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Finished 4-2-93



ESTES INDUSTRIES
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SKYWINDER™

**FLYING MODEL ROCKET KIT
KIT #2077**

**EX™
SERIES**

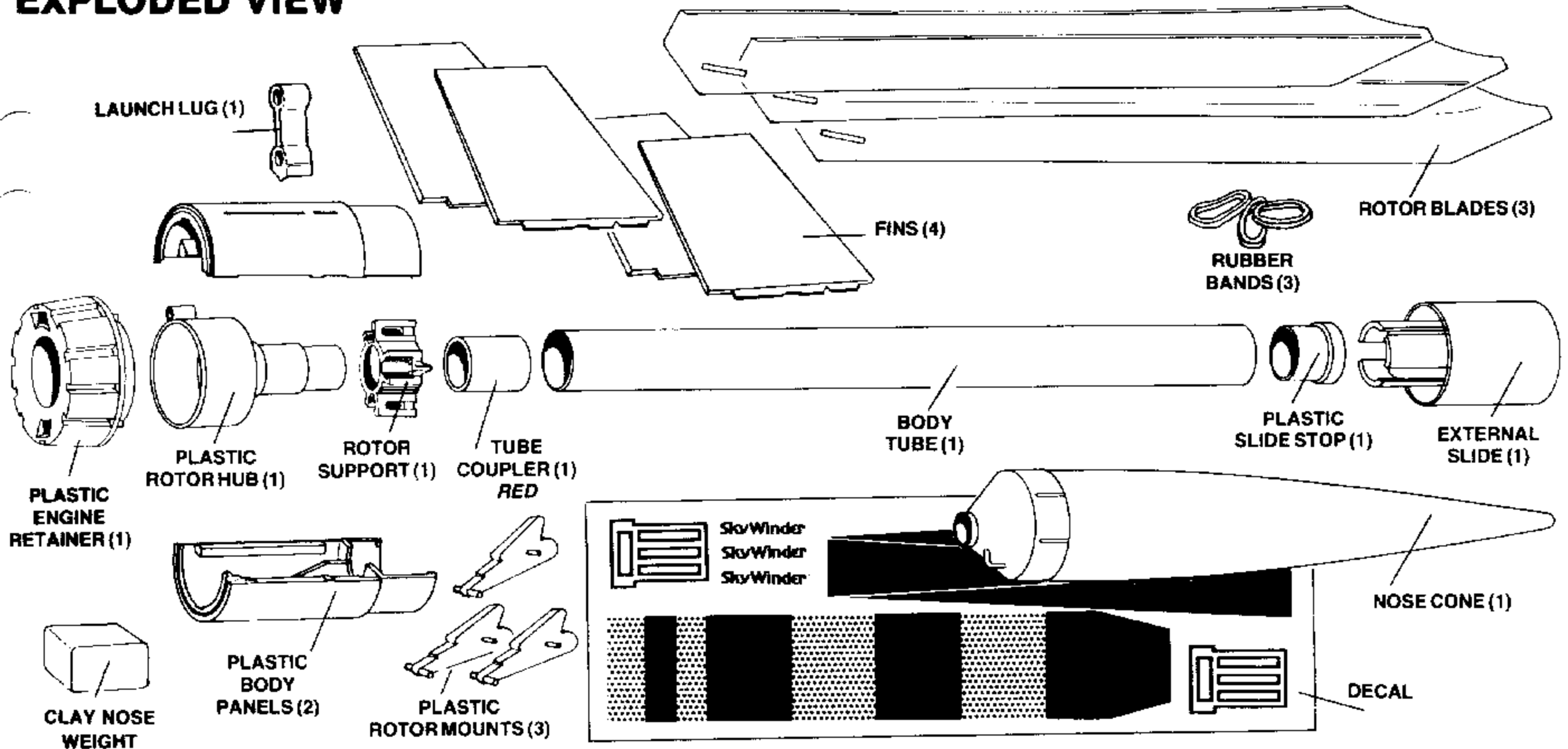


HOW TO USE THESE INSTRUCTIONS: Test fit parts before applying any glue.

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. Sand parts as necessary for proper fit.
- 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.

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.



