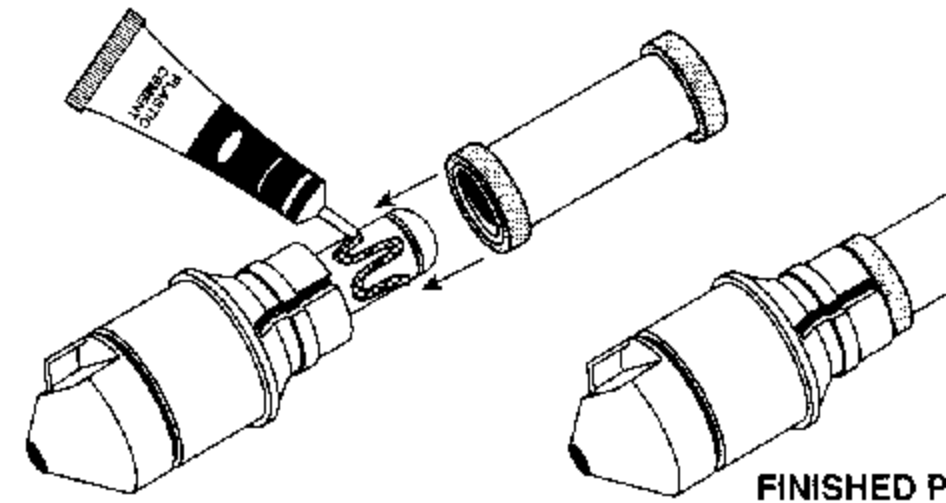


FINISHED PIECE

A. Apply glue to one end of the adapter tube and slide a green adapter ring onto the tube until the edges are even. Apply the remaining adapter ring to the other end of the tube in the same manner.



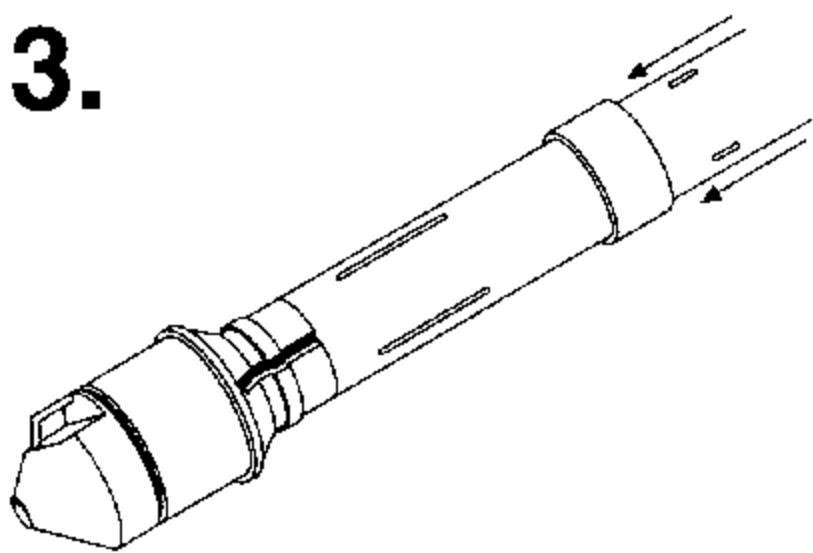
B. Use a hobby knife to carefully clean out the eyelet at the rear of the plastic tube adapter and to remove any flash (excess plastic). BE CAREFUL NOT TO CUT OFF EYELET!



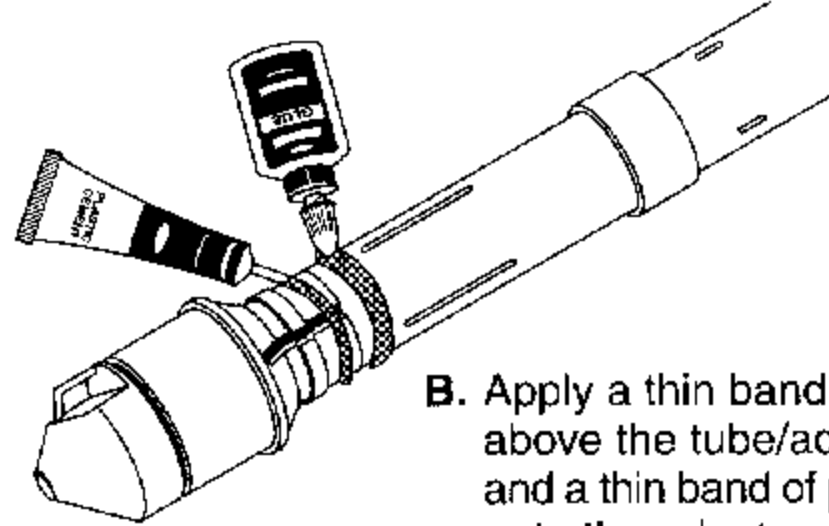
FINISHED P

C. Apply plastic cement to the **FRONT** of the plastic adapter as shown, and slide the adapter tube assembly all the way down until it rests against the adapter shoulder. Let assembly dry thoroughly.

