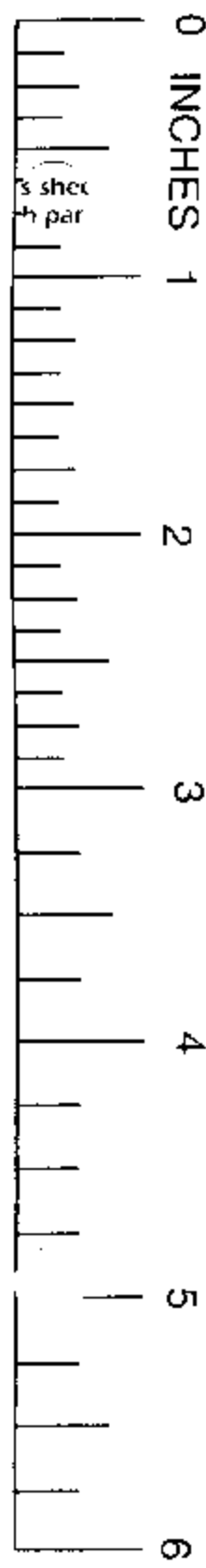


Updated 5-31-85

Novia™ ASSEMBLY INSTRUCTIONS



Product No. 1500
Skill Level One



Things You'll Need To Assemble this Kit:

Hobby Knife, Pencil and Paint Brush

Sandpaper (220 or 320 Grit) & Sanding Sealer

White Glue

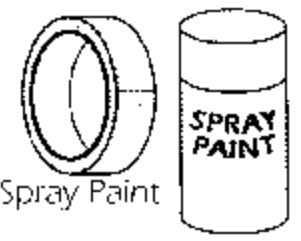
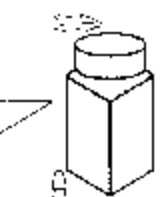
Aliphatic Resin glues work best such as TITEBOND or FIMFR'S CARPENTER'S WOOD GLUE - ELMER'S WHITE SCHOOL GLUE also works but dries slower.

Plastic Cement

Use TESTORS TUBE Plastic Cement, PACTRA LIQUID CEMENT or other comparable brands. DO NOT use cyanoacrylate glue.

Tape & Paint

Scotch Magic Tape or Paper Masking Tape and Spray Paint

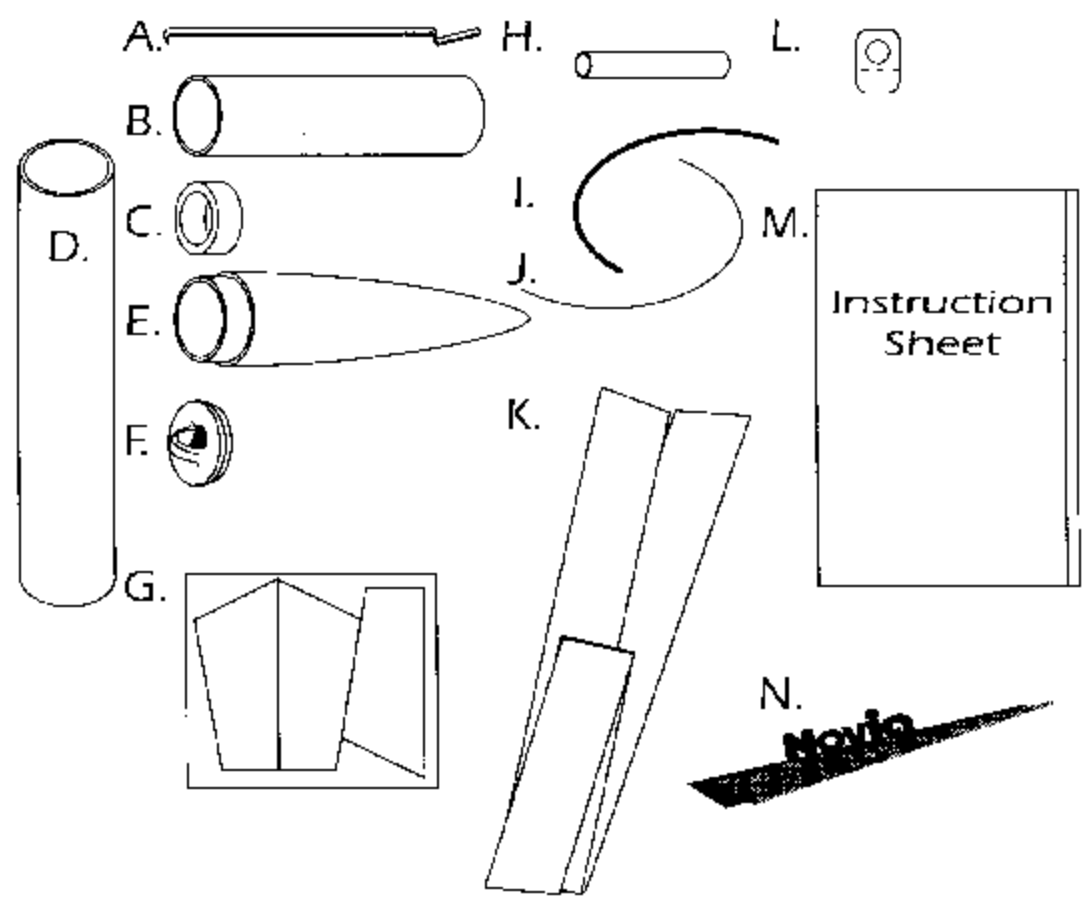


BEFORE STARTING ASSEMBLY READ THROUGH THESE INSTRUCTIONS. IT IS BEST TO TEST FIT ALL PARTS BEFORE APPLYING ANY GLUE. READ AND FOLLOW THE NAR MODEL ROCKET SAFETY CODE.

PARTS LIST

- A. 49000 Motor Clip
- B. 10303 Yellow Motor Mount Tube
- C. 14000 Blue Thrust Ring
- D. 11204 Body Tube
- E. 20075 Nose Cone
- F. 20076 Nose Cone Base
- G. 33006 Die-Cut Balsa Fin Set
- H. 10000 1 inch Launch Lug
- I. 50010 12 inch Elastic Shock Cord
- J. 50050 12 inch Kevlar* Shock Cord
- K. 78300 24 inch Plastic Streamer
- L. 28001 Single Gripper Tab
- M. 96000 Instruction Sheet
- N. 91500 Decal

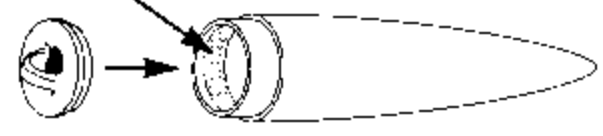
* Kevlar is a registered trademark of Dupont



STEP 1

A. Apply plastic model cement (not white glue) around the inside edge of the plastic nose cone. Push the base into the nose cone. Set aside to dry.