MASKING TAPE



GLUE (white or yellow)



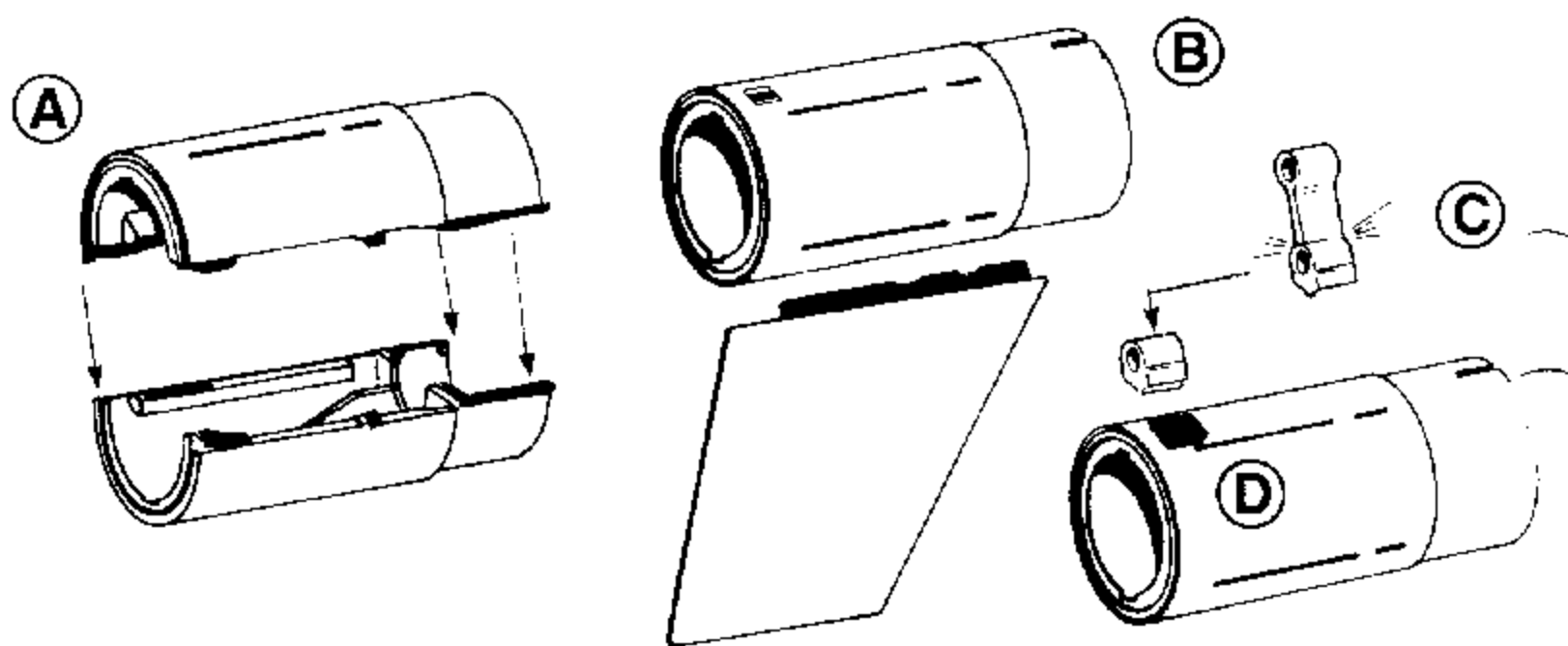
PLASTIC MODEL CEMENT

PLASTIC MODEL CEMENT IS APPLIED TO SURFACES SHOWN IN RED.

