

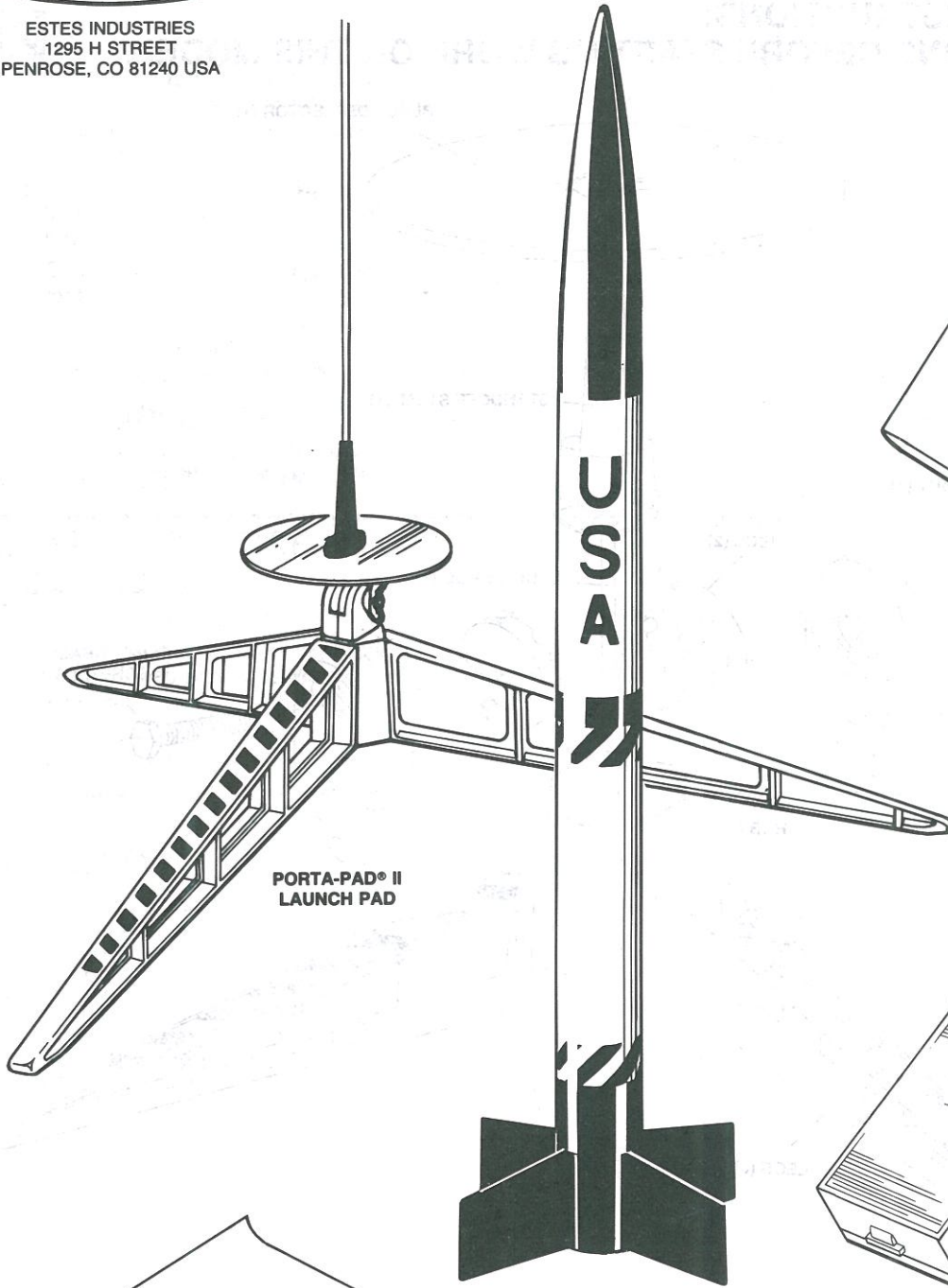


ESTES INDUSTRIES  
1295 H STREET  
PENROSE, CO 81240 USA

# AMERICA™ STARTER SET

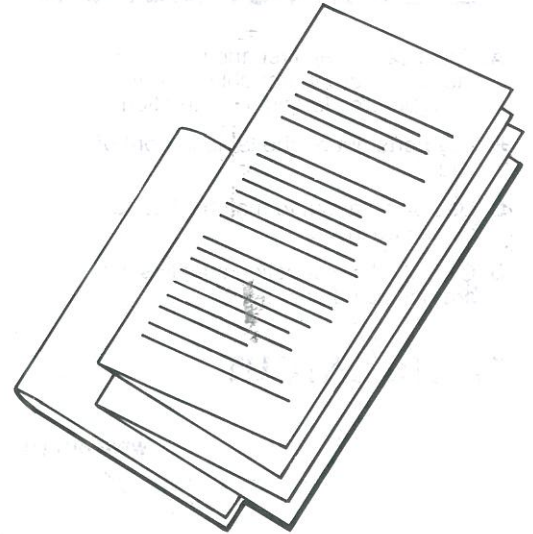
EST #1447

(7-94) 84078

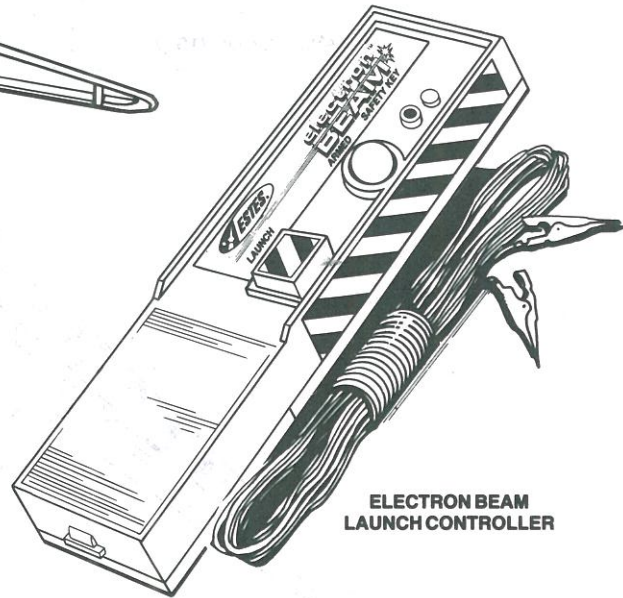


PORTA-PAD® II  
LAUNCH PAD

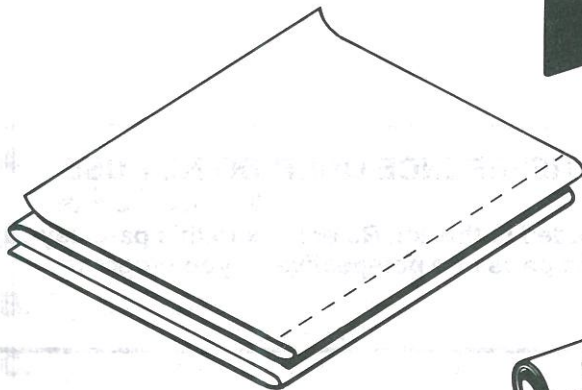
AMERICA™ ROCKET



LITERATURE



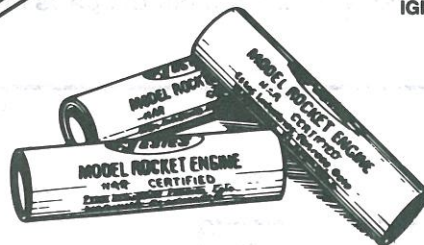
ELECTRON BEAM  
LAUNCH CONTROLLER



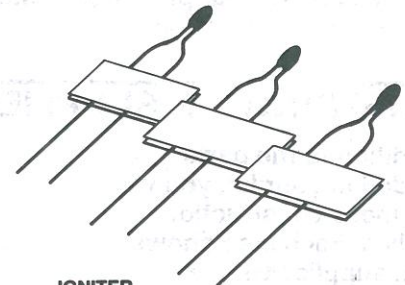
RECOVERY  
WADDING



IGNITER PLUGS



ROCKET  
ENGINES



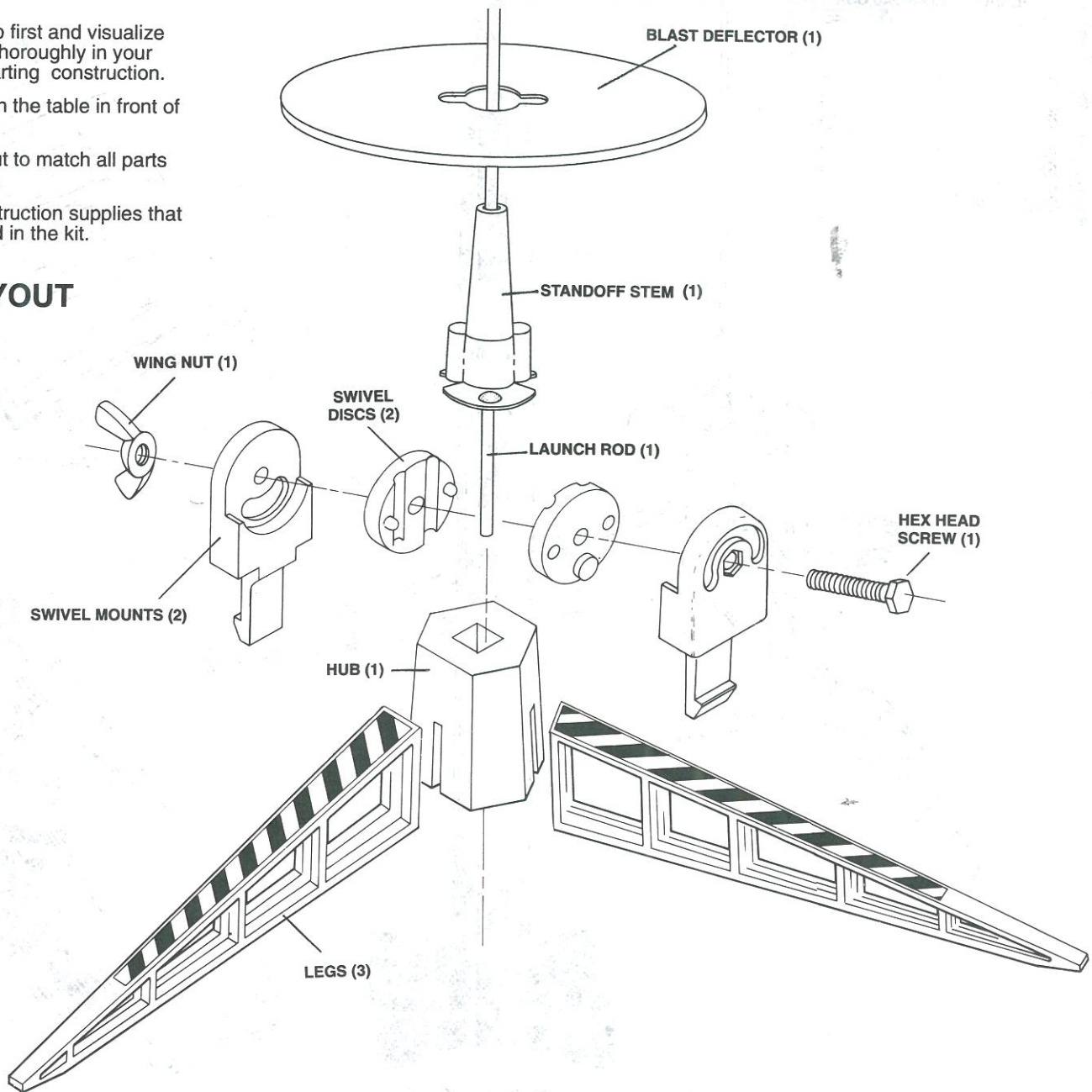
IGNITER  
PACK

## Part One: Launch Pad Assembly

### HOW TO USE THESE INSTRUCTIONS: READ ALL INSTRUCTIONS BEFORE STARTING WORK ON THIS MODEL.

- A. Read each step first and visualize the procedure thoroughly in your mind before starting construction.
- B. Lay parts out on the table in front of you.
- C. Use parts layout to match all parts contained in kit.
- D. Collect all construction supplies that are not included in the kit.

### PARTS LAYOUT



### EXTREMELY IMPORTANT: THE PARTS LAYOUT IS FOR REFERENCE ONLY! DO NOT USE THIS DRAWING ALONE.

The parts layout is only intended to assist you in locating the parts included in this kit. Refer back to this parts layout as you build your pad step by step. This method will help you put the parts into perspective as you progress through the construction.