Plastic Model Cement

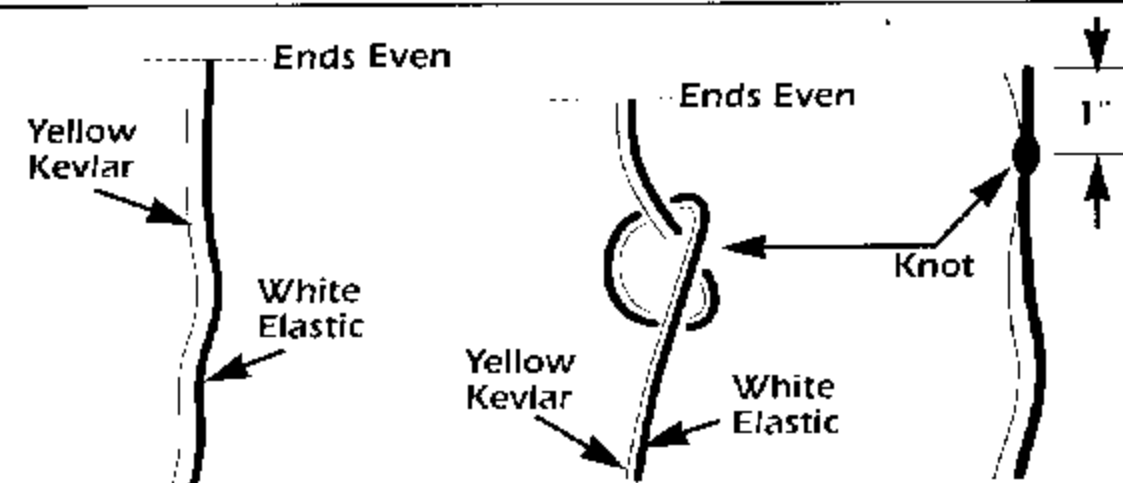


STEP 2

A. Hold the Yellow Kevlar Shock Cord and the White Elastic Shock Cord side by side. Pull one end of each cord so that they are even with each other. While holding the two cords together, tie a single parallel overhand knot approximately one inch in from the even ends as shown.

B. Gently pull on both cords to set the knot and prevent it from slipping.

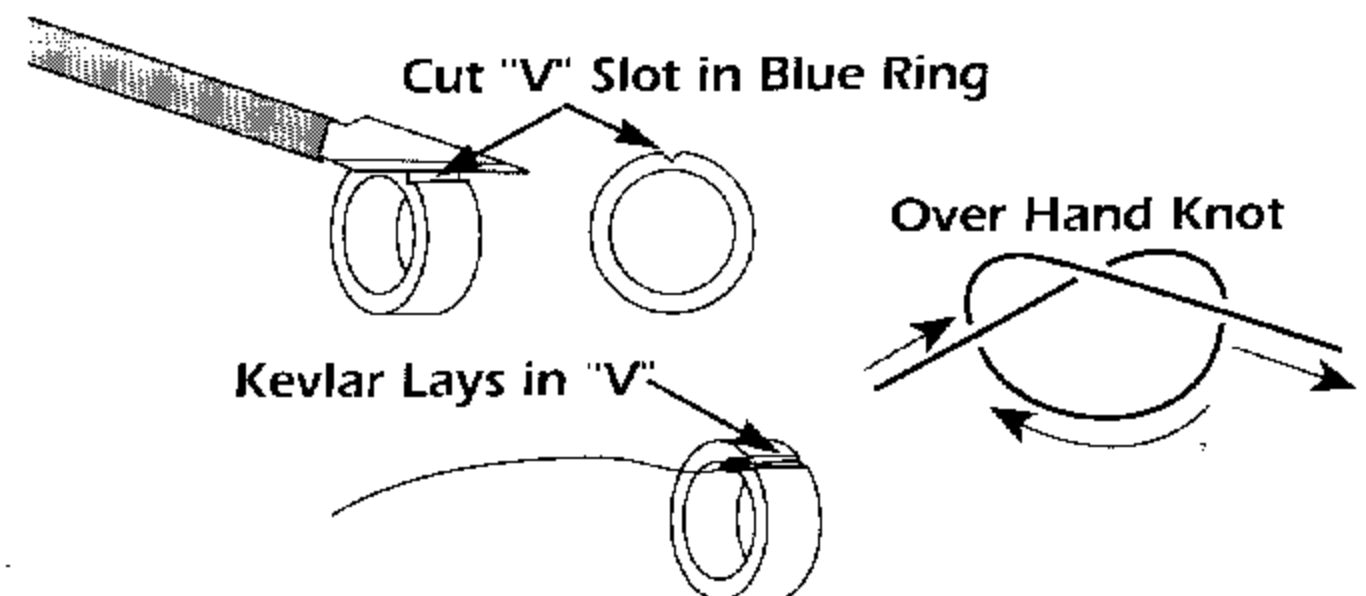
C. Apply a small amount of white glue on the ends of both cords to prevent them from fraying.



STEP 3

A. Use a sharp hobby knife to cut a shallow "V" slot in the Blue Thrust Ring as shown. Test fit the Blue Thrust Ring into one end of the Yellow Motor Mount Tube. If the fit is tight, sand the outside of the Blue Thrust Ring until you get a looser fit.

B. Tie the Yellow Kevlar Shock Cord onto the Blue Thrust Ring using two overhand knots as shown. Be sure the shock cord lays in the "V" you made in the Blue Thrust Ring.

