

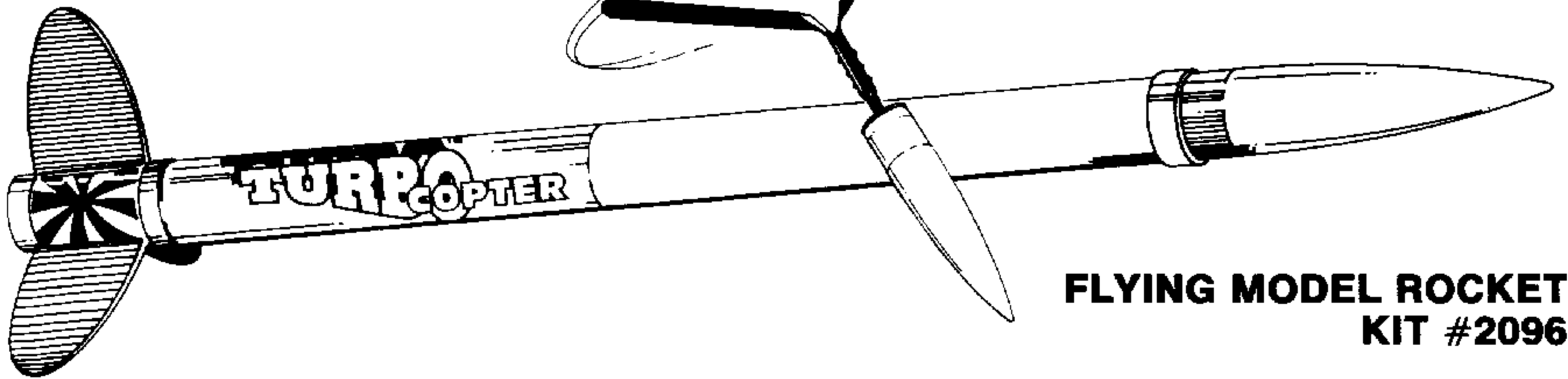


ESTES INDUSTRIES
1295 H STREET
PENROSE, CO 81240 USA

EX
SERIES

TURBO
COPTER

*Started 1-6-95
Finished 1-6-95*



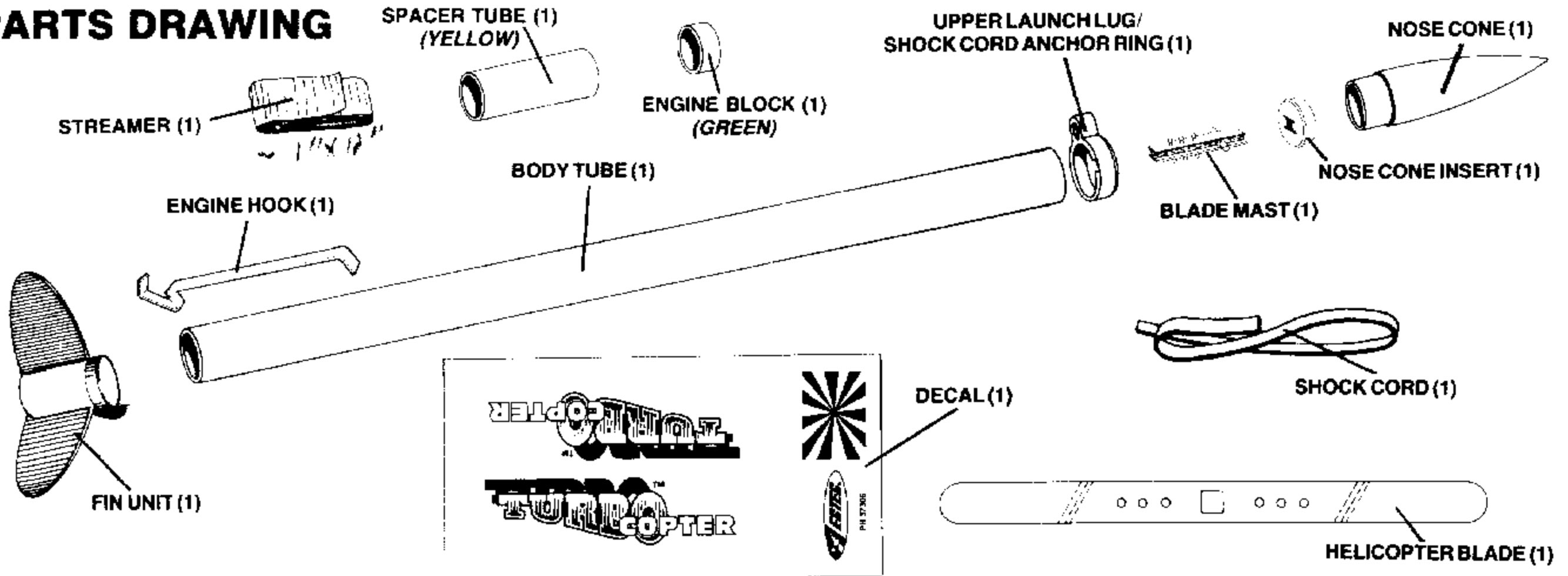
**FLYING MODEL ROCKET
KIT #2096**

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 continuing 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 parts drawing to match all parts contained in kit.
- E. Collect all construction supplies that are not included in the kit.
- F. Test fit parts before applying any glue.
- G. The construction supplies required for each step are listed at the beginning of each step.
- H. Check off each step as you complete it.

PARTS DRAWING



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

The parts drawing is only intended to assist you in locating the parts included in this kit. Refer back to this parts drawing 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.



