



ESTES INDUSTRIES  
1295 H Street  
Penrose, CO 81240

**EXPLORER**  
SERIES  
SKILL LEVEL 2

(7-96) 82102

EST 2128

# LONGSHOT™

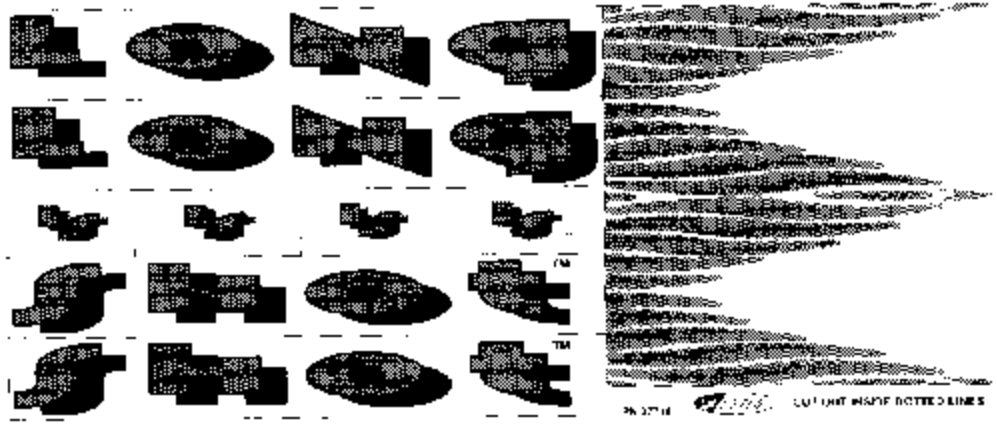
## FLYING MODEL ROCKET KIT INSTRUCTIONS

### TOOLS REQUIRED:

White or Yellow Glue, Tube Type Plastic Cement, Ruler, Hobby Knife, Pencil, Scissors, Masking Tape (Optional), and Plastic Bags (Optional).

**ALL GLUED AREAS ARE SHADED IN GRAY**

### PARTS LAYOUT



DECAL  
37716

BLACK NOSE  
CONE #56  
72015

3 RED TUBE  
COUPLERS JT56L  
30201

SHOCK CORD #1/4 x 36  
38382

ENGINE  
HOOK #2A  
35021

STREAMER #2 x 90  
38274

WHITE  
ENGINE BODY  
TUBE BT56  
30341

3 WHITE BODY  
TUBES BT56  
30340

UPPER STAGE MOUNT  
TUBE HBT760  
31760

ENGINE BLOCK  
RING AR2050  
30164-2

2 ADAPTER  
RINGS AR76055  
30133

ENGINE MOUNT  
TUBE HBT 1000  
(31281)

ENGINE BLOCK  
RING AR520  
30162-2

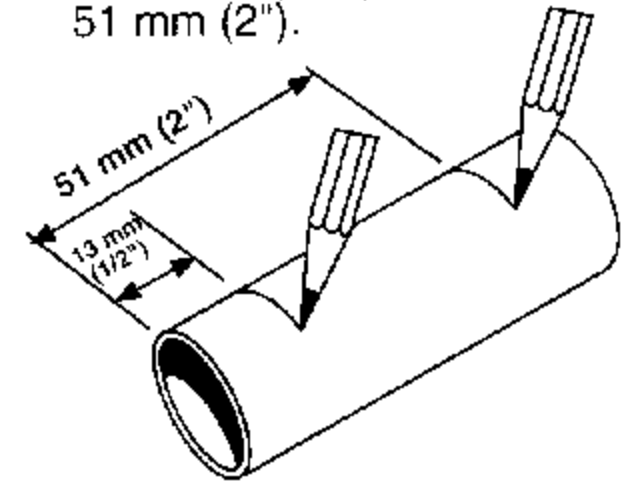
2 ADAPTER  
RINGS AR1000/56  
30002

YELLOW SPACER  
TUBE ET-2  
35003

2 BLACK PLASTIC FIN UNITS  
34062

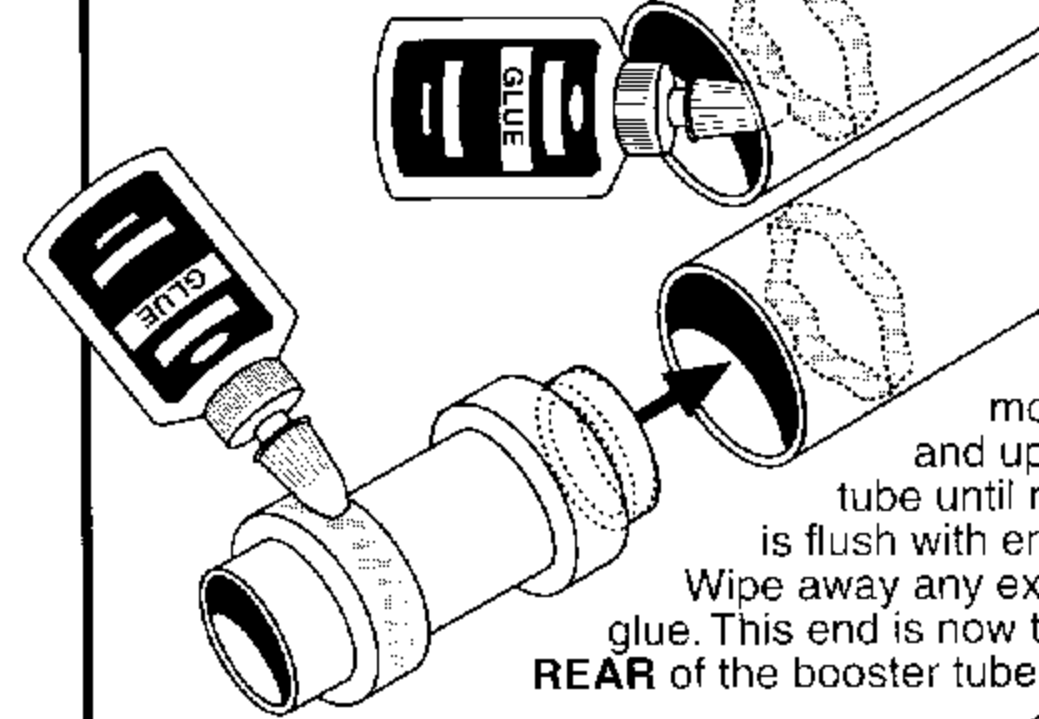
## 1. BOOSTER STAGE ASSEMBLY

- A. Mark the HBT 1000 engine mount tube 70 mm (2-3/4") at 13 mm (1/2") and at 51 mm (2").



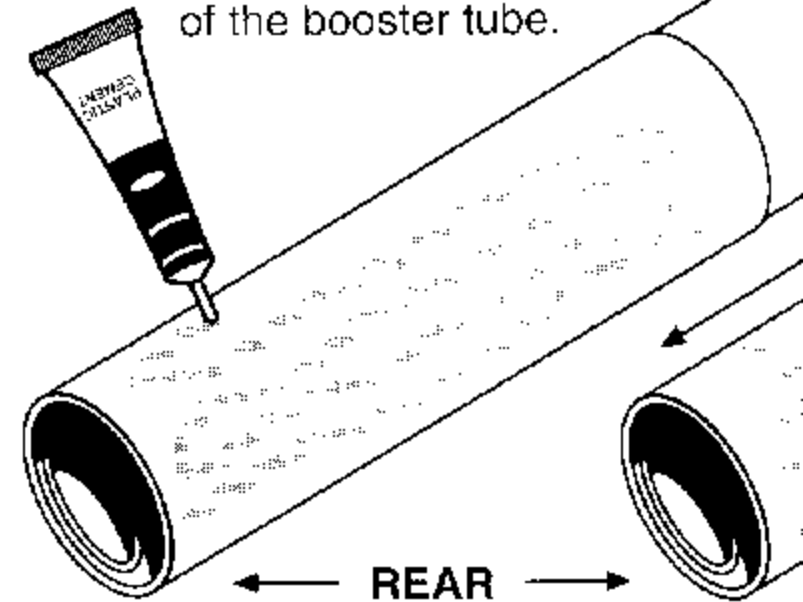
## 2. A.

- A. Apply a bead of glue around the inside of one end of the engine body tube and on the rear adapter ring of the engine mount.



## 5. A.

- A. Place a wide band of plastic cement around the rear of the booster tube.