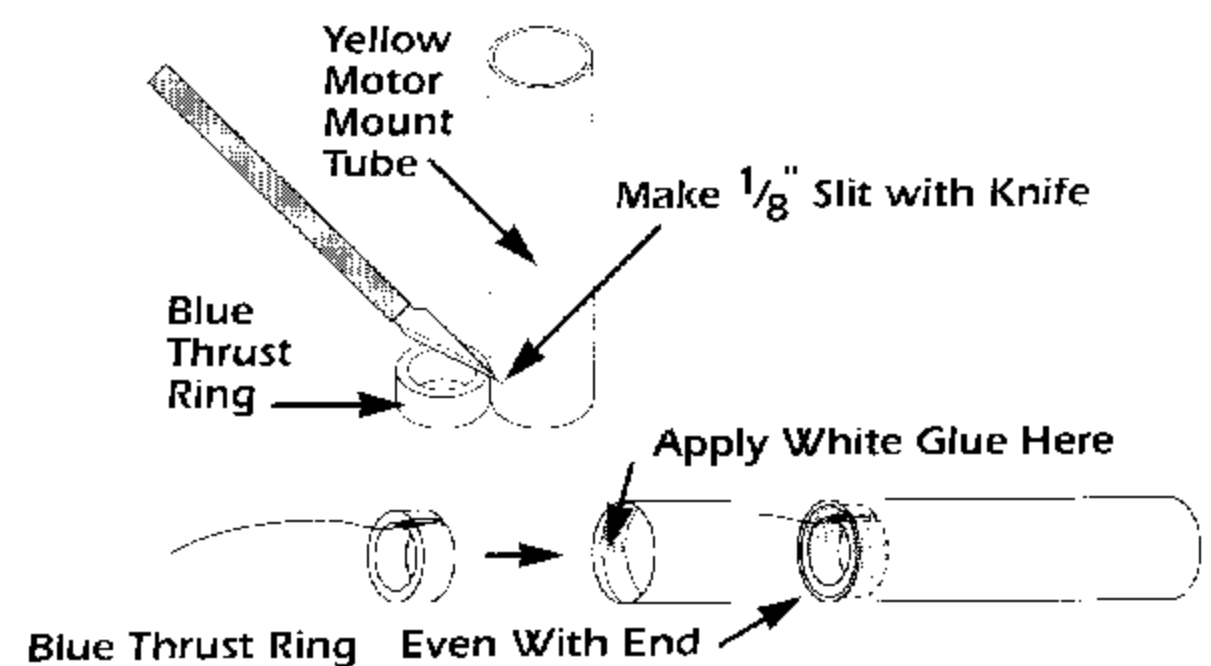


STEP 4

A. Place the Blue Thrust Ring up against the side of the Yellow Motor Mount Tube and use it as a guide to cut a 1/8 inch long slit in the side of the Yellow Motor Mount Tube as shown.

B. Apply white glue around the inside edge of the Yellow Motor Mount Tube as shown.

C. Insert the Blue Thrust Ring into the Yellow Motor Mount Tube with the Yellow Kevlar and knot facing as shown until it is even with the end of the Yellow Motor Mount Tube.

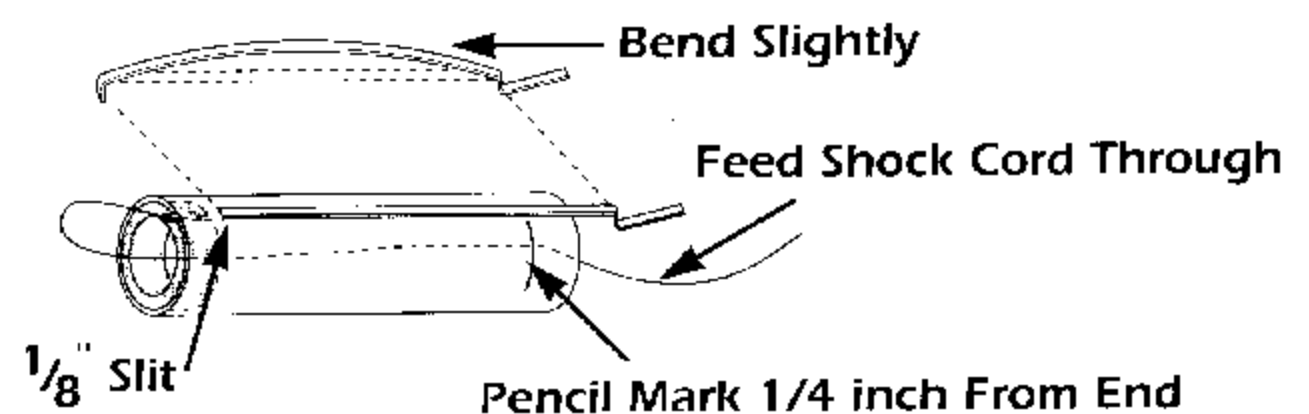


STEP 5

A. Using the ruler on the front of the instruction sheet, make a pencil mark 1/4 inch from the end of the Yellow Motor Mount Tube as shown.

B. "Feed" the shock cord back through the Yellow Motor Mount as shown.

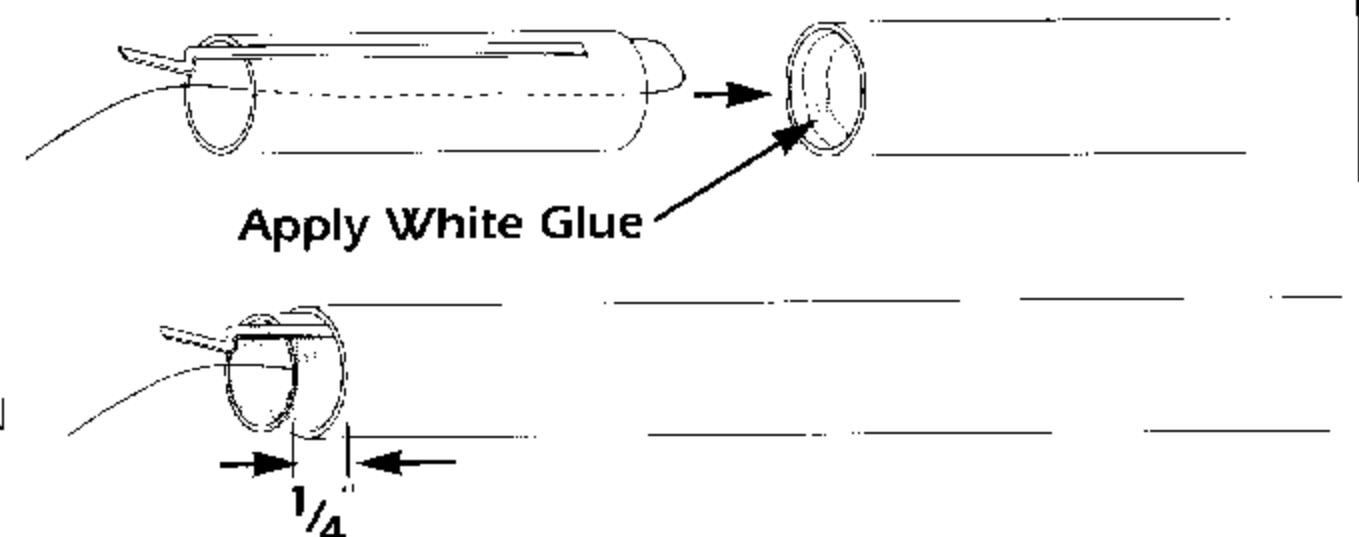
C. Make a slight bend in the motor clip as shown. Insert the clip into the slot you made in the Yellow Motor Mount Tube.