SCISSORS



HOBBY KNIFE



PENCIL



PLASTIC CEMENT



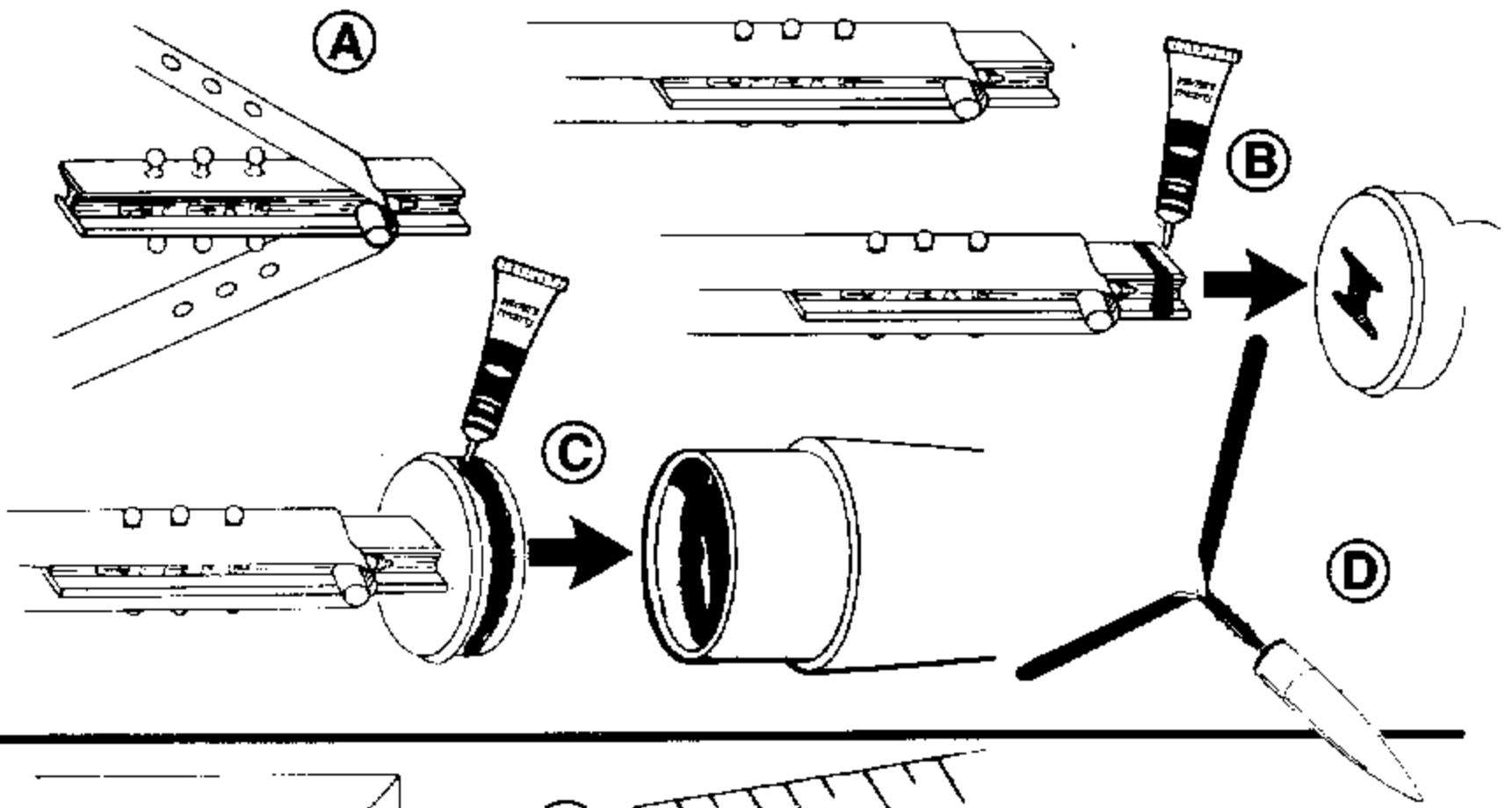
MASKING TAPE

PLASTIC CEMENT IS APPLIED TO SURFACES SHOWN IN RED.