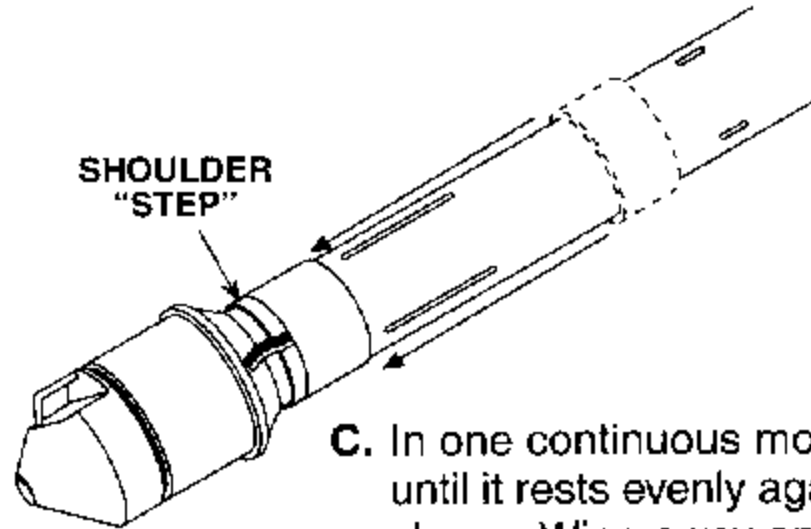
13.



A. Slide the stiffener tube part way down the tube assembly.

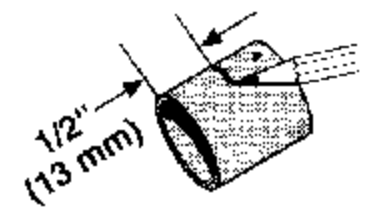


B. Apply a thin band of glue just above the tube/adapter joint, and a thin band of plastic cement onto the adapter shoulder just below the joint.

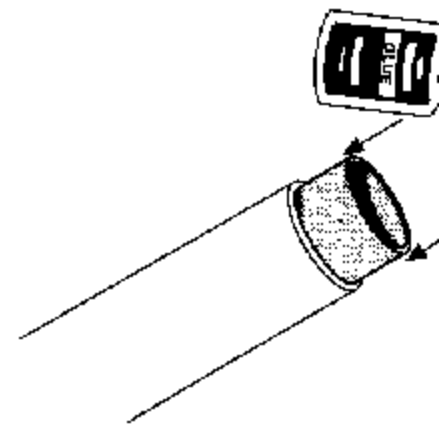


C. In one continuous motion slide the stiffener tube down until it rests evenly against the "step" on the shoulder as shown. Wipe away any excess adhesive and let dry.

14.

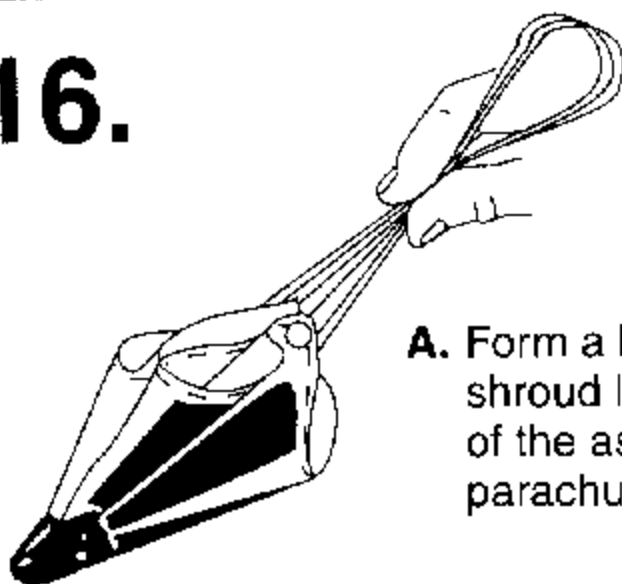


A. Mark the red tube coupler at 1/2" (13 mm).

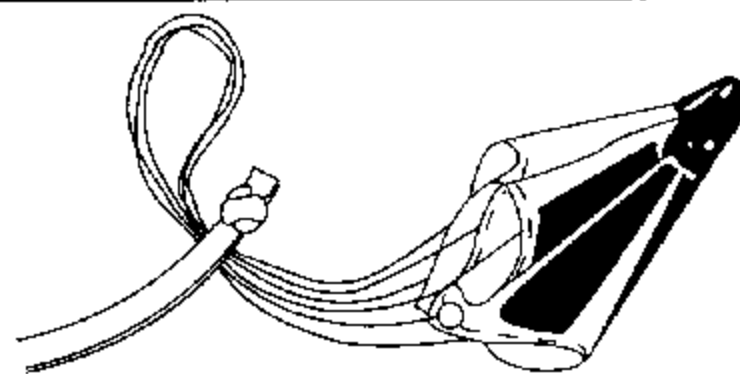


ROCKET PARACHUTE ATTACHMENT

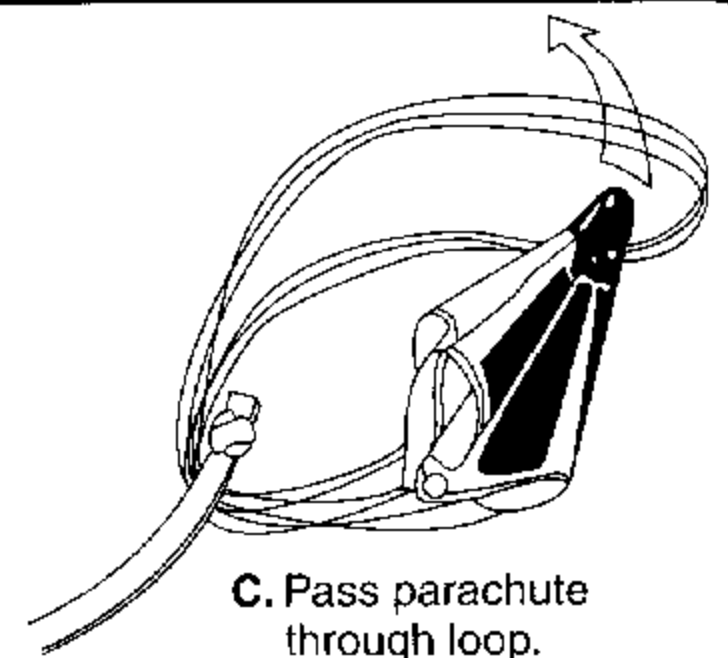
16.