1. ENGINE MOUNT ASSEMBLY



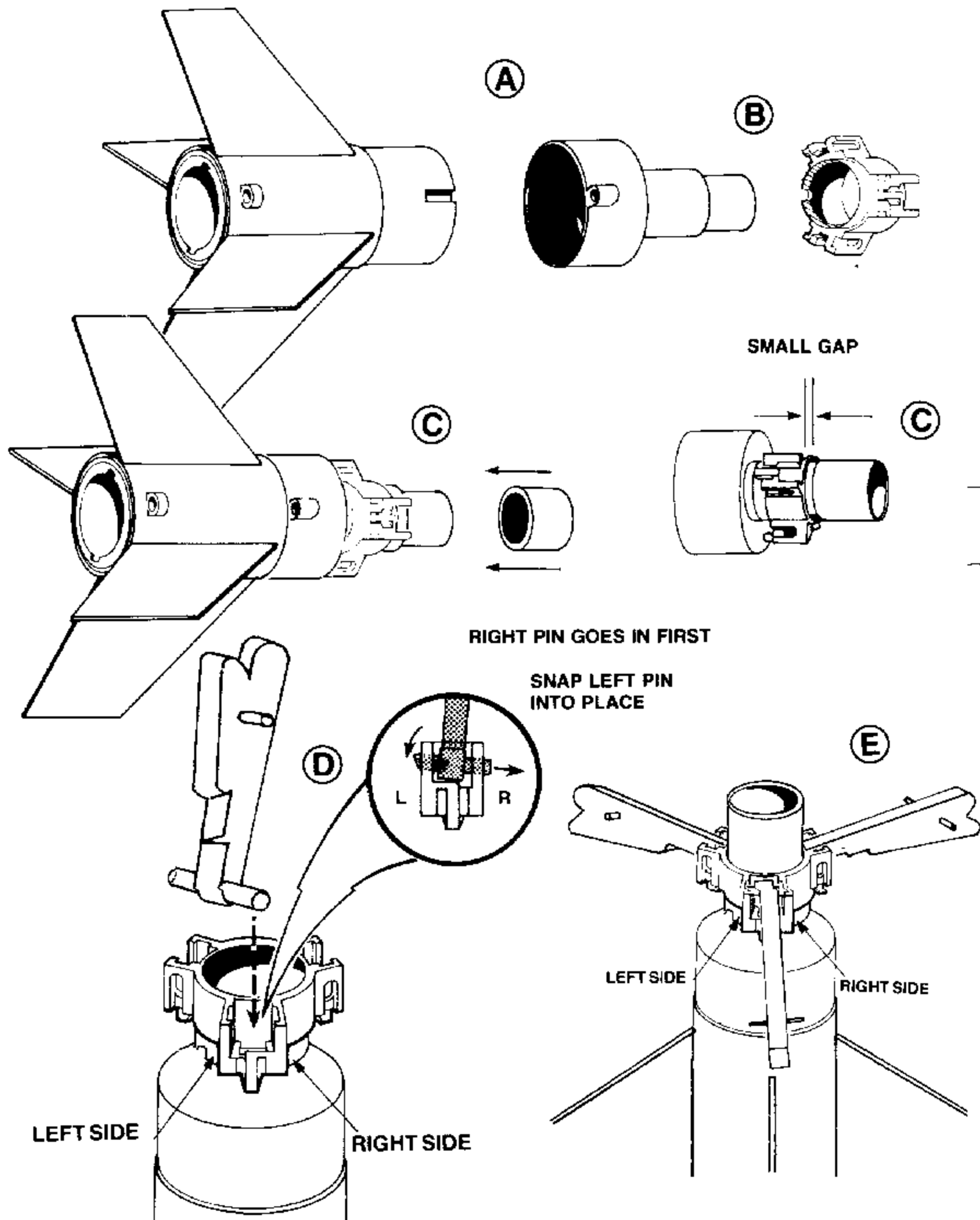
- A. Glue the two plastic body panels together.
- B. Glue the four fins into the body panel's slots.
- C. Snap off and remove the upper launch lug. It is not needed for this kit.
- D. Glue the short stemmed launch lug into the recessed area on the fin unit.



