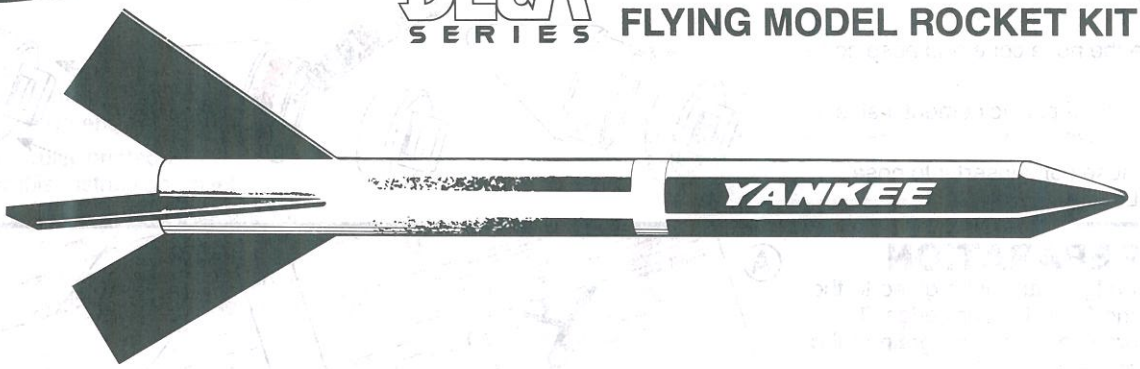
ESTES INDUSTRIES
1295 H STREET
PENROSE, CO 81240 USA

BETA™ SERIES

Yankee™

FLYING MODEL ROCKET KIT EST 1381

(8-94) 83409

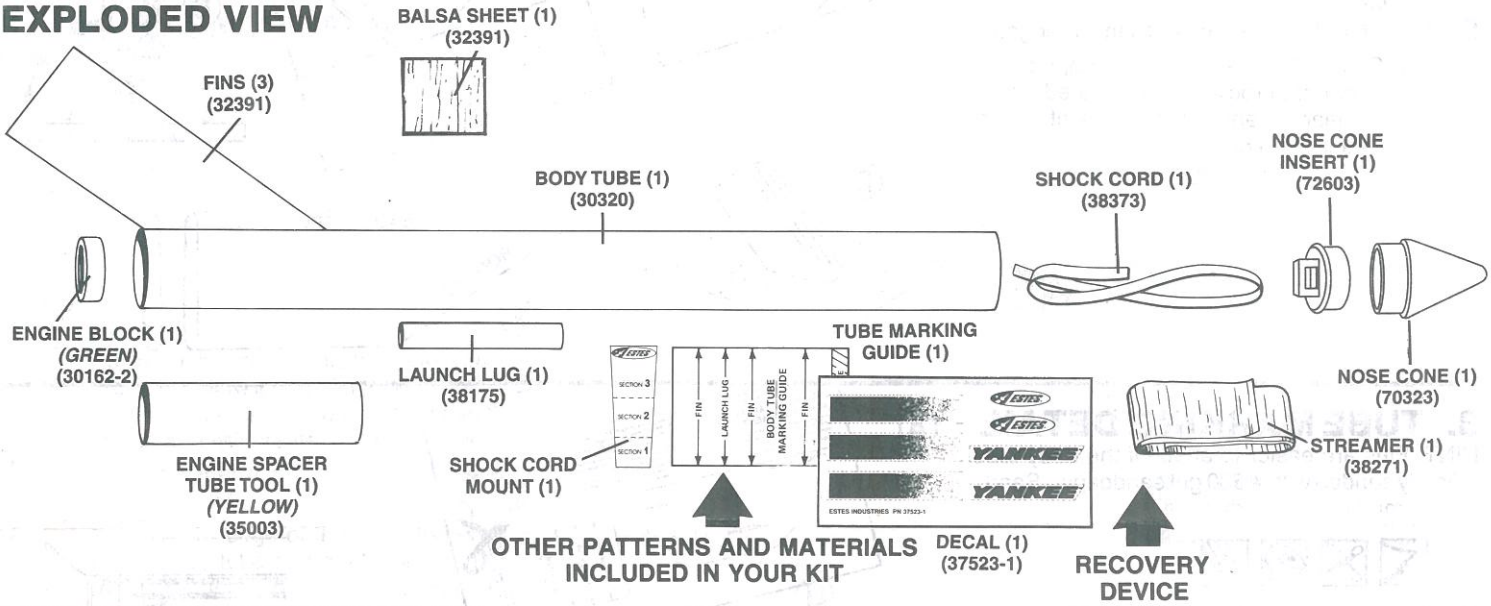


HOW TO USE THESE INSTRUCTIONS:

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. Tube marking guide, shock cord mount and fin pattern are printed in the instructions and will be found on page 7 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

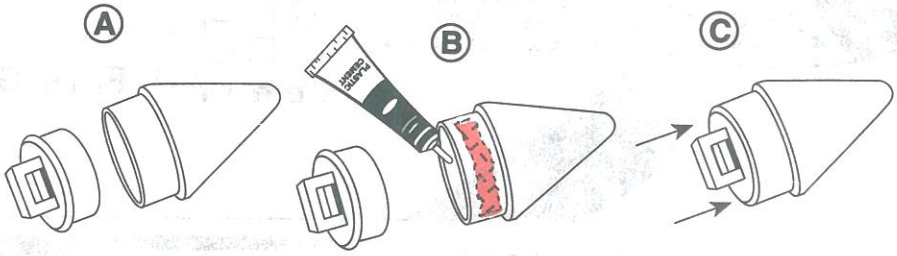
In addition to the parts included in your kit, you will need these construction supplies. Each step shows which supplies will be required.

