



EST 2115

SR-XTM

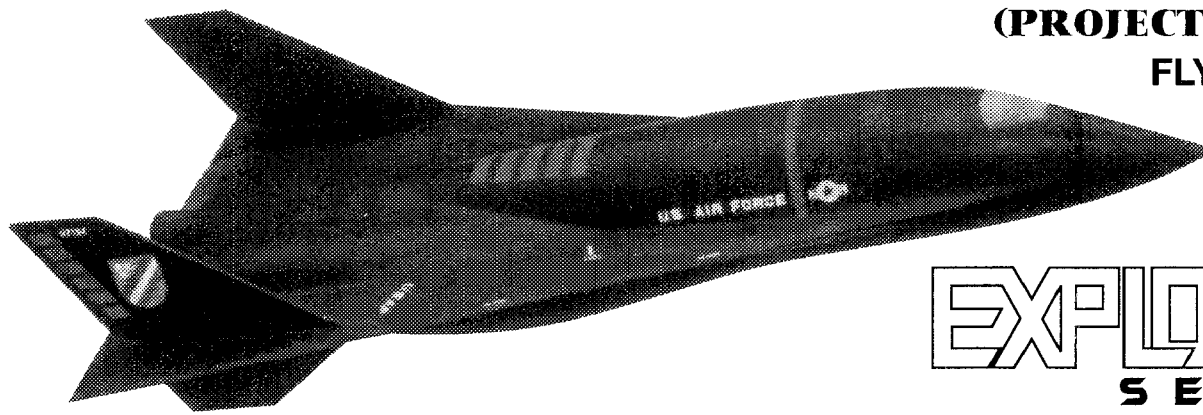
FLYING MODEL ROCKET



ESTES INDUSTRIES
1295 H STREET
PENROSE, CO 81240 USA

SR-X™ (PROJECT AURORA)

FLYING BOOST
GLIDER KIT
EST 2115



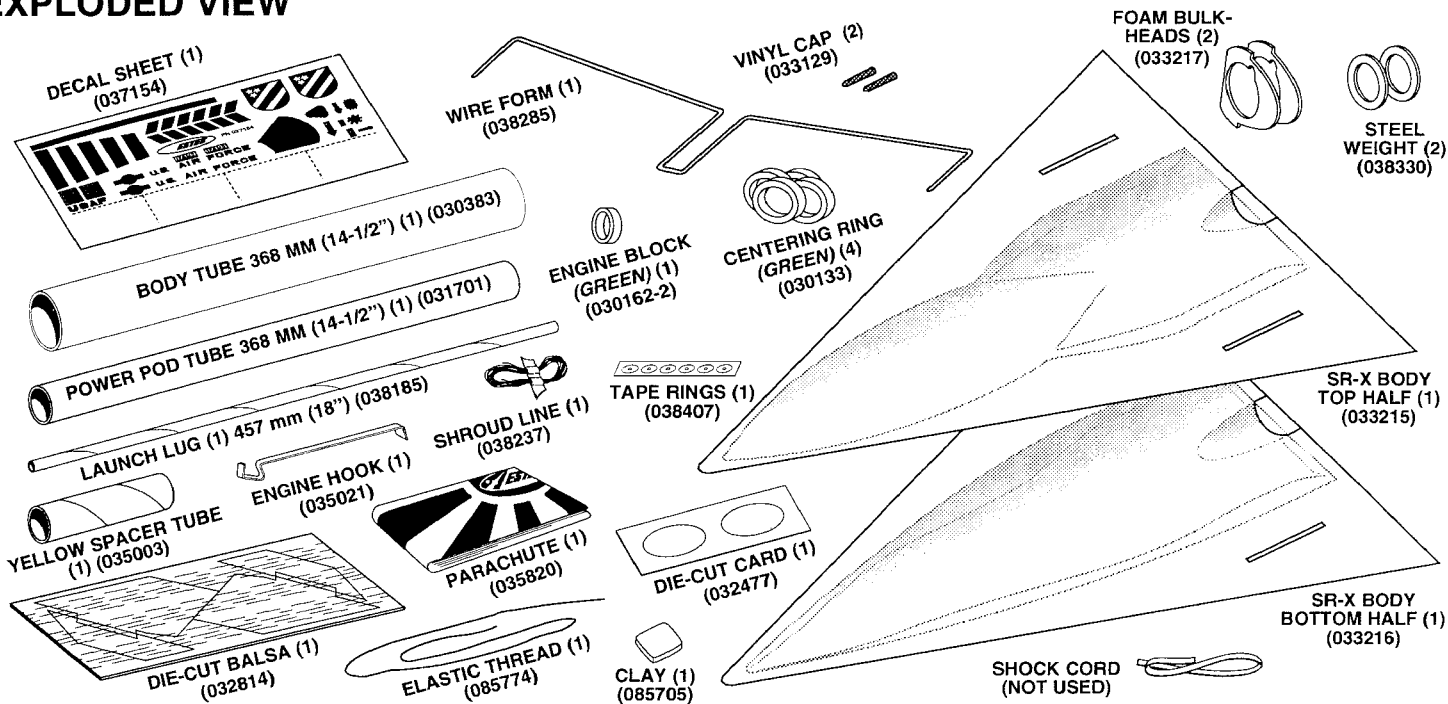
EXPLORER™ SERIES

(3-95) 084447

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. (Check inside tubes for any small parts.)
- C. Use exploded view to match all parts contained in the kit.
- D. Collect all construction supplies that are not included in the kit.
- E. Test fit parts before applying any glue.
- F. Sand parts as necessary to obtain 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.

CA (CYANOACRYLATE OR CRAZY GLUE) TYPE GLUES ARE NOT RECOMMENDED. PLASTIC CA WILL WORK BUT DO NOT USE THE ACCELERATORS FOR CA'S.

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.



SANDPAPER



GLUE
(white or yellow)



MASKING TAPE



CELLOPHANE TAPE



CONTACT CEMENT



PENCIL



BALL POINT PEN



SCISSORS



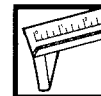
RULER



HOBBY KNIFE



SPRAY PAINT
(gloss or flat black enamel)

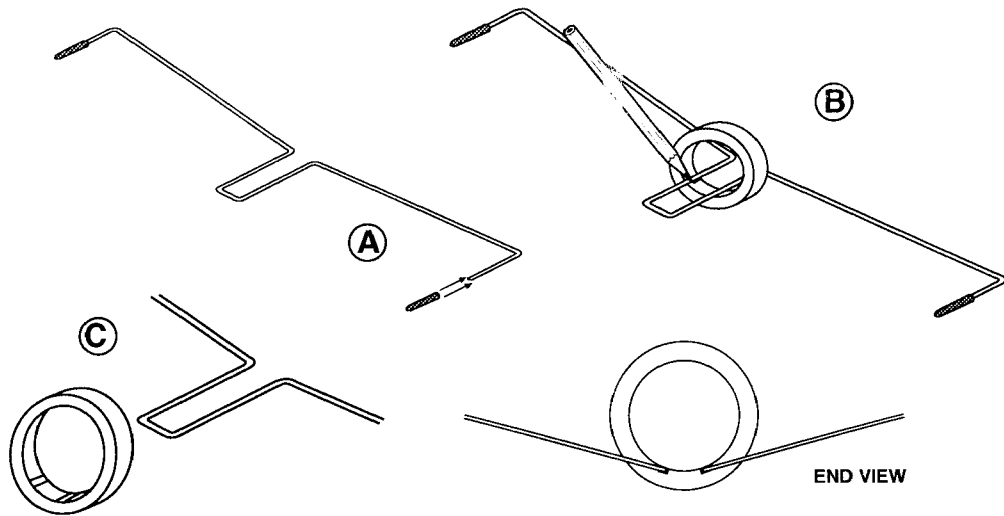


ROCKET BUILDER'S MARKING GUIDE-EST 2227 (optional)

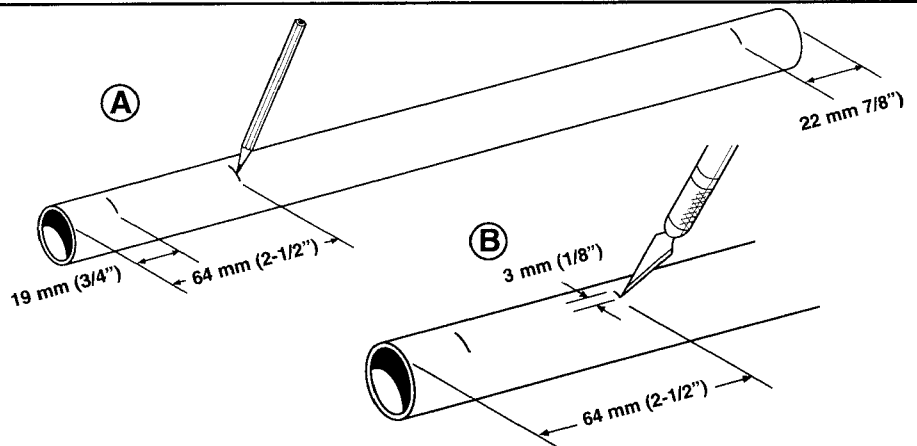
1. POWER POD ASSEMBLY



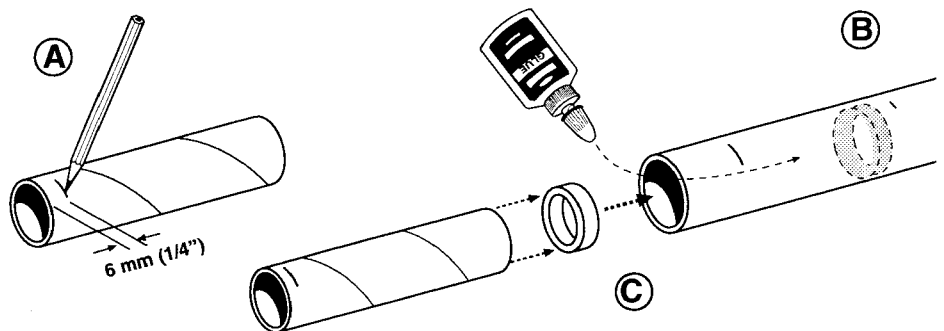
1.
 - A. Apply vinyl caps to ends of wire form.
 - B. Locate one of the large green rings. Lay wire form into ring as shown. Mark the location of the wire form in the ring.
 - C. Cut or file two grooves in the ring at wires location just deep enough for wire to fit in ring as shown.