### CONSTRUCTION SUPPLIES

In addition to the parts included in your kit, you will need these construction supplies. Each step shows which supplies will be required.



SCREWDRIVER



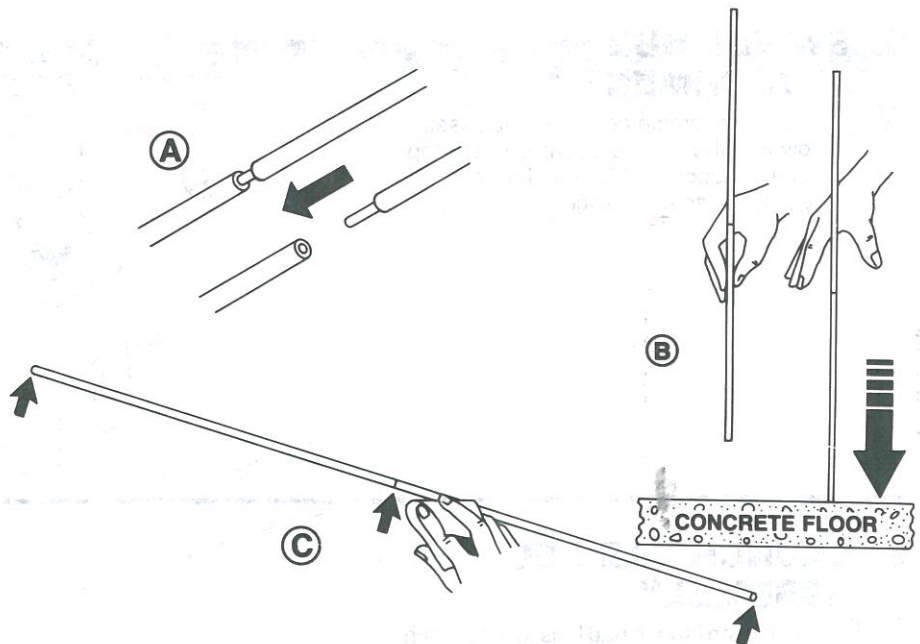
SANDPAPER



## 1. LAUNCH ROD ASSEMBLY



- A.  Join launch rod halves by inserting pin contained in one rod into hole contained in other rod. Do not attempt to push the pin in all the way.
- B.  Hold the joined rods above a concrete floor and repeatedly drop on end until rod halves are tightly joined.
- C.  Check the completed rod joint and ends for burrs. If any exist, remove them with a piece of fine sandpaper. It is important that the launch rod be smooth to avoid snagging a model rocket launch lug.

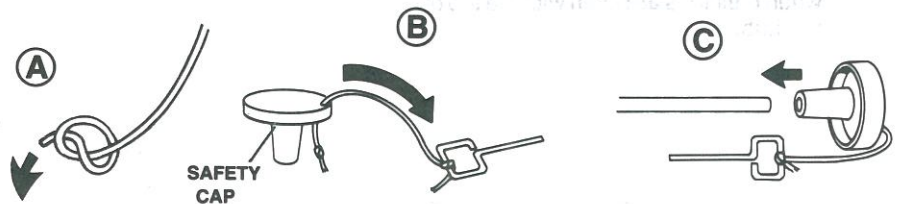


### IMPORTANT

SAND JOINT AND BOTH ENDS UNTIL COMPLETELY SMOOTH

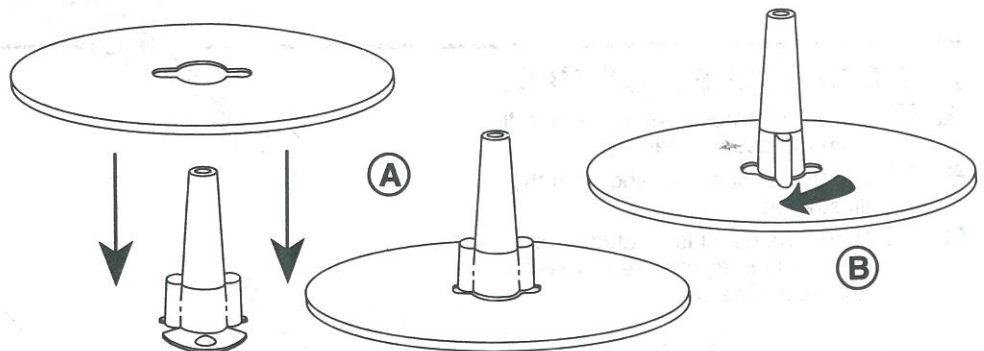
## 2. SAFETY KEY CAP ASSEMBLY

- A.  Tie a knot in one end of elastic cord.
- B.  Pass the cord through the small hole in the safety cap and tie to the controller safety key.
- C.  Place the safety cap on one end of the launch rod and set aside.