SANDPAPER (#400 & #600 grit) | WOOD GLUE (white or yellow) | SCISSORS | PENCIL | HOBBY KNIFE | MASKING TAPE | RULER | PAINT BRUSH | TUBE-TYPE PLASTIC CEMENT | SANDING SEALER | SPRAY PAINT (primer optional)

GLUE IS APPLIED TO SURFACES SHOWN IN RED.

1. NOSE CONE ASSEMBLY

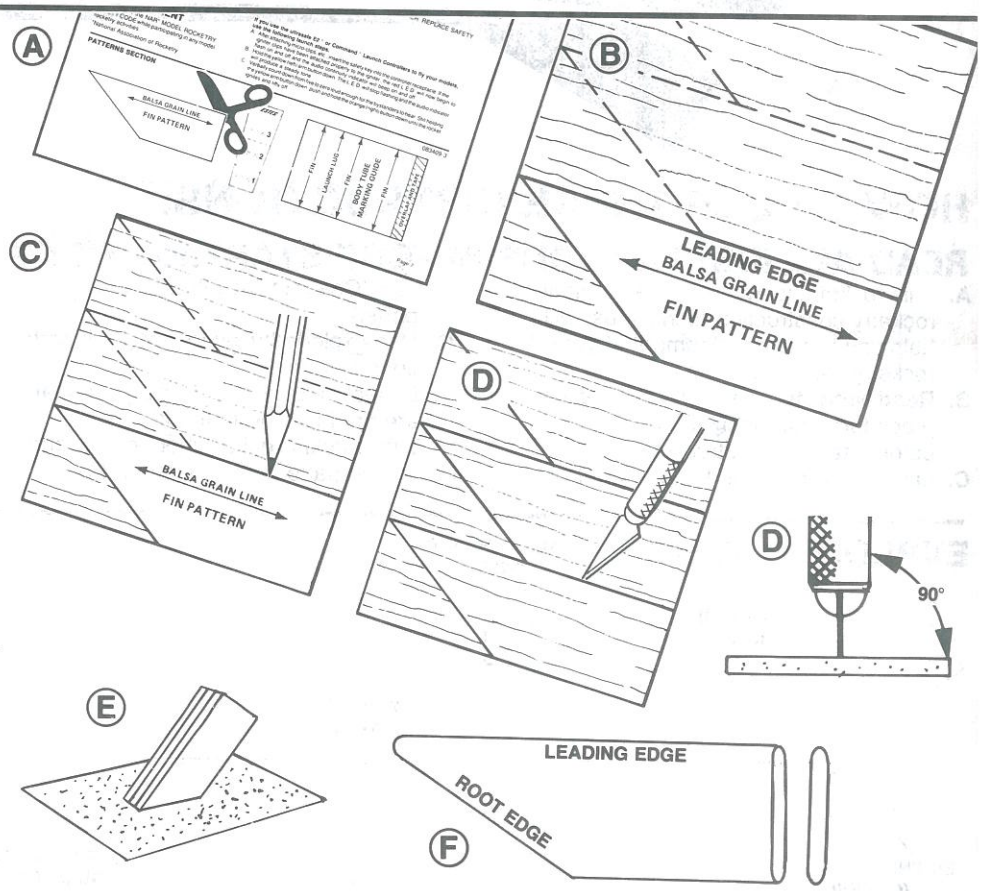
- **A.** ☐ Locate the nose cone and nose cone insert.
- **B.** ☐ Run a line of plastic cement inside base of nose cone.
- **C.** ☐ Insert nose cone insert into nose cone. Let dry.



2. FIN PREPARATION

Identify the root edge that will be glued to the body tube and the front (leading) edge. The leading edge always parallels the grain of the wood for extra strength.