**B.** Apply a ring of glue just below the 51 mm (2") mark. Slide one of the AR1000/56 adapter rings up to the 51 mm (2") mark.

**C.** Apply a ring of glue just below the 13 mm (1/2") mark. Slide the other AR1000/56 adapter ring just past the 13 mm (1/2") mark.

**D.** Apply a ring of glue to the outside edge of the engine block ring AR2050 and insert into the engine mount tube at the end closest to the 51 mm (2") mark. Push the engine block ring into tube until it is even with the end of the tube. Let dry.

**B.** Slide front end of booster engine mount through glue and up into engine body until rear end of mount touches end of body tube. Wipe away excess glue below the tube.

**3. A.** Mark all of the red tube couplers at 2.5 cm (1").

**B.** Slide front end of booster engine mount through glue and up into engine body until rear end of mount touches end of body tube. Wipe away excess glue below the tube.

**4. A.** Apply a thin layer of glue around inside FRONT of booster tube.

**B.** Take one red tube coupler and insert into front end of booster tube to 2.5 cm (1") mark on coupler.

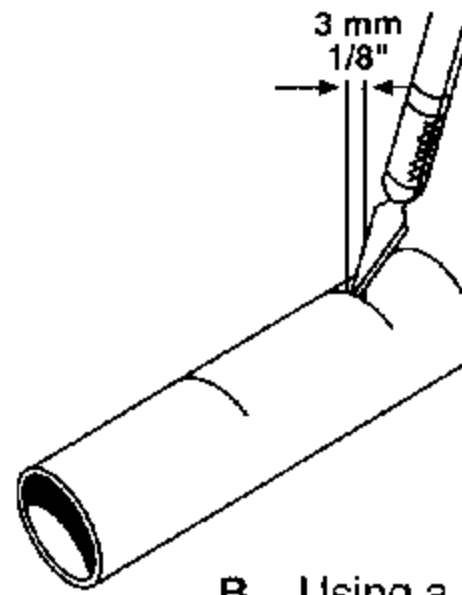
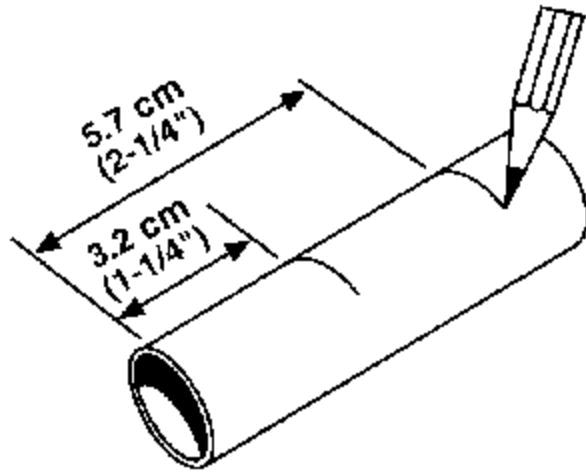
**B.** Making sure fin unit is right side up, slide fin unit down over the booster tube as shown until fin unit and booster tube are flush.

**C.** Immediately wipe away any excess plastic cement.

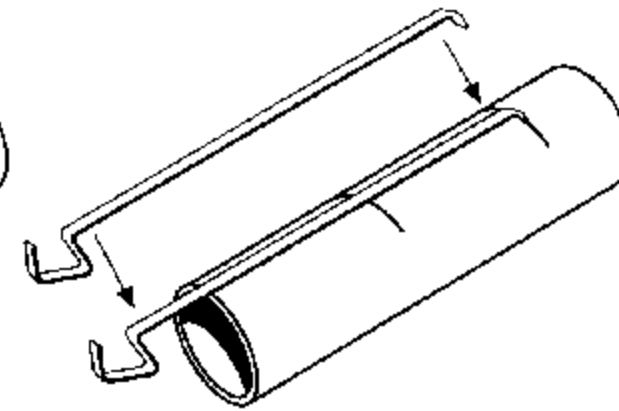
**D.** Set booster stage assembly aside to set.

## 6. UPPER STAGE ASSEMBLY

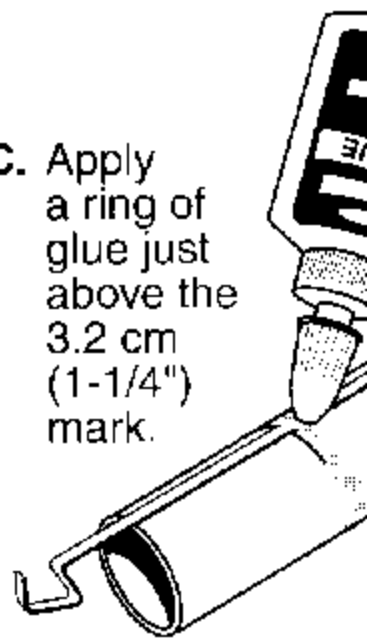
- A. Mark the second stage engine mount tube (HBT 760) at 3.2 cm (1-1/4") and at 5.7 cm (2-1/4").



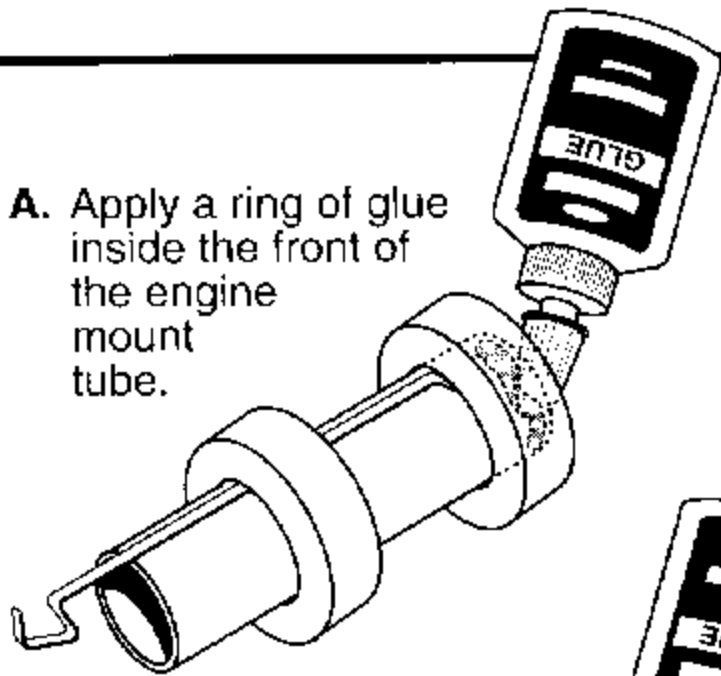
- B. Using a hobby knife, make a 3 mm (1/8") wide slit at the 5.7 cm (2-1/4") mark only. Insert engine hook as shown.



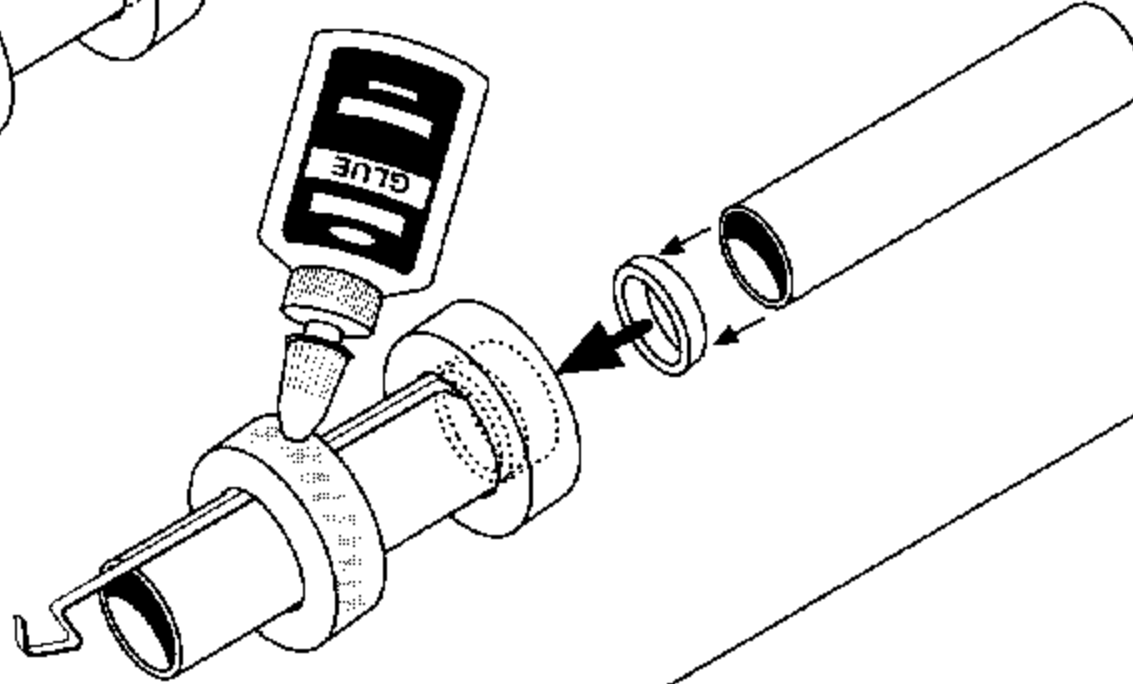
- C. Apply a ring of glue just above the 3.2 cm (1-1/4") mark.