STEP 6

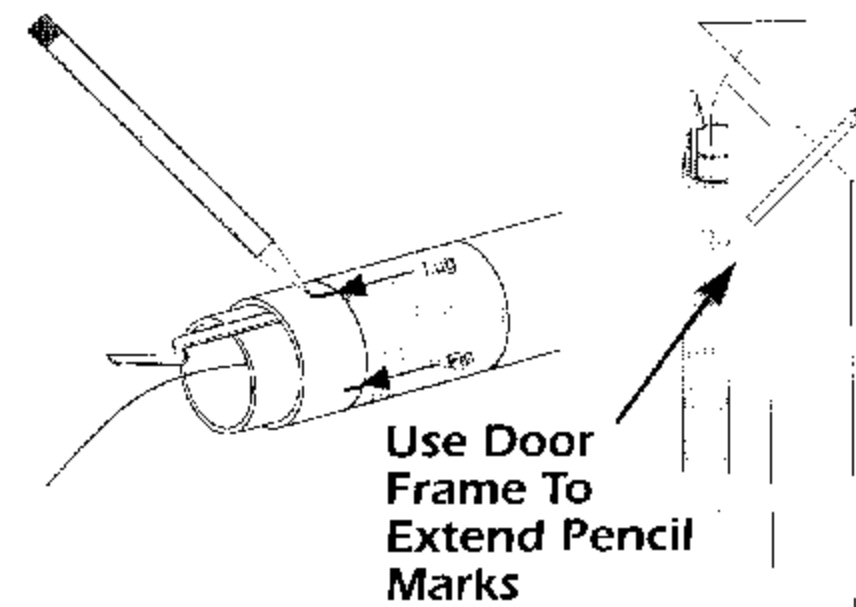
A. Apply white glue around the inside of one end of the White Body Tube.

B. Orient the Yellow Motor Mount tube as shown and immediately insert it into the White Body Tube and PUSH INTO THE BODY TUBE WITH ONE FAST & SMOOTH MOTION up to the 1/4 inch pencil mark on the Yellow Motor Mount Tube as shown.



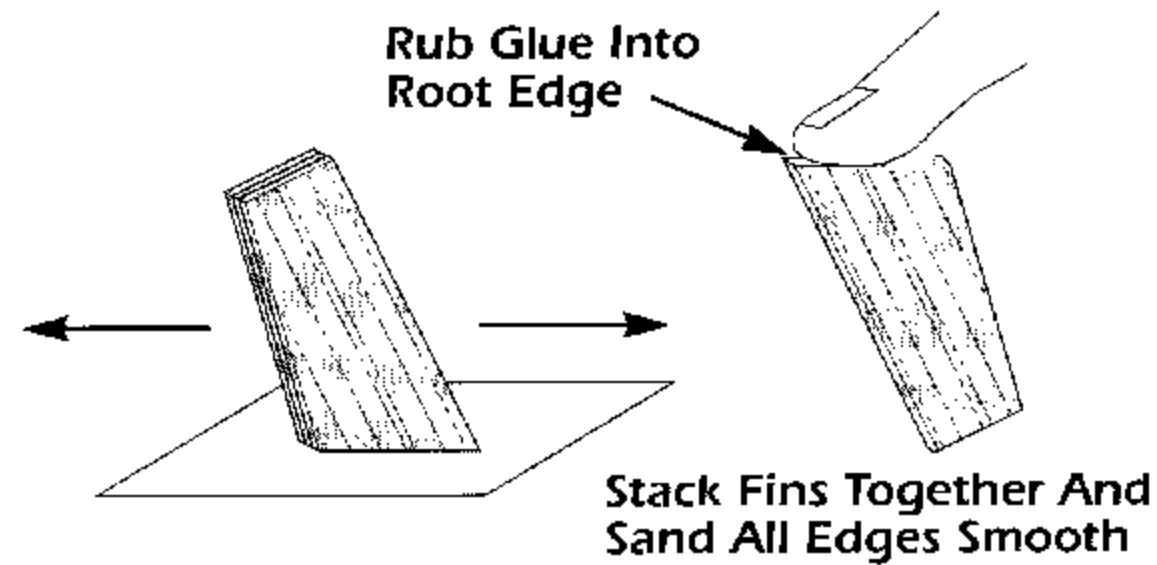
STEP 7

- Cut out the tube marking guide from the front page of the instruction sheet.
- Wrap the tube marking guide around the body tube. Align the arrow that is marked "Launch Lug" with the motor clip. Mark the body tube at each of the arrows with a pencil.
- Use a door frame as a guide and extend each of the pencil marks 3 inches up from the rear of the body tube.