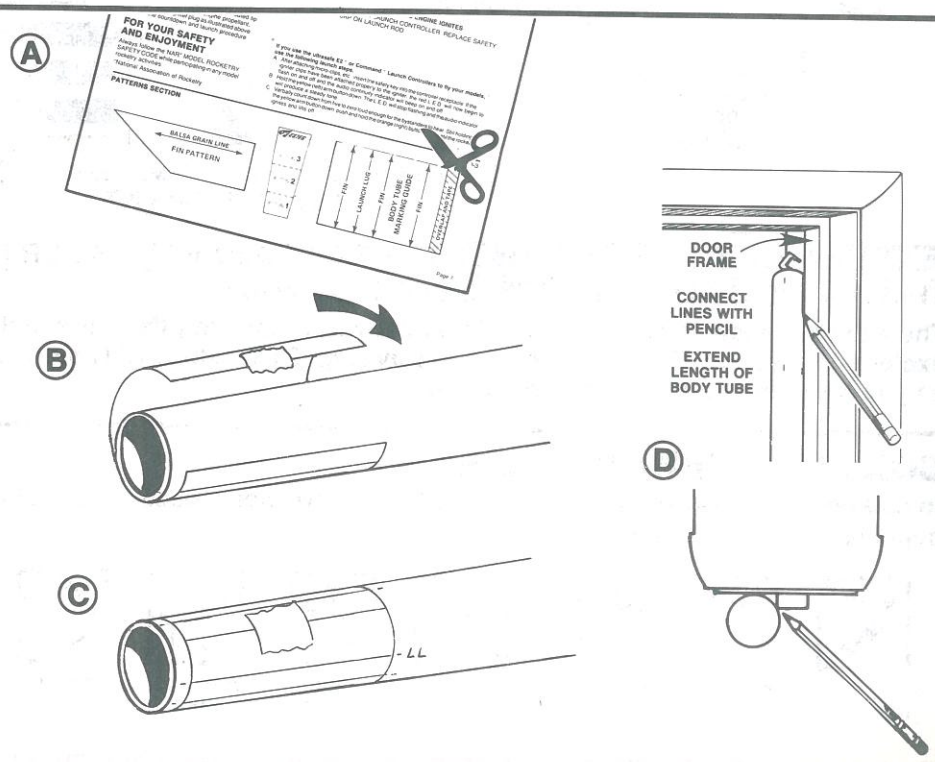
- **A.** ☐ Cut the fin pattern from the pattern section sheet on page 7.
- **B.** ☐ Lay the pattern on the balsa fin sheet as shown. **Important: Balsa grain must match grain line on pattern.**
- **C.** ☐ Draw around pattern to transfer three fin outlines onto the balsa.
- **D.** ☐ Cut the fins from the sheet. Hold knife vertically at 90° to work surface for even cut.
- **E.** ☐ Stack fins together and sand all edges.
- **F.** ☐ Optional: For a better-looking, higher-performing rocket, round the edges of the leading and trailing edge of the fin. See illustration.



3. TUBE MARKING DETAIL

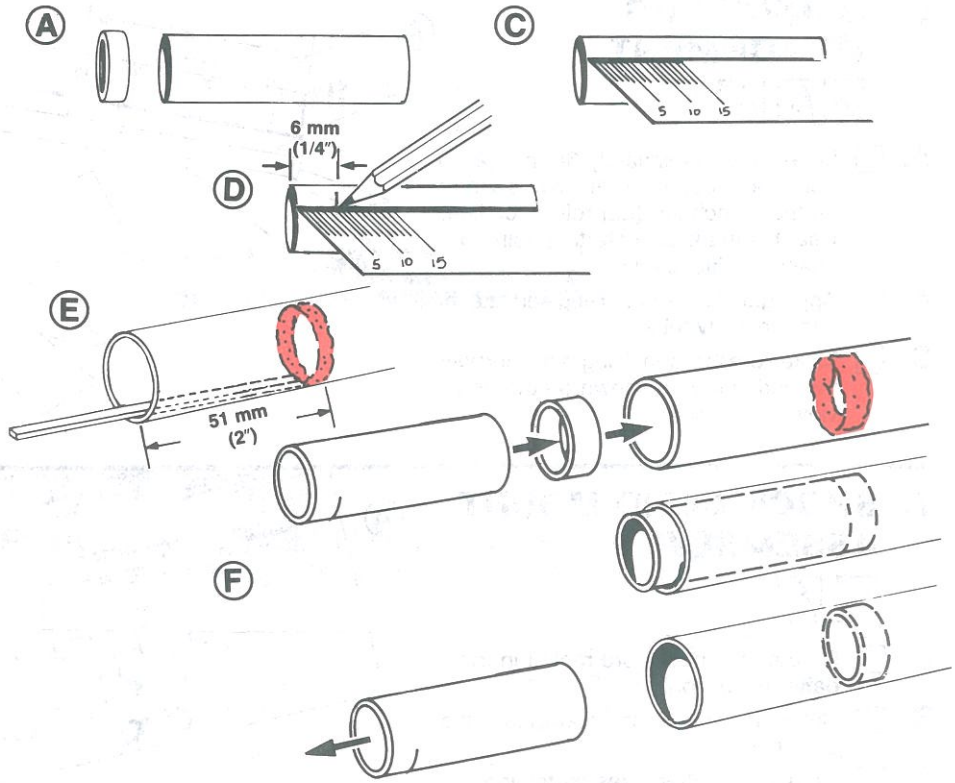
HINT: Fins are easier to attach if the body tube is lightly sanded with #600 grit sandpaper. Sand before marking the body tube.

- **A.** ☐ Locate the tube marking guide on the patterns section on page 7. Cut the guide along the outline.
- **B.** ☐ Wrap the guide around the body tube and tape it in place.
- **C.** ☐ Mark tube at all arrow locations. One line on your tube marking guide is labeled LL, this means launch lug. Write LL on the body tube for that line. Remove marking guide.
- **D.** ☐ Using a door frame as a guide, draw straight lines connecting each pair of fin marks. Extend the launch lug line (LL) by 100 mm (4").