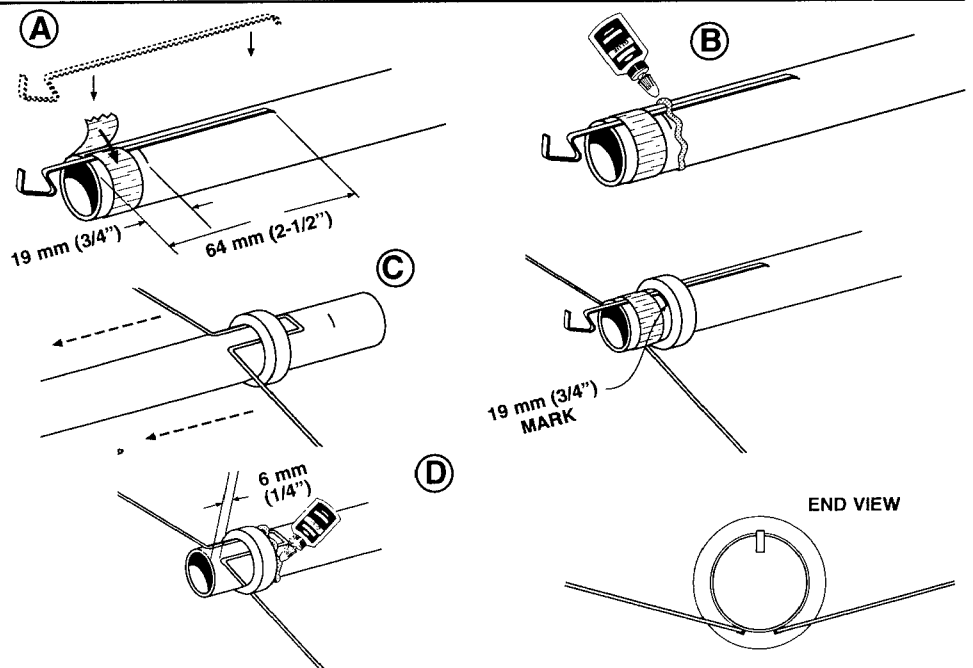
2.
 - A. Mark 368 mm (14-1/2") long power pod tube (the smaller diameter tube) at 19 mm (3/4"), and 64 mm (2-1/2") from one end of the tube. Mark other end of tube at 22 mm (7/8").
 - B. Cut a 3 mm (1/8") slit at 64 mm (2-1/2") mark.



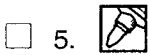
3.
 - A. Mark the yellow spacer tube 6 mm (1/4") from one end.
 - B. Apply glue around inside of power pod tube about 64 mm (2-1/2") from rear of tube, the same end with 19 mm (3/4") Mark.
 - C. Push engine block into tube with yellow spacer tube until mark is even with end of tube. Remove spacer tube immediately.



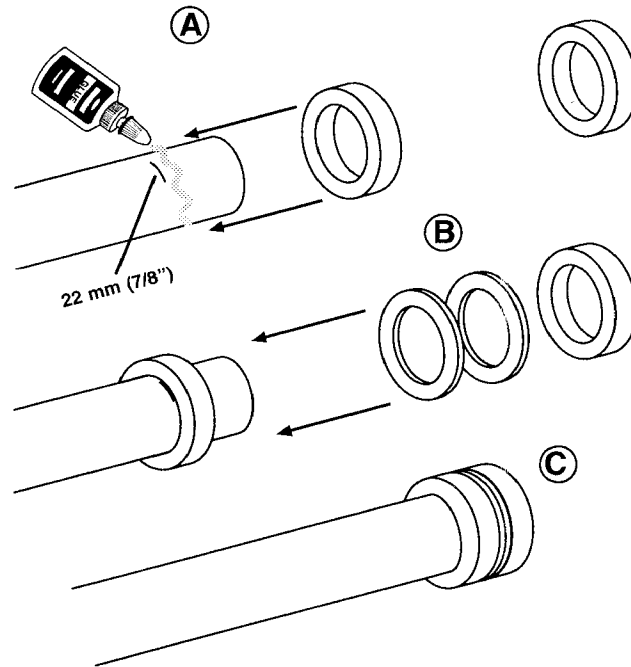
4.
 - A. Insert engine hook into slit. Hold engine hook temporarily in place with piece of masking tape.
 - B. Apply glue around tube above the 19 mm (3/4") mark.
 - C. Slide the green ring and wire form onto the front of the tube and down to the 19 mm (3/4") mark with wireform opposite the engine hook as shown.
 - D. Adjust the wire form so end of wire is 6 mm (1/4") from end of tube and **apply glue around both sides of ring and wire form**. Adjust the engine hook so it is straight along the tube. Let glue set.



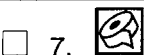
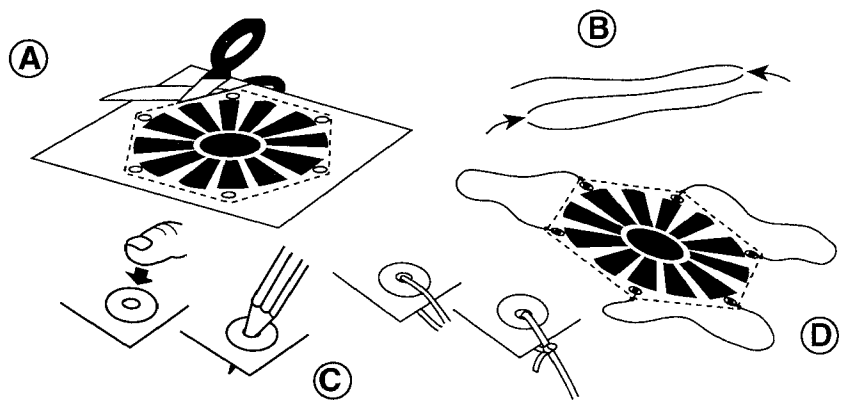
1. POWER POD ASSEMBLY (CONTINUED)



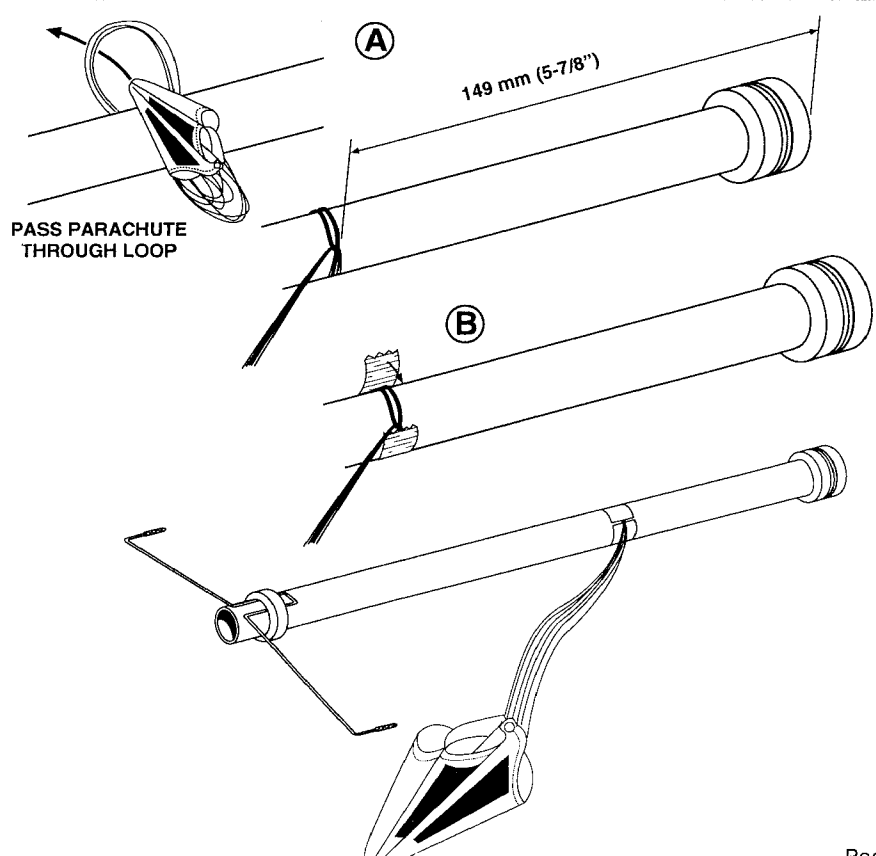
5.
 - A. Apply glue in front of the 22 mm (7/8") mark on the power pod and slide second green ring into place as shown.
 - B. Slide 2 weights onto tube against ring.
 - C. Apply glue to the front of the tube and slide third green ring onto tube and against weights.



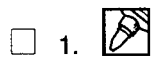
6.
 - A. Cut out the parachute on printed edge lines.
 - B. Remove tape from shroud lines, fold and cut into three equal lengths.
 - C. Attach tape rings to top of parachute and press firmly into place. Punch holes in parachute and tape ring with a sharp pencil. Tie lines through holes and secure end with double knot.
 - D. Attach remaining lines to other corners to complete parachute.



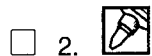
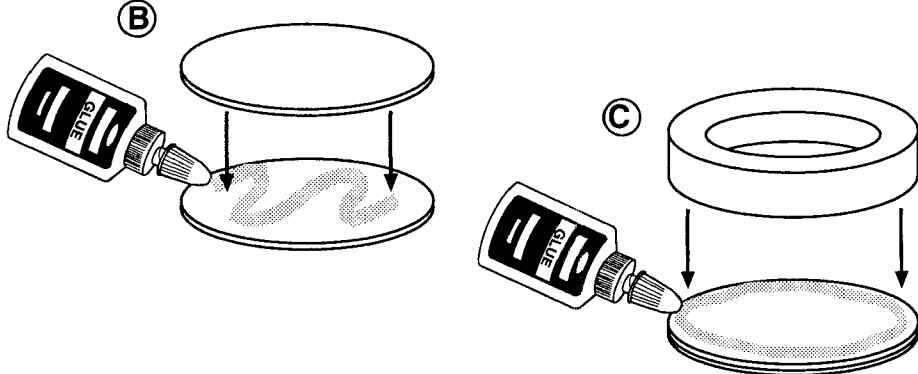
7.
 - A. Place shroud line loops around the front of pod and pass the parachute through the loops. Pull tight. Slide the loop so that it is 149 mm (5-7/8") from the front of pod.
 - B. Secure the shroud lines of parachute around pod with masking tape.