2. ROTOR HUB ASSEMBLY



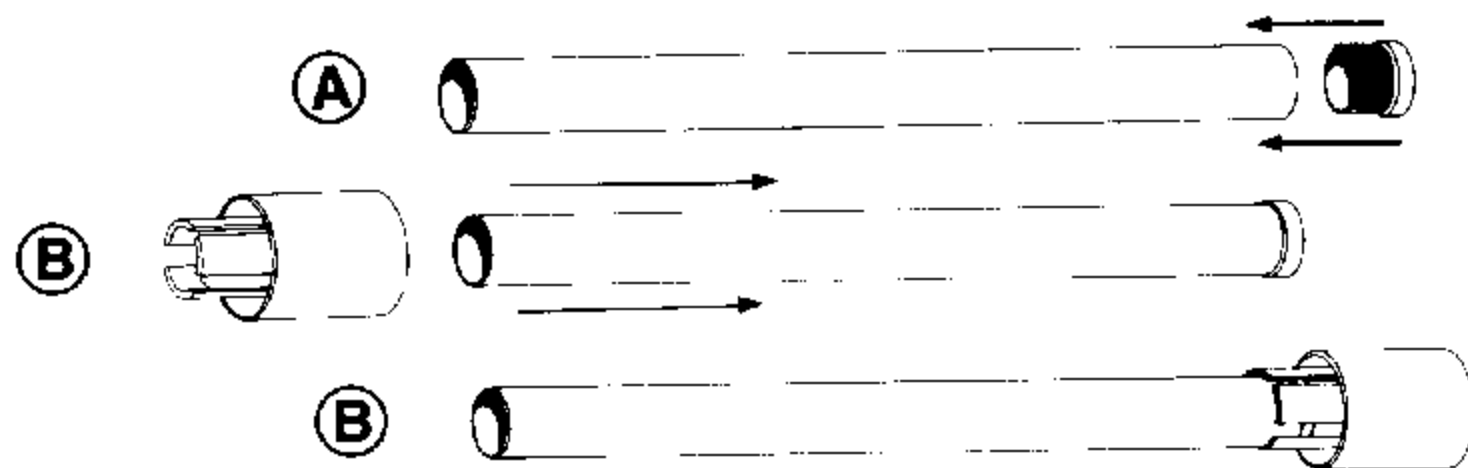
- A. Glue the rotor support to the front of the fin unit.
NOTE: The "key" inside the rotor support fits in the slot in the front of the fin unit.
- B. Slide the rotor hub over the rotor support with the notched end facing the fins. **DO NOT GLUE.**
- C. Test fit and glue the red tube coupler onto the forward end of the rotor support.
NOTE: The rotor hub should still be able to spin with the coupler in place. Allow glue to dry. Leave just enough clearance between the rotor hub and the coupler so that the hub spins freely.
- D. Install rotor mounts into hub by sliding the right side pin into the hole on the right "ear" of the rotor hub. Gently push to the right, snapping the left side pin down into its hole. **DO NOT FORCE THE ROTOR MOUNTS INTO POSITION.** If the mount is upside down, it will not go into the hub.
- E. Repeat this operation with the other two rotor blade mounts.



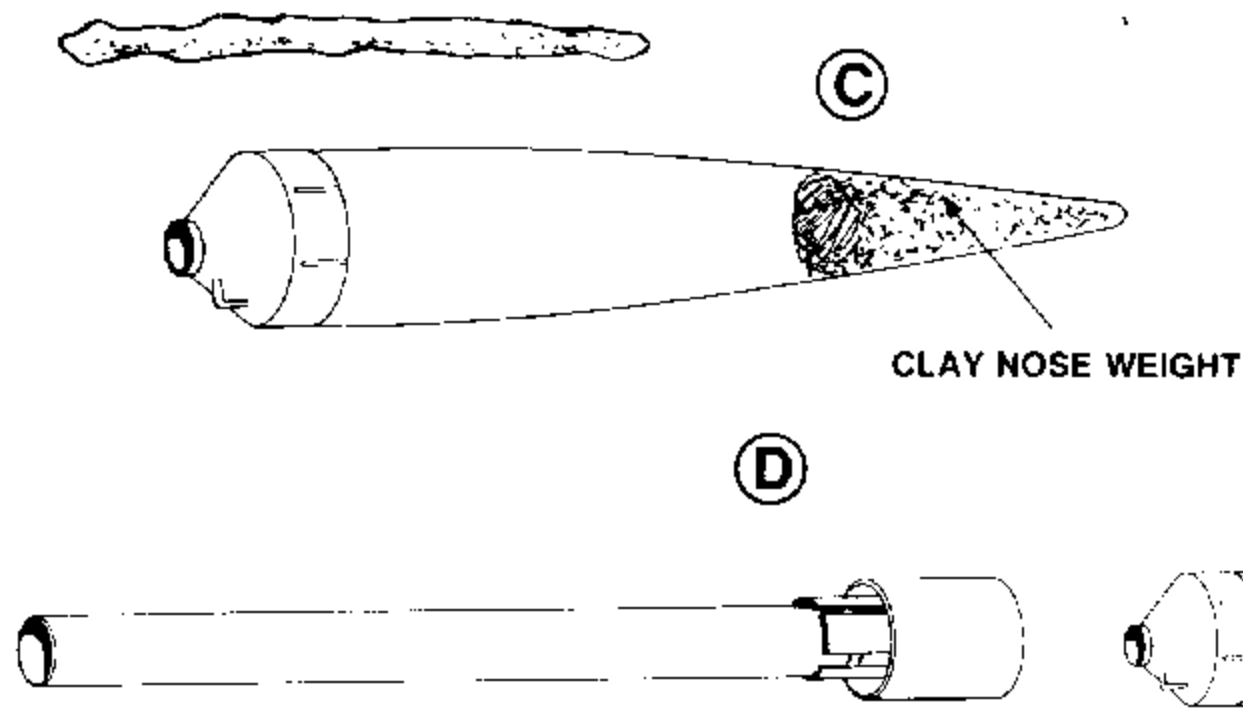
3. NOSE ASSEMBLY



- A. Glue the slide stop into one end of the body tube. Allow glue to dry.
- B. Slide the external slide onto the body tube and over the slide stop. **DO NOT GLUE.**