4. ENGINE MOUNT ASSEMBLY

- **A.** ☐ You will need the yellow engine spacer tube and green engine block.
- **B.** ☐ Locate the ruler printed in the center crease of this instruction sheet.
- **C.** ☐ Lay one end of the engine spacer tube on the zero mark of the ruler.
- **D.** ☐ Take your pencil and place a mark on the engine spacer tube at 6 mm (1/4″) from zero.
- **E.** ☐ Using a balsa scrap stick or end of a pencil, apply a ring of glue inside the body tube about 51 mm (2″) from the end.
  NOTE: This must be the same end of the tube on which fin lines were drawn.
- **F.** ☐ Push the green engine block into the body tube using the spacer tube. Push until the 6 mm (1/4″) mark on the spacer tube is even with the end of the body tube. **Remove spacer tube immediately.**

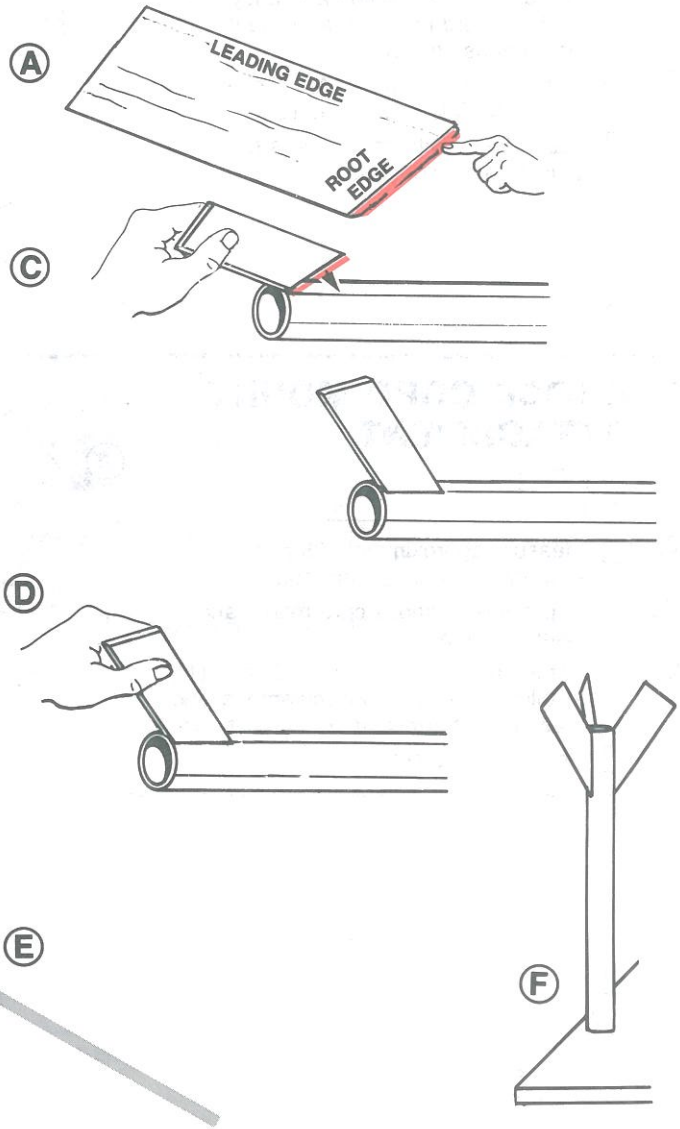


5. FIN ATTACHMENT

NOTE: Before gluing your fins, match the fin shape to the fin pattern shown in this step. Identify the root edge that will be glued to the body tube and the front (leading) edge. The leading edge always parallels the grain of the wood for extra fin strength. This will help you attach your fins correctly. **Remember: Fins must be attached correctly for stable flights.**

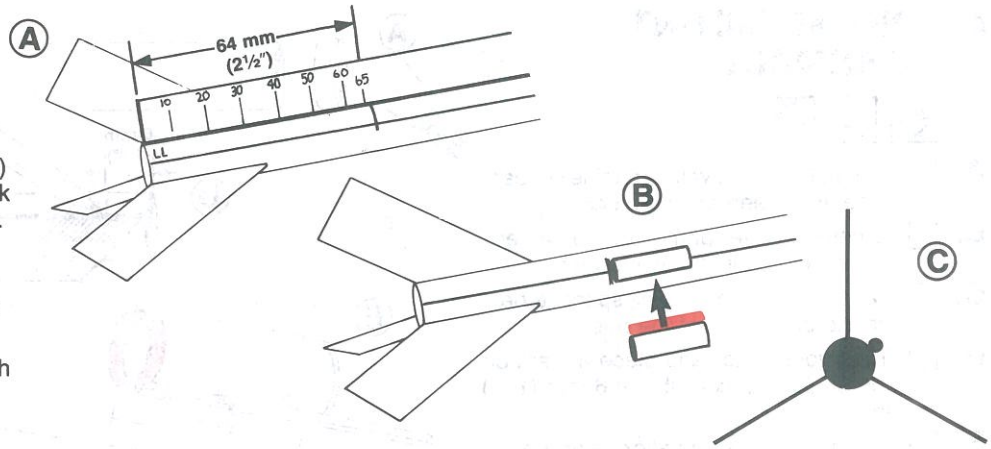
- **A.** ☐ Rub a thin film of glue into the root edge of one fin. Allow it to dry for a minute or two. This will make it easier to attach the fin and will create a stronger bond.
- **B.** ☐ Apply another thin film of glue to the root edge of the same fin.
- **C.** ☐ Set the rear edge of the fin at the end of the body tube and gently press the root edge along the body tube fin line.
- **D.** ☐ Carefully adjust the fin, if needed, so it will project straight up from the body. Work slowly and carefully so as not to disturb the glue joint. Attach remaining fins in same manner. Do not set rocket on fins whilte glue is wet.
- **E.** ☐ After all fins are attached, use shaded end view to check proper fin spacing.
- **F.** ☐ Important: Stand rocket on table as shown. Allow fins to dry before proceeding.