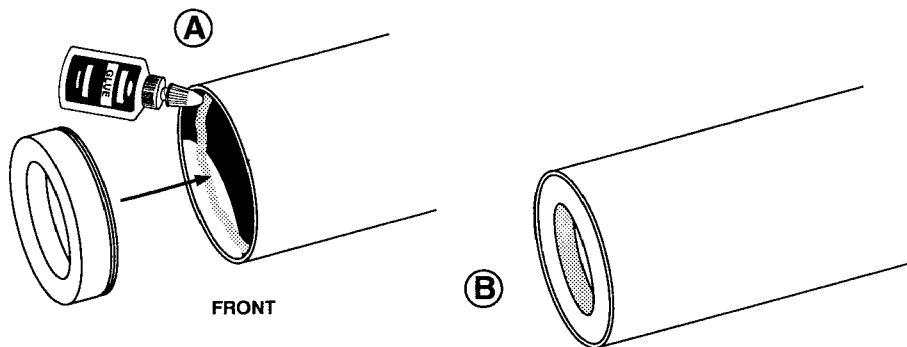
2. SR-X ASSEMBLY



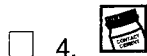
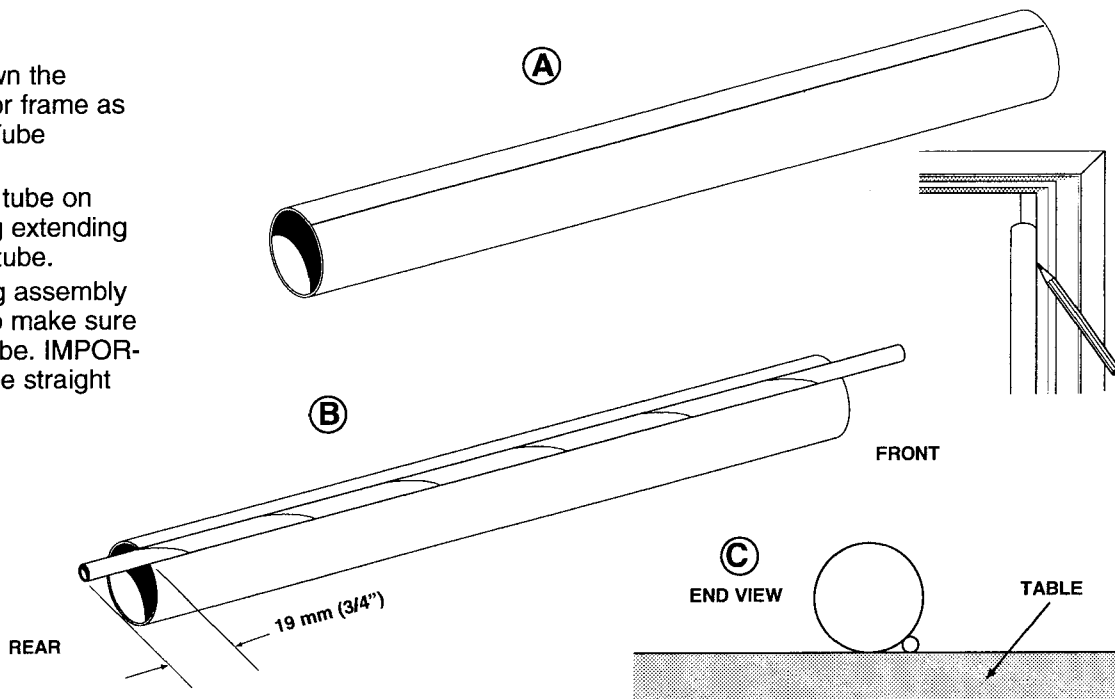
- A. Remove the two discs from the die-cut card.
- B. Apply glue to one side of a disc and glue discs together.
- C. Apply glue around face edge of disc and apply last green ring as shown.



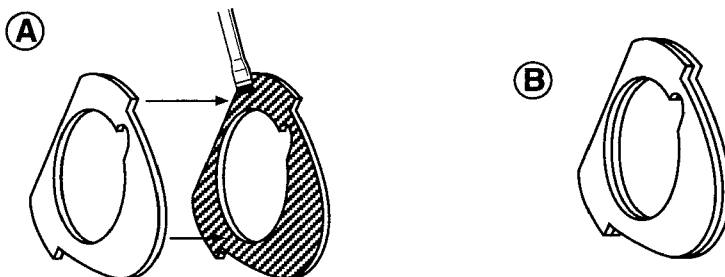
- A. Apply glue to inside end of large diameter 368 mm (14-1/2") long body tube.
- B. Slide ring/disc assembly into tube, flush with end of tube. This end of the tube is the front end.



- A. Draw a straight line down the length of tube, using a door frame as a guide or use the Estes Tube Marking Guide.
- B. Glue long launch lug to tube on line, with end of launch lug extending 19 mm (3/4") from rear of tube.
- C. Lay tube and launch lug assembly onto flat surface of table to make sure launch lug is straight on tube. **IMPORTANT-** Launch Lug must be straight on tube



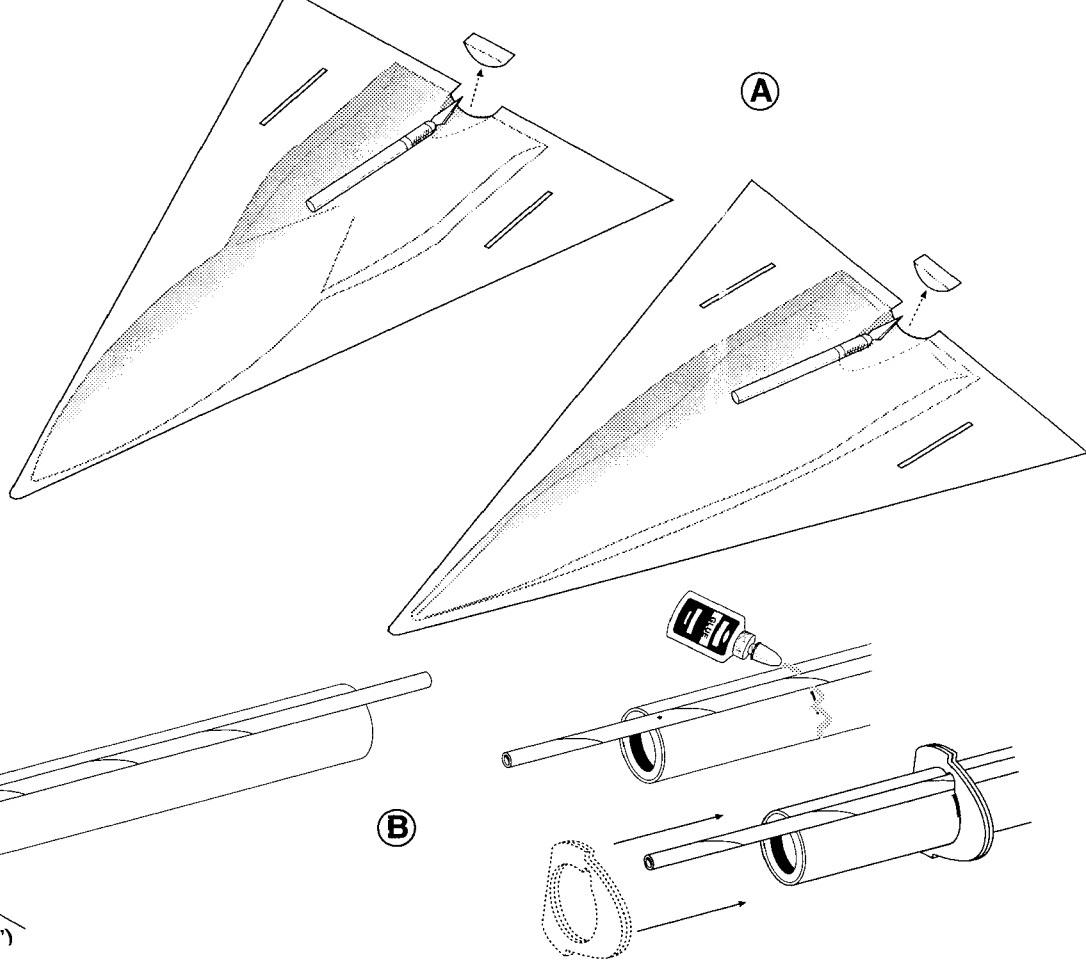
- A. Apply a **THIN LAYER** of contact cement to the two foam bulkheads as shown. **Allow cement to become dry to the touch.**
- B. Align the bulkheads and press together.