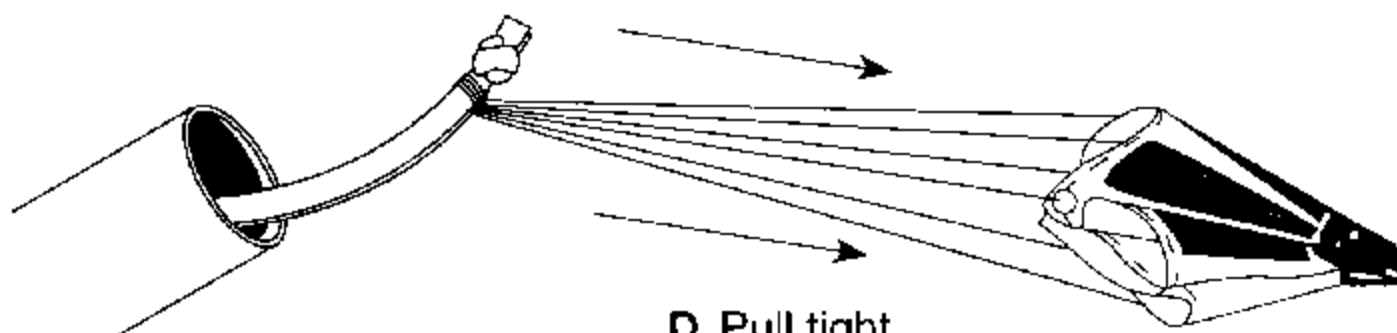
A. Form a loop with the shroud lines on one of the assembled parachutes.



B. Lay the end of one of the knotted shock cords over the loop as shown.



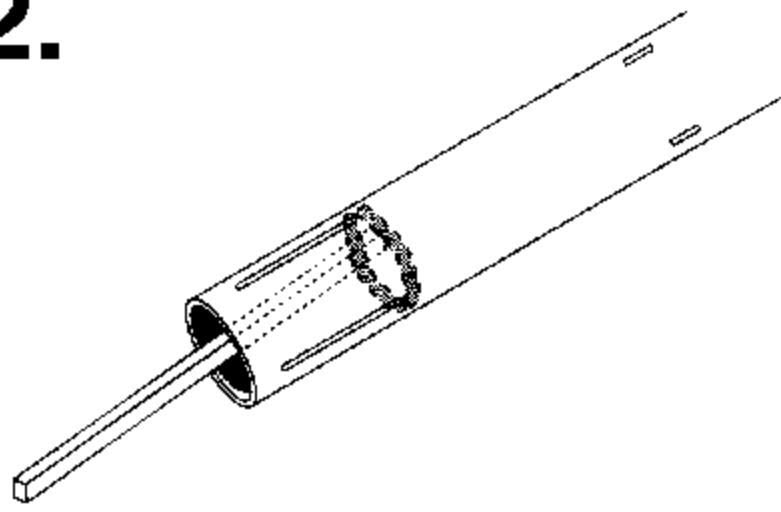
C. Pass parachute through loop.



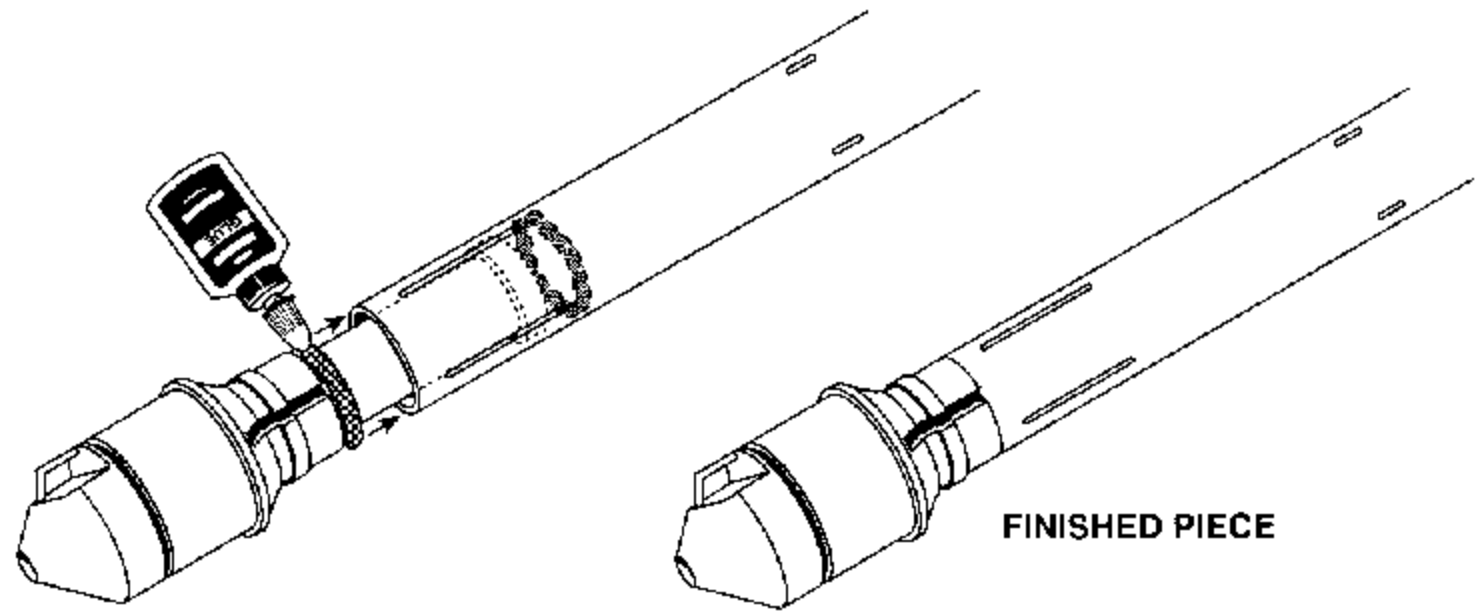
D. Pull tight.