At this point, it is a good idea to rest for a few minutes. Get up and stretch or read through the next steps before doing any more work.



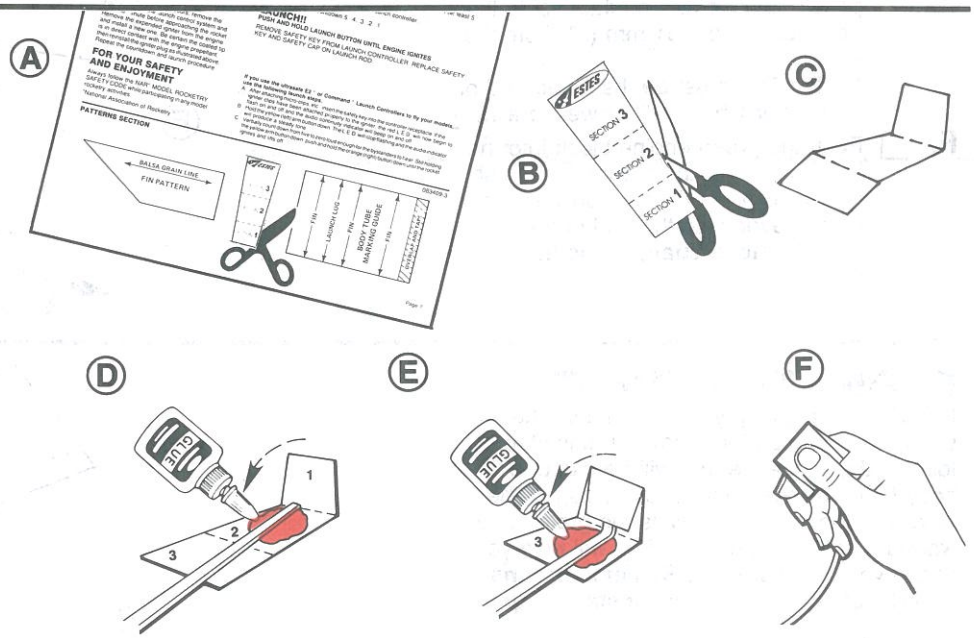
6. LAUNCH LUG ATTACHMENT

- **A.** ☐ Measure approximately 64 mm (2½") from rear of body tube and place a mark on the launch lug (LL) reference line. Use this mark as a starting point to attach the launch lug.
- **B.** ☐ Apply glue to the launch lug and attach it to the body tube.
- **C.** ☐ Make sure the launch lug is aligned with the body tube as shown on the end view. Allow to dry.



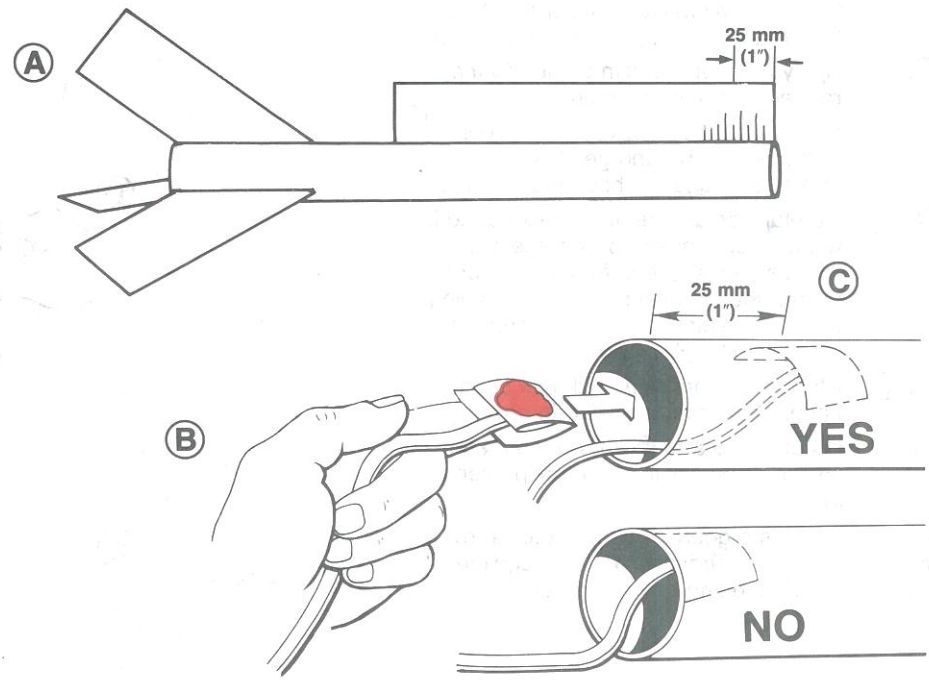
7. SHOCK CORD MOUNT ASSEMBLY

- **A.** ☐ Locate the shock cord mount 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 1 forward. Apply glue to section 3. Fold forward again.
- **F.** ☐ Clamp firmly with your fingers for two minutes until glue dries.