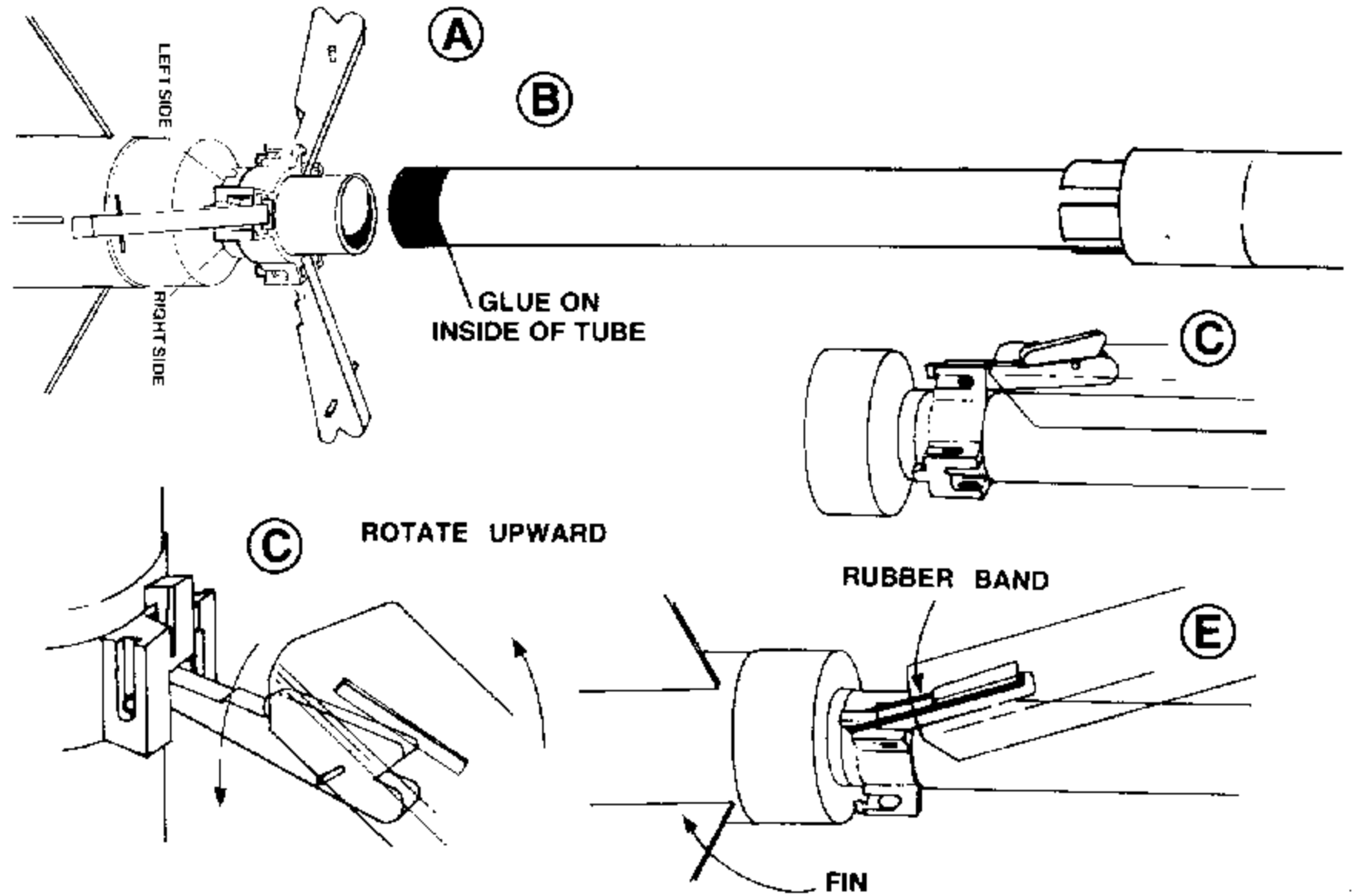
- C. Roll the clay nose weight between your hands to make a "snake" about 6 mm (1/4") diameter. Poke the clay through the hole in the rear of the nose cone. Use a dowel or piece of scrap wood to push the clay forward into the cone until it is packed tightly in the front of the cone.
- D. Slide nose cone into the top of the external slide to check for fit. If necessary, wrap tape around the base of the nose cone to achieve a tighter fit.
NOTE: Nose cone must not separate from rest of vehicle.