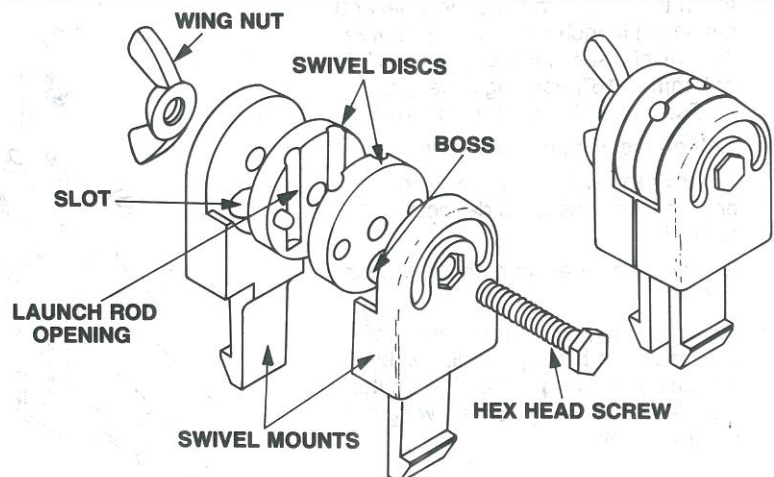
## 3. LAUNCH STANDOFF ASSEMBLY

- A.  Slide the blast deflector over the standoff stem. Make sure the blast deflector is resting on the base of the standoff.
- B.  Rotate the standoff stem 1/4 turn so nodes (bumps) on stem base engage in slots in the blast deflector.



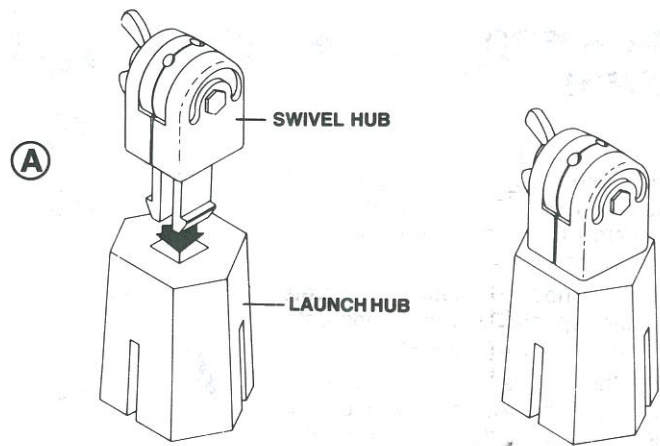
## 4. SWIVEL HUB ASSEMBLY

- A.  Join swivel discs so that the small and large launch rod openings match.
- B.  Insert hex head machine screw through central hole in one swivel mount.
- C.  Slide joined swivel discs onto hex head screw. Seat circular boss on swivel disc into slot in swivel mount.
- D.  Slide remaining swivel mount onto hex head screw and seat slot over circular boss.
- E.  Attach and lightly tighten wing nut.



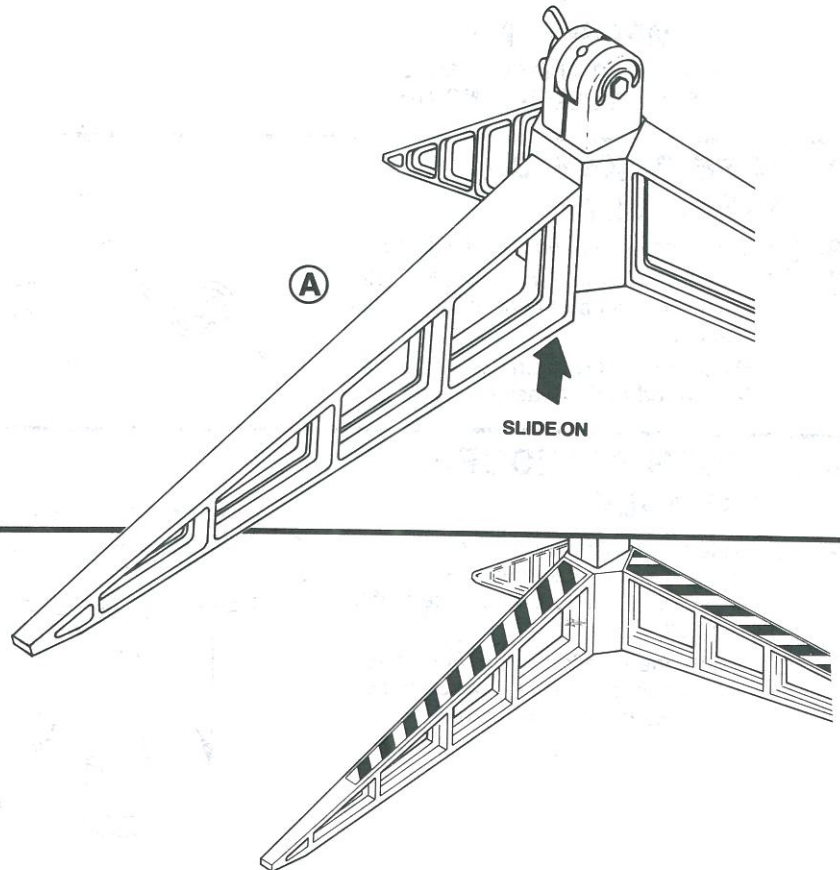
## 5. SWIVEL HUB ATTACHMENT

- A.  Push the completed swivel hub assembly into the square opening in the top of the launch pad hub as far as it will go. It will snap in place.



## 6. LAUNCH PAD LEG ASSEMBLY

- A.  Attach the launch pad legs to the launch pad hub. Legs are seated properly when their tops are even with the top of the hub.

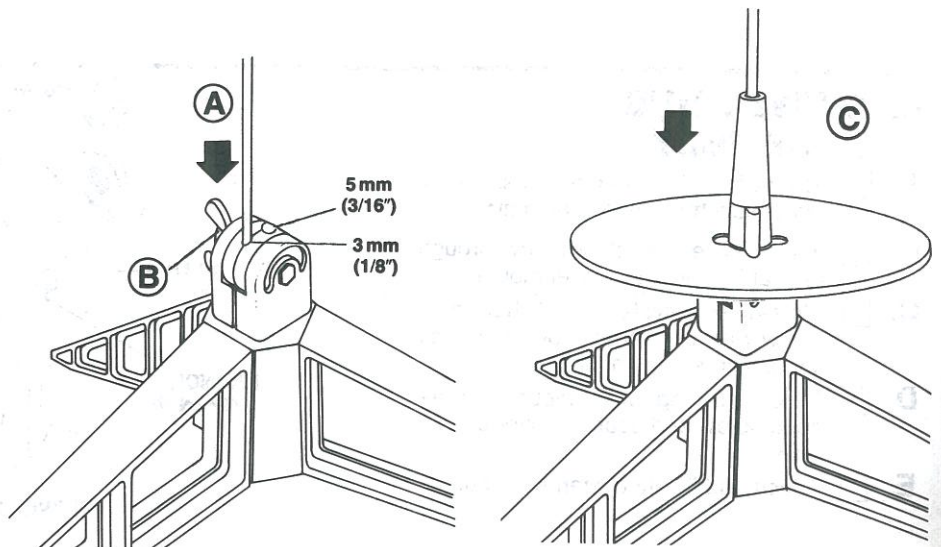


## 7. DECAL APPLICATION

- A.  Carefully remove one decal at a time from the decal sheet.  
B.  Lightly position it as shown in the illustration.  
C.  When the decal is located properly, gently rub it down to remove bubbles and stick it securely.

## 8. BLAST DEFLECTOR ATTACHMENT

- A.  Insert the launch rod into the smaller 3 mm (1/8") launch rod opening between the swivel discs until it stops. (The larger 5 mm (3/16") opening is designed for Estes Maxi™ Rod launch rods.)  
B.  Tighten the wing nut securely.  
C.  Remove the safety cap from the rod end and slide the blast deflector onto the rod.  
D.  Replace the safety cap on the launch rod.  
E.  You may adjust the launch angle of your rocket in breezy conditions by loosening the wing nut and tilting the rod. Be sure to retighten the wing nut before launch.