8. SHOCK CORD MOUNT ATTACHMENT

- **A.** ☐ Measure approximately 25 mm (1") from the front end of the body tube.
- **B.** ☐ Apply glue to shock cord mount and insert into tube.
- **C.** ☐ Set the mount back at least 25 mm (1") to allow for nose cone clearance and press mount firmly into glue as shown.
- **D.** ☐ Hold until glue sets.



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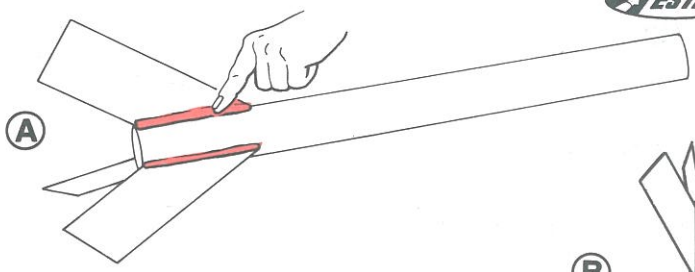
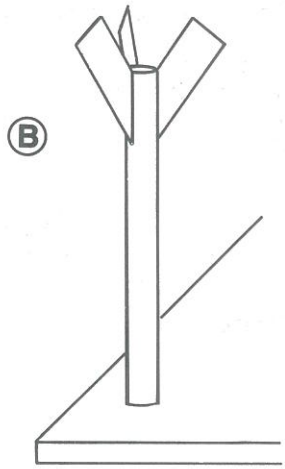
9. GLUE REINFORCEMENT DETAIL

NOTE: Glue joint reinforcements or fillets are important because they help blend the fins, launch lugs or other components into the body tube. This blending improves the looks of your model, allows smoother air flow over your rocket during flight and strengthens the attachment points.

A. ☐ Reinforce each fin/body tube joint with glue and each side of launch lug as shown. Use your finger to help smooth the glue (fillet).

B. ☐ Stand rocket on table as shown to allow glue to dry for approximately five minutes. Wipe away any excess glue that may run down the side of the body tube. Allow to dry.





10. FINISHING YOUR ROCKET

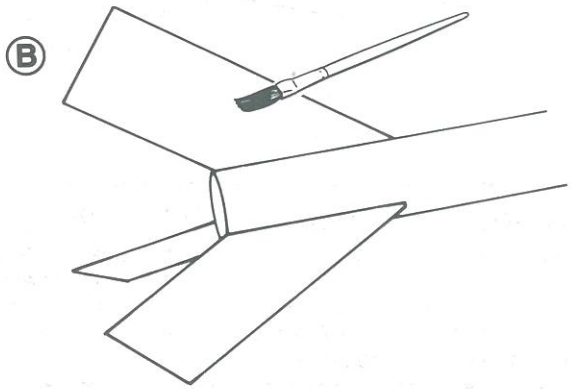
A. ☐ Before you paint your rocket make sure all of the glue joints are completely dry.

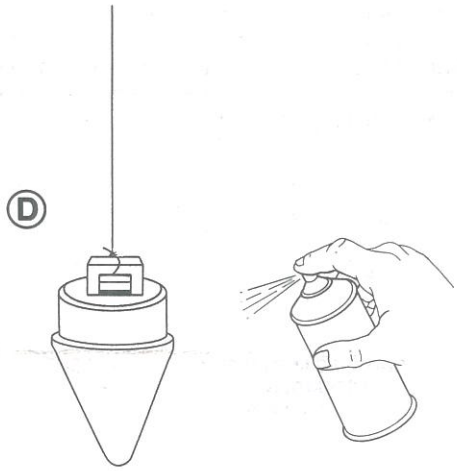
B. ☐ Optional: For increased performance and a smoother finish, apply sanding sealer to the fins before you paint. When the sealer is dry, sand again, then seal and sand again. Repeat this until the fins are smooth.