E. Repeat this step with the other parachute and shock cord.

12.

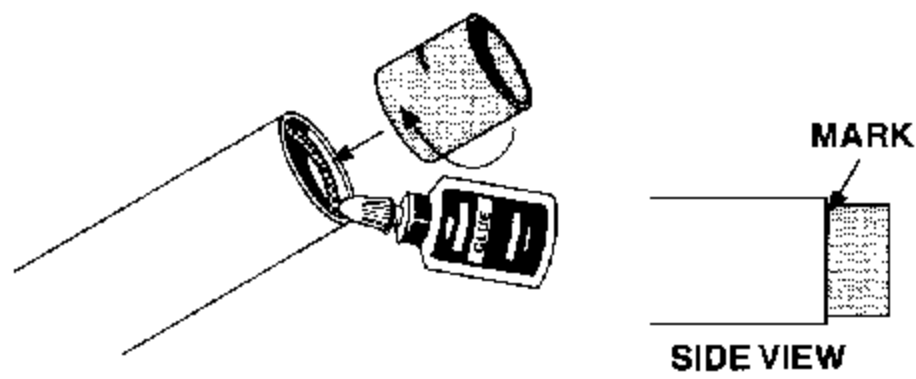


A. Once the adapter assembly is completely dry, apply a band of glue just in front of the REAR slots on the slotted upper body tube as shown.



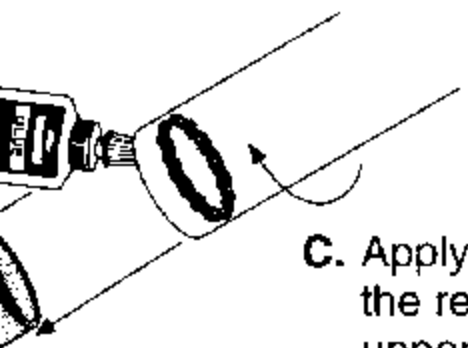
B. Slide the front of the adapter assembly part way into the tube, apply a band of glue around the rear ring, then slide the adapter assembly into the tube until the tube rests evenly on the adapter shoulder. IMMEDIATELY WIPE AWAY ANY EXCESS GLUE! Let dry.

ED PIECE



B. Apply glue inside the FRONT of the UPPER tube assembly as shown, then use a twisting motion to insert the red tube coupler up to its mark. Let glue dry.

pler

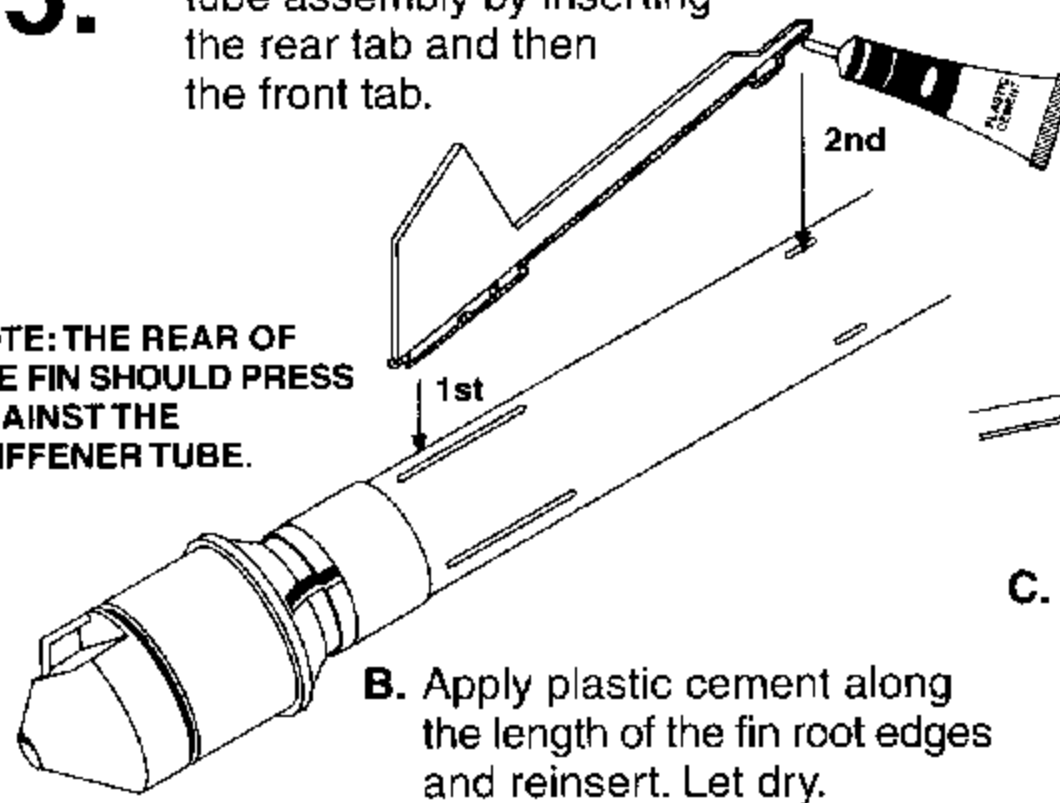


C. Apply glue inside one end of the remaining 4.3" (10.9 cm) upper body tube, then use a twisting motion to connect the tubes. Let dry.

15.