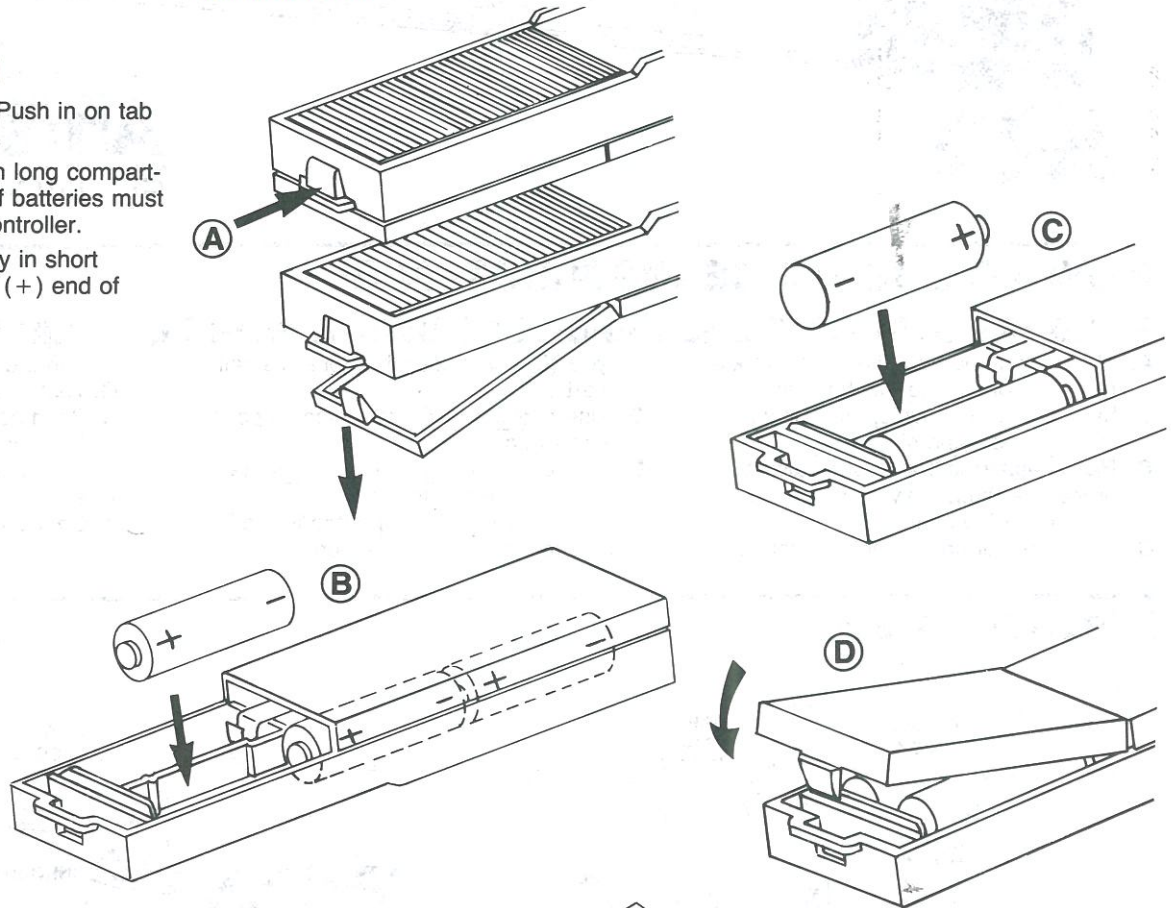
## Part Two: Controller Assembly

This controller requires four AA alkaline batteries (not included). Note that only alkaline batteries are recommended.

**SAFETY NOTE:** This controller contains a safety key that must be inserted into the controller to arm the launch system. Follow this simple safety rule:  
**A.** Never insert the key into the controller until you are ready to launch.  
**B.** Remove the key immediately after launch or if you must return to the launch pad in case of a misfire. Always keep the safety key in your possession or place safety cap/key on launch rod.

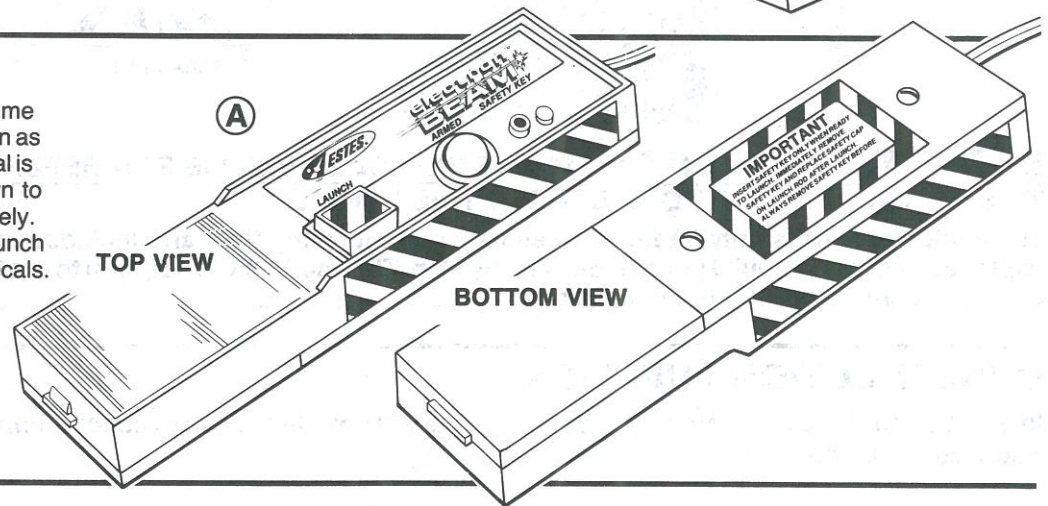
### 1. BATTERY INSTALLATION

- A.  Remove battery door. Push in on tab and pull down on door.
- B.  Install three batteries in long compartment. Plus (+) ends of batteries must face towards rear of controller.
- C.  Install remaining battery in short compartment with plus (+) end of battery facing forward.
- D.  Replace battery door.



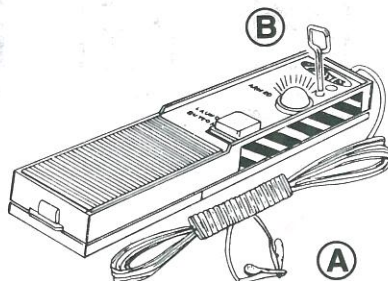
### 2. DECAL PLACEMENT

- A.  Carefully remove one decal at a time from the decal sheet. Lightly position as shown in the illustration. When decal is located properly, gently rub it down to remove bubbles and stick it securely. Note: Be careful not to overlap launch controller body joint with the side decals.



### 3. TEST THE CONTROLLER

- A.  Clip micro-clips together.
- B.  Insert safety key. This will cause the bulb to light.
- C.  Press the launch button for **only a moment**. Bulb will go out while button is depressed.



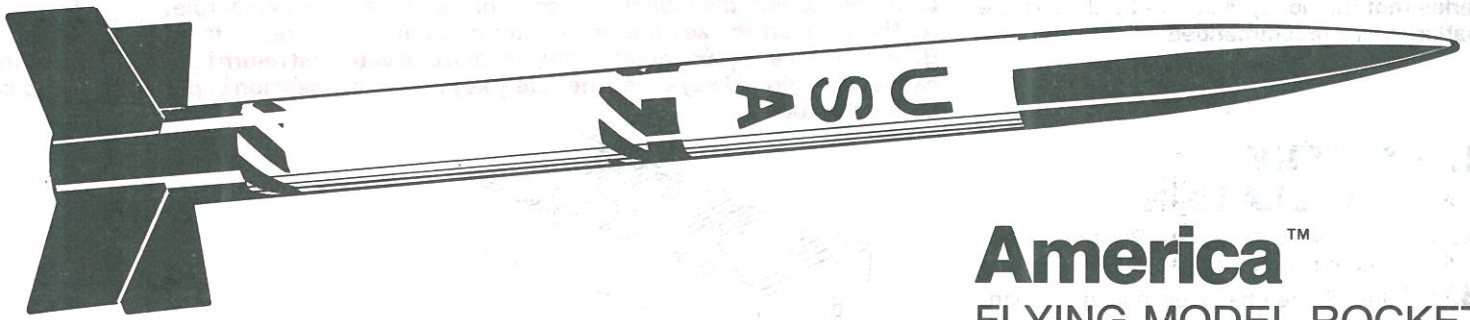
If the controller does not behave as described, check the following:

- Make sure the micro-clips are firmly clipped together.
- Remove and re-insert the safety key to insure it is making contact.
- Make sure batteries are correctly inserted as described above.

If you cannot get the controller to work, return it to Estes for replacement (see warranty on back of instructions).