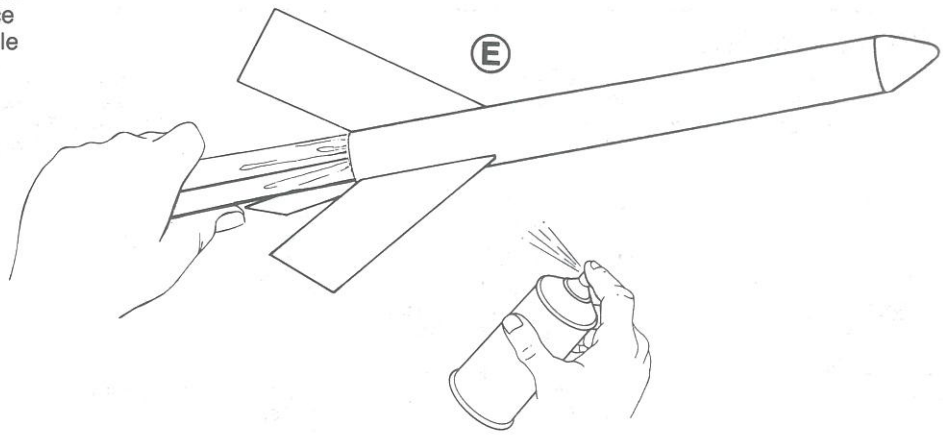
C. ☐ Optional: For a smoother and better-looking finish, spray a coat of automotive primer on your rocket. Do not apply too much. Lightly sand the rocket with 400 to 600 grit sandpaper. Apply another coat if needed. Sand between coats. The primer will allow the final coats of paint to adhere better to the rocket. Several light mist coats of paint are preferable. Too much paint will add to the rocket's weight.

D. ☐ Refer to the illustration on the front of the color panel for paint locations and decal placement.

E. ☐ Use spray enamel to paint your model rocket. Make a handle by rolling a piece of paper. Insert it into the rocket while painting. Allow paint to dry.





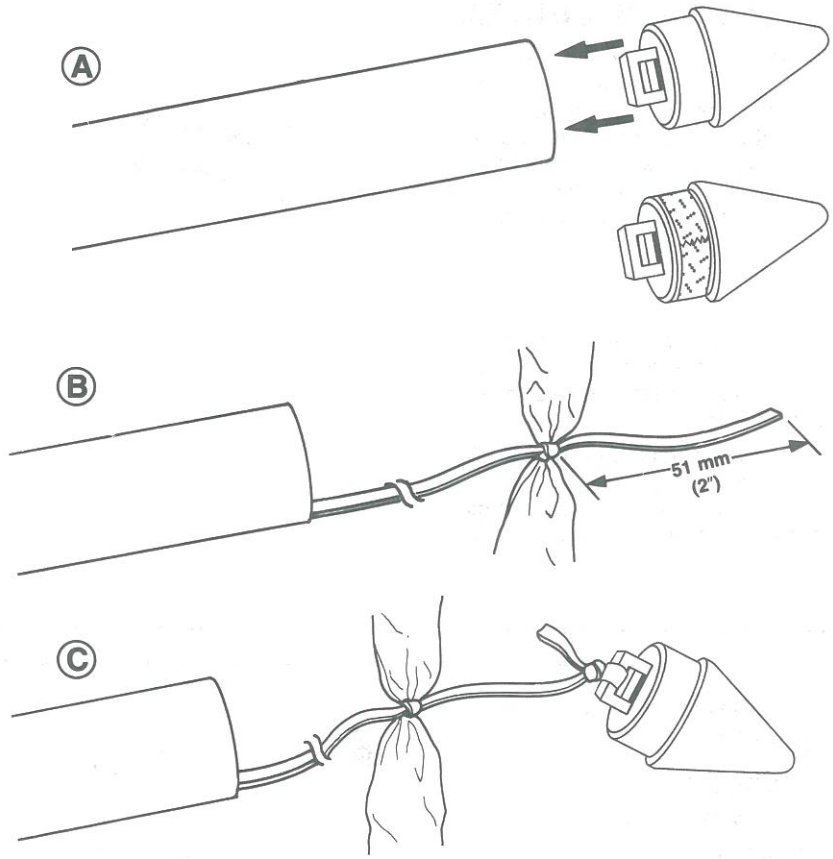


11. RECOVERY DEVICE ATTACHMENT

A. ☐ Check the fit of the nose cone in the body. Nose cone must slide easily into the tube but not be so loose that it wobbles when you shake the rocket. If it is too tight, lightly sand the shoulder of the nose cone. If too loose, wrap a bit of masking tape around the shoulder.

B. ☐ Using a double knot, tie the free end of the shock cord around the middle of the streamer about 51 mm (2") from the end of the shock cord.

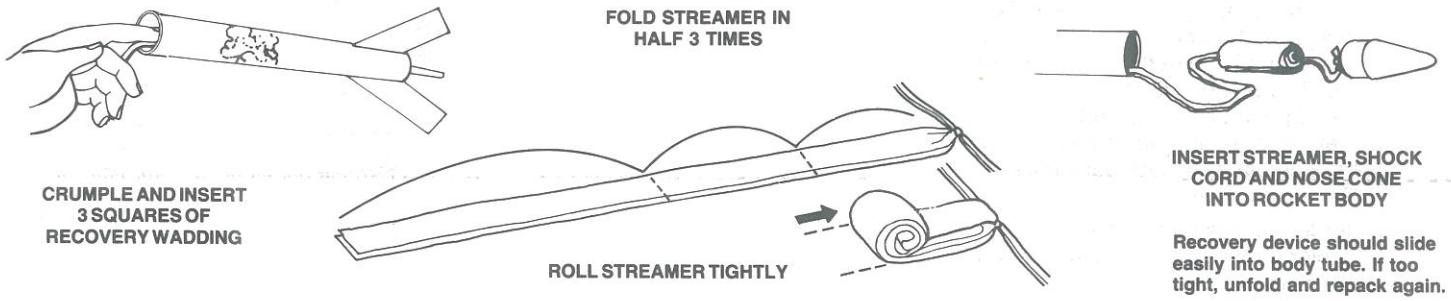
C. ☐ Tie the end of shock cord to the nose cone eyelet.