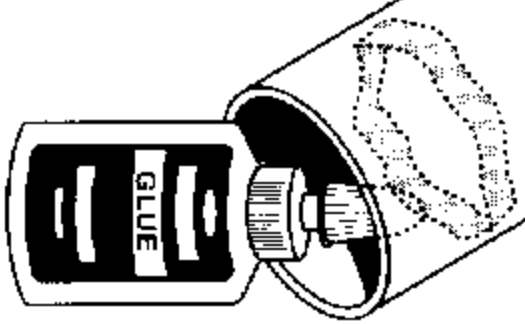
7. A. Apply a ring of glue inside the front of the engine mount tube.



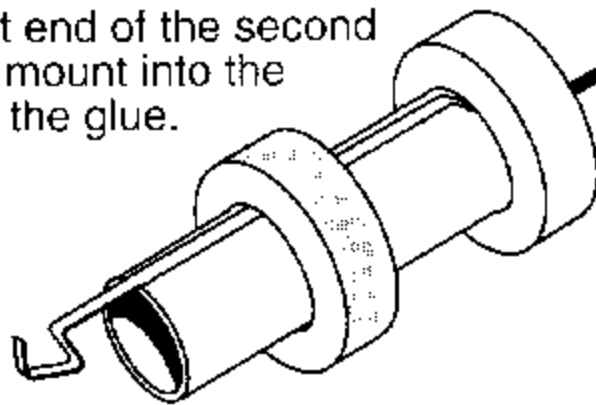
- B. Push the engine block ring (AR520) into the front of the engine mount tube with the yellow spacer tube until ring hits the engine hook. Immediately remove yellow spacer tube. Let assembly dry.



- C. Apply a bead of glue to the rear adapter ring and around inside of one end of a 300 mm (12") BT56 body tube.



- D. Slide the front end of the second stage engine mount into the body through the glue.



- E. Push engine mount in until it is even with the end of the body tube. Wipe away any excess glue. This is now the rear of the tube.

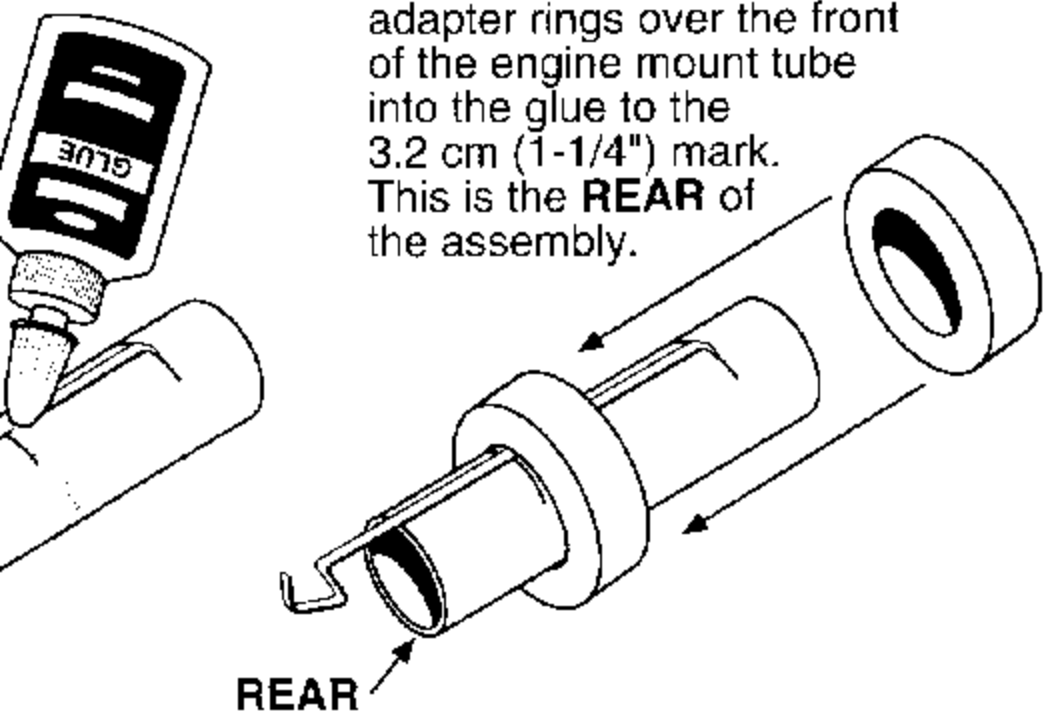
REAR

8. A. Place a thin layer of glue 6mm (1/4")

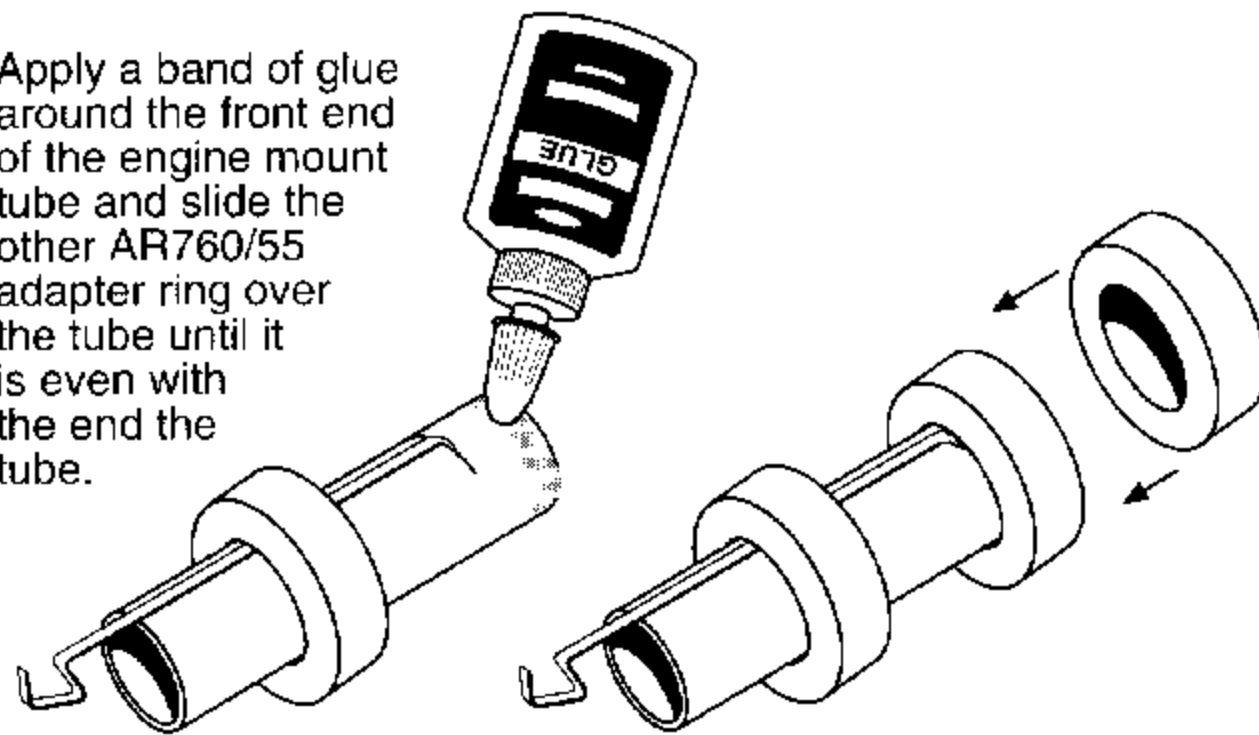


B. In  
co  
2.

D. Slide one of the AR760/55 adapter rings over the front of the engine mount tube into the glue to the 3.2 cm (1-1/4") mark. This is the **REAR** of the assembly.