# Part Three: Rocket Assembly



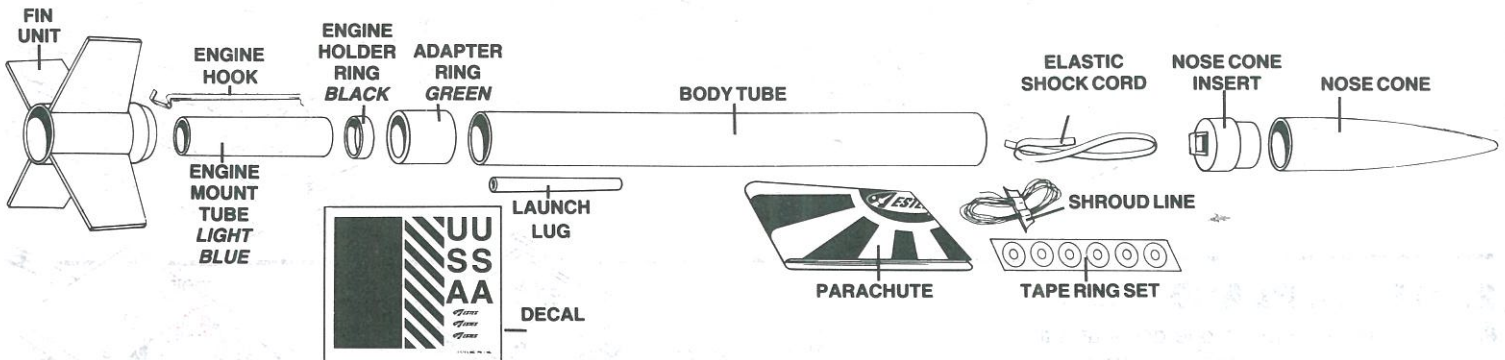
**America™**  
FLYING MODEL ROCKET

## HOW TO USE THESE INSTRUCTIONS:

### READ ALL INSTRUCTIONS BEFORE STARTING WORK ON THIS MODEL

- A. This rocket, incorporating basic model rocketry construction techniques, will help you in the development of your rocketry modeling skills.
- B. Read each step first and visualize the procedure thoroughly in your mind before starting construction.
- C. Lay parts out on the table in front of you. (Check inside tubes for any small parts.)
- D. Use exploded view to match all parts contained in kit.
- E. Collect all construction supplies that are not included in the kit.
- F. Shock cord mount is printed in the instructions and will be found on page 9 in the patterns section.
- G. Test fit parts before applying any glue.
- H. Sand parts as necessary for proper fit.
- I. The construction supplies required for each step are listed at the beginning of each step.
- J. Check off each step as you complete it.

## EXPLODED VIEW



**EXTREMELY IMPORTANT: THE EXPLODED VIEW IS FOR REFERENCE ONLY! DO NOT USE THIS DRAWING ALONE TO ASSEMBLE THIS MODEL.**

The exploded view is only intended to assist you in locating the parts included in this kit. Refer back to this exploded view as you build your model step by step. This method will help you to put the parts into perspective as you progress through the construction.

## CONSTRUCTION SUPPLIES

In addition to the parts included in your kit, you will need these construction supplies. Each step shows which supplies will be required.



PENCIL



KNIFE



GLUE  
(white or yellow)



RULER



SCISSORS



PLASTIC CEMENT

**GLUE IS APPLIED TO SURFACES SHOWN IN RED.**

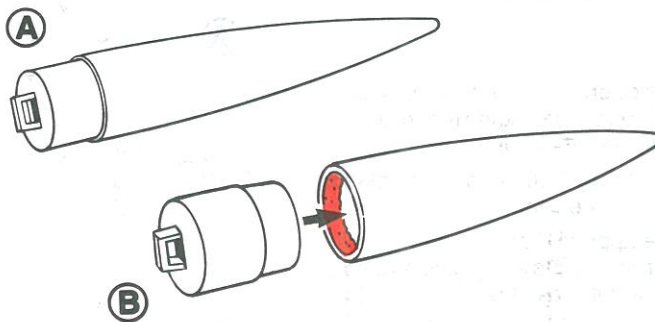


# 1. NOSE CONE ASSEMBLY

NOTE: This is the only step in the construction of your model rocket that requires plastic cement



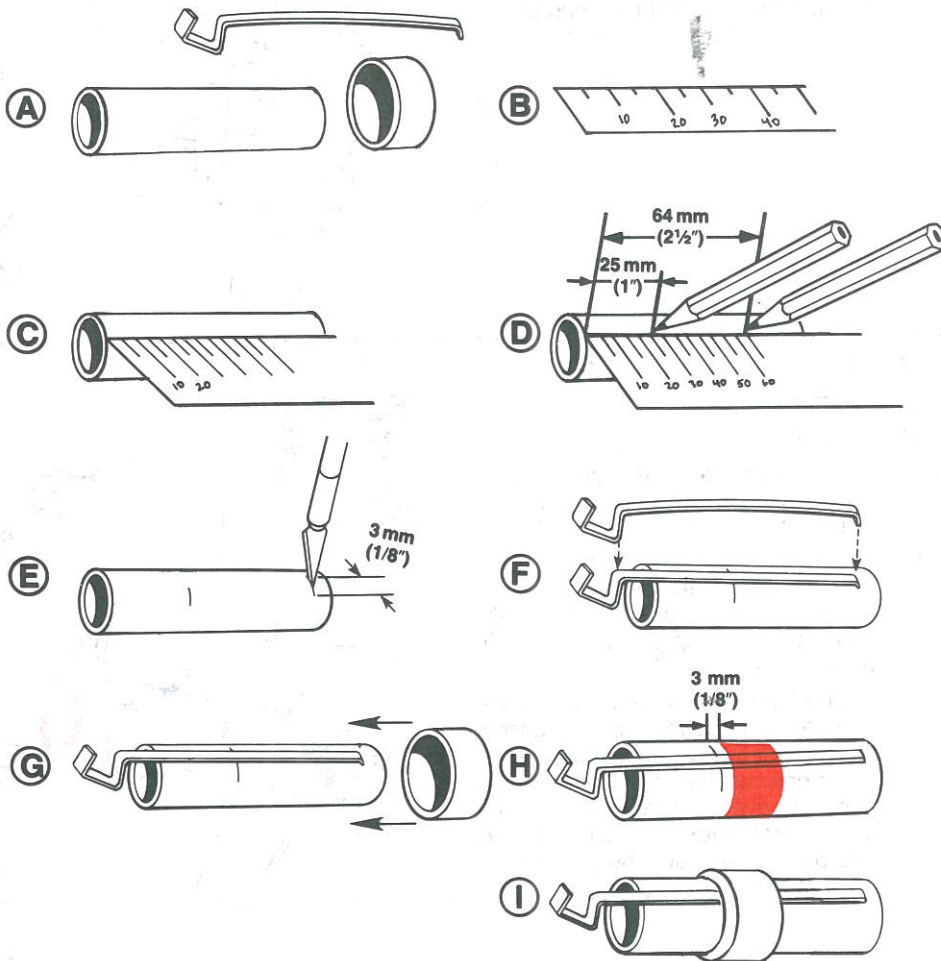
- A.  Test fit the nose cone insert into the nose cone. **Do not glue at this time.** Remove the insert.
- B.  Apply plastic cement as shown in the illustration and assemble the nose cone and insert pieces. Allow assembly to dry.



# 2. ENGINE MOUNT ASSEMBLY



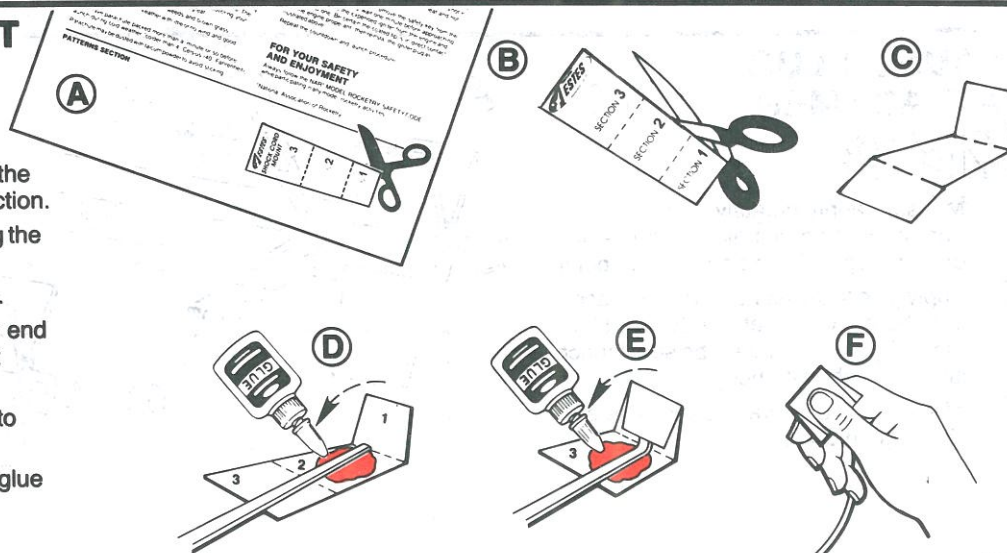
- A.  For this step you will need the light blue engine mount tube, the engine hook and the black engine holder ring.
- B.  Locate the ruler printed in the center crease of this instruction sheet.
- C.  Lay one end of the engine mount tube on the zero mark of the ruler.
- D.  Place a mark on the engine mount tube 25 mm (1") from zero. Make another mark 64 mm (2½") from zero.
- E.  Cut a 3 mm (1/8") long slit at the 64 mm (2½") mark.
- F.  Insert the engine hook into the slit as shown. The engine hook should extend beyond the rear of the engine tube.
- G.  Test fit the black engine holder ring by sliding it on to the front of the engine tube. Slide the ring over the engine hook and up to the 25 mm (1") mark that you made in step D. Remove the ring.
- H.  Apply glue around engine mount tube about 3 mm (1/8") ahead of 25 mm (1") mark as shown.
- I.  Now slide the engine holder ring on to the engine mount tube up to 25 mm (1") mark **and no further.** Do not stop while sliding ring into place or the glue may grab at the wrong point.
- J.  Let assembly dry.