WHAT TO EXPECT WHEN FLYING YOUR YANKEE™ ROCKET

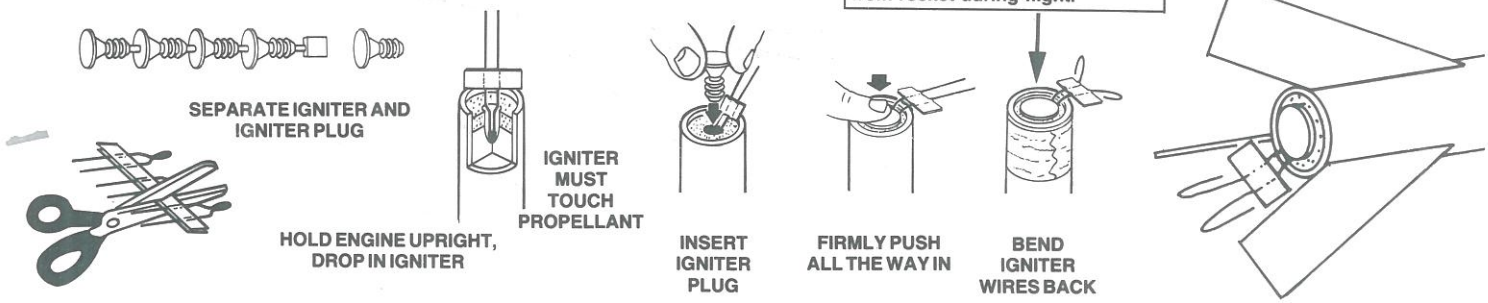
The Yankee™ model rocket, on a 1/2A6-2 or an A8-3 engine, can easily be flown off the area the size of a baseball field. The 1/2A6-2 or A8-3 should give you between 107 and 183 meters (350 to 600 feet) altitude. If you choose to use a high performing C6-7 (about 549 meters - 1800 feet altitude), then you need an area at least the size of a football field. The Yankee™ is recovered with a streamer. The streamer can be easily seen when it is ejected at apogee. The streamer also makes it easier to find your rocket once it is on the ground. Have fun flying your Yankee™!

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

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.

MISFIRES

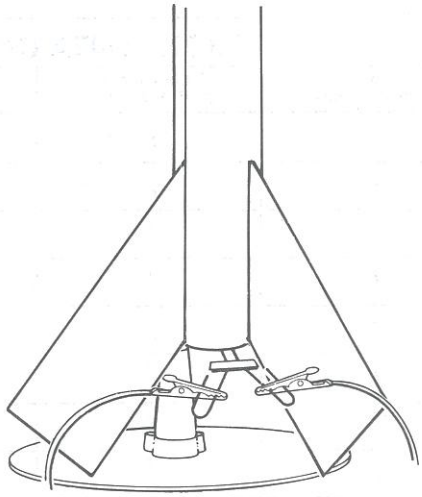
If the igniter functions properly but the propellant does not ignite, keep in mind the following: An Estes igniter will function properly even if the coated tip is chipped. However, if the coated tip is not in direct contact with the engine propellant, it will only heat and not ignite the engine.

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!!

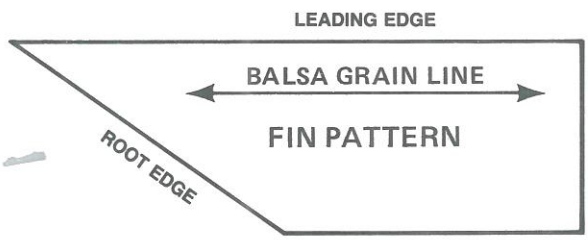
PUSH AND HOLD LAUNCH BUTTON UNTIL ENGINE IGNITES

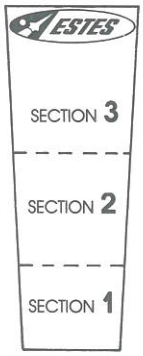
REMOVE SAFETY KEY FROM LAUNCH CONTROLLER. REPLACE SAFETY KEY AND SAFETY CAP ON LAUNCH ROD.

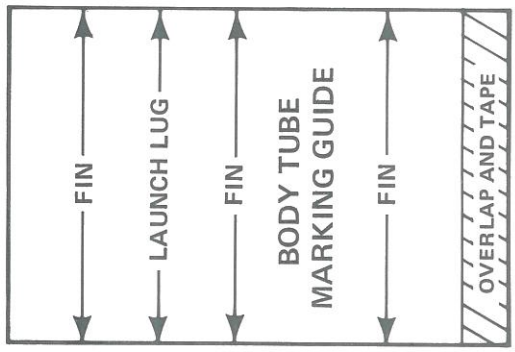
If you use the E2™ or Command™ Launch Controllers to fly your models, use the following launch steps.

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.

PATTERNS SECTION







FLIGHT DATA CARD

Flight number	Date	Engine type	Altitude predicted/actual	Flight duration predicted/actual	Recovery device operation	Performance comments	Condition after recovery
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