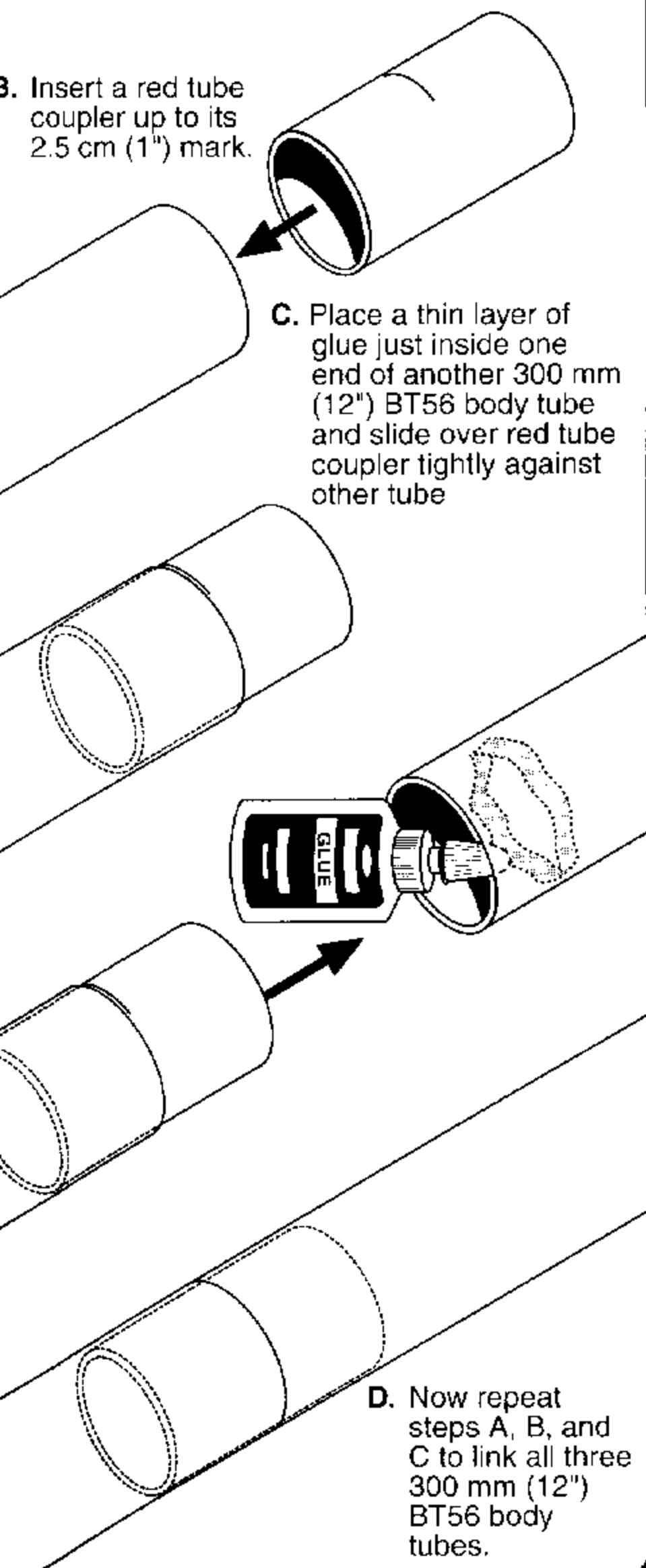
E. Apply a band of glue around the front end of the engine mount tube and slide the other AR760/55 adapter ring over the tube until it is even with the end of the tube.



mm (1/4") inside the front of tube.

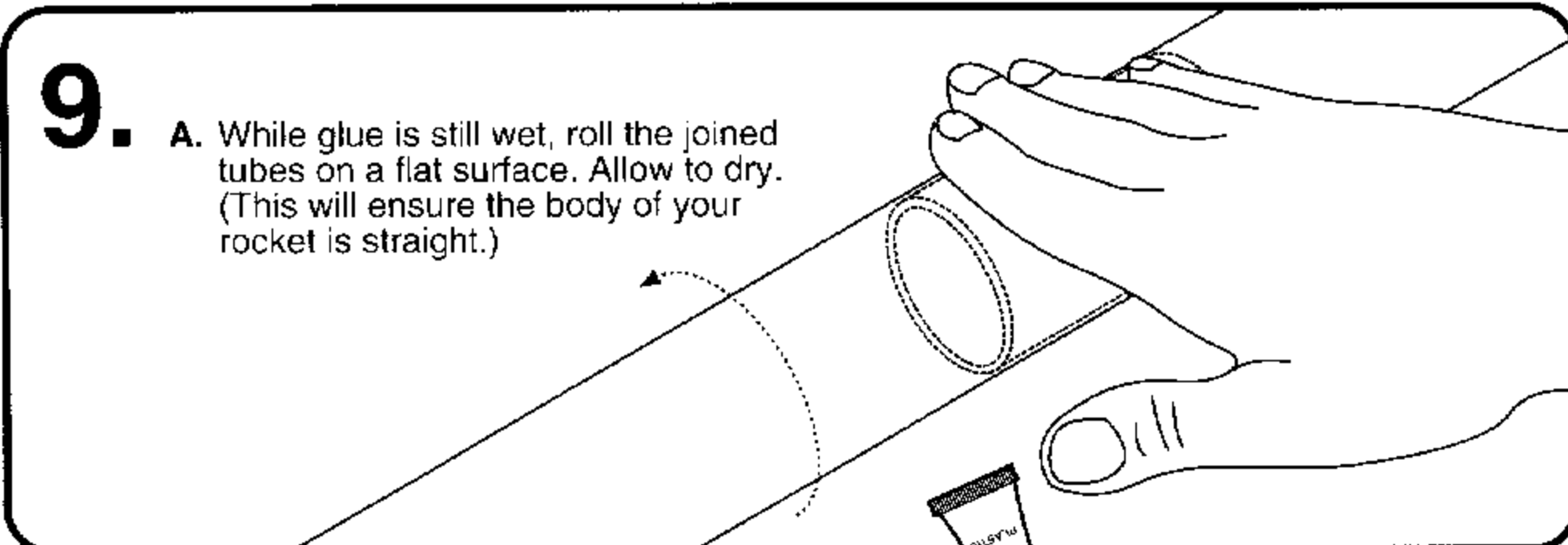
3. Insert a red tube coupler up to its 2.5 cm (1") mark.

C. Place a thin layer of glue just inside one end of another 300 mm (12") BT56 body tube and slide over red tube coupler tightly against other tube