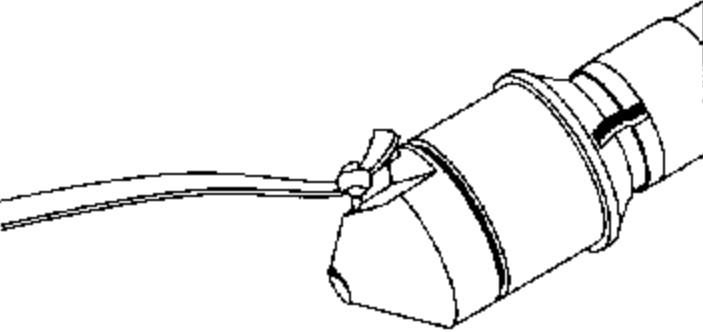
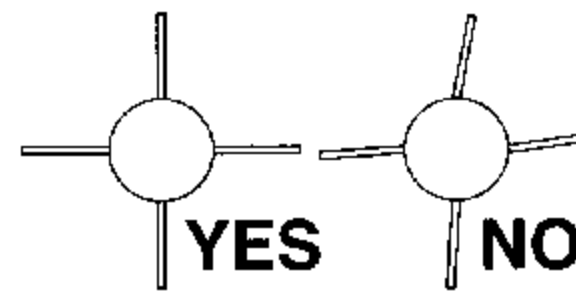
A. Test fit the upper fins into the upper tube assembly by inserting the rear tab and then the front tab.

NOTE: THE REAR OF THE FIN SHOULD PRESS AGAINST THE STIFFENER TUBE.

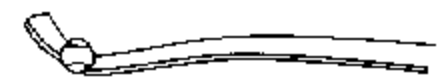


B. Apply plastic cement along the length of the fin root edges and reinsert. Let dry.

BE SURE TO CHECK ALIGNMENT BEFORE CEMENT DRIES!

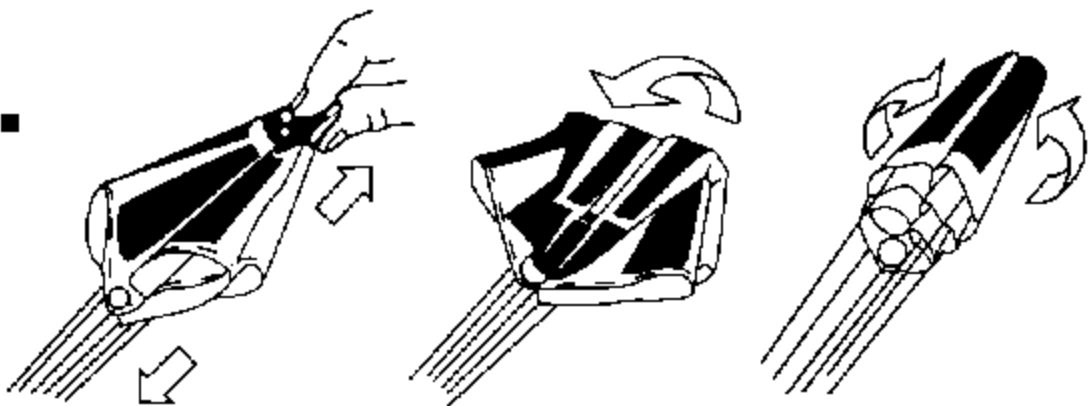


C. Tie the remaining shock cord to the plastic adapter eyelet with a triple knot.



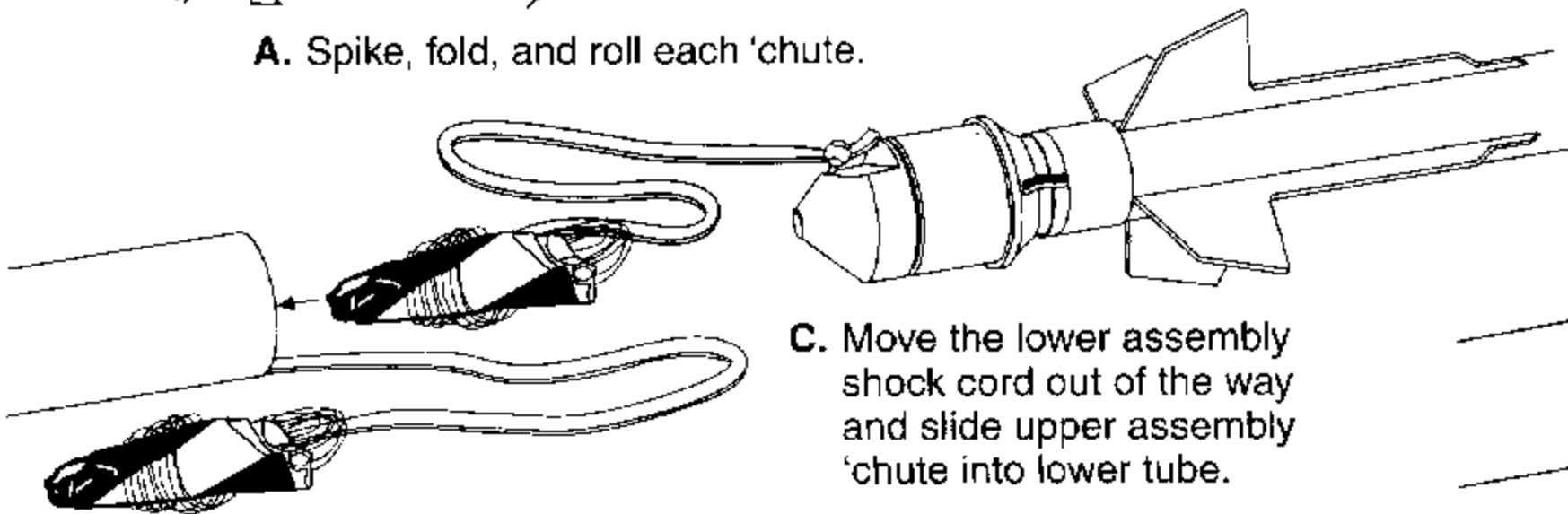
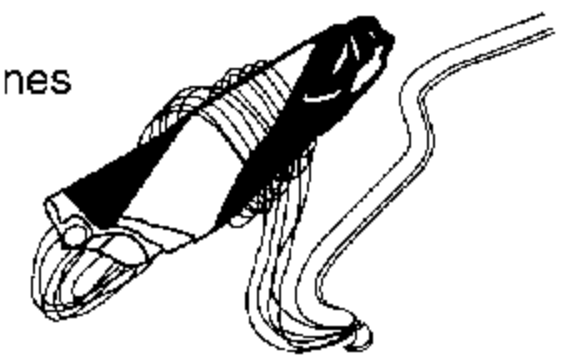
D. Tie a triple knot in the free end of the shock cord.

