

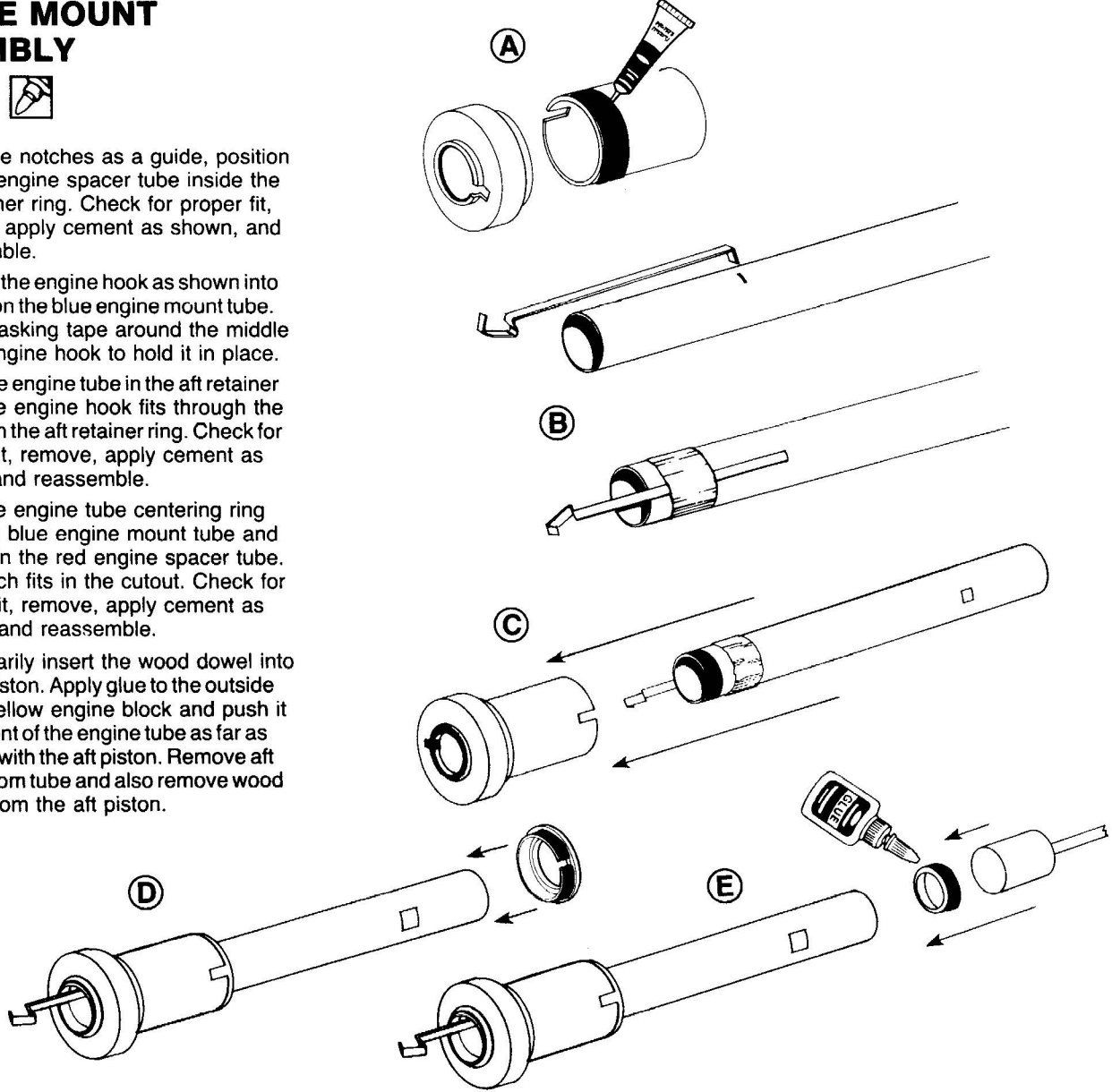




# 1. ENGINE MOUNT ASSEMBLY



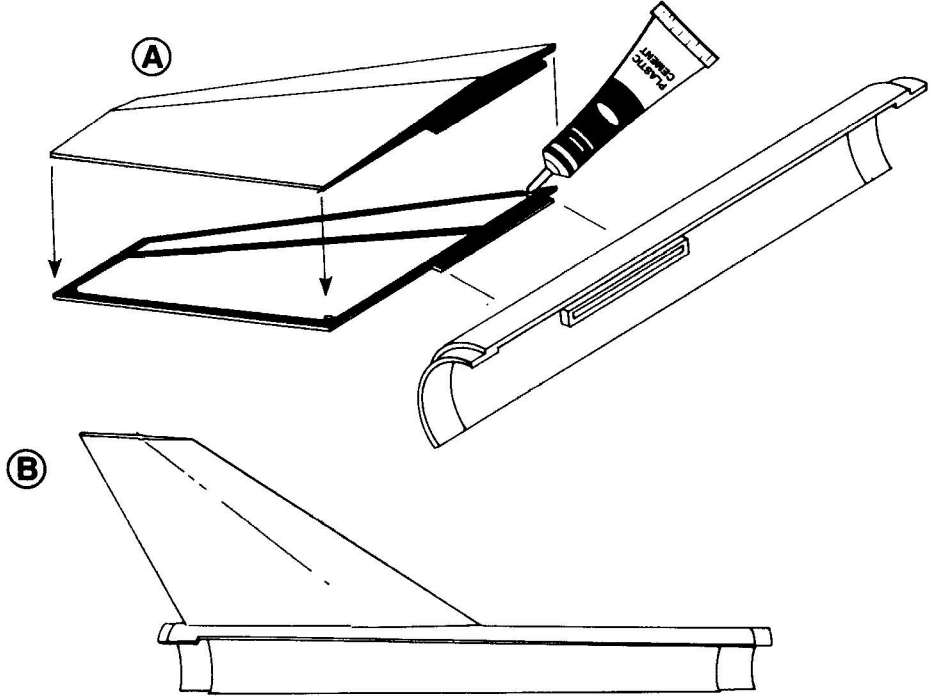
- A.  Using the notches as a guide, position the red engine spacer tube inside the aft retainer ring. Check for proper fit, remove, apply cement as shown, and reassemble.
- B.  Position the engine hook as shown into the slot on the blue engine mount tube. Wrap masking tape around the middle of the engine hook to hold it in place.
- C.  Insert the engine tube in the aft retainer ring. The engine hook fits through the cutout on the aft retainer ring. Check for proper fit, remove, apply cement as shown and reassemble.