D. Now repeat steps A, B, and C to link all three 300 mm (12") BT56 body tubes.

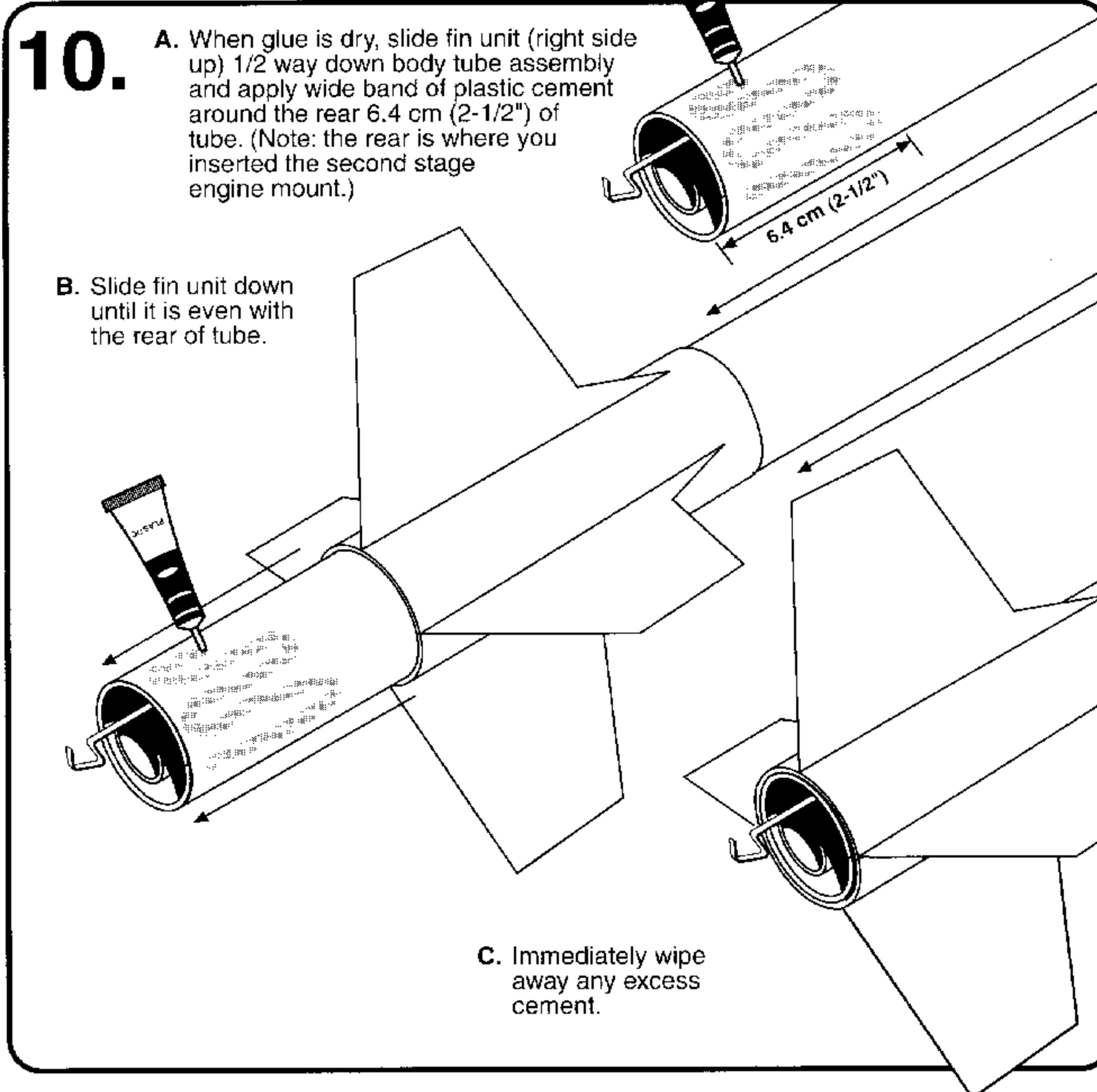
9. A. While glue is still wet, roll the joined tubes on a flat surface. Allow to dry. (This will ensure the body of your rocket is straight.)



10. A. When glue is dry, slide fin unit (right side up) 1/2 way down body tube assembly and apply wide band of plastic cement around the rear 6.4 cm (2-1/2") of tube. (Note: the rear is where you inserted the second stage engine mount.)

B. Slide fin unit down until it is even with the rear of tube.

C. Immediately wipe away any excess cement.



# 11.

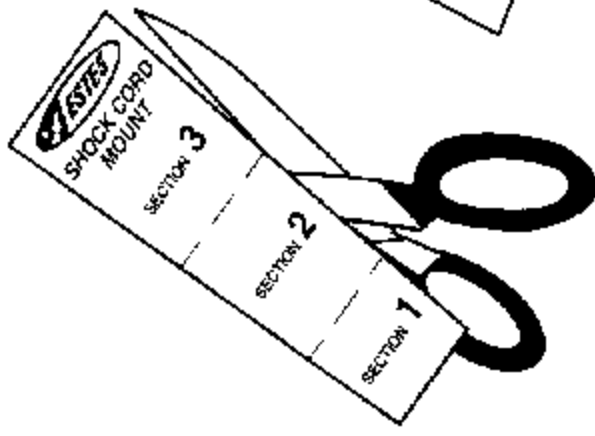
**ESTES**  
SHOCK CORD  
MOUNT

SECTION 3

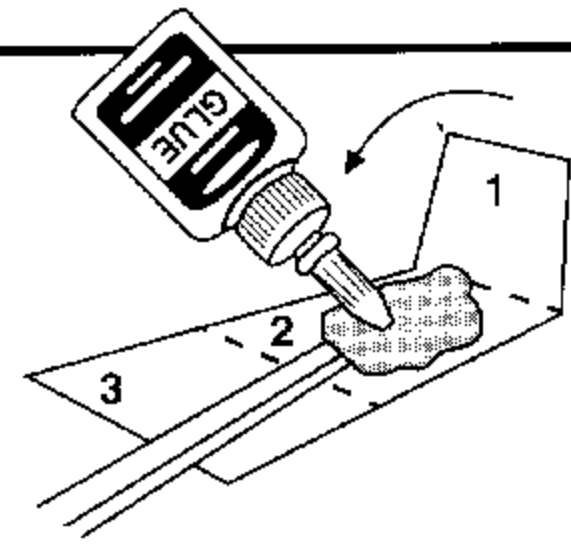
SECTION 2

SECTION 1

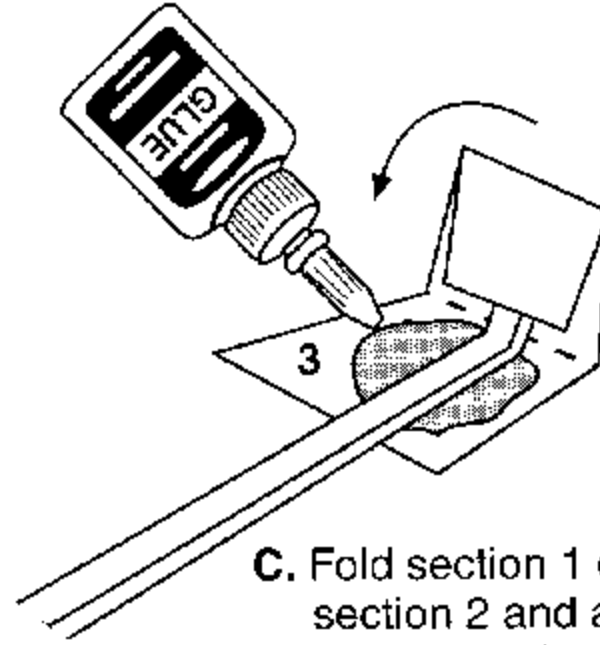
A. Cut out shock cord mount at left along solid lines. Crease on dotted lines by folding.



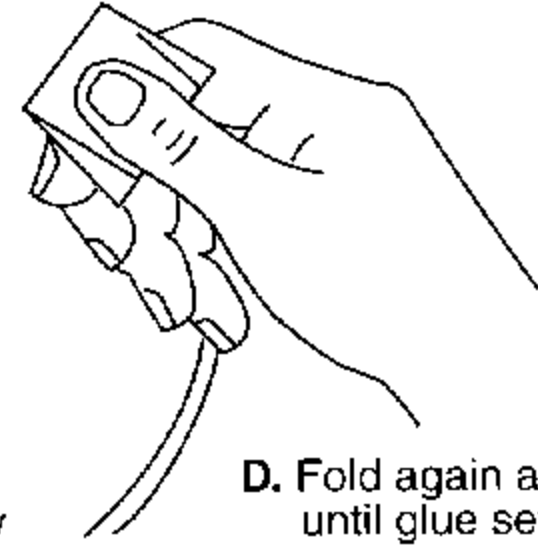
B. Spread glue on section 2 and lay shock cord into glue at a slight angle as shown.