1. NOSE CONE ASSEMBLY



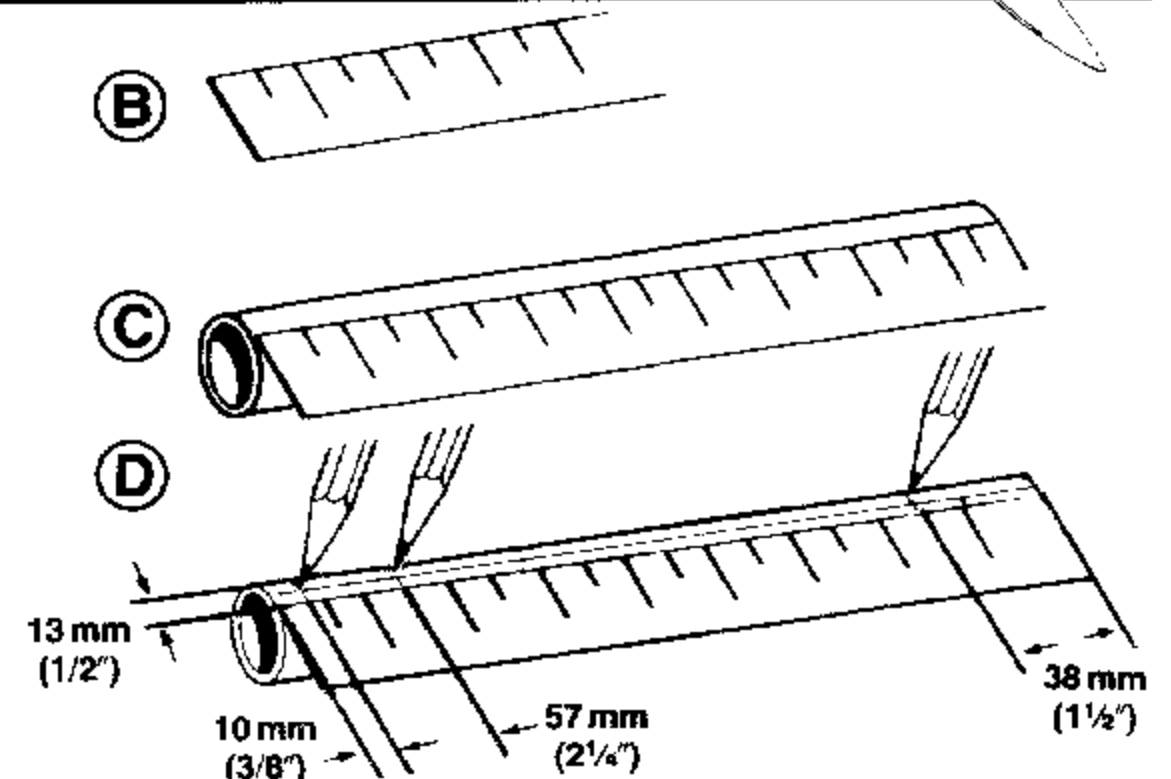
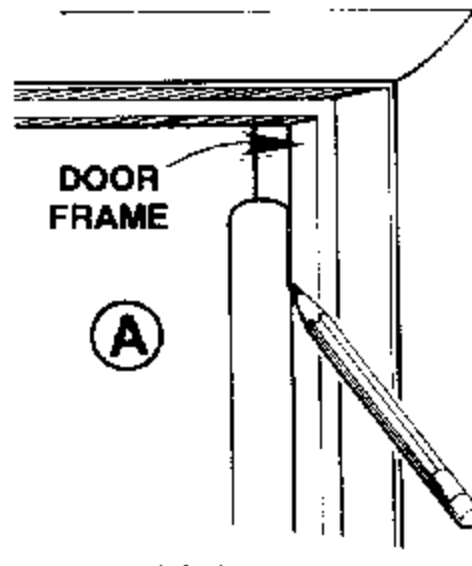
- Insert mast into square cutout in the helicopter blade. Fold the blade in half and snap the round posts into the holes in the helicopter blade.
- Insert and glue the blade mast into the nose cone insert.
- Test fit the nose cone insert into the nose cone. Apply plastic cement as shown in the illustration and assemble the nose cone and insert pieces. Allow assembly to dry.
- Fold the blades out along the score line on the blade.



2. TUBE MARKING DETAIL



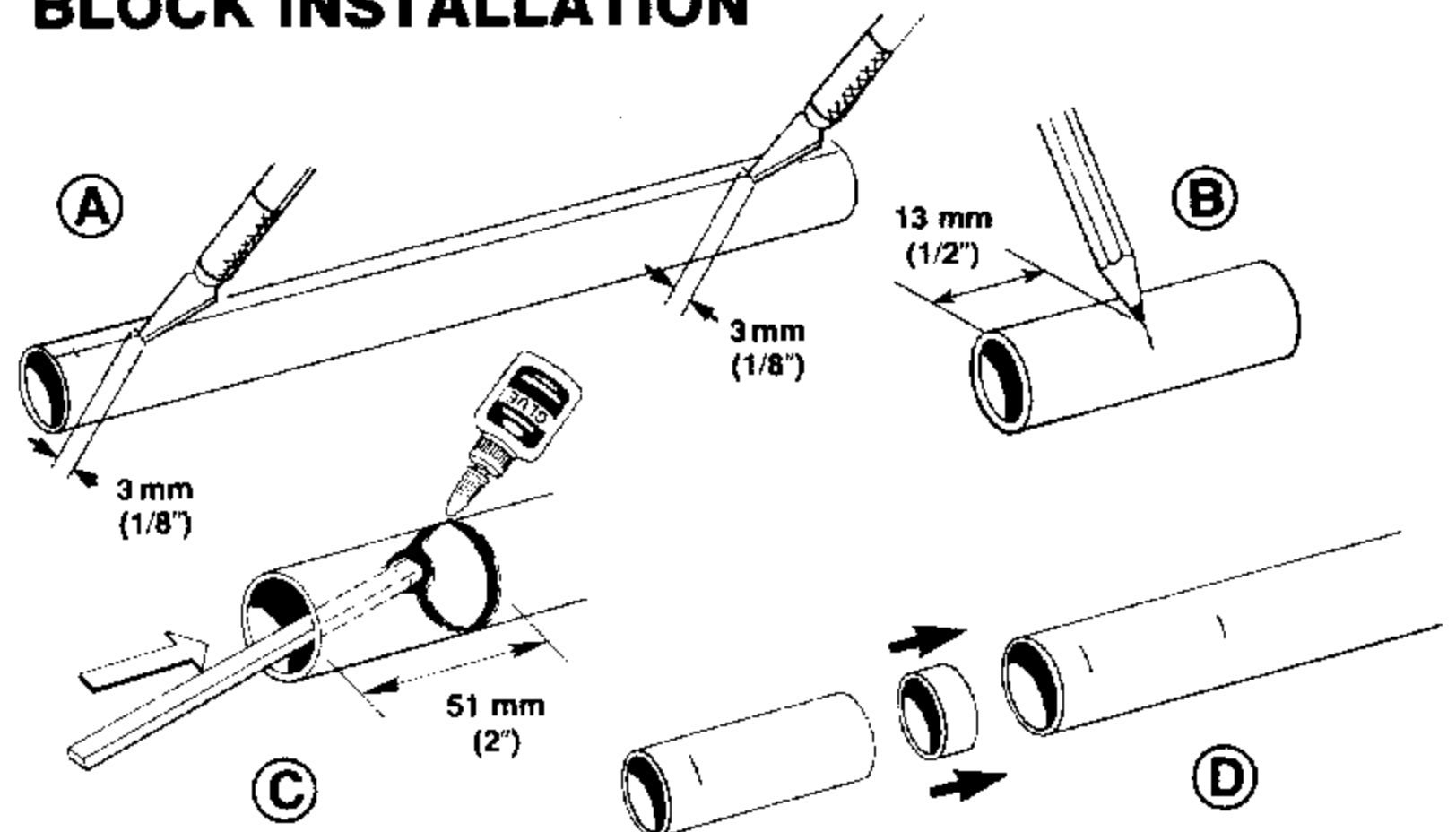
- Using a door frame as a guide, lightly draw a straight line along the entire length of the tube.
- Locate the ruler printed in the center crease of this instruction sheet.
- Lay one end of the body tube on the zero mark of the ruler.
- Place three marks on the line you drew in step 2A. Make one 38 mm (1 1/2") from one end of the tube. Make two more marks at the other end of the tube, one at 57 mm (2 1/4") and the other at 10 mm (3/8") from zero. Make the third mark 13 mm (1/2") long.