# 3. SHOCK CORD MOUNT ASSEMBLY



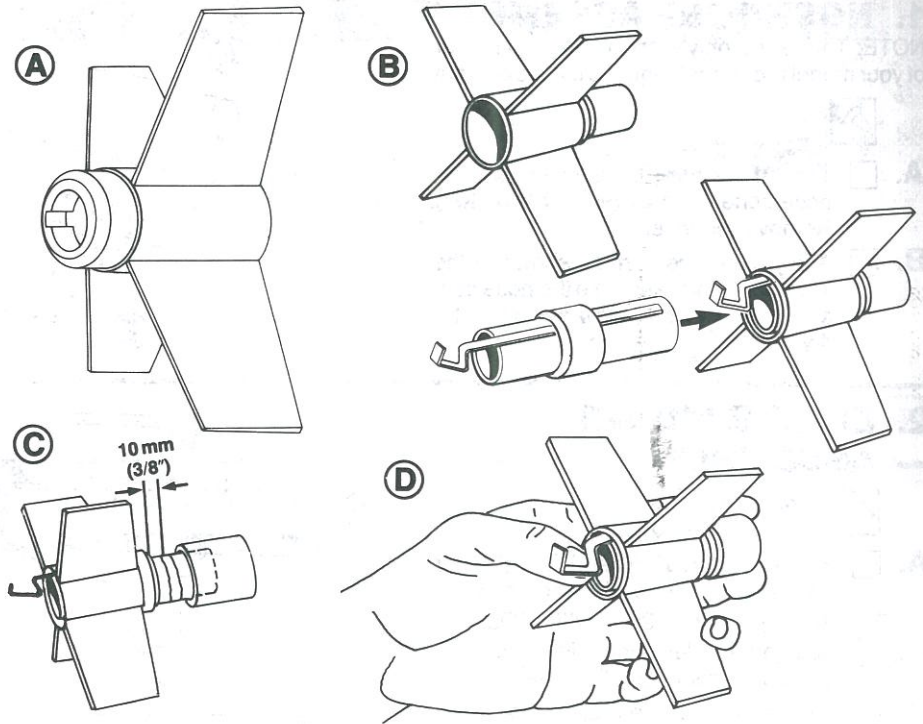
- A.  Locate the shock cord mount on the bottom of page 9 in the patterns section.
- B.  Cut out the shock cord mount along the solid black outline.
- C.  Crease on dotted lines by folding.
- D.  Spread glue on section 2 and lay end of shock cord into glue at a slight diagonal as shown.
- E.  Fold section forward. Apply glue to section 3. Fold forward again.
- F.  Clamp firmly with your fingers until glue dries.



## 4. FIN UNIT ASSEMBLY



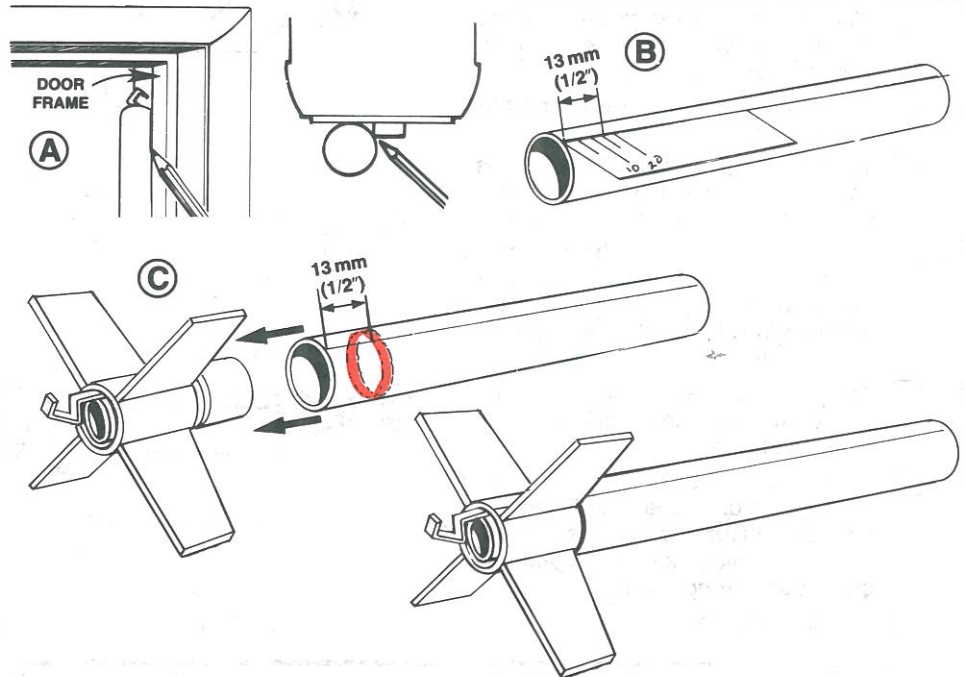
- A.  Locate slot on inside of fin unit. The engine hook on the engine mount tube will fit into slot in fin unit.
- B.  Slide assembly from step 1 into plastic fin unit from the rear.
- C.  Measure approximately 10 mm (3/8") ahead of fin unit and apply glue around the engine tube as shown.
- D.  Hold engine mount tube in place with thumb and in one continuous movement, slide green adapter ring on to engine mount until it touches the fin unit.



## 5. FIN ATTACHMENT



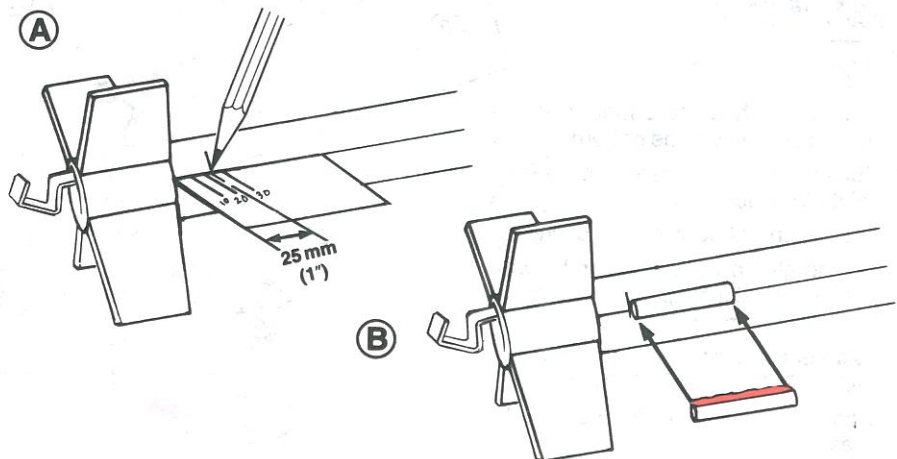
- A.  Using a door frame as a guide, lightly draw a straight line along entire length of body tube as shown.
- B.  Measure approximately 13 mm (1/2") from one end of the body tube. This gives you an idea of where inside the tube you will be spreading glue for the next step.
- C.  Apply glue inside one end of body tube about 13 mm (1/2") from end. Align the line on body tube with the engine hook and in one continuous motion, push the body tube over the adapter ring until the body tube touches the fin unit as shown. The body tube should be snug to top edge of fin unit.



## 6. LAUNCH LUG ATTACHMENT



- A.  Measure approximately 25 mm (1") from front of fin unit along the line you drew in step 5. Place a mark at this point.
- B.  Apply glue to the launch lug and attach it to the body tube at the 25 mm (1") mark. Sight along tube to be sure launch lug is straight with body.
- C.  After glue is dry, erase pencil line still showing on tube.





# WHAT TO EXPECT WHEN FLYING YOUR AMERICA™

The America™ is a perfect beginner's rocket. The different engines that are suggested for this kit will give you a wide range of performances. The A8-3 (recommended for the first flight), will put your rocket up to 76-91 meters (250-300 feet) and the B6-4 should give you about 152-168 meters (500-550 feet) of altitude. Your America™ is capable of using a C6-5. On a C6-5, you can expect nearly 305 meters (1000 feet) of altitude. Remember to "size" your

engine for the fields you are flying in. "A" engines are ideal for baseball diamond sized fields whereas a "C" engine may require an area twice the size of a football field. At apogee (the highest point of your rocket's flight), the parachute will eject. If it is breezy, remember to fly only in less than 32 kph (20 mph) wind. Your rocket may drift, so keep this also in mind when you decide on which engine to use. Enjoy flying your America™.