C. Fold section 1 over section 2 and apply glue to section 3.

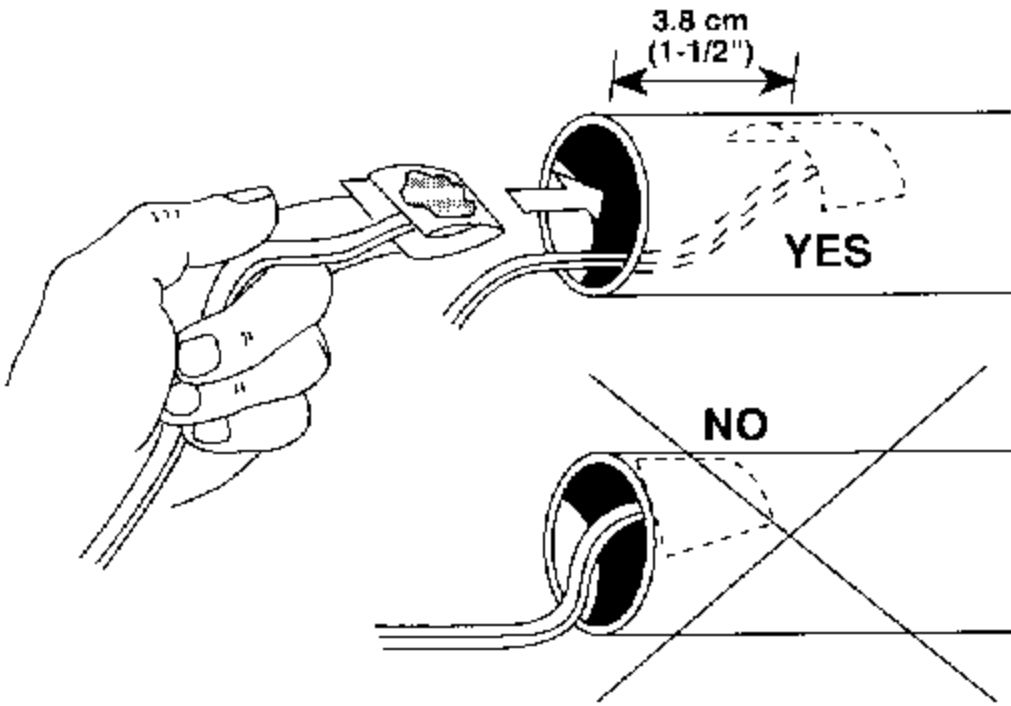


D. Fold again and pinch until glue sets.



CUT OUT

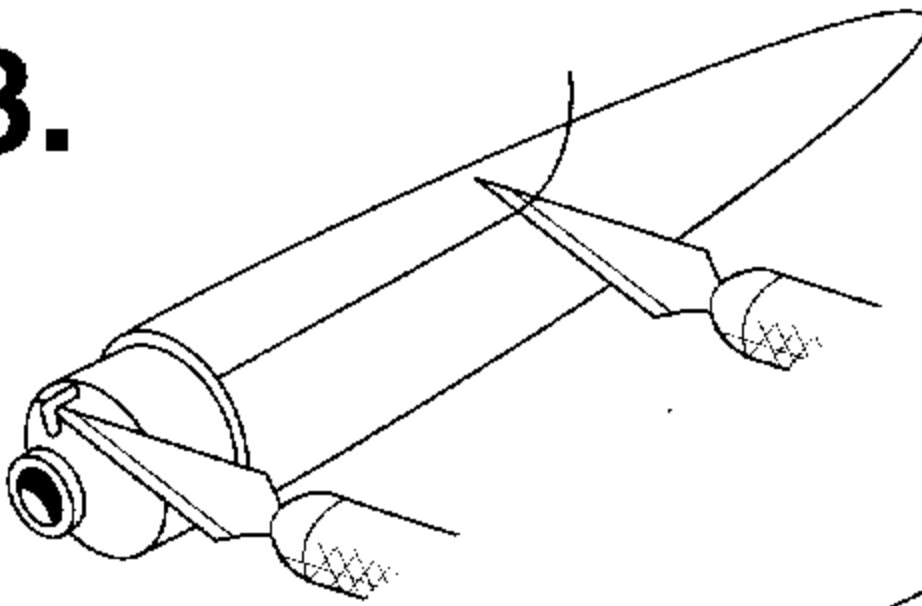
# 12.



- A. Measure about 3.8 cm (1 1/2") down from front of body tube.
- B. Apply glue to shock cord mount and insert to 3.8cm (1 1/2") point inside tube.
- C. Press mount firmly into place. (Setting mount well inside tube allows for nose cone clearance.)

# 13.

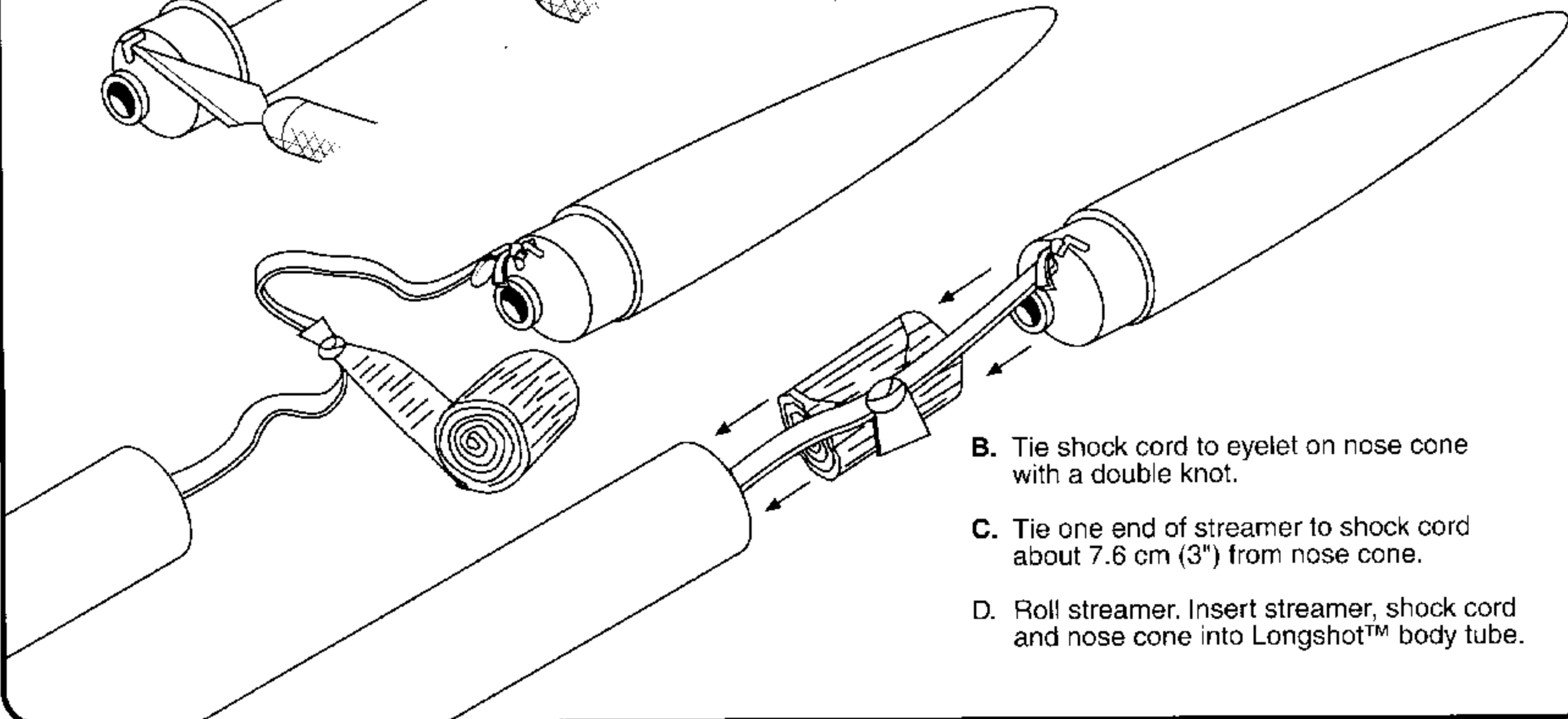
A. Clean the excess plastic (flash) from the nose cone and eyelet with a hobby knife. **BE SURE YOU DON'T CUT OFF THE NOSE CONE EYELET.**