3. TUBE CUTTING AND ENGINE BLOCK INSTALLATION



- Cut a 3 mm (1/8") wide slit at the 57 mm (2 1/4") and 38 mm (1 1/2") marks as shown. Do not cut a slot at the 10 mm (3/8") mark.
- Mark the yellow cardboard tube 12 mm (1/2") from one end.
- Smear glue 51 mm (2") inside the white body tube from the end with the pencil mark using a scrap piece of wood or an old pencil.
- Insert the green engine block in the tube, and push it in using the yellow tube until the mark on the yellow tube is even with the end of the white tube. **Quickly** remove the yellow tube to keep it from being glued in the white tube. **NOTE:** The engine block should be forward of the slot in the white tube.

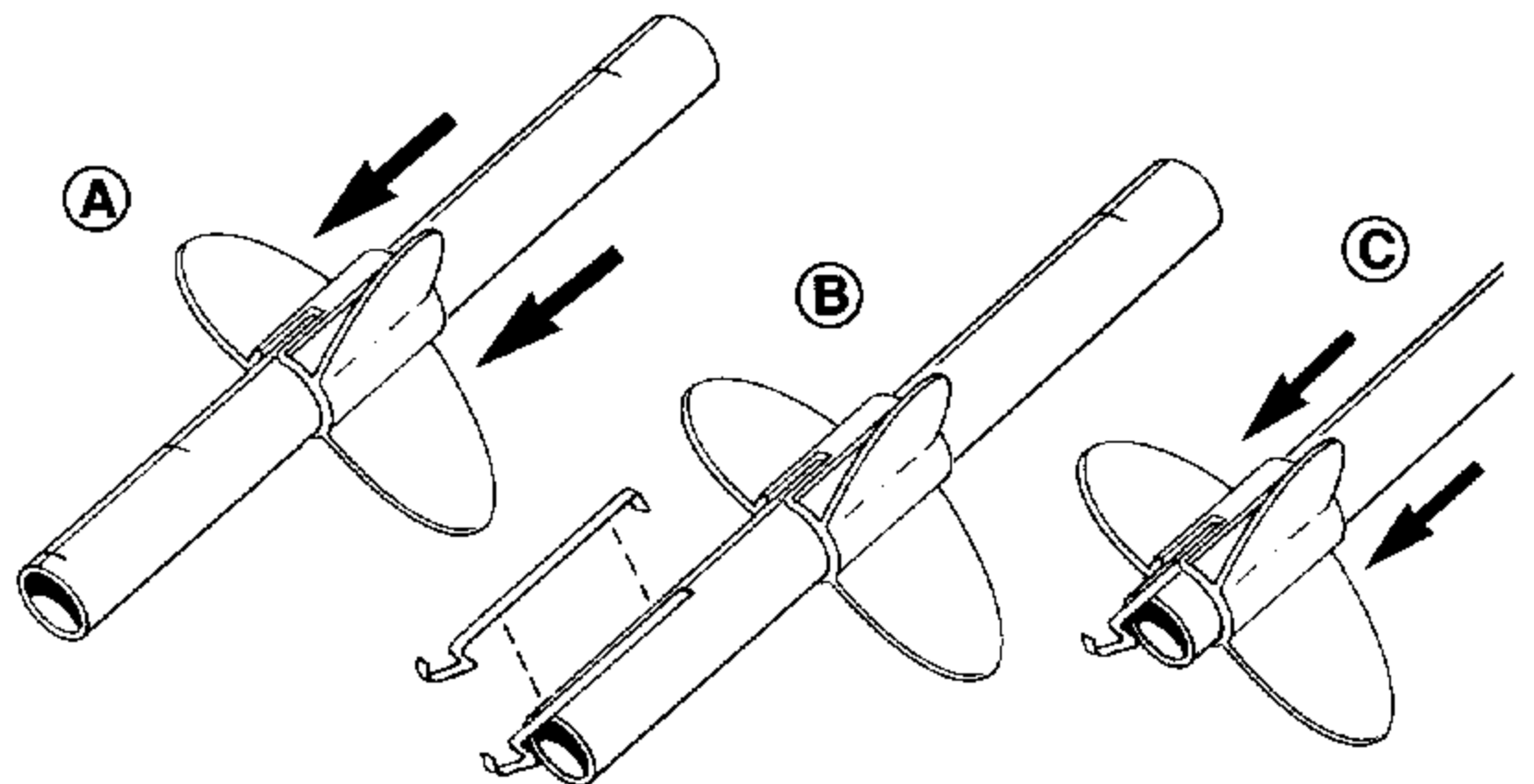


4. FIN UNIT/ENGINE HOOK ATTACHMENT



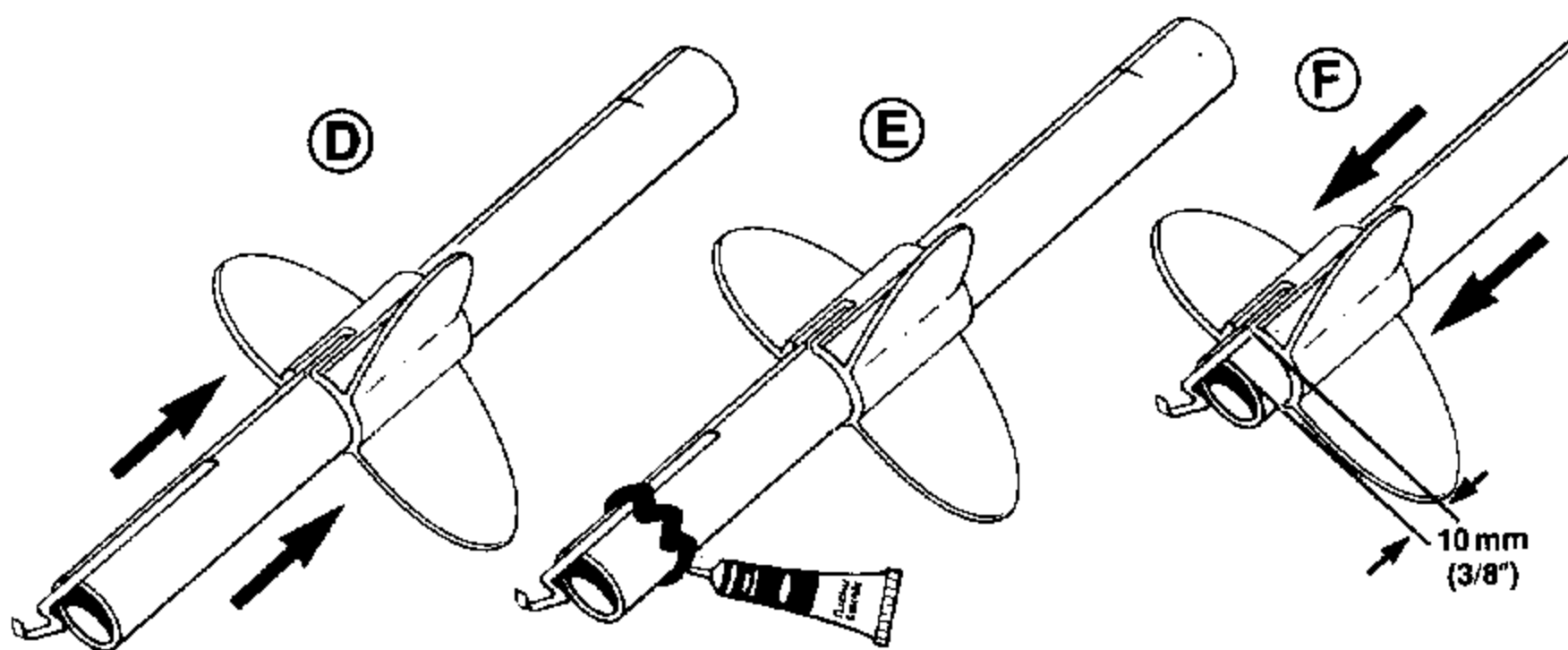
NOTE: Inspect the fin unit for the launch lug and engine hook slit.

- Slide the fin unit onto the body tube and position it about halfway along the tube. Orient the engine hook slot over the line you drew in step 2A.
- Insert one end of the engine hook into the slit on the end of the tube with the 10 mm (3/8") mark as shown.
- Test fit by sliding fin unit over the engine hook. Make sure hook fits into slot on fin unit.



4. FIN UNIT/ENGINE HOOK ATTACHMENT (continued)

- Slide fin unit halfway up tube.
- Apply tube-type plastic cement around the body tube in a "zigzag" fashion as shown in the illustration.
- F. Push the fin unit down the tube and over the engine hook. Continue pushing until the rear of the fin unit touches the 10 mm (3/8") mark. Carefully wipe away any excess plastic cement.