- D.  Slide the engine tube centering ring over the blue engine mount tube and mate it in the red engine spacer tube. The notch fits in the cutout. Check for proper fit, remove, apply cement as shown, and reassemble.
- E.  Temporarily insert the wood dowel into the aft piston. Apply glue to the outside of the yellow engine block and push it in the front of the engine tube as far as it will go with the aft piston. Remove aft piston from tube and also remove wood dowel from the aft piston.



# 2. FIN PANEL ASSEMBLY



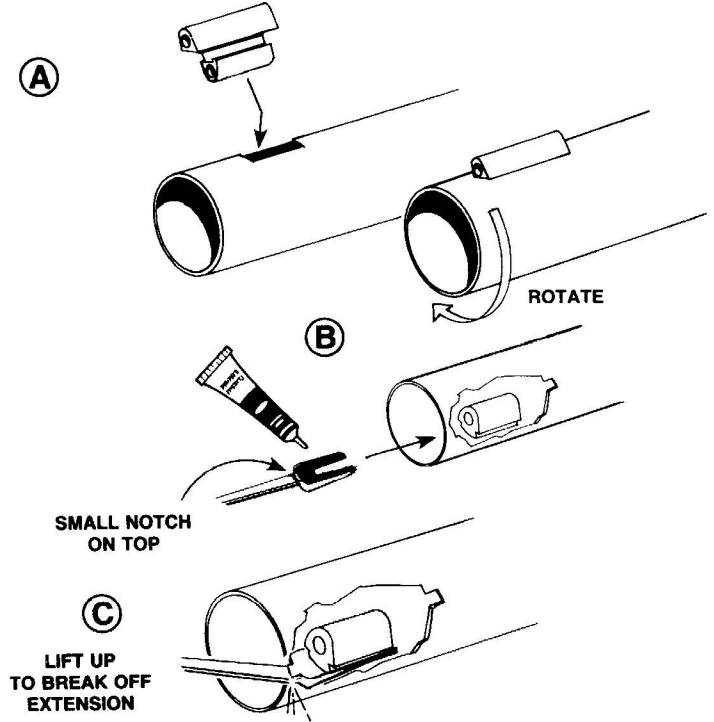
- A.  Match and glue the fin halves together (Make three sets). Glue each fin assembly into the body panels. Allow to dry.
- B.  Example of assembled fin panel