2. SR-X ASSEMBLY (CONTINUED)

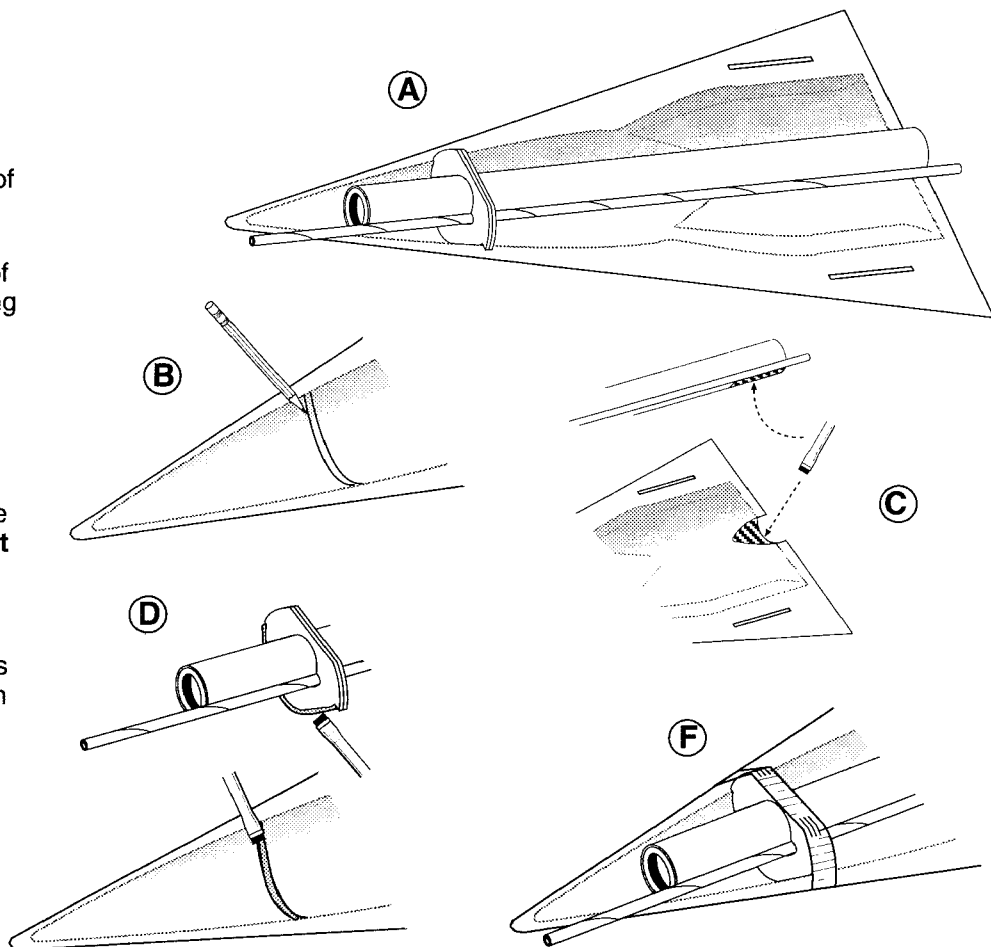
5.    

- A. Carefully trim out opening for the tube at the rear of top and bottom halves of SR-X.
 B. Mark tube at 60 mm (2-3/8") from the front as shown. Apply white glue to 60 mm (2-3/8") mark around tube. Slide foam bulkhead onto tube past the 60 mm (2-3/8") mark. Clean excess glue from bulkhead/tube joint.
 C. Lay top half of SR-X on table.



6.   

- A. Lay top half of SR-X on table. Lay tube/bulkhead assembly into top half of SR-X with rear of tube even with rear of top half.
 B. Mark bulkhead location on inside of SR-X body.
 C. Apply a thin layer of contact cement to tube contact area at rear of top half of SR-X and on corresponding area on tube. **Allow cement to become dry to the touch.**
 D. Apply a **very thin layer** of contact cement around outside edge where bulkhead will contact top of SR-X. Apply **very thin layer** of contact cement to bulkhead location on inside of SR-X body. **Allow contact cement to become dry to the touch.**
 E. Being careful not to let the contact cement areas touch until rear of tube and rear of top half are aligned. Press tube and top half firmly together when aligned.
 F. Apply masking tape to hold bulkhead tight against SR-X body as shown.



2. SR-X ASSEMBLY (CONTINUED)

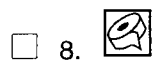
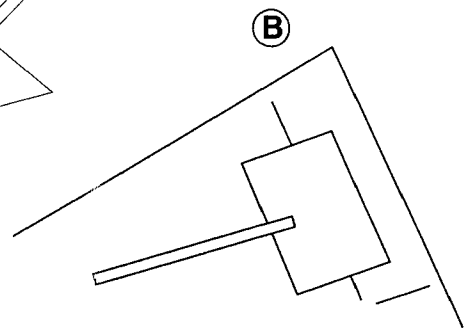
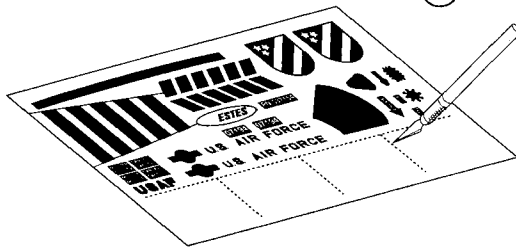


7.

A. Cut the elevator material into 4 equal parts from the decal sheet.

B. Apply on piece of hinge material to each elevator on inside surface of top half and bottom half as shown.

C. Trim hinge material out of slots in top and bottom halves.



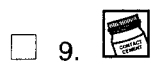
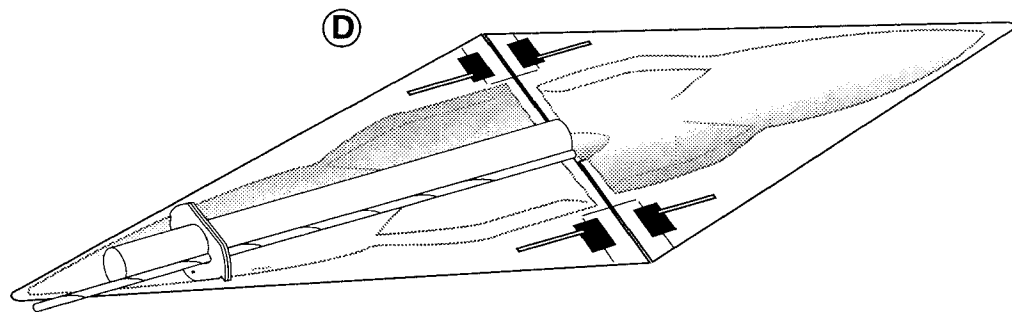
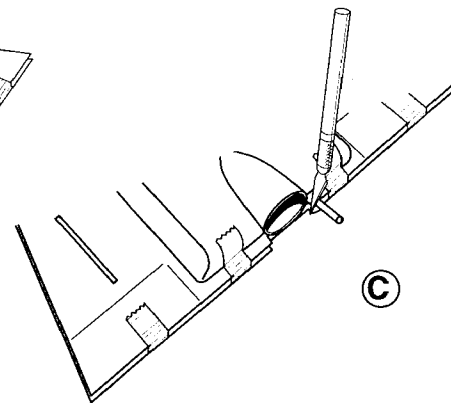
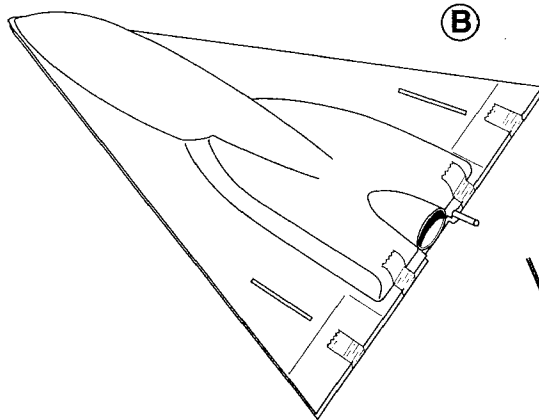
8.

A. Lay top half of the SR-X on the bottom half. Make sure they are aligned.

B. Apply masking tape strips to rear edge to hold halves together and aligned. This will act as a temporary hinge.

C. Carefully trim the launch lug back to the model's edge.

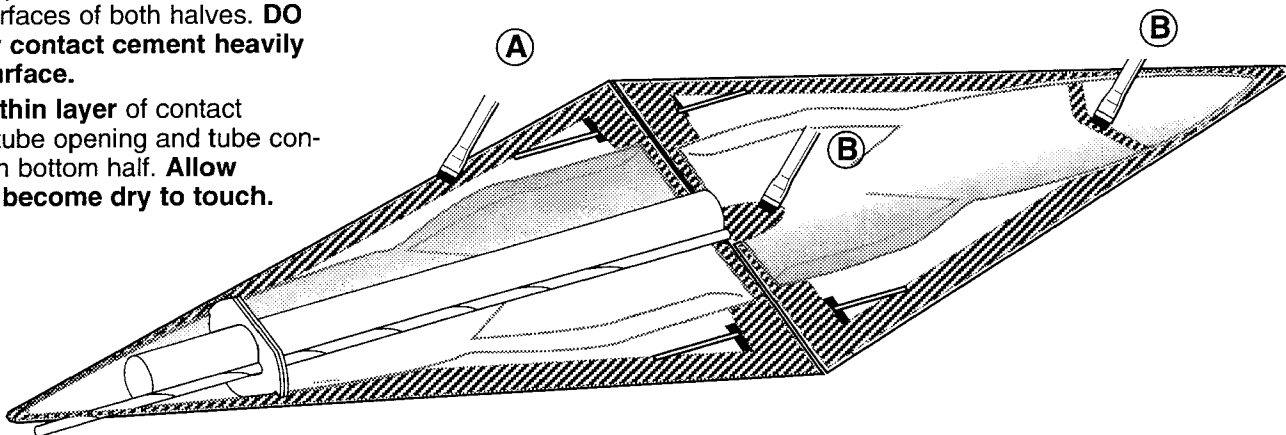
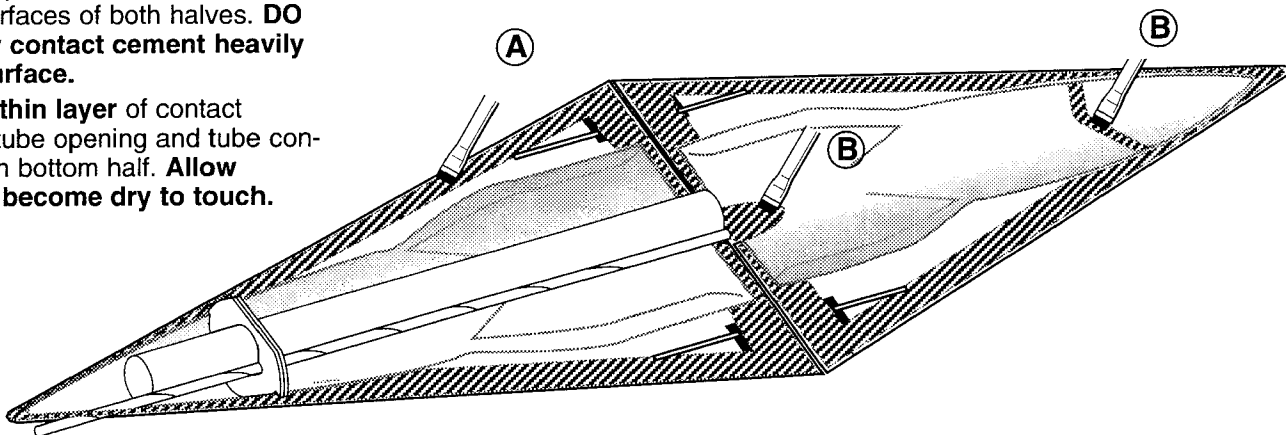
D. Swing open the top and bottom halves. Make sure the tape hinges are secure and halves are still aligned.