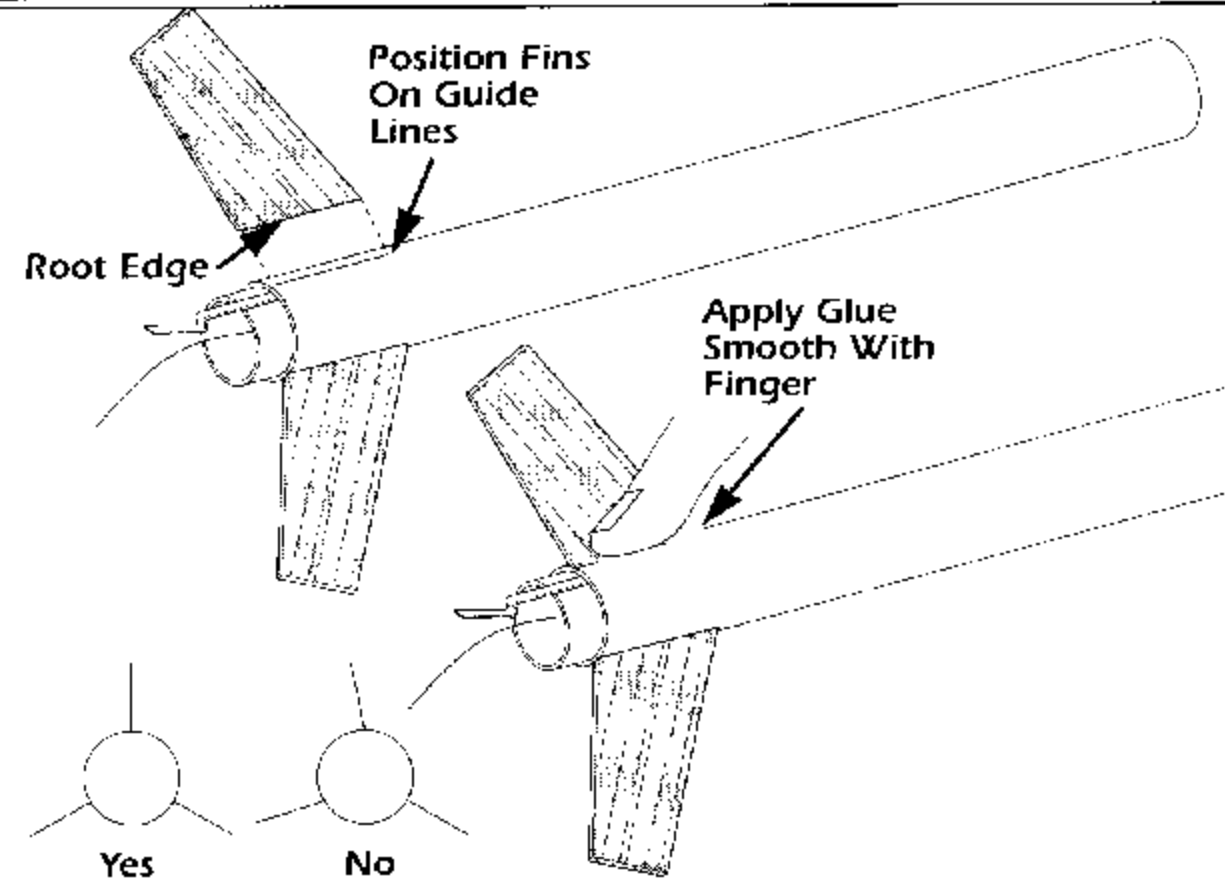
STEP 8

- Carefully remove each of the three die cut balsa fins from the sheet with a sharp hobby knife.
- Stack the fins together and sand all edges smooth.
- Rub a small line of white glue into the root edge of each fin and set aside to dry.



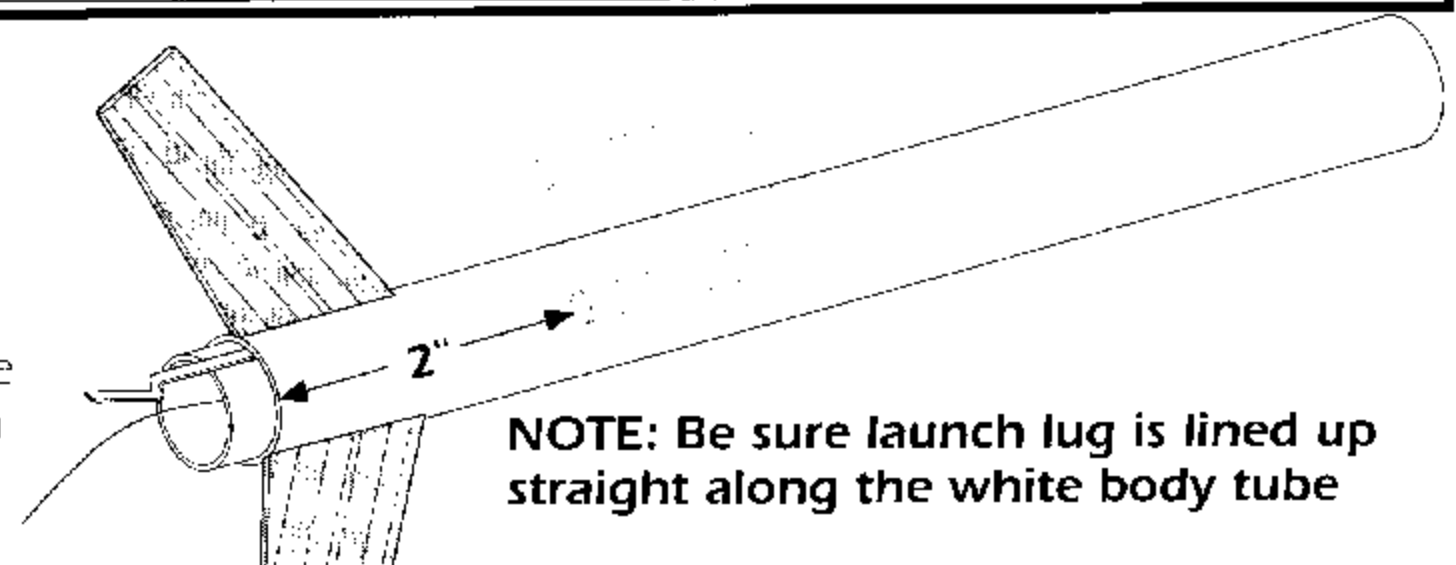
STEP 9

- Apply a small line of white glue along the root edge of a fin and position it along one of the fin lines on the body tube. Adjust the fin so that it projects straight away from the body tube as shown. Allow the glue to set for a few minutes before attempting to glue on the remaining fins. Repeat this step for the remaining two fins.
- After the glue is completely dry apply a small bead of white glue to both sides of a fin-body tube joint. Smooth out the glue with your finger. Wipe excess glue off your finger onto a tissue or paper towel.
- Repeat the above step for the remaining fin-body tube joints. Set aside to dry.