### 3. LAUNCH LUG ASSEMBLY



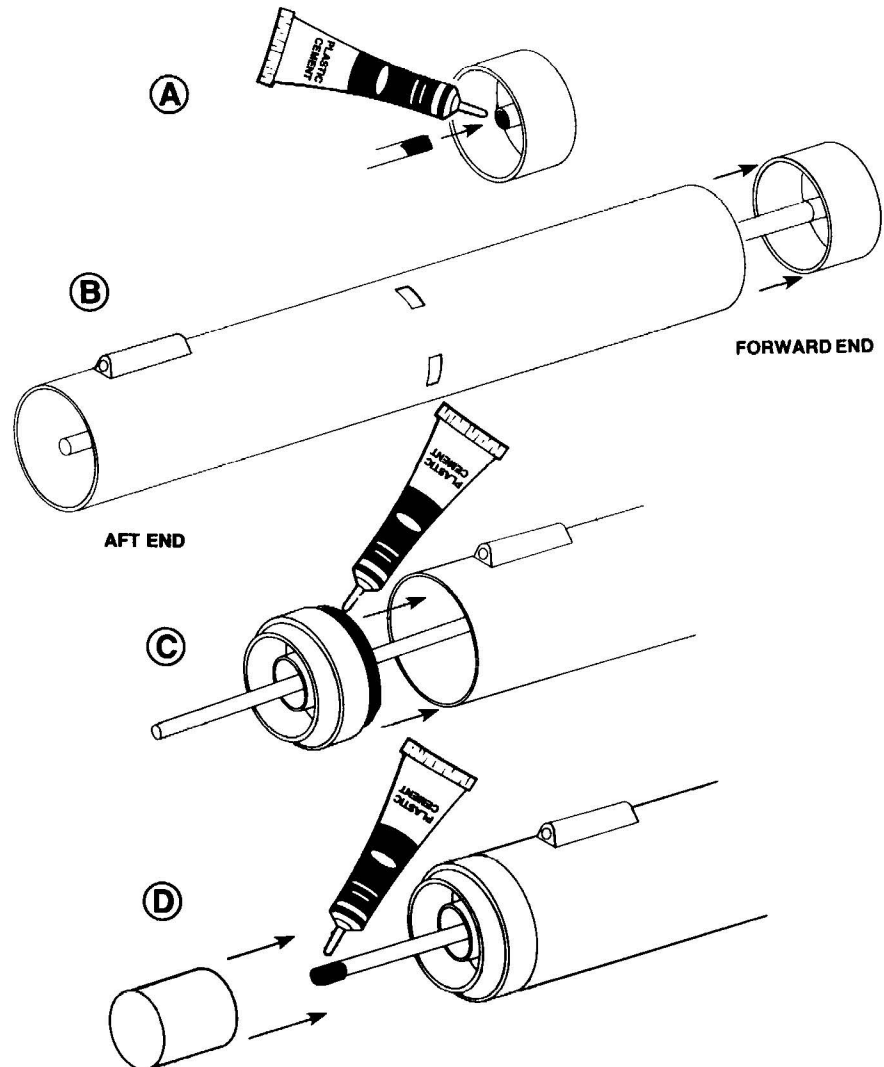
- A.  Insert the launch lug into the large cutout in the orange body tube. Rotate body tube so that the launch lug is positioned as shown.
- B.  Apply glue to the top and bottom of the launch lug lock and insert it under the edges of the launch lug mount.
- C.  Snap off the lock handle by lifting up and twisting back and forth.



### 4. PISTON ASSEMBLY



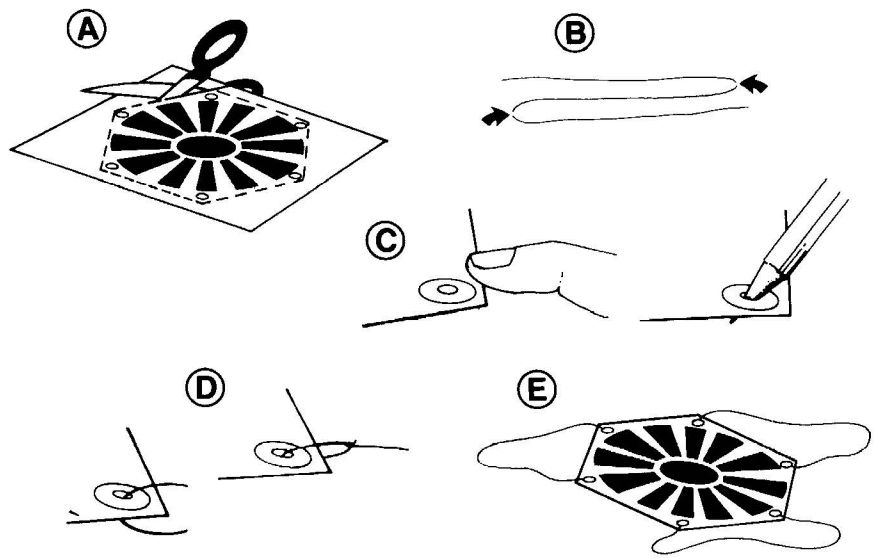
- A.  Glue the wooden dowel into the large forward piston.
- B.  Slide the dowel and large piston into the orange tube from the forward end so that the dowel comes out the aft end. *Do not glue.*
- C.  Slide the forward retaining ring over the dowel as shown and mate with the orange body tube. Check for proper fit, remove, apply cement as shown and reassemble.
- D.  Glue the small piston on the back end of the wooden dowel. Allow assembly to dry.