9.

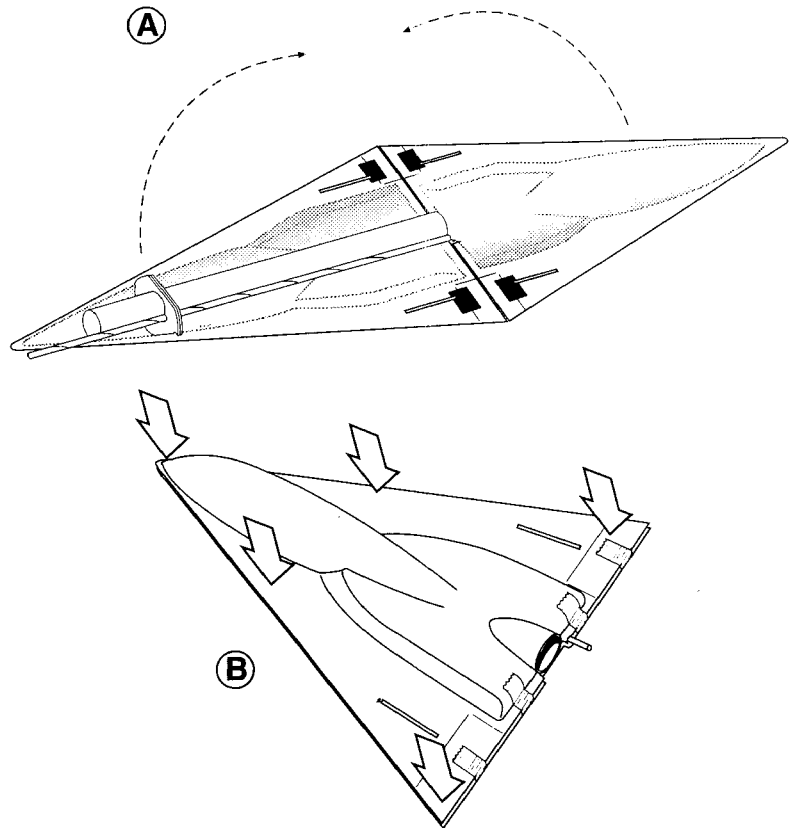
A. Apply a **very thin layer** of contact cement (up to 25 mm [1] wide) around the perimeter and over all the elevator surfaces of both halves. **DO NOT apply contact cement heavily to foam surface.**


B. Apply a **thin layer** of contact cement to tube opening and tube contact area on bottom half. **Allow cement to become dry to touch.**

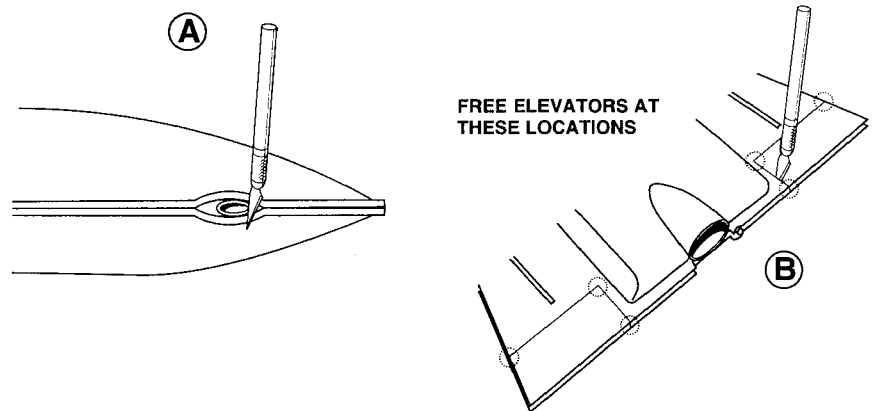


2. SR-X ASSEMBLY (CONTINUED)

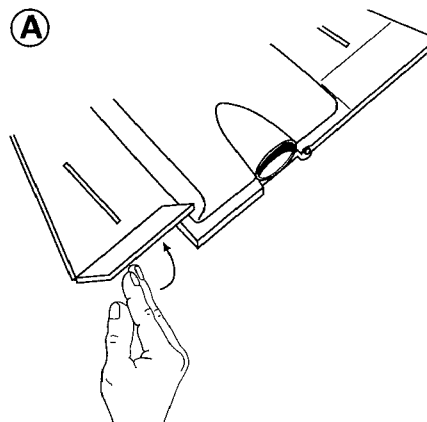
- 10.
- A. Carefully swing top and bottom halves together. Make sure alignment is correct.
- B. Firmly press halves together around perimeter and in the elevator areas.



11. 
- A. Carefully trim the front launch lug back to model's edge.
- B. Carefully free elevators by cutting through die-cut tabs at elevators with a sharp new modeling type knife or blade.
- DO NOT CUT HINGE MATERIAL SANDWICHED BETWEEN HALVES.**



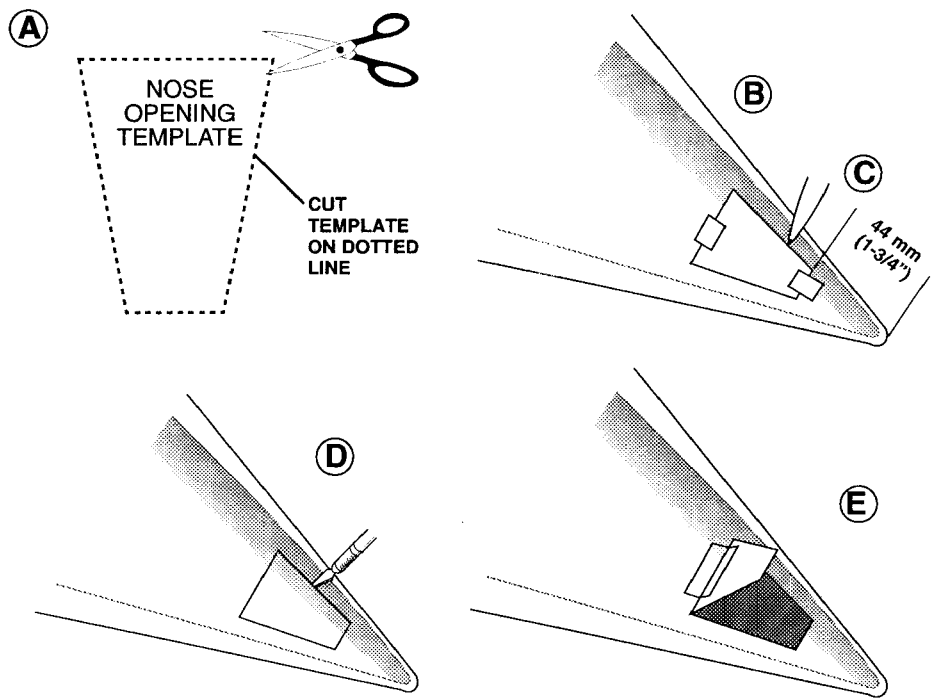
- 12.
- A. Position SR-X right side up, push elevators up as shown. This will crush the foam along the top edge of elevators to allow the up motion only on elevators.
- DO NOT PUSH DOWN ON ELEVATORS.**



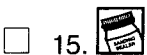
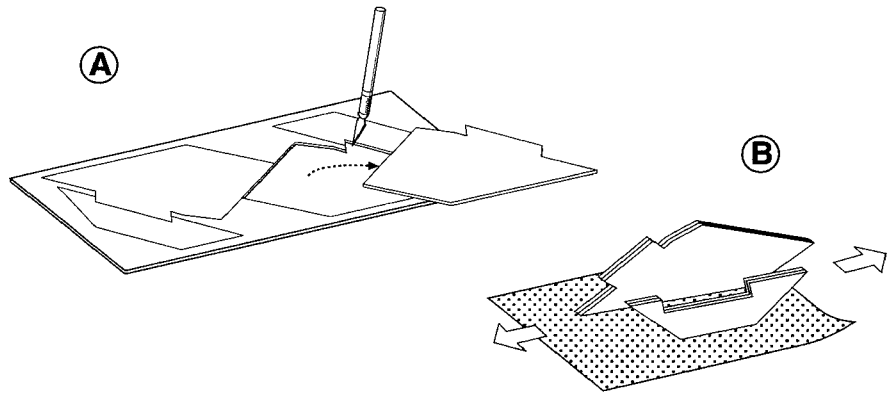
2. SR-X ASSEMBLY (CONTINUED)



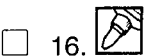
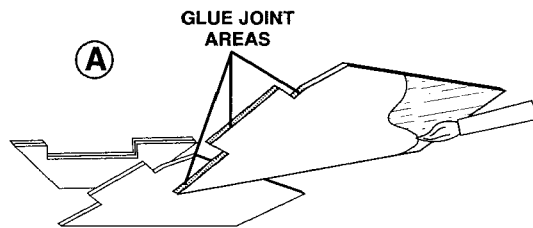
- A. Cut out the nose opening template from the instructions.
- B. Place template on bottom half of SR-X 44 mm (1-3/4") from nose tip, as shown. Hold it in place with 2 small pieces of tape.
- C. Draw around template with ball point pen.
- D. Cut nose opening out. **Note:** Part that is removed will be put back in place to become a door. Cut cleanly with a sharp, new, modeling type knife blade.
- E. Apply a strip of cellophane tape to the rear of nose door from previous step. Position door in place and press tape firmly into place. Place a piece of tape to temporarily hold the front of door closed.