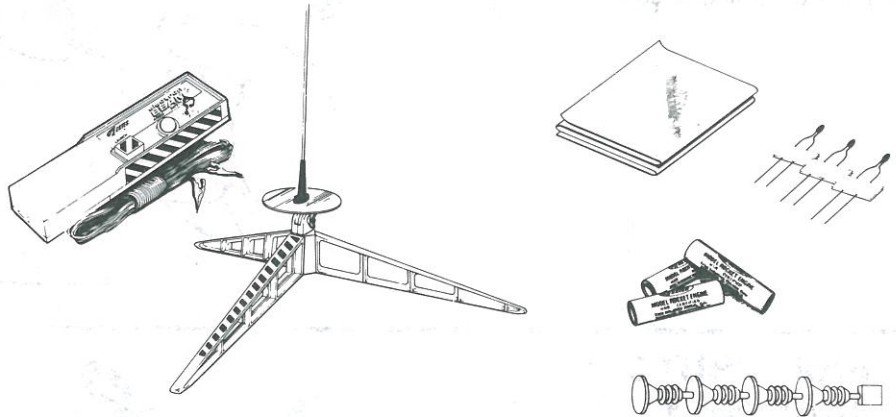
## LAUNCH SUPPLIES

To launch your rocket you will need the following items:

- Estes Electrical Launch Controller and Launch Pad
- Estes Recovery Wadding No. 2274
- Recommended Estes Engines: 1/2A6-2, A8-3 (First Flight), A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C6-5 or C6-7

All Estes engines include igniters and igniter plugs.

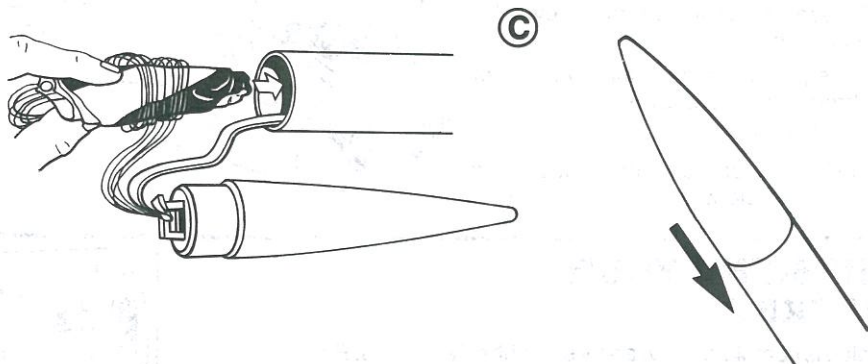
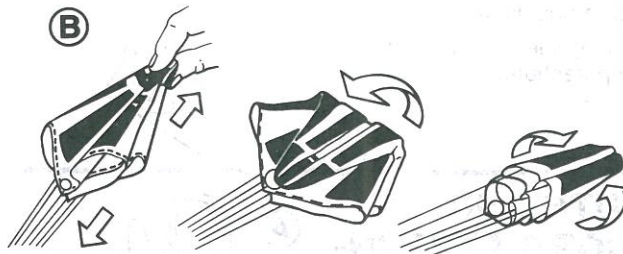
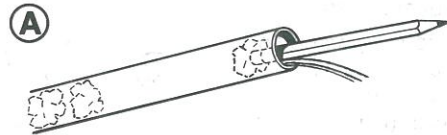
To become familiar with your rocket's flight pattern, use an A8-3 engine for your first flight. Use only Estes products to launch this rocket.



## Part Four: Flight Preparation

### 1. RECOVERY SYSTEM INSTALLATION

- Loosely crumple three squares of recovery wadding. Insert wadding into body, but **do not** pack tightly.
- Pull 'chute into spike shape. Fold top of 'chute down, then fold **one** side over. Roll 'chute tightly and wrap shroud lines around it.
- Push shock cord and 'chute down into body and socket nose cone into place. **CAUTION:** 'Chute must slide easily into body. If it fits tightly, remove and repack 'chute.



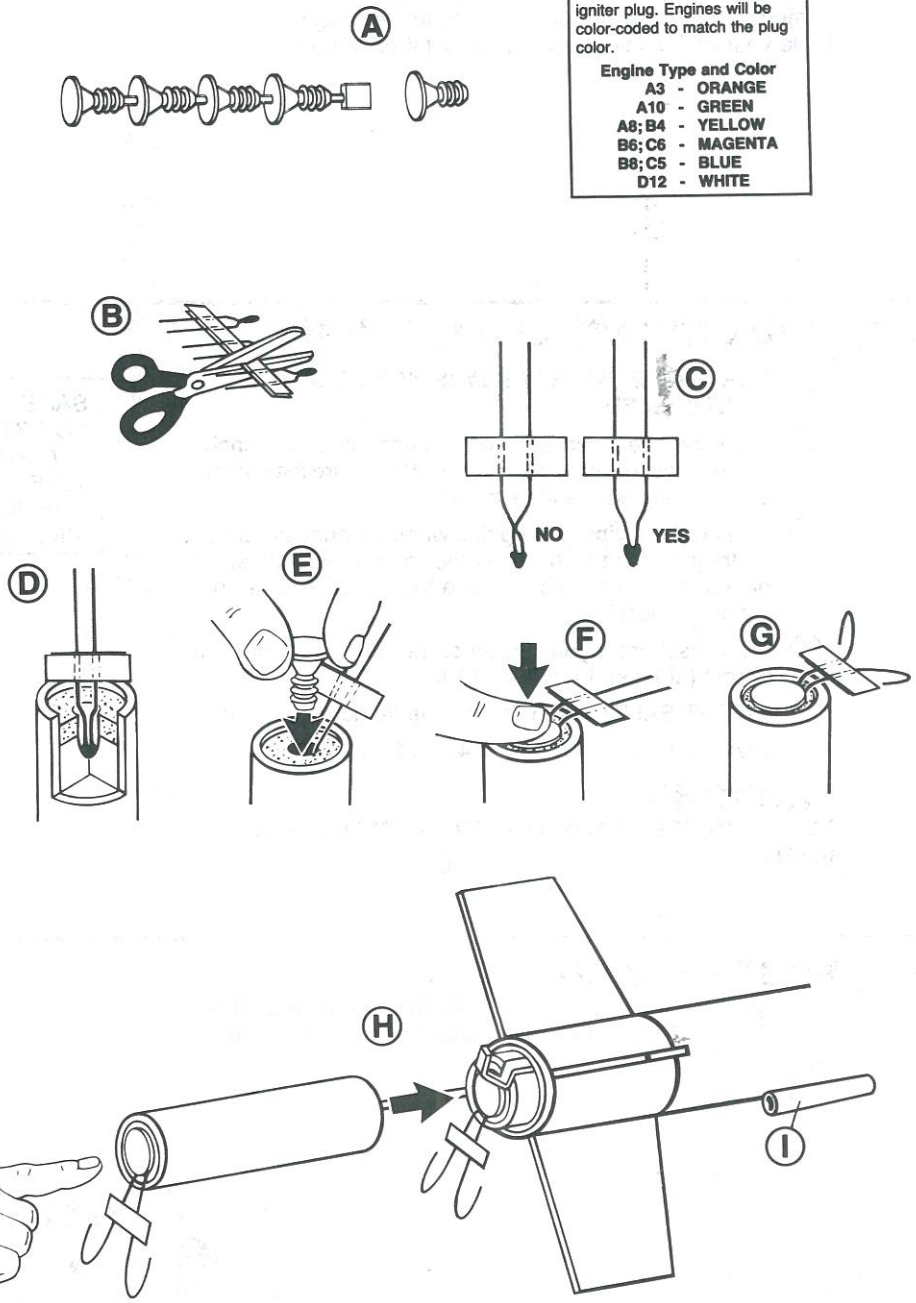
## 2. ENGINE/IGNITER INSTALLATION

**NOTE:** Always launch your model rockets by electrical means only. Our professionally engineered system uses an electrical igniter and color-coded igniter plug. The plug holds the igniter against the engine propellant so positive ignition will occur. The plug is ejected at ignition and may be recovered and used again. Follow this easy procedure to ensure reliable operation.

- A.  Separate one igniter plug from its tree as shown. The plugs are color-coded to fit specific engine sizes. A tag attached to the tree also designates which engines may be used with a certain plug.
- B.  Carefully remove the staple holding igniters in paper. Cut one igniter from the strip as shown.
- C.  Igniter will fail if wire leads touch. Gently separate wires if necessary.
- D.  Hold engine upright, drop igniter into nozzle. **Note:** Igniter must touch propellant.
- E.  Insert igniter plug.
- F.  Firmly push the plug all the way in.
- G.  Bend igniter wires into loops to allow a more positive micro-clip attachment.
- H.  Push end of engine hook back and insert engine into mount tube. Hook must latch securely over end of engine to hold it in place.
- I.  Engine must be rotated so igniter is **not** aligned beneath launch lug.
- J.  Your rocket is now prepared for flight. Read part five for countdown and launch.