## 5. PARACHUTE ASSEMBLY

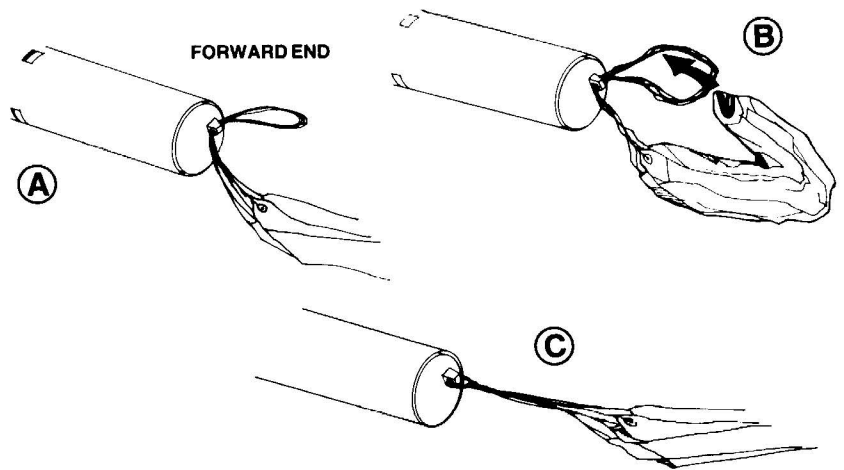


- A.  Cut out parachute on printed edge lines.
- B.  Remove tape from shroud lines, fold and cut into three equal lengths.
- C.  Attach tape rings to top of parachute and press firmly into place. Punch hole through the parachute material with the point of a sharp pencil. (Do not use a dull pencil or ballpoint pen.)
- D.  Pass shroud line through hole in parachute and tape disk. Tie lines together with a double knot.
- E.  Attach remaining lines to other corners to complete parachute.



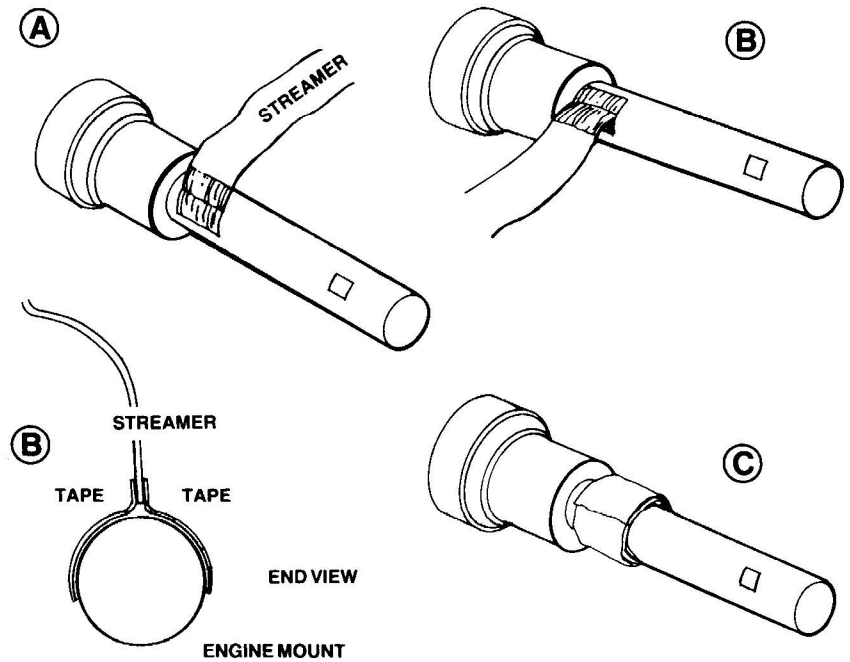
## 6. PARACHUTE ATTACHMENT TO FORWARD PISTON

- A.  Thread shroud lines through loop on forward piston.
- B.  Pass parachute back through loop of shroud lines as shown.
- C.  Pull lines tight.