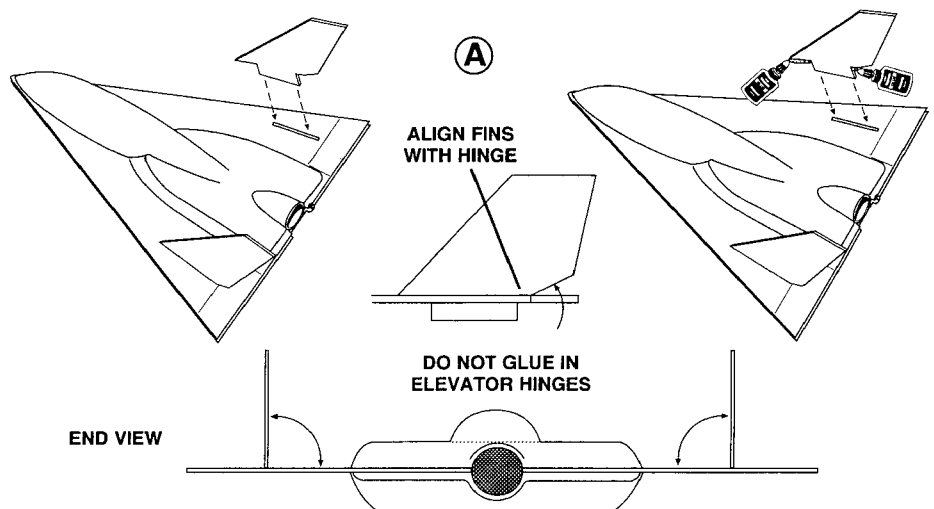
- A. Fine sand balsa sheet and carefully remove die-cut balsa parts from sheet. Use a sharp knife if needed.
- B. Stack alike parts together and sand edges smooth. **Do not sand preset angle on top fins.** This angle is set to stop the elevators upward movement.




- A. Apply sanding sealer or primer paint to wood parts. Lightly sand and repeat steps until balsa grain is filled and smooth. **Do not apply sealer or primer paint to glue joint areas shown.**



- A. Fit upper fins into slots in wings. Trim and sand slots if necessary. Remove and apply white glue to fins. Fit fins into slots. Adjust fins so they are at a right angle to the wing and the angle in fin matches angle of elevators. Allow glue to dry.
- B. Apply glue fillet to each fin/wing joint, and allow glue to dry. **Do not get glue in elevator openings.**



2. SR-X ASSEMBLY (CONTINUED)

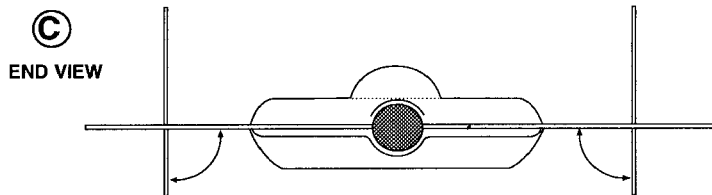
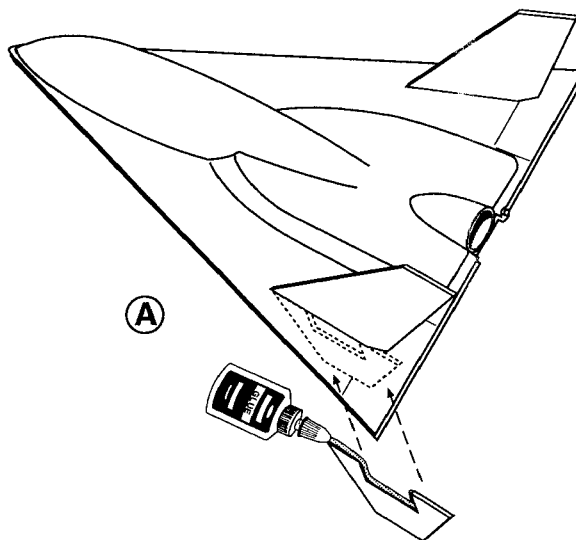
□ 17. 

A. Fit lower fins onto upper fin parts sticking through bottom of wing. Sand if needed for correct fit.

B. Apply white glue to edges and glue into place. Adjust fins for correct alignment. Allow glue to dry.

C. Apply a white glue fillet to each fin/wing joint, and allow glue to dry.

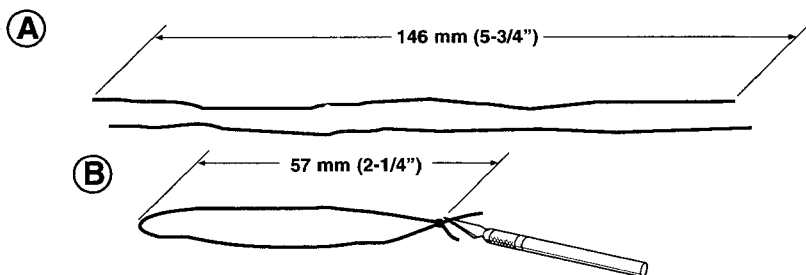
Do not get glue in elevator openings. Elevators must move freely.




□ 18.  

A. Cut two pieces of black elastic thread 146 mm (5-3/4") long.

B. Tie each thread into loop approximately 57 mm (2-1/4") long. Cut excess thread ends off loops. Keep extra length of thread to make replacement loops if needed.

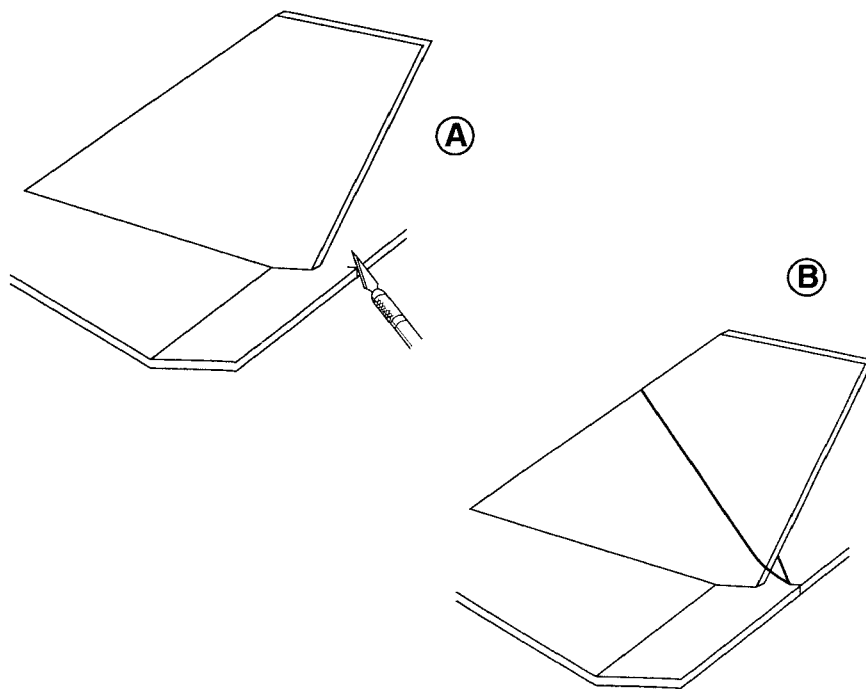


□ 19. 

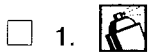
A. Cut a 1 mm (1/16") deep slit in the rear edge of elevators as shown.

B. Slip knotted end of elastic loop into slits and loop over upper fins. This will make elevators activate upward and be limited by fins.

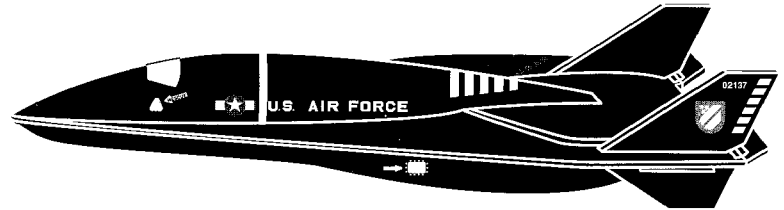
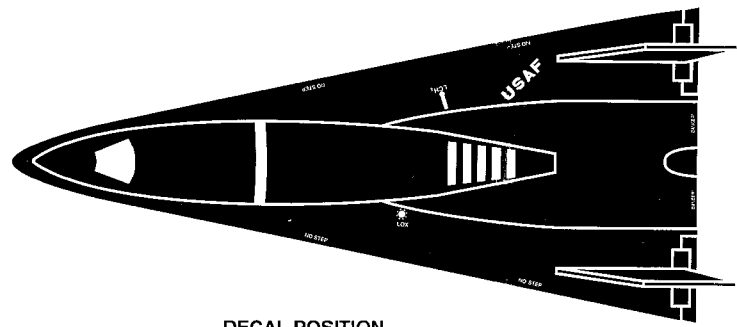
OPTIONAL: You may wish to lightly sand round the leading edges of the wings and around the nose with fine sandpaper. Being extra careful not to tear the foam, before you paint the model.



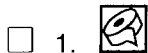
3. PAINTING & DETAILING



You may wish to paint your SR-X, but painting adds weight and will diminish its glide performance. Remove elastic loops, use paint sparingly. Paint entire model black, **USE ONLY TESTOR'S TYPE PAINT.** When paint is thoroughly dry, apply decals in locations shown and apply a thin coat of Testor's Dullcote to the entire model. Use the box photo also as a reference. When paint is thoroughly dry, reattach elastic loops to the elevators and over the fins.