The following is a list of engine size and respective color of the igniter plug. Engines will be color-coded to match the plug color.

Engine Type and Color	
A3	ORANGE
A10	GREEN
A8; B4	YELLOW
B6; C6	MAGENTA
B8; C5	BLUE
D12	WHITE



## Part Five: Launch & Recovery

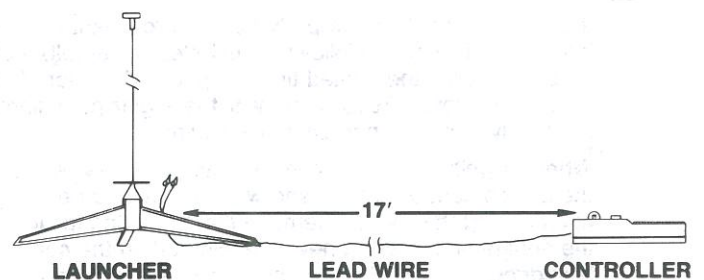
### A. FLYING YOUR ROCKET

Set up launch pad in an open area. Choose a large field away from power lines, tall trees, and low flying aircraft. Try to find a field at least 76 meters (250 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.

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

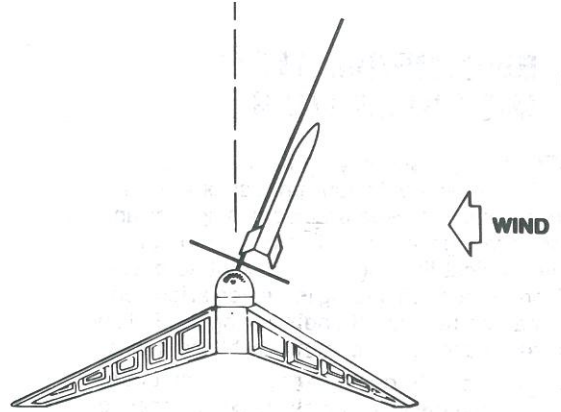
Parachute may be dusted with talcum powder to avoid sticking.





## B. PAD ADJUSTMENT

Your Porta-Pad® can be adjusted by loosening and tightening of the wing nut. A rocket will always fly **into** the wind. Remember this when you adjust your pad. You may want to angle your rocket into the wind so that it drifts back to you.



## C. COUNTDOWN AND LAUNCH

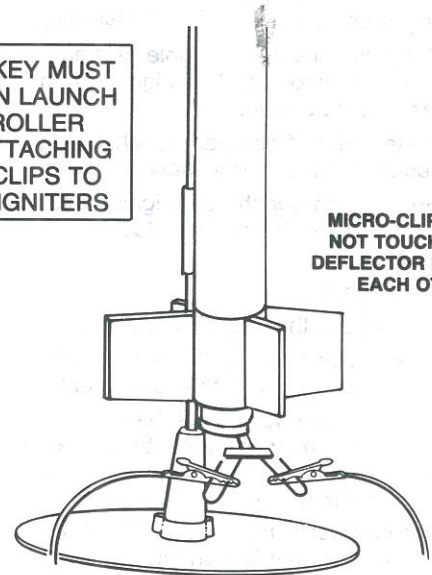
- ⑩ **BE CERTAIN SAFETY KEY IS NOT IN LAUNCH CONTROLLER.**
- ⑨ Remove safety cap and slide launch lug over launch rod to place rocket on launch pad. Make sure the rocket slides freely on the launch rod.
- ⑧ Attach micro-clips to the igniter wires. Arrange the clips so they do not touch each other or 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 5 meters - 15 feet).
- 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**

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

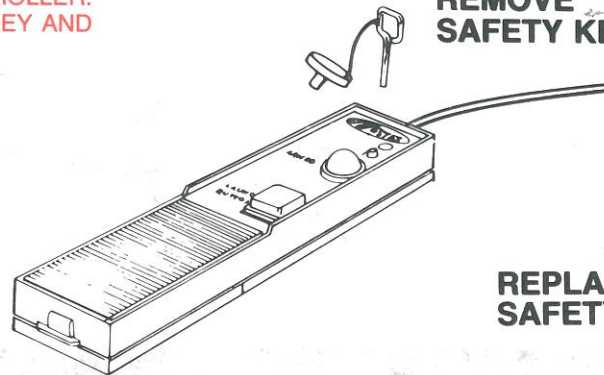
**MICRO-CLIPS MUST NOT TOUCH BLAST DEFLECTOR PLATE OR EACH OTHER**



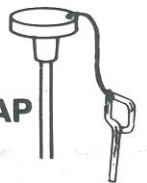
## D. POST-LAUNCH SAFETY

**REMOVE SAFETY KEY FROM LAUNCH CONTROLLER. KEEP KEY WITH YOU OR REPLACE SAFETY KEY AND SAFETY CAP ON LAUNCH ROD.**

**REMOVE SAFETY KEY...**



**REPLACE SAFETY CAP**



## E. 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. Repeat the countdown and launch procedure.

The full line of Estes products is available from most toy and hobby shops and many chain stores. Or for more information, write:  
**Estes Industries**  
P.O. 227, Penrose, CO 81240.

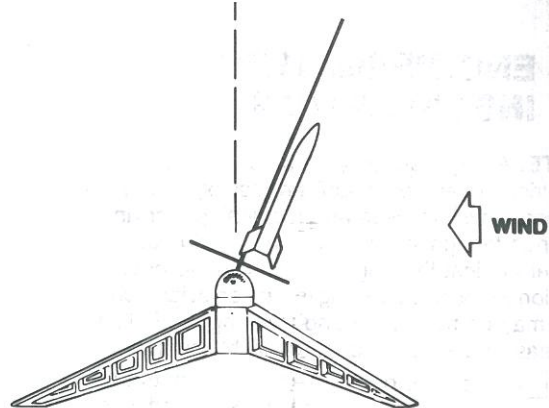
### **FOR YOUR SAFETY AND ENJOYMENT**

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

\*National Association of Rocketry

## B. PAD ADJUSTMENT

Your Porta-Pad® can be adjusted by loosening and tightening of the wing nut. A rocket will always fly **into** the wind. Remember this when you adjust your pad. You may want to angle your rocket into the wind so that it drifts back to you.



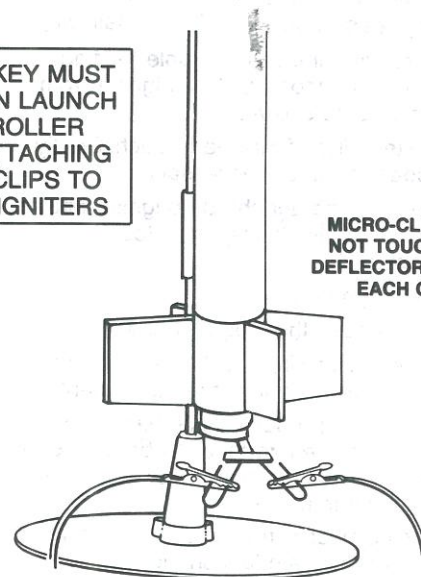
## C. COUNTDOWN AND LAUNCH

- 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 5 meters - 15 feet).
- 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**

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

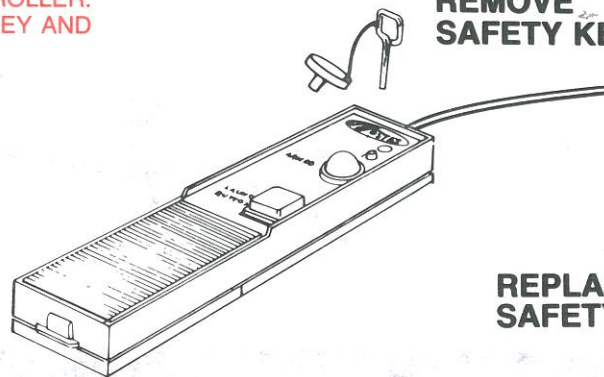
**MICRO-CLIPS MUST NOT TOUCH BLAST DEFLECTOR PLATE OR EACH OTHER**



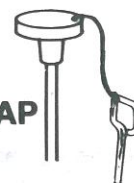
## D. POST-LAUNCH SAFETY

**REMOVE SAFETY KEY FROM LAUNCH CONTROLLER. KEEP KEY WITH YOU OR REPLACE SAFETY KEY AND SAFETY CAP ON LAUNCH ROD.**

**REMOVE SAFETY KEY...**



**REPLACE SAFETY CAP**



## E. 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. Repeat the countdown and launch procedure.

The full line of Estes products is available from most toy and hobby shops and many chain stores. Or for more information, write:  
**Estes Industries**  
P.O. 227, Penrose, CO 81240.

## FOR YOUR SAFETY AND ENJOYMENT

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

\*National Association of Rocketry