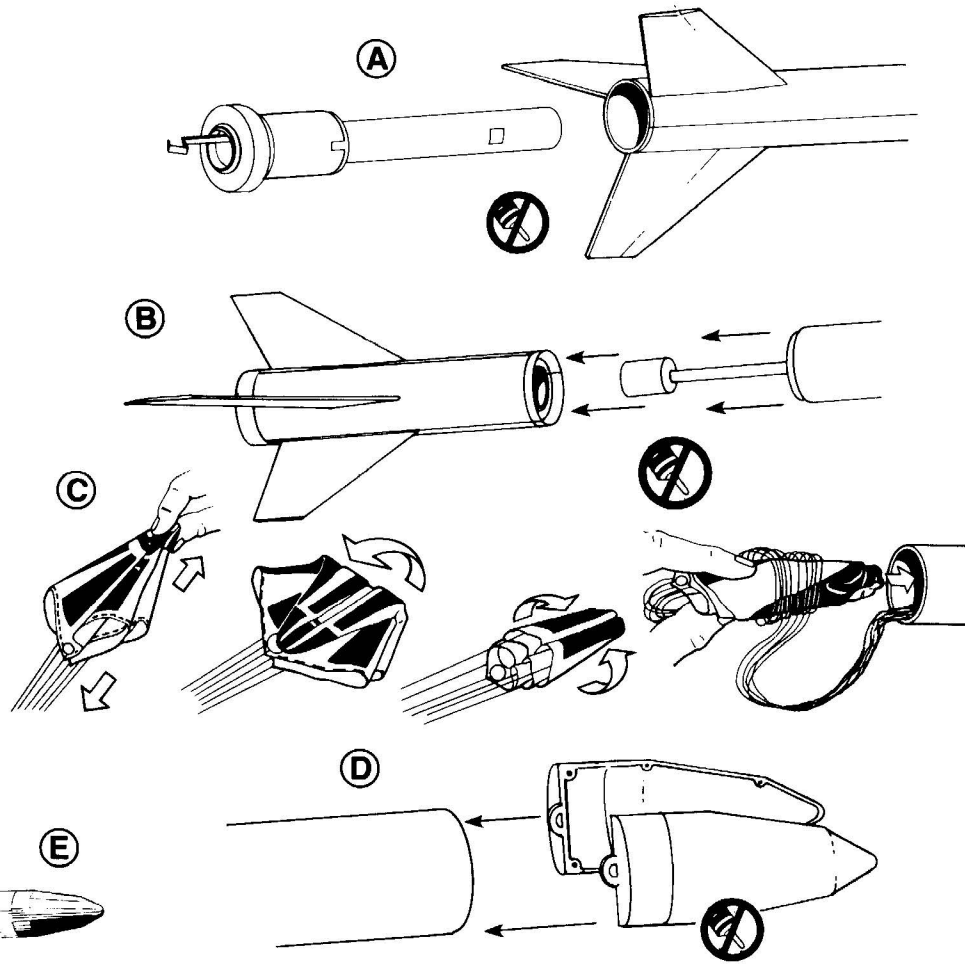
## 7. STREAMER ATTACHMENT TO ENGINE MOUNT ASSEMBLY

- A.  From the decal sheet, remove one of the pieces marked "streamer tape". Attach half of it to the streamer and the other half to the blue engine mount tube as shown.
- B.  Fold the streamer over and affix the other piece of streamer tape as shown.
- C.  Roll the remaining streamer length around the engine mount tube. The engine tube is now ready for final flight preparations.



## 8. PREPARING YOUR ROCKET FOR FLIGHT FINAL ASSEMBLY

- A.  Fit the fin panel assemblies together to form the rear portion of the rocket body tube. Insert the engine mount tube into the fin unit. *Do not glue.*
- B.  Slide the small piston out the back of the orange body tube and into the blue engine tube. Now slide the orange tube back and mate to the fin panel assembly tube. *Do not glue.*
- C.  To install parachute, spike, fold and roll the parachute as shown. Wrap the lines loosely around the 'chute and insert in rocket. Push piston back as far as it will move, but don't separate the rocket.
- D.  To install the nose cone, fit the nose cone halves together (*do not glue*) and insert the nose cone into the rocket.
- E.  For decal placement, refer to the front of the box. Gently lift one decal at a time and lightly lay it down in place. If position is correct, rub it down with your finger to remove bubbles and stick it securely.

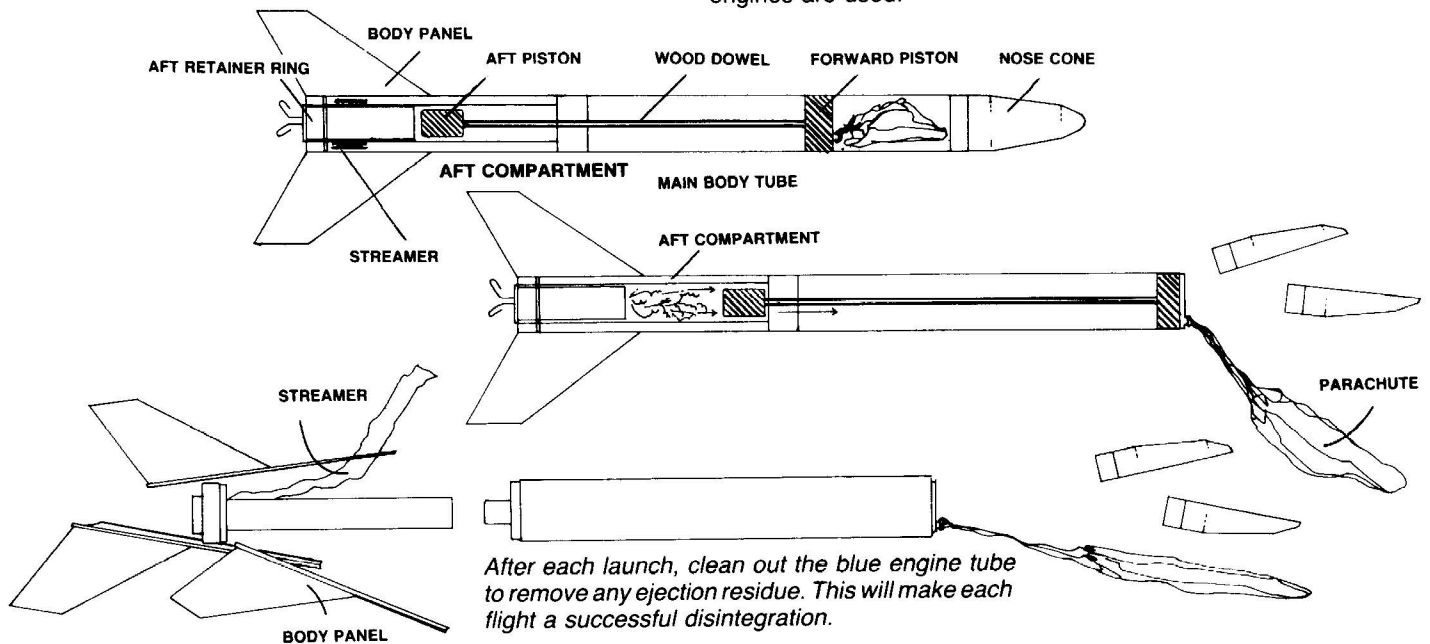


## WHAT TO EXPECT WHEN YOU FLY THIS ROCKET

Cato™ is unique because it safely simulates a mid-air break-up. First: prior to engine burnout the sliding piston arrangement is in the back position. At burn-out, the ejection charge (from the engine) pushes the piston forward which pushes off the nose cone and pushes out the parachute (middle drawing). The ejection gases are still at a high pressure and begin filling the aft compartment. When the pressure in the aft compartment is high enough, it simultane-

ously pushes the engine mount assembly backwards and the main body tube forward. This releases the body panels and allows the streamer on the engine mount to deploy.