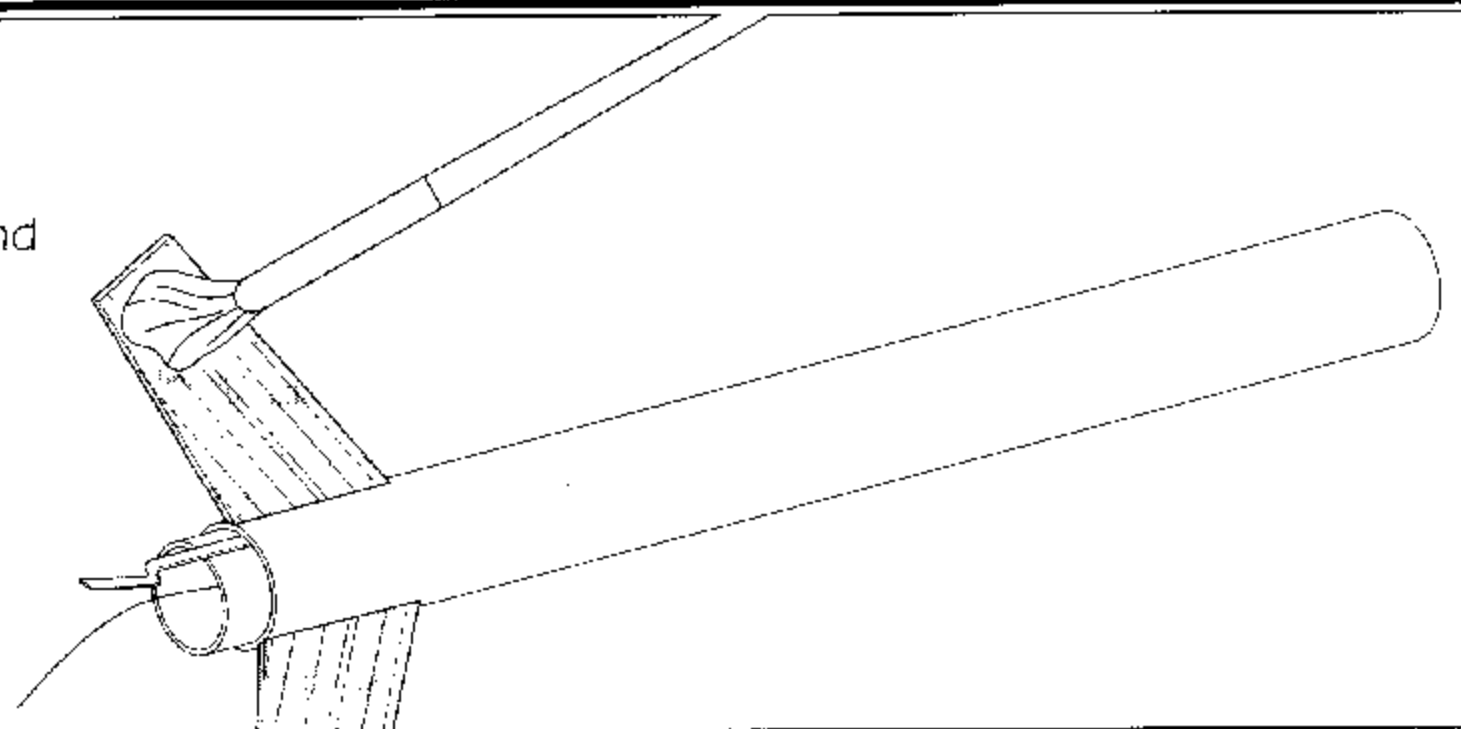
STEP 10

- Make a pencil mark on the launch lug line 2 inches from the rear of the rocket as shown.
- Apply white glue to the launch lug and place along the pencil line with one end even with the mark 2 inches from the rear of the rocket as shown.



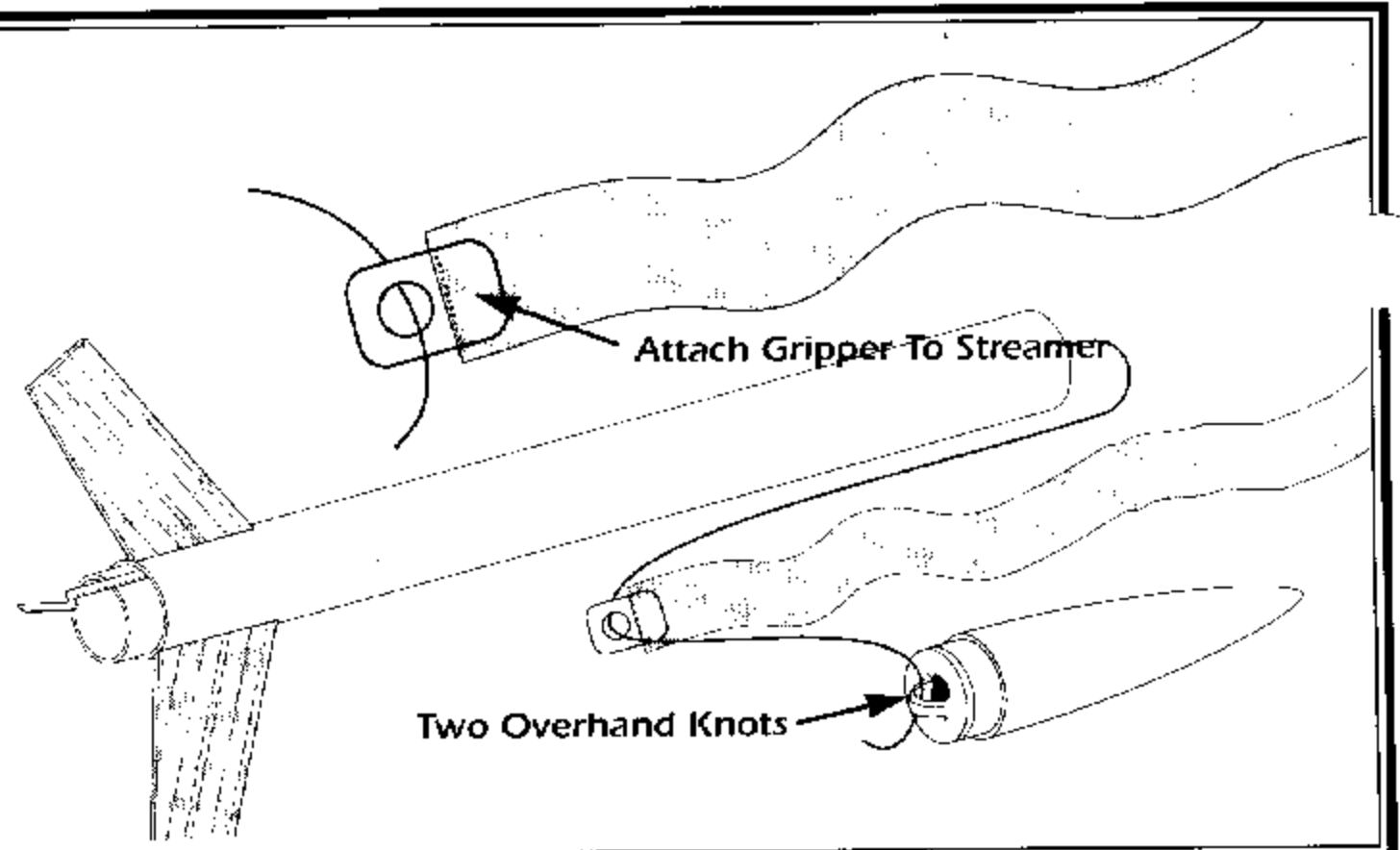
STEP 11

- After all the glue is completely dry apply a coat of sanding sealer to each fin. When sealer is dry, lightly sand each fin.
- Repeat the sealing and sanding process until the surface of each fin is smooth.