4. FINAL ASSEMBLY

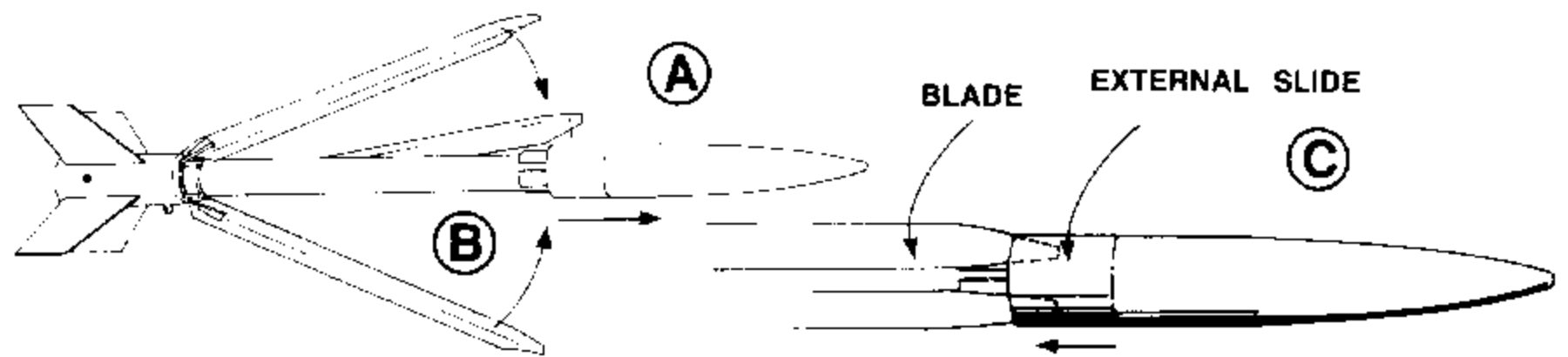


- A. Test fit nose unit to fin unit.
- B. Apply glue inside the white body tube.
NOTE: Push the tube coupler only to the bottom of the coupler. The hub should still be able to spin! Allow glue to dry. Make sure tubes all align and are straight.
- C. Attach rotor blades to the rotor mounts by inserting back of tab on rotor mounts through the slot on the blades and then rotating upward until the front of the tab locks into place. No glue is required.
NOTE: Blade should curve around the body tube.
- D. Repeat process for the other two blades.
- E. Install rubber bands onto the rocket as shown.