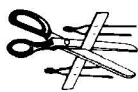
**Remember** your Cato™ rocket is intended to be flown only with Estes B6-0 and C6-0 engines. This allows the break-apart phase to occur at a low enough height to ensure all parts are recovered. In order for your Cato™ to disintegrate as it is intended to do safely, use exclusively Estes engines and launching products manufactured by Estes Industries. Other manufacturer's products may prevent your rocket from performing as intended. Estes can not accept responsibility for actual failures of Cato™ if other than Estes engines are used.



After each launch, clean out the blue engine tube to remove any ejection residue. This will make each flight a successful disintegration.

## PREPARE ENGINE

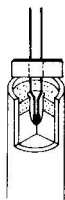
NOTE: Igniter plugs come with rocket engines. If your engines did not come with plugs, follow the instructions that came with the engines.



SEPARATE IGNITER AND IGNITER PLUG



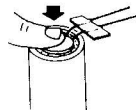
HOLD ENGINE UPRIGHT, DROP IN IGNITER



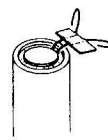
IGNITER MUST TOUCH PROPELLANT



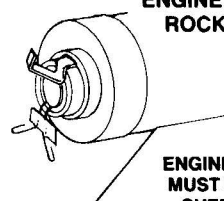
INSERT IGNITER PLUG



FIRMLY PUSH ALL THE WAY IN



BEND IGNITER WIRES BACK



INSERT ENGINE INTO ROCKET

ENGINE HOOK MUST LATCH OVER END OF ENGINE

## LAUNCH SUPPLIES

To launch your rocket you will need the following items:

- Estes Electrical Launch Controller and Launch Pad
- Recommended Estes Engines: B6-0 (First Flight), C6-0

To become familiar with your rocket's flight pattern, use a B6-0 engine for your first flight. **Use only Estes products to launch this rocket.**

## FLYING YOUR ROCKET

Choose a large field away from power lines, tall trees, and low flying aircraft. Try to find a field at least 250 feet (76 meters) 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.

Don't leave parachute packed more than a minute or so before launch during cold weather [colder than 40° Fahrenheit (4° Celsius)].

Parachute may be dusted with talcum powder to avoid sticking.

**Be prepared to recover seven pieces!**

## MISFIRES

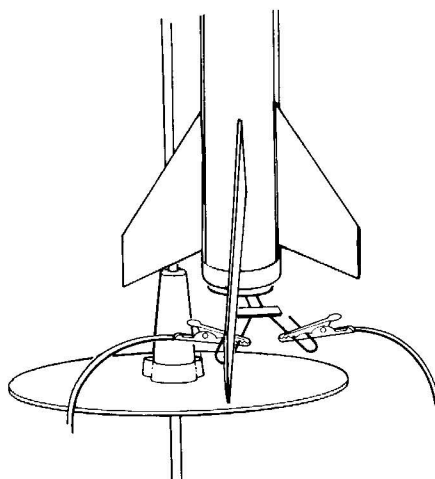
If the igniter functions properly but the propellant does not ignite, keep in mind the following: An Estes igniter will function properly even if the coated tip is chipped. However, if the coated tip is not in direct contact with the engine propellant, it will only heat and not ignite the engine.

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, then reinstall the igniter plug as illustrated above. Repeat the countdown and launch procedure.

## FOR YOUR SAFETY AND ENJOYMENT

Always follow the NAR\* MODEL ROCKETRY SAFETY CODE while participating in any model rocketry activities.

\*National Association of Rocketry



**SAFETY KEY MUST NOT BE IN LAUNCH CONTROLLER WHEN ATTACHING MICRO-CLIPS TO ENGINE IGNITER**

**MICRO-CLIPS MUST NOT TOUCH BLAST DEFLECTOR OR EACH OTHER**

## COUNTDOWN AND LAUNCH

- 10 BE CERTAIN SAFETY KEY IS NOT IN LAUNCH CONTROLLER.
- 9 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.
- 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 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.

Give audible countdown 5...4...3...2...1

## LAUNCH!!

**PUSH AND HOLD LAUNCH BUTTON UNTIL ENGINE IGNITES**

**If you use the ultrasafe E2™ or Command™ Launch Controllers to fly your models, use the following launch steps.**

- A. After attaching micro-clips, etc., insert the safety key into the controller receptacle. If the igniter clips have been attached properly to the igniter, the red L.E.D. will now begin to flash on and off and the audio continuity indicator will beep on and off.
- B. Hold the yellow (left) arm button down. The L.E.D. will stop flashing and the audio indicator will produce a steady tone.
- C. Verbally count down from five to zero loud enough for the bystanders to hear. Still holding the yellow arm button down, push and hold the orange (right) button down until the rocket ignites and lifts off.