5. SHOCK CORD MOUNT ATTACHMENT

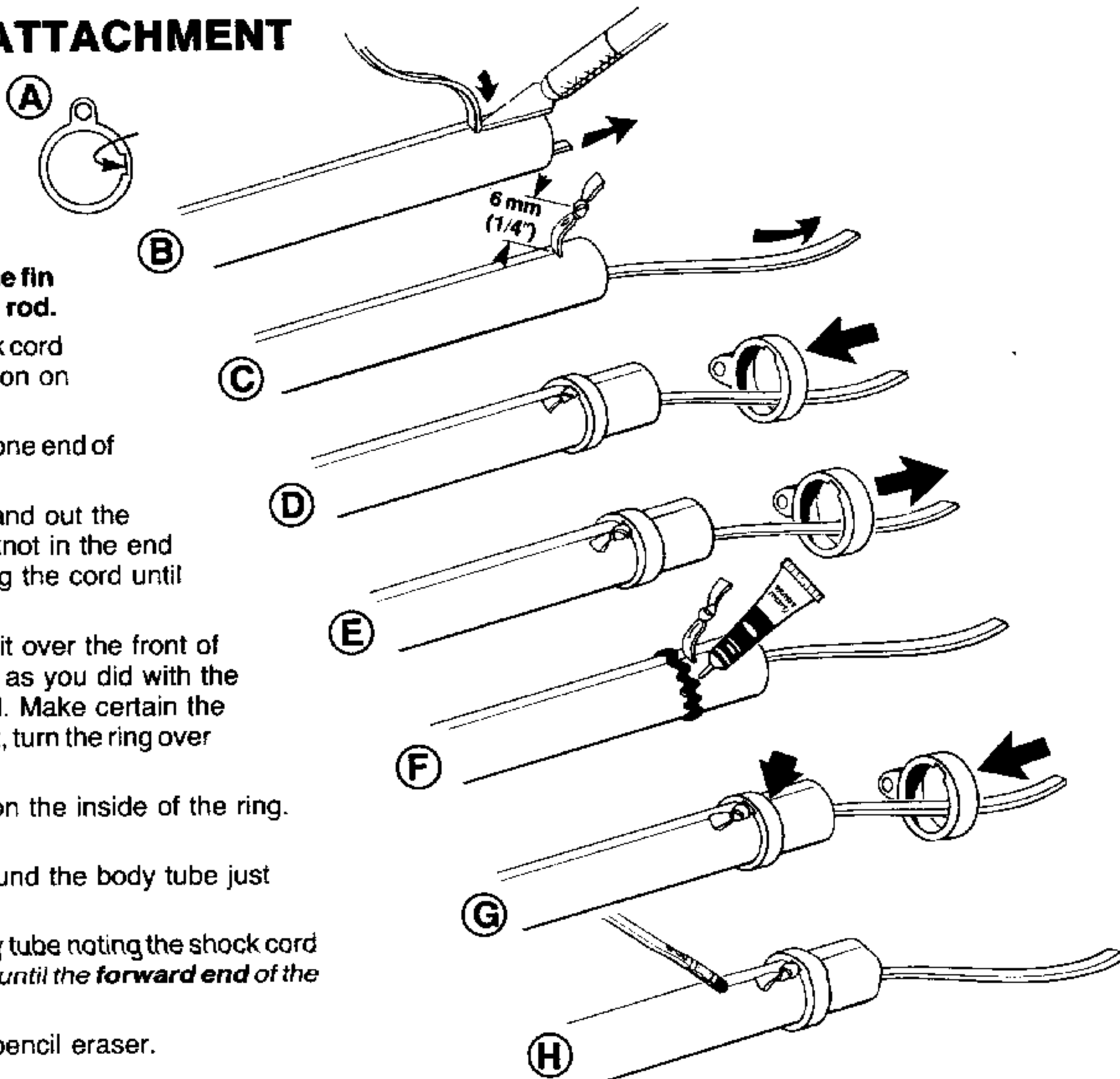


NOTE: The shock cord mount ring performs two functions.

1. It holds the shock cord in place.
2. It acts as the forward launch lug.

The forward launch lug must be in line with the fin unit launch lug for proper fit on the launch rod.

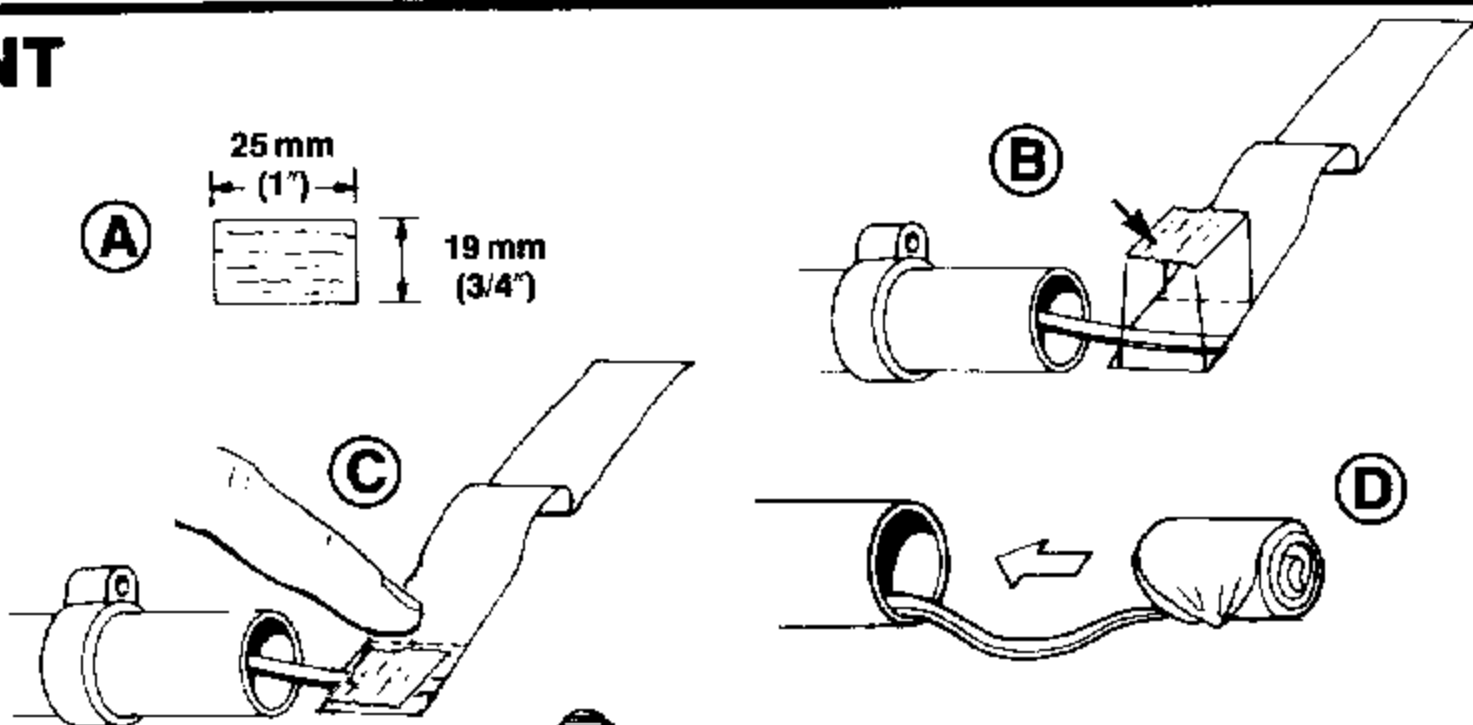
- A. Inspect the launch lug ring for the shock cord slot and launch lug using the illustration on the right.
- B. Use a modeling knife or pencil to push one end of the shock cord into the forward slot.
- C. Pull the shock cord through the slot and out the forward end of the body tube. Tie a knot in the end of the shock cord and continue pulling the cord until the knot is 6 mm (1/4") from the slot.
- D. Test fit the launch lug ring by sliding it over the front of the tube. Orient the slot over the line as you did with the fin unit and push over the shock cord. Make certain the forward and rear lugs are aligned. If not, turn the ring over and re-fit.
- E. Make sure the cord fits into the slot on the inside of the ring. Now remove ring.
- F. Spread a band of plastic cement around the body tube just behind the protruding shock cord.
- G. Position the launch lug ring on the body tube noting the shock cord slot. Push the ring over the shock cord until the forward end of the ring is even with the shock cord slot.
- H. Erase pencil line on body tube with pencil eraser.