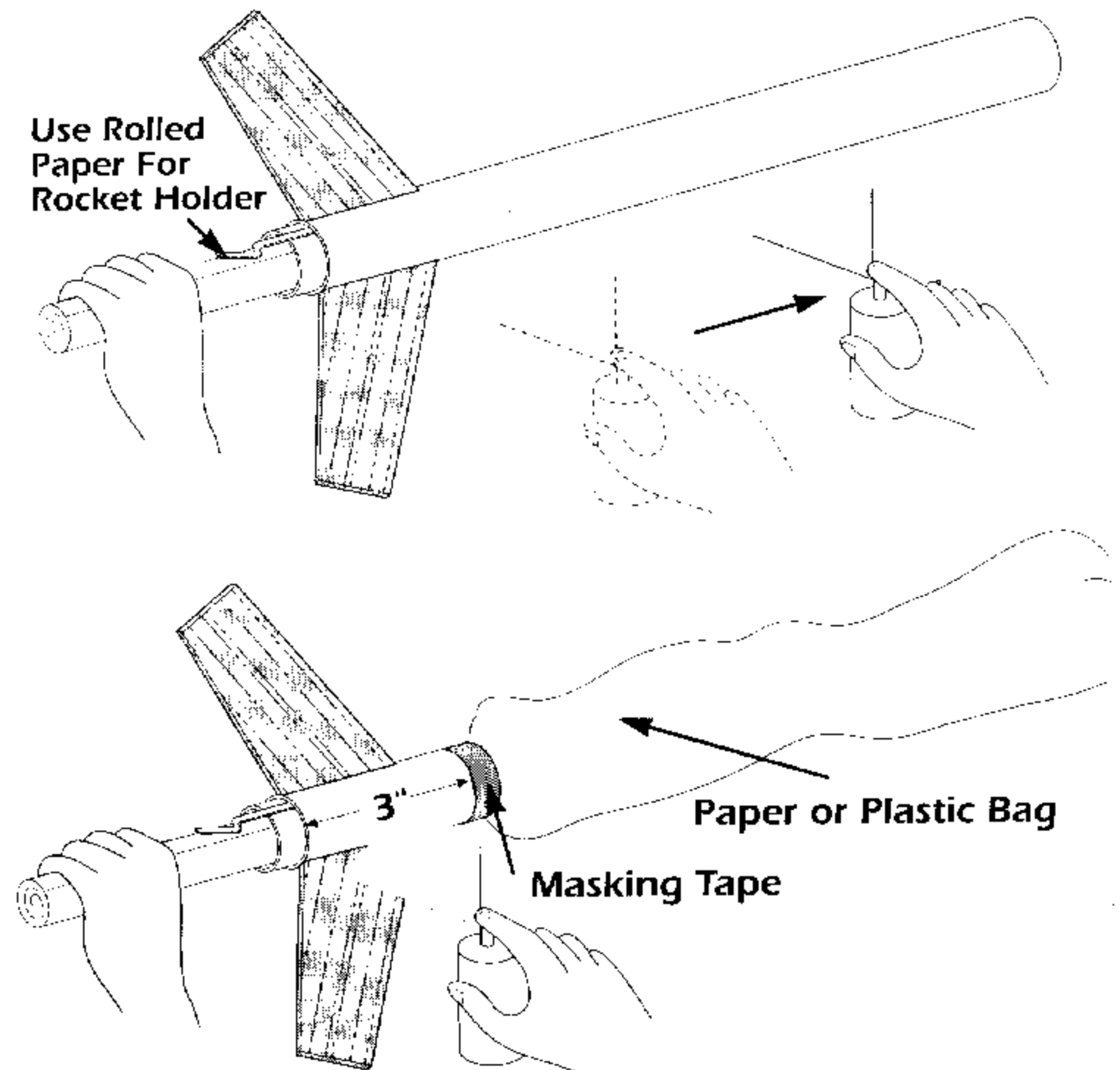
STEP 12

- A. Feed the shock cord back through the body tube until you are able to grab it from the front end and pull it all the way out the front.
- B. Peel the backing off the gripper tab and attach it to one end of the plastic streamer.
- C. Feed the loose end of the shock cord through the hole in the gripper tab.
- D. Use two overhand knots to tie the loose end of the shock cord onto the nose cone.



STEP 13

- A. Paint the entire rocket with gloss white spray enamel. Follow the instructions on the spray can for best results.
- B. After paint is completely dry, apply masking tape around the body tube 3 inches from the rear of the body tube. Cover the forward section of the body tube with paper or a plastic bag. Spray paint the entire rear section of the rocket gloss grey. Carefully remove the masking tape after the paint is dry.



**READ AND FOLLOW THE ENCLOSED
LAUNCHING PROCEDURE SHEET**



QUEST
QUEST
AEROSPACE
EDUCATION, INC.
Phoenix, AZ 85027-2921 U.S.A.

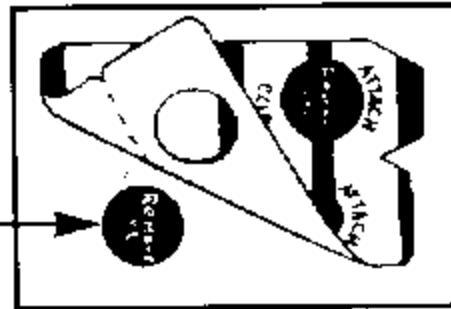
LAUNCHING PROCEDURES

This sheet covers basic Launching Procedures for single stage model rockets with parachute or streamer recovery systems. Review your kit instructions for additional information about your rocket. Specific details for launching multi-stage models, glider recovery vehicles or other different types of model rockets are featured in the instructions of specific kits.

STEP 1

Remove TigerTail II sticker from backing sheet.

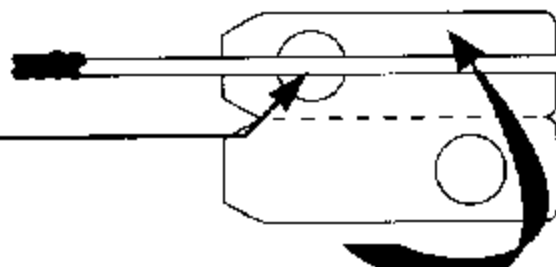
Leave "dots" behind on sheet.



STEP 2

Center the copper igniter wire over the hole.

Be sure igniter wire is centered and visible through both holes.