REMOVE SAFETY KEY FROM LAUNCH CONTROLLER. REPLACE SAFETY KEY AND SAFETY CAP ON LAUNCH ROD.

## AFTER THE LAUNCH

In the early days of space exploration, NASA's engineers were only able to achieve a 70% failure rate with their rockets. Today you can achieve 100% "failure" flying your Cato™. To be absolutely confident that your rocket will in fact "Cato", clean out the blue engine tube between launches to remove ejection charge residue. This allows the piston to slide freely for successful disintegration after disintegration. Remember your Cato™ is supposed to disintegrate in flight.



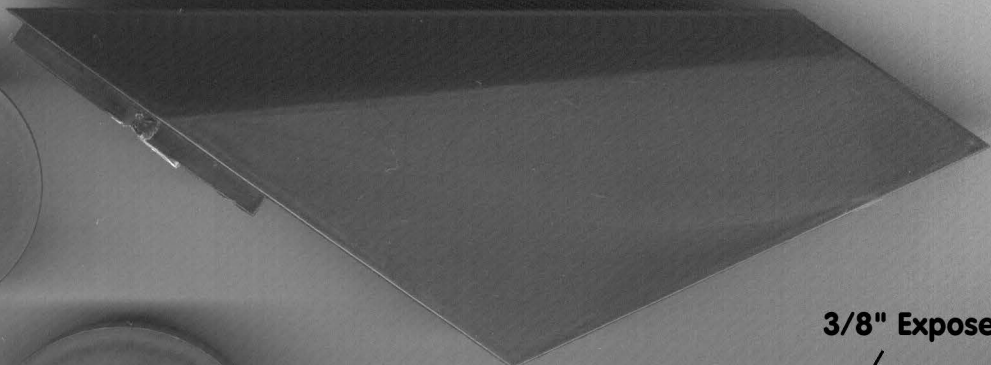
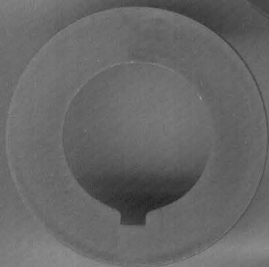
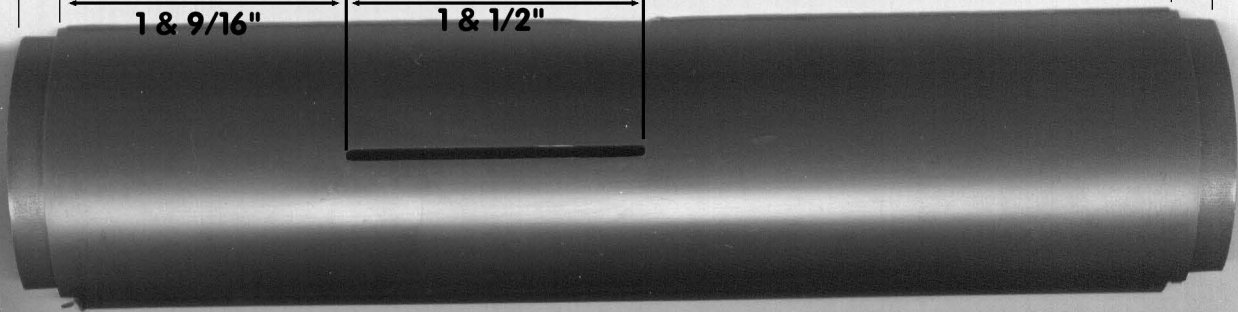
3/16"

6"

3/16"

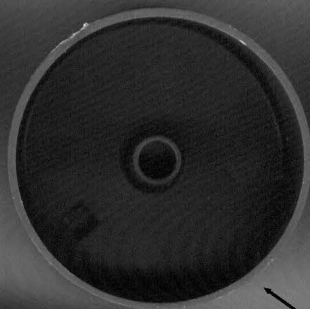
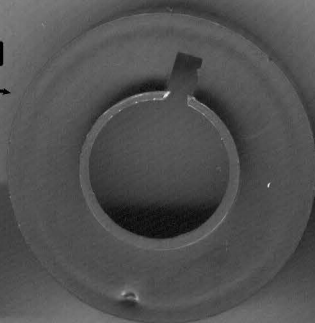
1 & 9/16"

1 & 1/2"