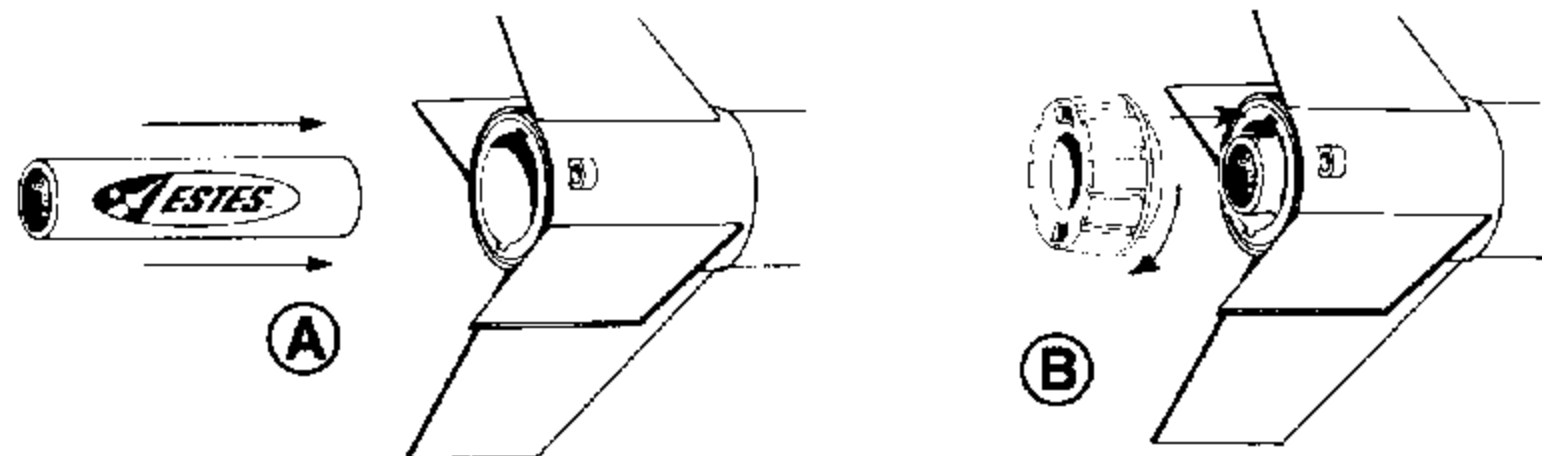
5. ROCKET PREFLIGHT

- A. Slide nose forward.
- B. Fold blades down against body tube.
- C. Slide nose back so blade tips insert into pocket in external slide.



ENGINE INSTALLATION

- A. Slide engine into engine mount.
- B. Twist on the plastic engine retainer ring to hold the engine in place.



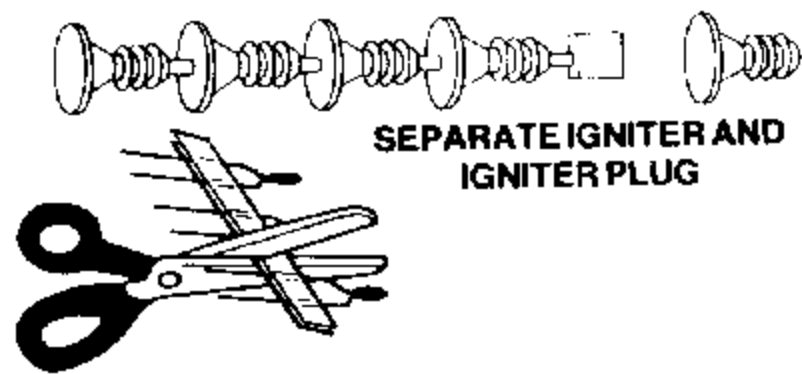
WHAT TO EXPECT WHEN FLYING YOUR SKYWINDER™ ROCKET

Skywinder™ boosts vertically with the three rotors retracted alongside the body tube. At apogee (the highest point in the rocket's flight), the ejection charge pressurizes the body tube and pushes the nose section forward, releasing the rotors.

Rubber bands then pull the blades outward while the rocket begins to fall. While the model falls, air flows over the blades in such a way that lift is produced causing the hub to rotate on the rotor support. The rocket will then descend to Earth via spinning rotors "skywinding".