4. TRIMMING YOUR SR-X FOR FLIGHT



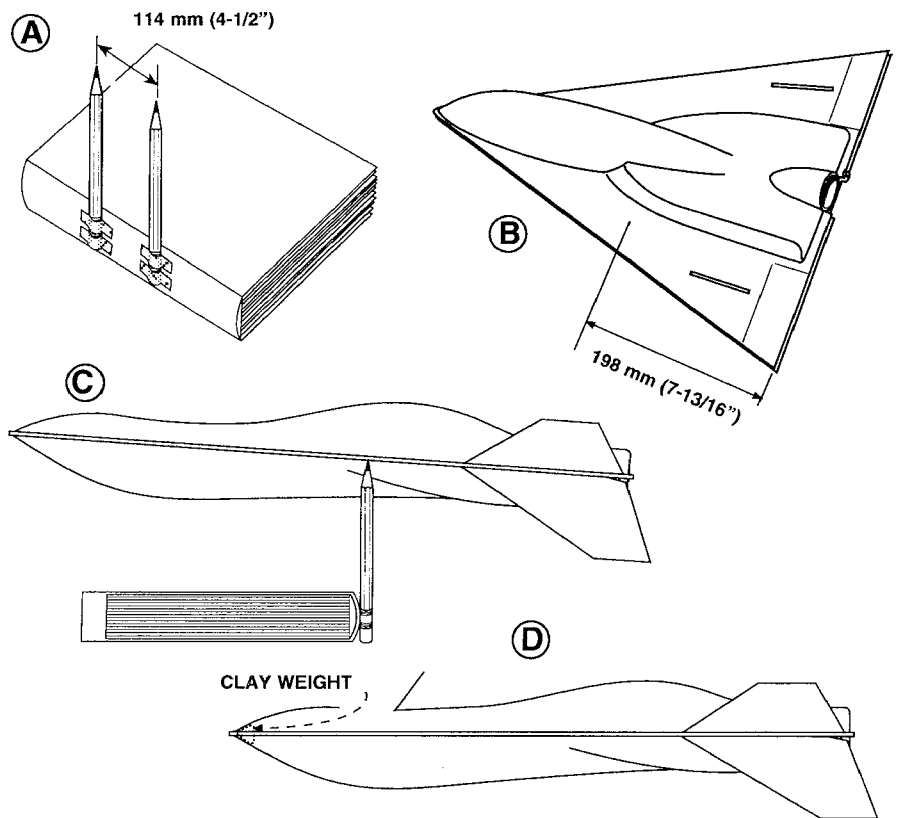
A. Tape two pencils of equal length or two ball point pens of the same length to the edge of a book at a distance of 114 mm (4-1/2") apart as shown. This will be a balancing fixture to trim your SR-X's glide.

B. Remove the Power Pod from the model, mark the SR-X 198 mm (7-13/16") from the rear edge of the wing on wing top side.

C. Suspend the SR-X on your trim fixture with end of pencils on the marks. The SR-X will be tail heavy.

D. Push clay into the end of the nose through the opening cut in step 13 until SR-X balances in a slight nose high attitude.

E. Push clay tightly into nose. Recheck the balance and secure the openings door with a piece of cellophane tape. Your SR-X is now ready for its first flight.



WHAT TO EXPECT WHEN FLYING YOUR SR-X

The SR-X is boosted into the air with a C6-3 engine in the power pod. At apogee (the highest point of flight) the power pod ejects and returns on a parachute and the SR-X begins to glide back. Retrieve the parts after landing replace engine and igniter, and you are ready to fly again.

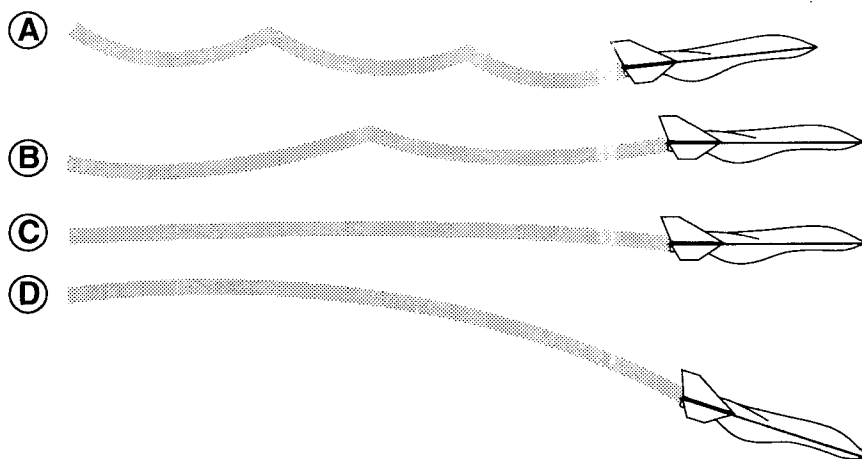
On your first flight, observe your SR-X's glide and correct if necessary by following the Optimizing The Glide section of the instructions. Your SR-X is easily repaired using epoxy, white or yellow glue.

OPTIMIZING THE GLIDE OF YOUR SR-X

Some fine tuning can be done to optimize the glide. Observe the glide:

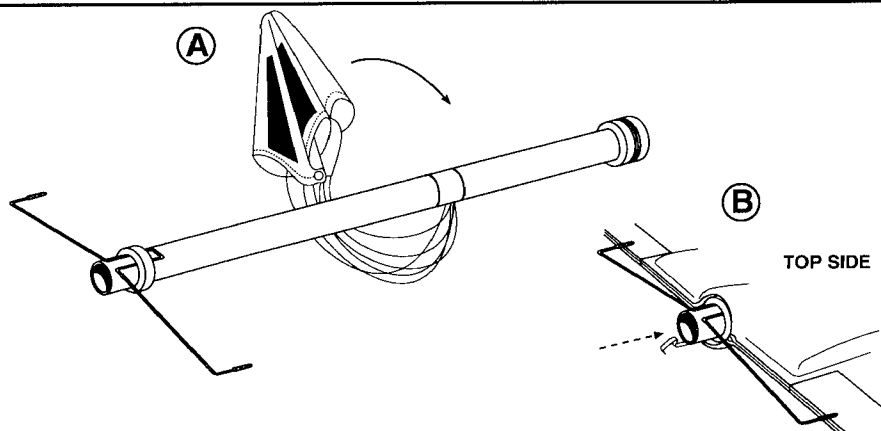
- A. Heavy Stall - add clay weight to nose in small amounts and re-fly after each addition until glide improve
- B. Light stall - OK, but clay weight can be added in small amounts to nose until glide improves
- C. Normal Flight - Slow loss of altitude
- D. Nose Heavy - Too much weight in nose. Remove weight a little at a time until glide is correct.

If SR-X turns too tightly - Add a small piece of tape to elevator where top fin contacts elevator. If turn is to the right - add tape under the right rudder. If turn is to the left - add tape under the left rudder. A slight large turn is desirable to keep the model in the flying area.



RECOVERY SYSTEM PREPARATION

- A. Pull parachute into spike shape, and roll shroud lines and parachute around power pod.
- B. Insert pod into SR-X. Roll pod and parachute as you slide pod into SR-X. Push pod all the way into the SR-X. Adjust the pod with the engine hook pointing down and wire form ends in a down attitude as shown.
- C. Slip wire form ends over elevators to hold them flat with the wing.



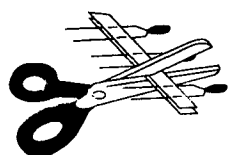
ENGINE/IGNITER INSTALLATION

NOTE: always launch your rocket 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.

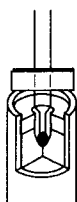
- A. Separate one igniter plug from its tree as shown. The plugs are color-coded to fit specific engine sizes. A tag attached to the tree also designates which engines may be used with a certain plug.
- B. Carefully remove the staple holding the igniters in paper. Cut one igniter from the strip as shown.
- 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 SR-X is now prepared for flight.

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

HOLD ENGINE UPRIGHT, DROP IN IGNITER



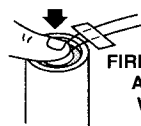
SEPARATE IGNITER AND IGNITER PLUG



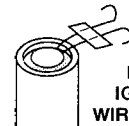
IGNITER MUST TOUCH PROPELLANT



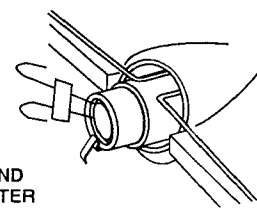
INSERT IGNITER PLUG



FIRMLY PUSH ALL THE WAY IN



BEND IGNITER WIRES BACK



INSERT ENGINE INTO ROCKET

LAUNCH SUPPLIES

To launch your SR-X you will need the following items:

- Estes Electrical Launch Controller and Launch Pad
- Recommended Estes Engine: C6-3 (First Flight)

All Estes engines include igniters and igniter plugs. Use only Estes products to launch this glider.

FLYING YOUR SR-X

Only fly SR-X with the Porta-Pad® pointing straight up. Do not angle the launch rod.

Apply tape to the launch rod so that the SR-X is 70 mm (2-3/4") off the blast deflector.

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 150 meters (500 feet) square. The larger the launch area, the better your chances of recovering your glider. Football fields and large 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.

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

- 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.
- Hold the yellow (left) arm button down. The audio indicator will produce a steady tone.
- Verbally count down from five to zero loud enough to 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.

COUNTDOWN AND LAUNCH

Check the elevator position. Make sure the elevators held down with the wire form, and the power pod are pushed into SR-X all the way.

10 BE SURE SAFETY KEY IS NOT IN LAUNCH CONTROLLER.

- 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.
- Attach micro-clips to the igniter wires. Arrange the clips so they do not touch each other or the metal blast deflector. Attach the clips as close to the protective tape on igniter as possible.
- Move back from your rocket as far as launch wire will permit (at least 5 meters (15 feet)).
- INSERT SAFETY KEY to arm the launch controller. Give audible countdown 5...4...3...2...1...**LAUNCH!! PUSH AND HOLD LAUNCH BUTTON OR BUTTONS UNTIL ENGINE IGNITES**

POST-LAUNCH SAFETY

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

MISFIRES

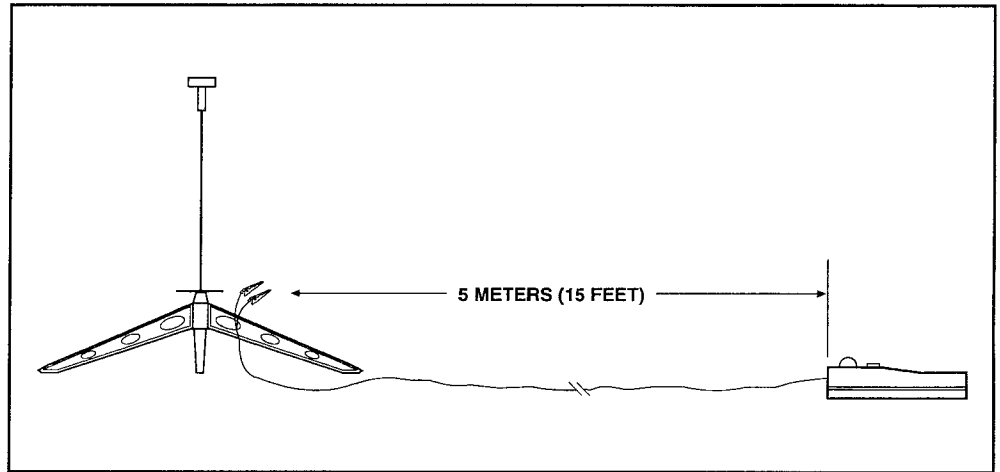
If the igniter functions properly but the propellant does not ignite, keep in mind the following: An Estes igniter will function properly even if the coated tip is chipped. However, if the coated tip is not in direct contact with the engine propellant, it will only heat and not ignite the engine.