B. Tie shock cord to eyelet on nose cone with a double knot.

C. Tie one end of streamer to shock cord about 7.6 cm (3") from nose cone.

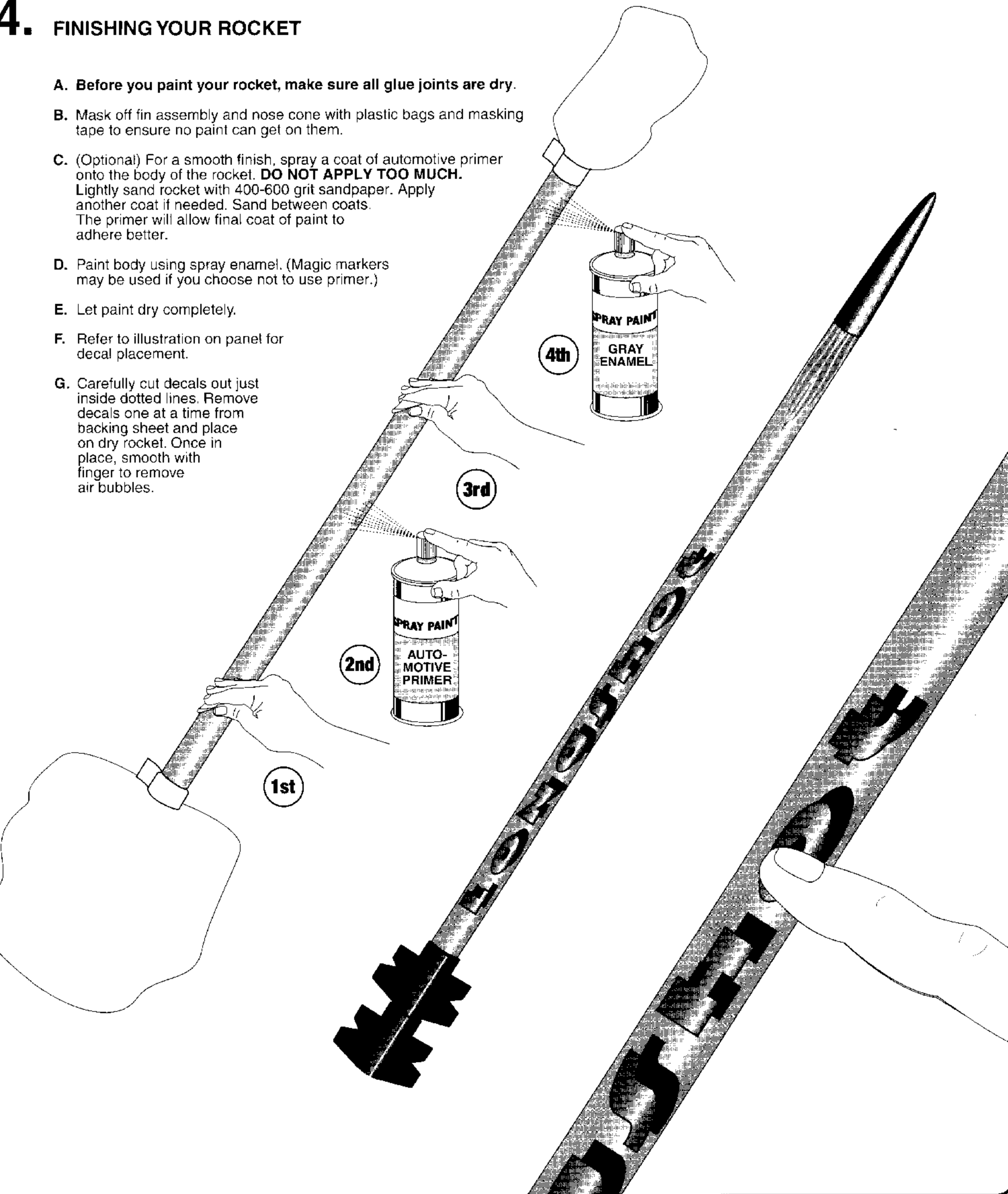
D. Roll streamer. Insert streamer, shock cord and nose cone into Longshot™ body tube.



# 14.

# 4. FINISHING YOUR ROCKET

- A. Before you paint your rocket, make sure all glue joints are dry.
- B. Mask off fin assembly and nose cone with plastic bags and masking tape to ensure no paint can get on them.
- C. (Optional) For a smooth finish, spray a coat of automotive primer onto the body of the rocket. **DO NOT APPLY TOO MUCH.** Lightly sand rocket with 400-600 grit sandpaper. Apply another coat if needed. Sand between coats. The primer will allow final coat of paint to adhere better.
- D. Paint body using spray enamel. (Magic markers may be used if you choose not to use primer.)
- E. Let paint dry completely.
- F. Refer to illustration on panel for decal placement.
- G. Carefully cut decals out just inside dotted lines. Remove decals one at a time from backing sheet and place on dry rocket. Once in place, smooth with finger to remove air bubbles.



# 15. FLYING YOUR ROCKET

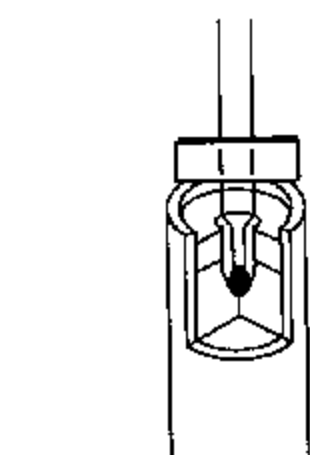
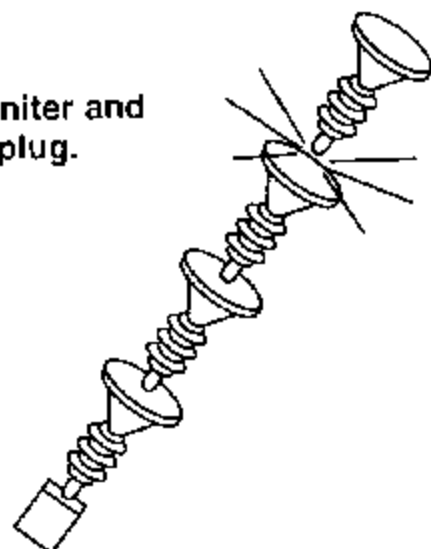
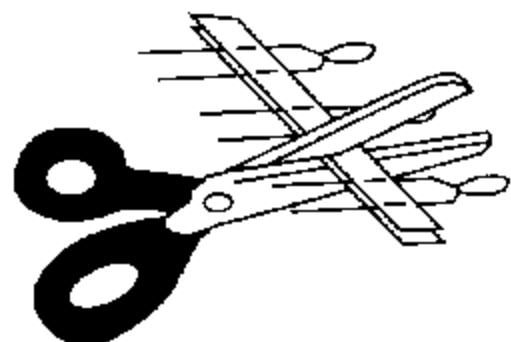
## ROCKET PREPARATION

Remove nose cone, shock cord and streamer.

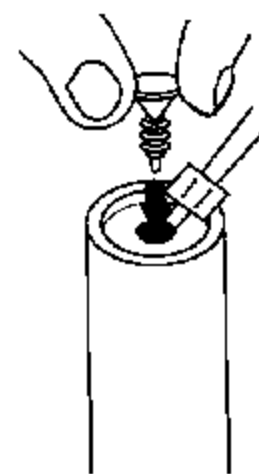
Crumple and insert four squares of recovery wadding. Insert streamer, shock cord and nose cone.

## ENGINE PREPARATION

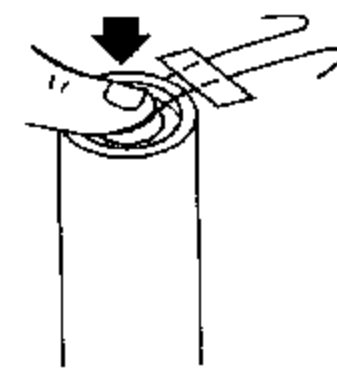
Separate igniter and igniter plug.



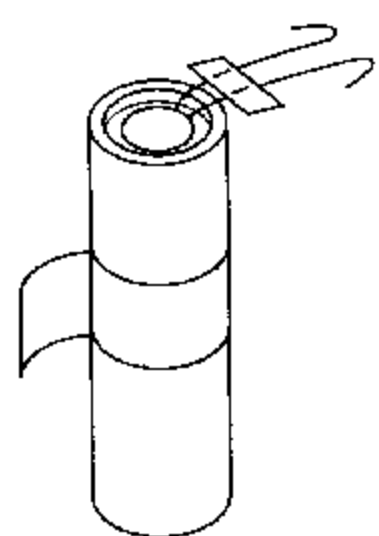
Hold booster stage engine upright, drop in igniter. Igniter must touch propellant.