17.



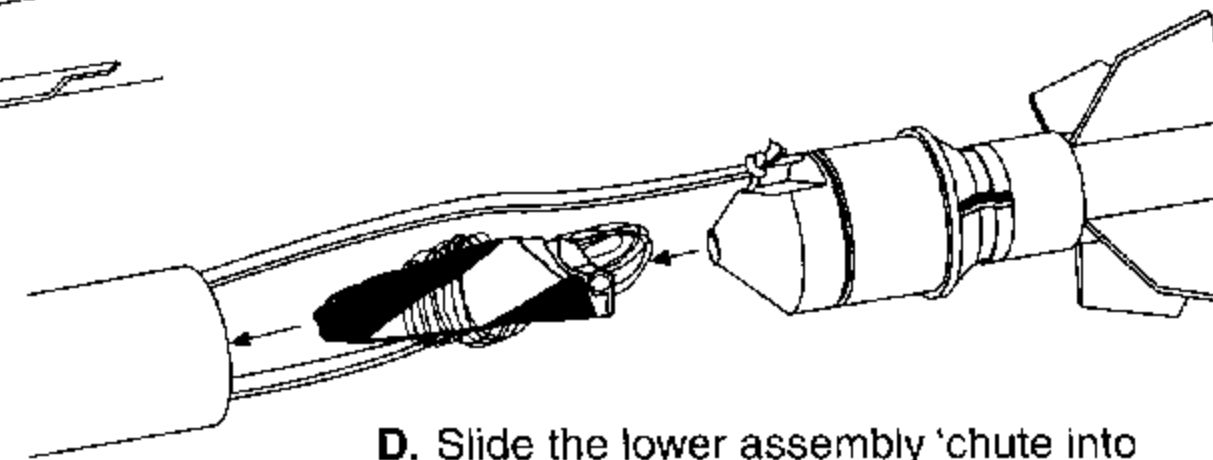
A. Spike, fold, and roll each 'chute.

B. Wrap shroud lines loosely around each 'chute.



C. Move the lower assembly shock cord out of the way and slide upper assembly 'chute into lower tube.

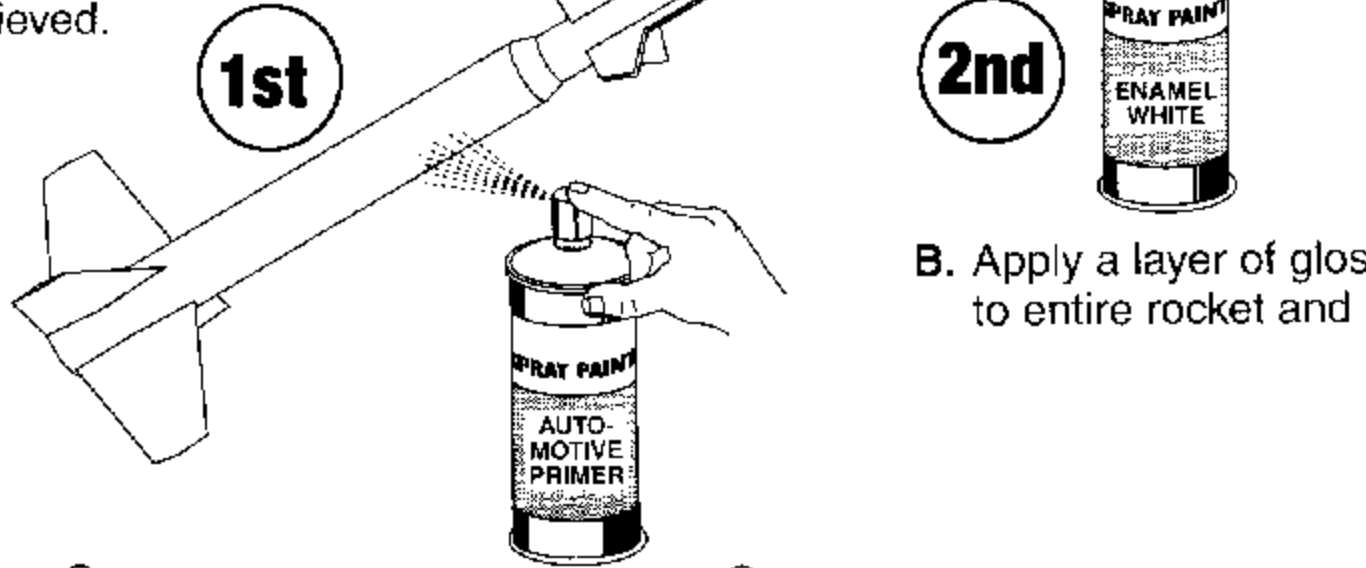
Parachute should slide easily into body tube. If fit is too tight, unfold and repack again.