When the 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.

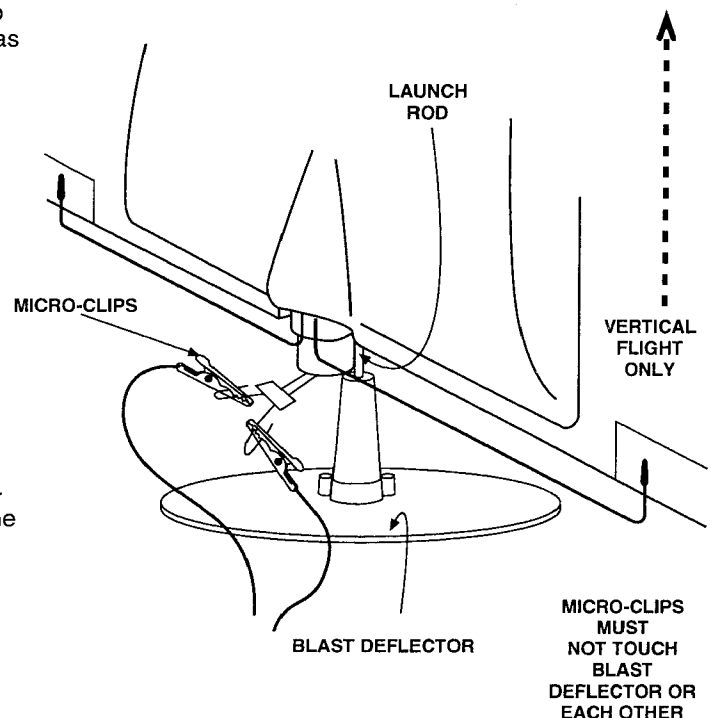
The full line of Estes products are available from most toy and hobby shops and many chain stores. Or for more information, write: Estes Industries, P.O. Box 227, Penrose, CO 81240.

FOR YOUR SAFETY AND ENJOYMENT

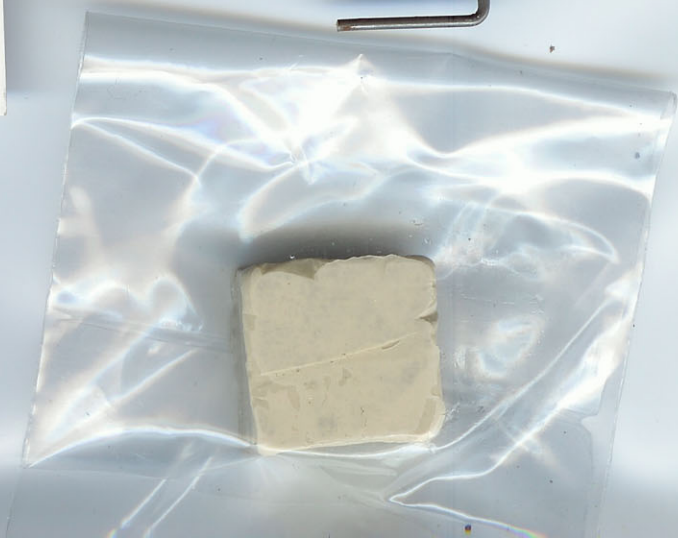
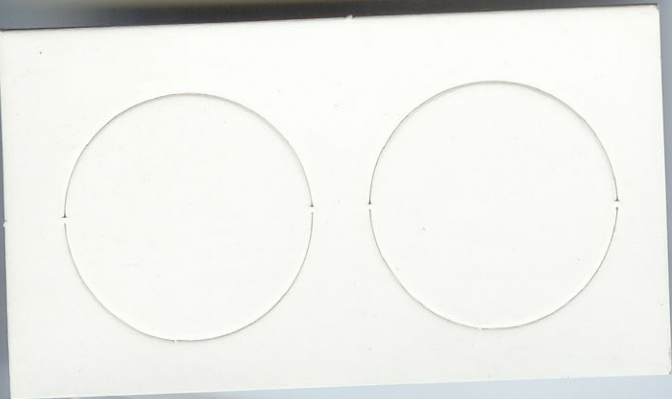
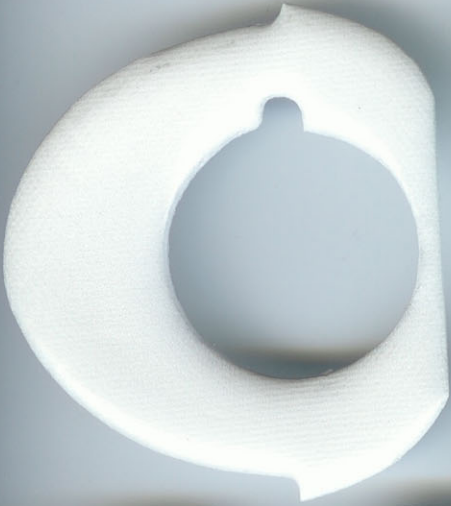
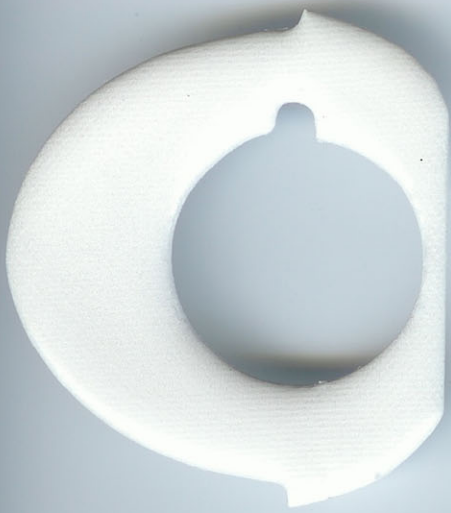
Always follow the National Association of Rocketry (NAR) MODEL ROCKETRY SAFETY CODE while participating in any model rocketry activities.



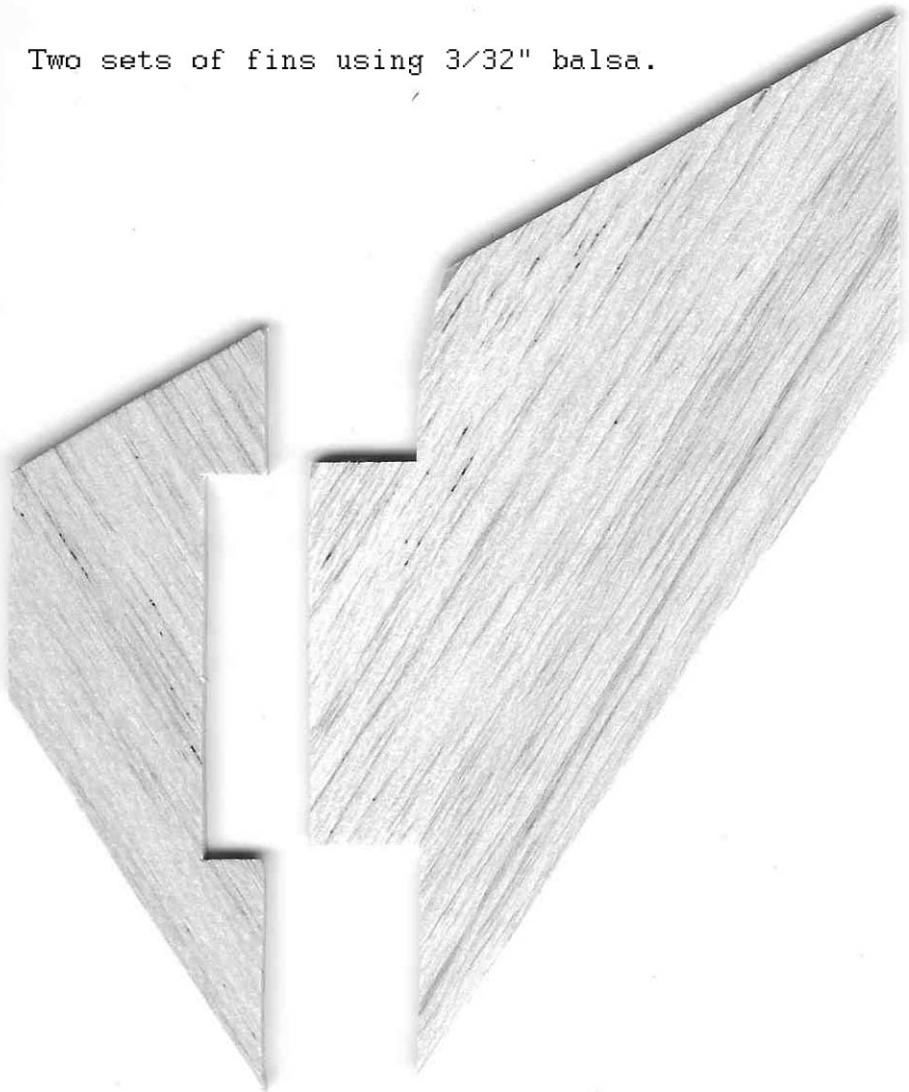
SAFETY KEY MUST NOT BE IN LAUNCH CONTROLLER WHEN ATTACHING MICRO-CLIPS TO ENGINE IGNITERS



Wire diameter is .042"



Two sets of fins using 3/32" balsa.





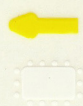
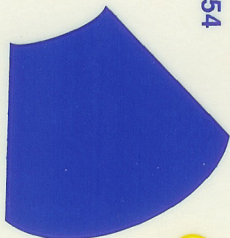
PN 037154

07194 07194

NO STEP DANGER!
NO STEP DANGER!
NO STEP DANGER!
NO STEP DANGER!

USAP

US AIR FORCE
US AIR FORCE
US AIR FORCE



RESCUE

LCH₂

LOX