6. RECOVERY DEVICE ATTACHMENT

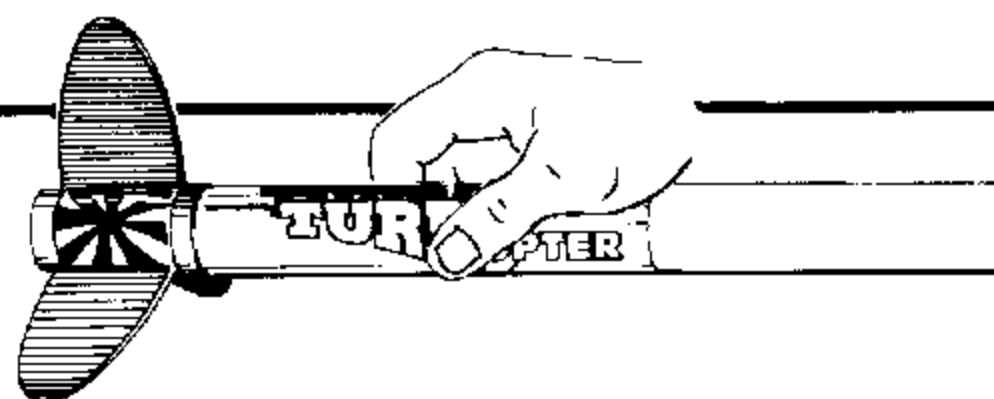


- A. Cut a 25 mm (1") long piece of 19 mm (3/4") wide masking tape.
- B. Lay end of shock cord over end of streamer material as shown and tape shock cord and streamer together.
- C. Press tape down firmly to assure a strong bond.
- D. Roll and insert streamer, shock cord, helicopter blades and nose cone into body. Recovery device should slide easily into body tube. If too tight, unfold and repack.



7. FINISHING YOUR ROCKET

When all glue is completely dry, apply self-adhesive decals. Use the photo on the front of the box as decal placement guide. Gently lift one decal at a time and lightly lay it down in position. If position is correct, rub it down with your finger to remove bubbles and stick it securely.

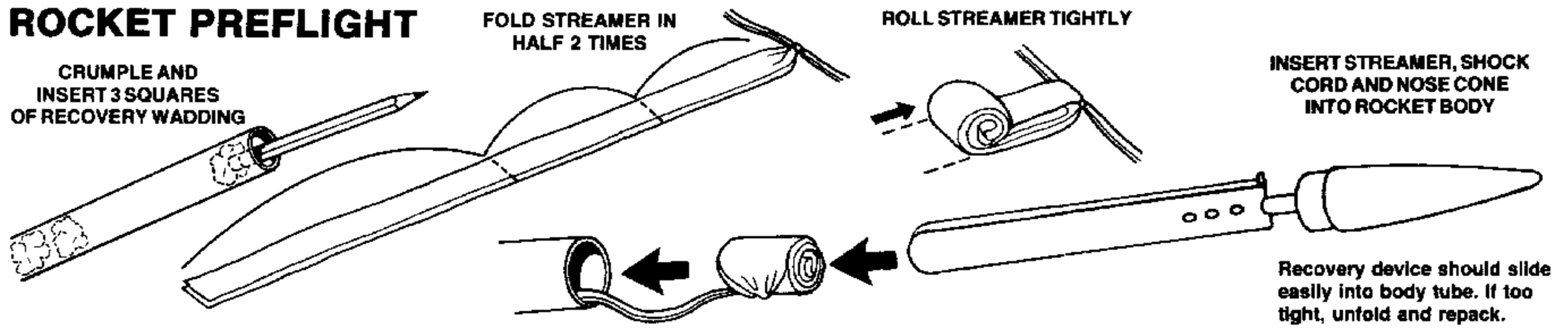


WHAT TO EXPECT WHEN FLYING YOUR TURBO-COPTER™ ROCKET

The Turbo-Copter™ is easy to build and fly. At apogee, the nose pops off and descends in a spinning manner, while the tube and fins come down safely on a streamer. Both pieces of the rocket descend quickly, making the rocket safe for recovery on small fields. With the largest engine (C6-7) you can use with the Turbo-Copter™, you can expect on