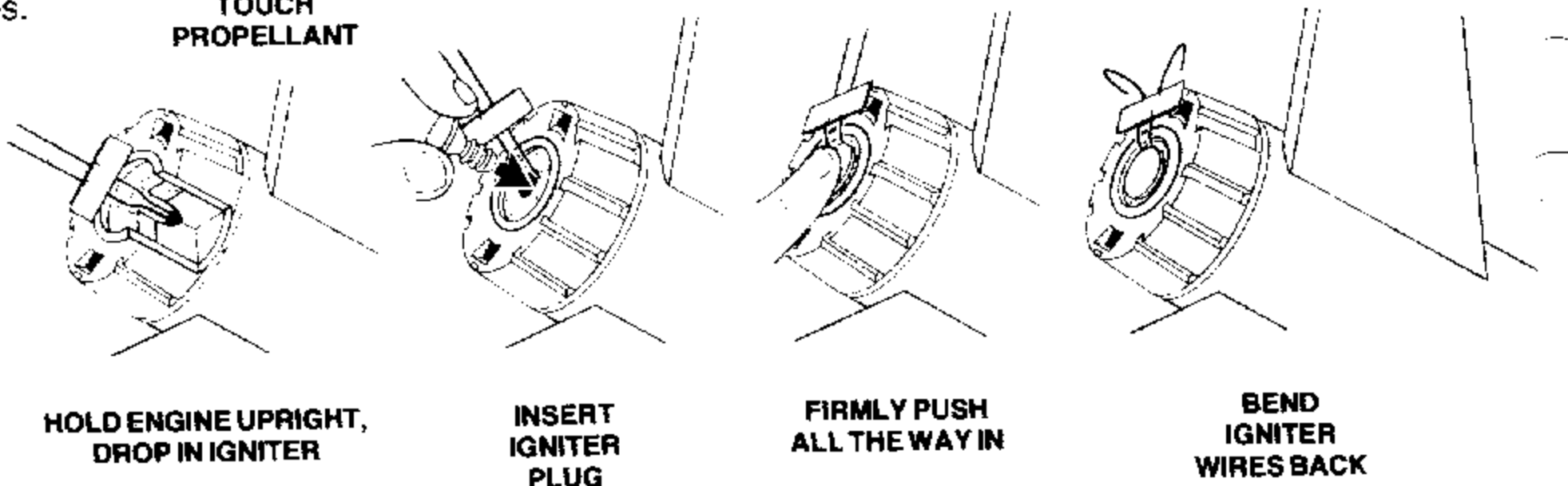
PREPARE ENGINE

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

IGNITER MUST TOUCH PROPELLANT



HOLD ENGINE UPRIGHT, DROP IN IGNITER

INSERT IGNITER PLUG

FIRMLY PUSH ALL THE WAY IN

BEND IGNITER WIRES BACK

LAUNCH SUPPLIES

To launch your rocket you will need the following items:

- Estes Electrical Launch Controller and Launch Pad
- Recommended Estes Engines: B4-2, B6-2, C5-3, C6-3

To become familiar with your rocket's flight pattern, use a B4-2 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

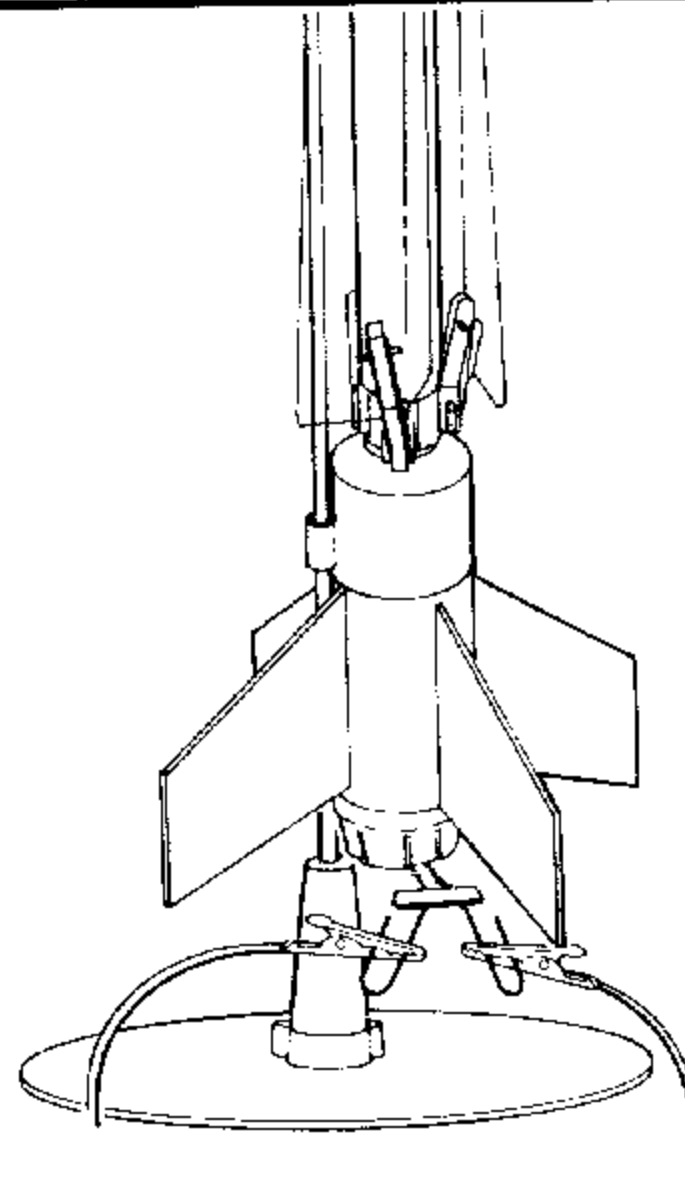
If the igniter functions properly but the propellant does not ignite, keep in mind the following: An Estes igniter will function properly even if the coated tip is chipped. However, if the coated tip is not in direct contact with the engine propellant, it will only heat and not ignite the engine.

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



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

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 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 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 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.