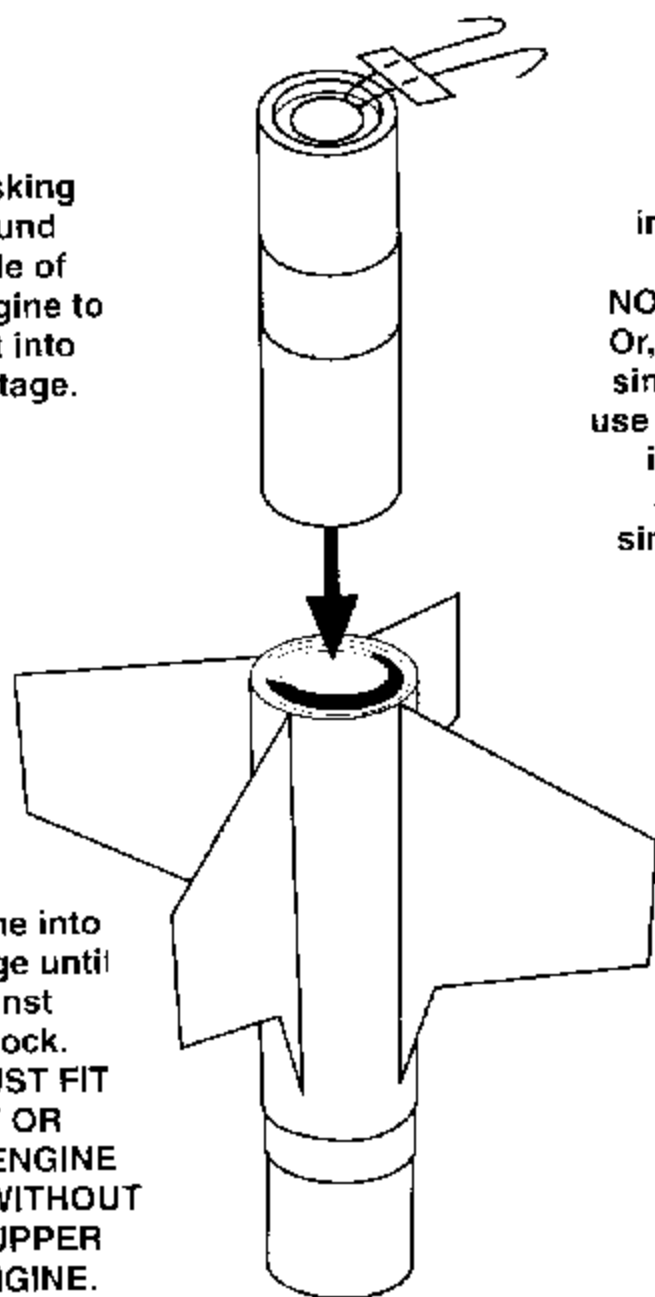
Insert igniter plug. Firmly push all the way in.



Bend igniter wires back.

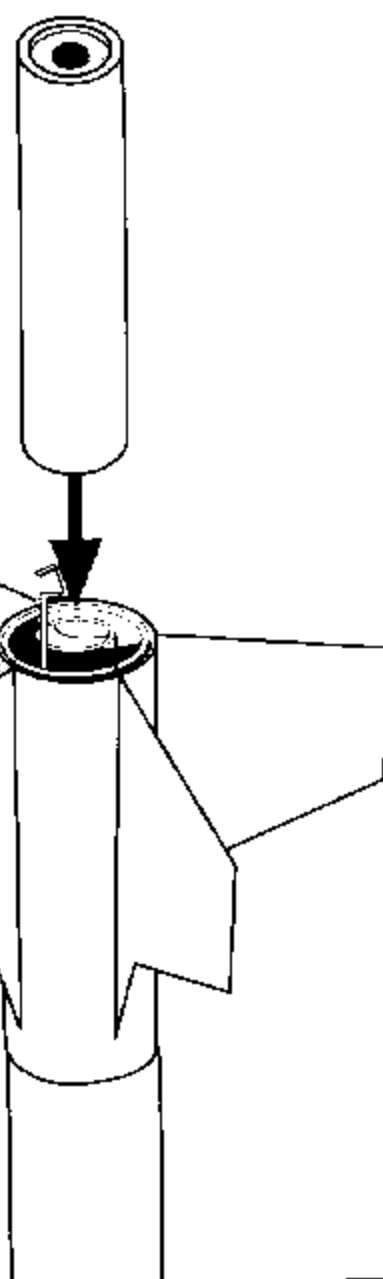


Wrap masking tape around the middle of booster engine to friction fit into booster stage.

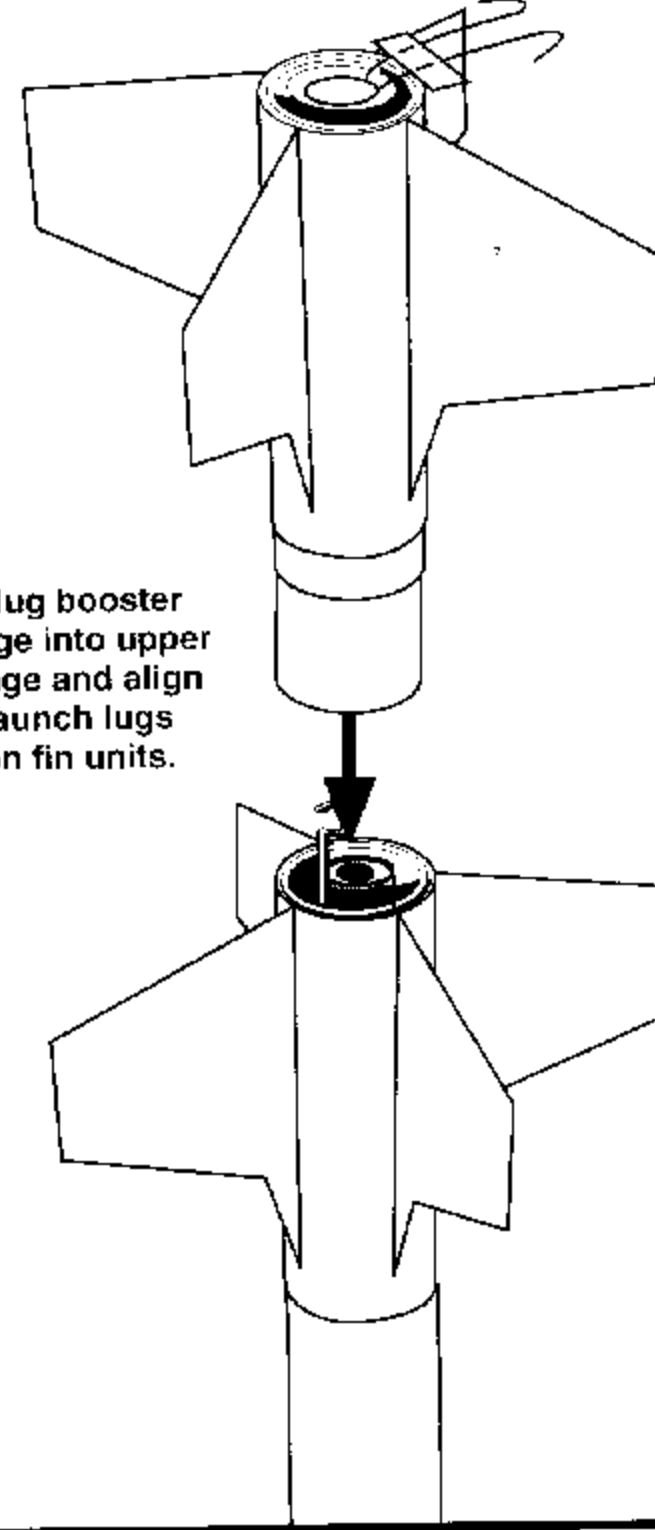


Insert engine into booster stage until it is against engine block. ENGINE MUST FIT SNUGLY OR BOOSTER ENGINE MAY EJECT WITHOUT IGNITING UPPER STAGE ENGINE.

Insert engine into upper stage. BE SURE THE NOZZLE IS VISIBLE. Or, to fly your rocket single stage; Do not use booster assembly, insert an igniter and plug into a single stage engine and insert into upper stage of rocket.



Plug booster stage into upper stage and align launch lugs on fin units.



## LAUNCH SUPPLIES

To launch your rocket, you will need the following:

- Launch Pad (Estes Porta-Pad® II)
- 5 mm (3/16") diameter two piece Maxi™ Rod (EST 302044)
- Launch Controller (Estes Electron Beam®)
- Recommended Estes Engines:  
Single stage configuration: (You can fly this rocket using just the upper stage); use a C5-3 or a C6-3, Two stage configuration:  
Booster - D12-0 Upper Stage - B6-6 or C6-7
- 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
C5-3.....	300	91
C6-3.....	275	84
D12-0/B6-6 .....	700	212
D12-0/C6-7 .....	1000	305

## 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.