D. Slide the lower assembly 'chute into lower tube, insert shock cords, then slide plastic adapter into lower tube.

18.

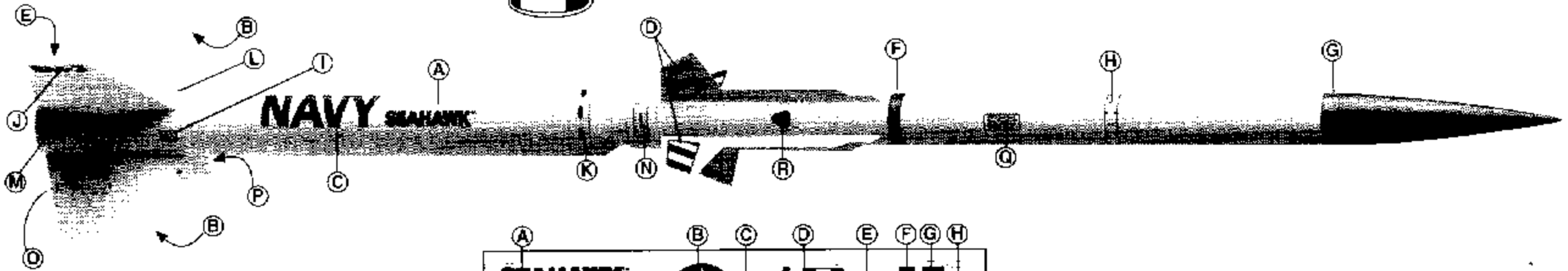
A. Insert the nose cone and apply a thin coat of gray automotive primer to entire rocket and let dry. Sand and prime the rocket until a smooth base is achieved.



B. Apply a layer of gloss white to entire rocket and let dry.

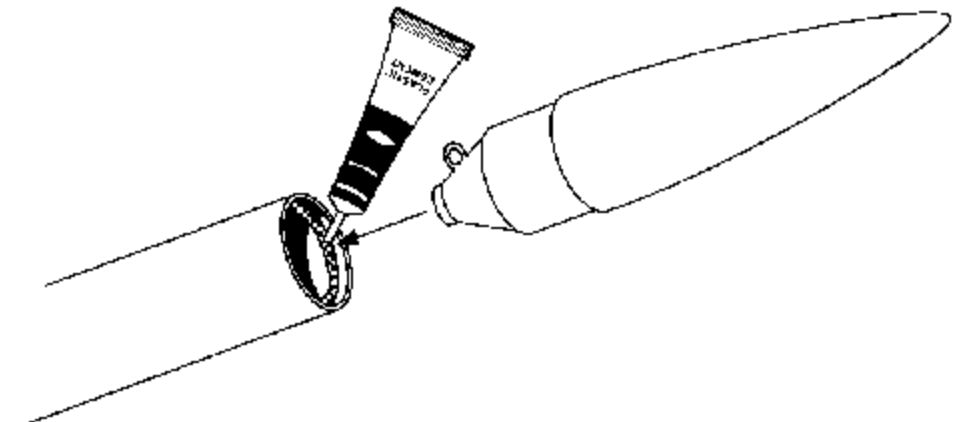
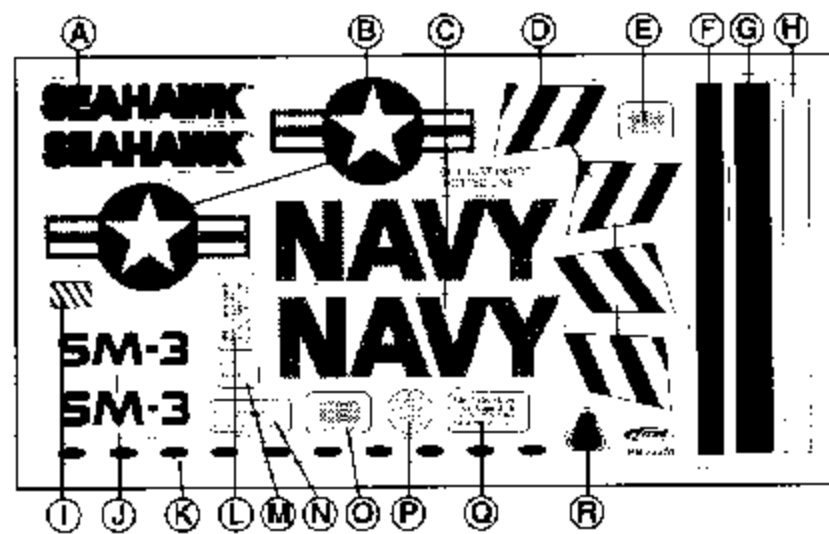
MASKING TAPE

C. Once rocket is dry, remove the nose cone, mask off the shoulder, and paint the nose cone gloss blue. Let dry completely.



D. Cut decals out just inside the dotted lines.

E. Remove one decal at a time, and apply as shown. Rub with finger to remove air bubbles.



F. Apply plastic cement to the front of the upper tube and insert nose cone.

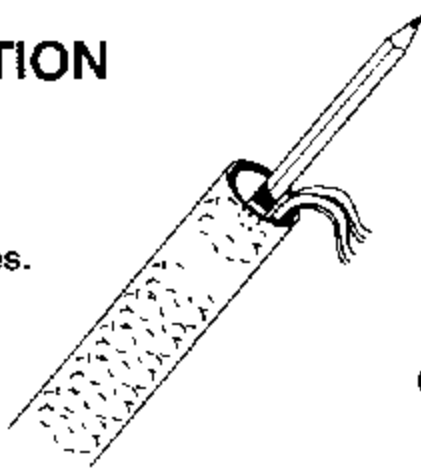
FLYING YOUR ROCKET

19.