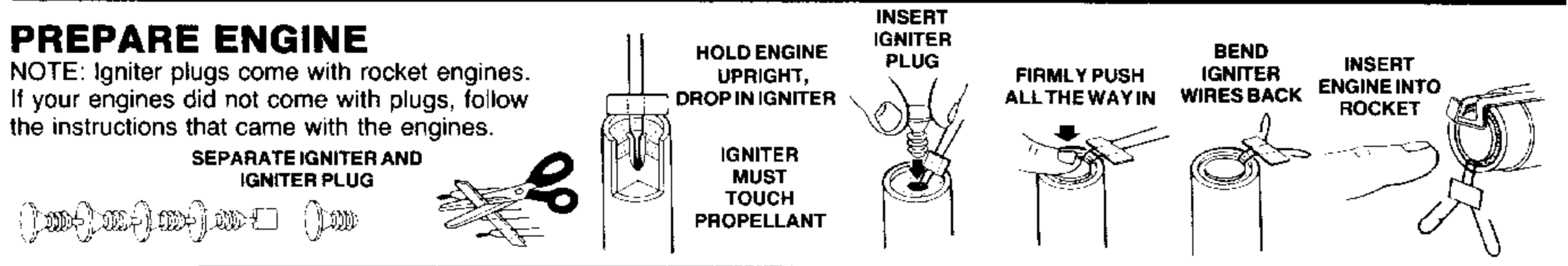
incredible altitude of 557 meters (1828 feet). The higher the Turbo-Copter™ goes, the greater the possibility that you will lose the nose cone. The smallest (1/2A6-2) will deliver about 40 meters (131 feet). The smallest will work fine on football-size fields, while the more powerful will require a very large field and a good set of searching eyes.

ROCKET PREFLIGHT



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.



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 (First Flight), A8-3, A8-5, B4-4, B6-4, B6-6, B8-5, C6-5, C6-7
 To become familiar with your rocket's flight pattern, use a 1/2A6-2 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 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.

MISFIRES

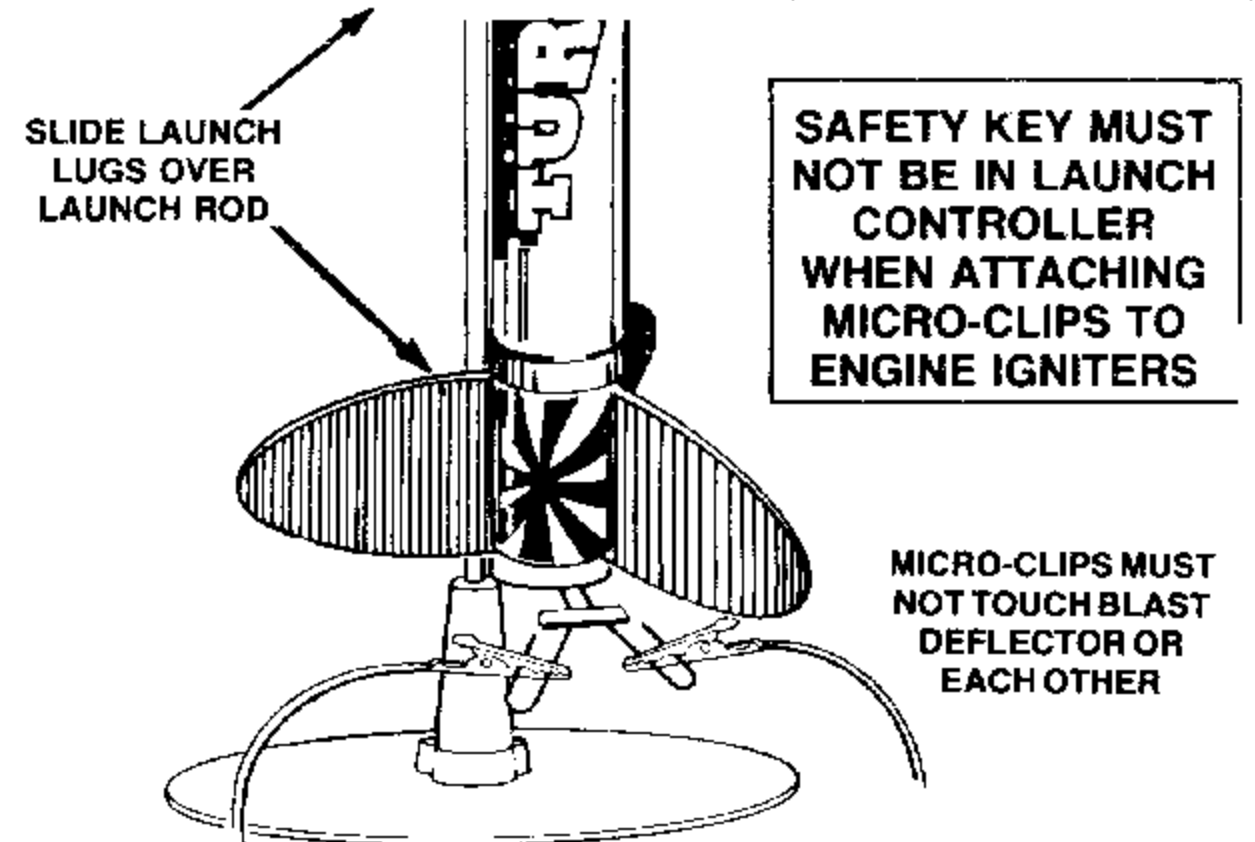
If the igniter functions properly but the propellant does not ignite, keep in mind the following: An Estes igniter will function properly even if the coated tip is chipped. However, if the coated tip is not in direct contact with the engine propellant, it will only heat and not ignite the engine.

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



COUNTDOWN AND LAUNCH

- ⑩ BE CERTAIN SAFETY KEY IS NOT IN LAUNCH CONTROLLER.
- ⑨ Remove safety cap and slide launch lugs 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

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

If you use the Estes E2™ or Command Control™ 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 audio continuity indicator will beep on and off.
- B. Hold the yellow (left) arm button down. 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.