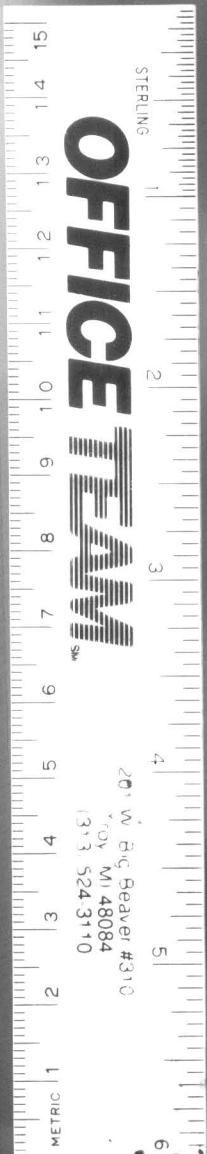
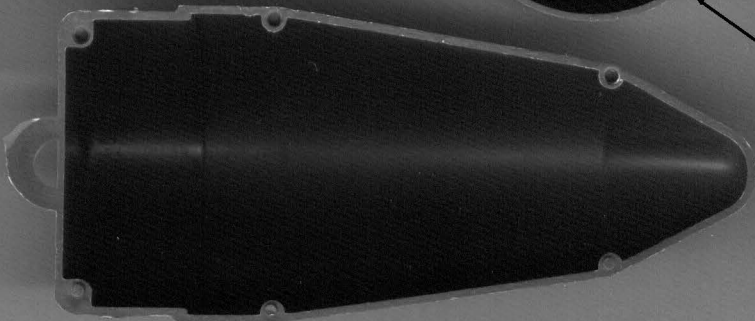


3/8" Exposed

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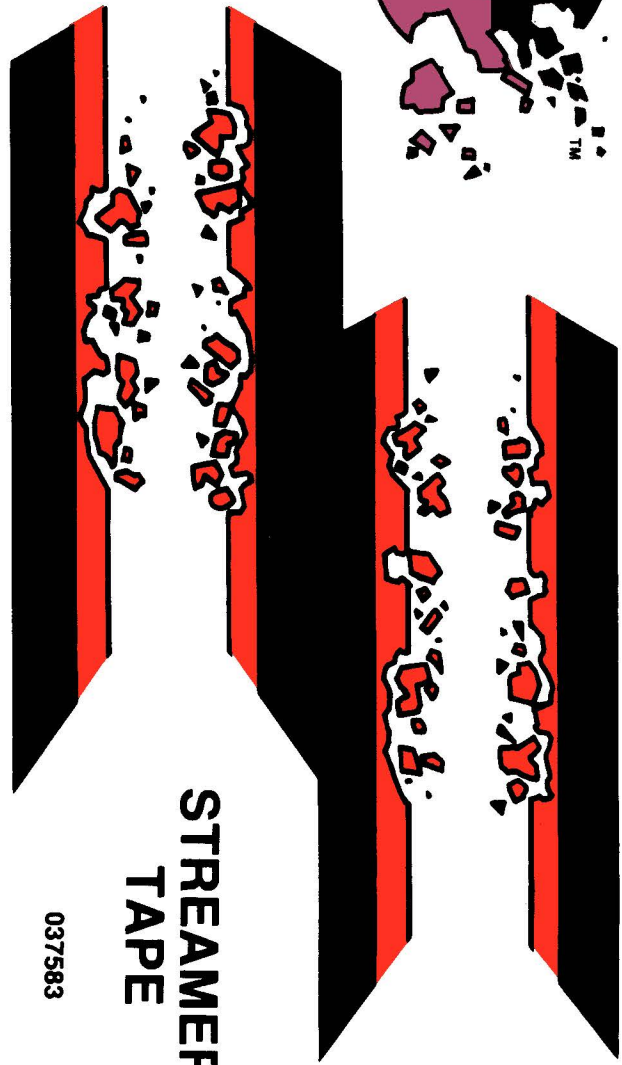
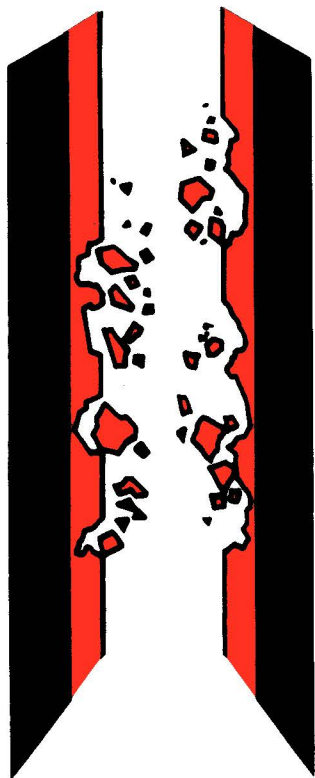
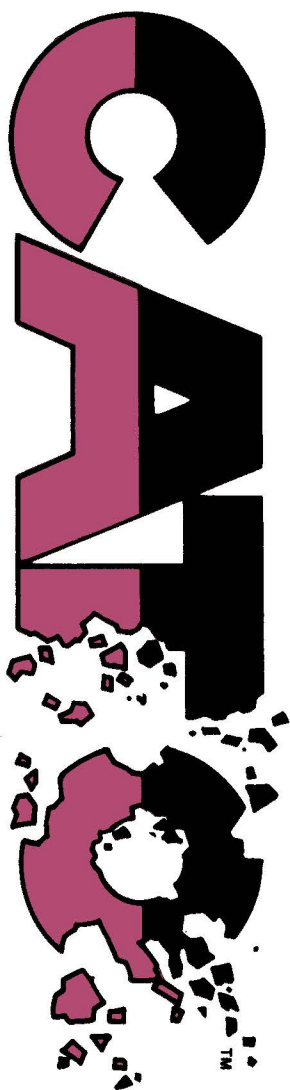


3/4" Long





# STREAMER TAPE



STREAMER  
TAPE

037583