ROCKET PREPARATION

Remove shock cords and parachutes.

Crumple and insert six squares of recovery wadding. Repack and insert parachutes and shock cords as you did in step 17.



ENGINE PREPARATION

Separate igniter and igniter plug.

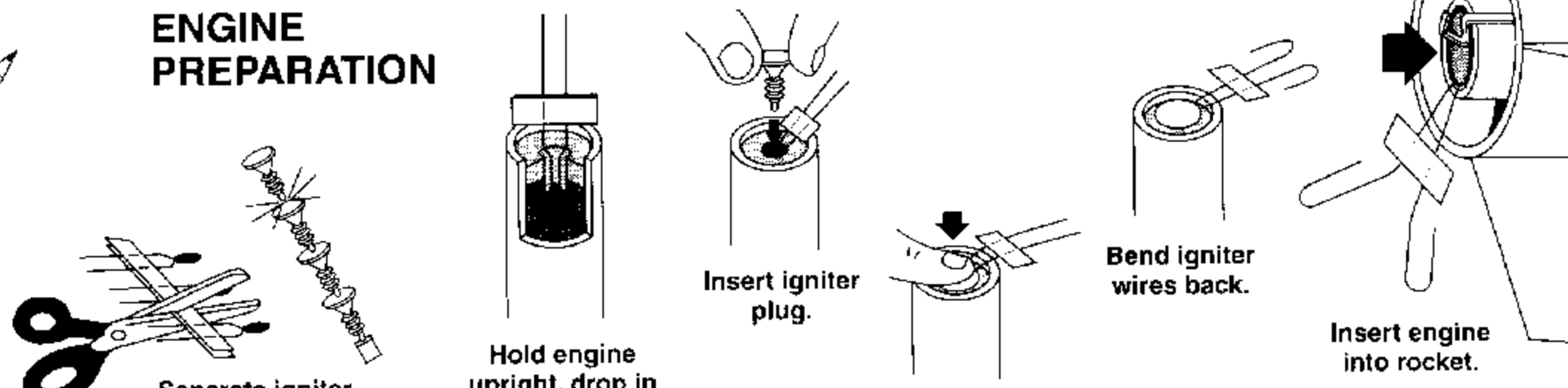
Hold engine upright, drop in igniter. Igniter must touch propellant.

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** 3/16" (5 mm) launch rod
 - Launch Controller (Estes Electron Beam®)
 - Recommended Estes Engines: D12-5 **ONLY!**
 - Recovery Wadding (EST 302274)
 - Igniters and Igniter Plugs (included with Estes engines)
- Use only Estes products to launch this rocket.

ENGINE	PROJECTED ALTITUDE	
	Feet	Meters
D12-5	465	142

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 500 feet (152 meters) 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 parachutes packed more than a minute or so before launch during cold weather (colder than 40° Fahrenheit [4° Celsius]). Parachutes 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.

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

LAUNCH SEQUENCE

4
At peak altitude (apogee), the upper section and parachutes are ejected from the rocket body.

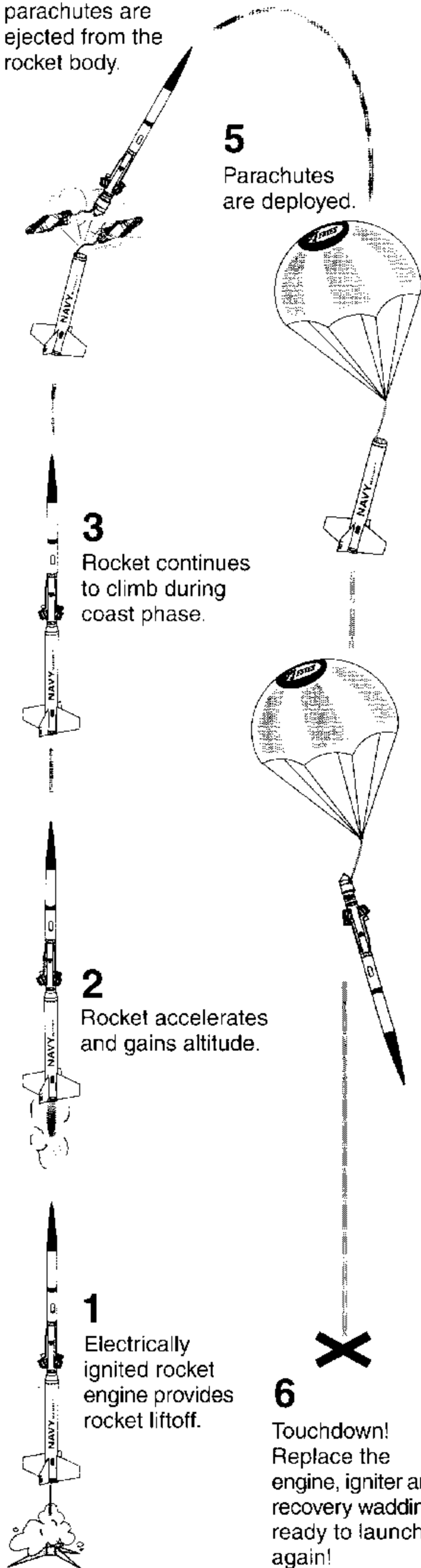
5
Parachutes are deployed.

3
Rocket continues to climb during coast phase.

2
Rocket accelerates and gains altitude.

1
Electrically ignited rocket engine provides rocket liftoff.

6
Touchdown! Replace the engine, igniter and recovery wadding, ready to launch again!



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 fugs 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 micro-clips so they do not touch each other or the metal blast deflector. Attach micro-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 15 feet - 5 meters).

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.

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