Fold TigerTail II sticker over the igniter wire.

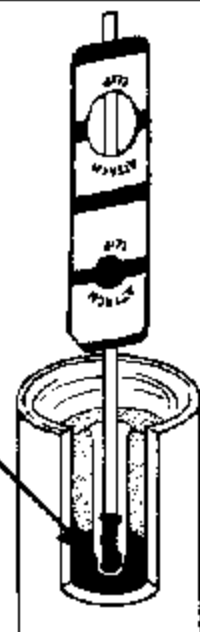


STEP 3

Place black coated end of the igniter wire into motor nozzle as far as it will go.

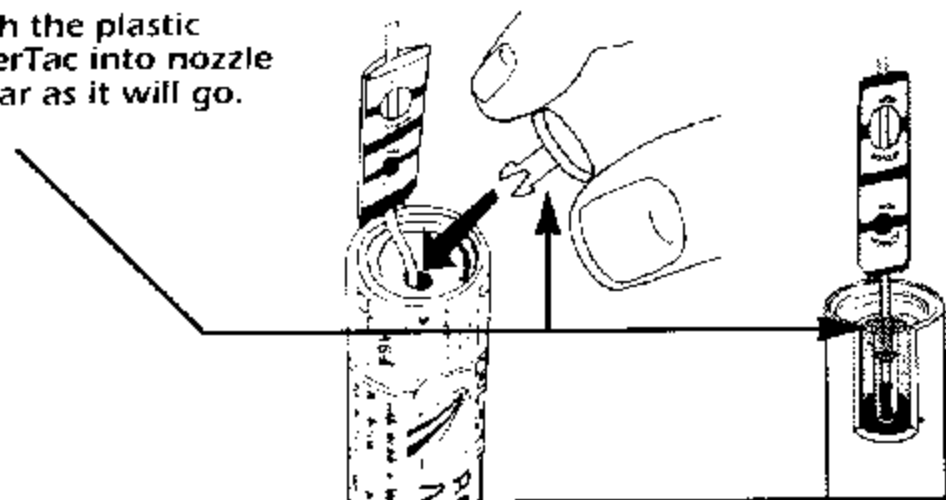
Black igniter tip **MUST TOUCH** the bottom of the nozzle or motor will not ignite.

("Disregard" any message on the motor label stating "Attach TigerTail Here", as this was for an earlier version of the TigerTail igniter.)



STEP 4

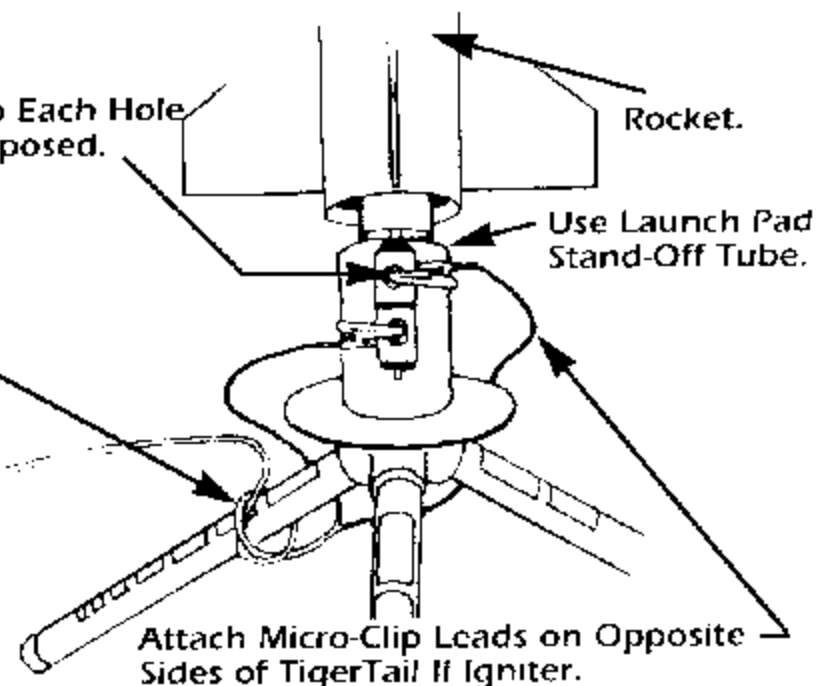
Push the plastic TigerTac into nozzle as far as it will go.



STEP 5

Attach One Micro-Clip Lead to Each Hole Where The Copper Wire is Exposed.

Tie Micro-Clip Leads to Launch Pad Leg.



Attach Micro-Clip Leads on Opposite Sides of TigerTail II Igniter.

IMPORTANT: To Avoid a Potential Short Circuit and /or Misfire **DO NOT** Clamp Micro-Clips too Tightly to the TigerTail II Igniter

NOTE: If you are using a different brand rocket motor and the TigerTac does not fit into the nozzle, substitute the TigerTac with a 1" x 1" square of recovery wadding crumpled into a small ball and pushed into the motor nozzle with a pen or pencil tip to hold igniter wire in place.

LAUNCH SITE SELECTION: Select a large area away from tall trees, power lines and low flying aircraft. Parks, playgrounds, soccer and football fields make great launch sites. **DO NOT LAUNCH ROCKETS IN AREAS WITH BROWN GRASS, DRY WEEDS, OBSTRUCTIONS OR ANY HIGHLY FLAMMABLE MATERIALS.** The larger the launch site the easier it will be to recover your rocket. See the N.A.R. Safety Code for additional information.

NOTE: (For circular area, site dimension is the diameter in feet, for a rectangular area, it is the shortest side in feet.)

Motor Type	Installed Total Impulse (Newton-Seconds)	Minimum Site Dimensions (feet)
A	1.26 - 2.50	100
B	2.51 - 5.00	200
C	5.01 - 10.00	400

LAUNCH PREPARATIONS: (1) Parachute Recovery Wadding should be positioned between the rocket motor and the recovery system to prevent scorching of the parachute or streamer. The wadding should loosely fill the body tube for a depth of approximately two body tube diameters. Crumble the wadding loosely to get maximum bulk and a good seal against the wall of the body tube. See Recovery Wadding instructions for more information.

(2) Recheck the recovery system of your model to be sure it has been prepped and packed per its instructions. Your parachute or streamer should fit loosely inside the rocket's body tube so it can deploy easily. Lightly dust your parachute with baby or talcum powder to keep it from developing a set shape inside your rocket body tube. This technique is especially effective if the weather is hot and humid or is very cold.

(3) Check the nose cone fit to be sure it's snug, but not too tight. If it's too loose add a small piece of tape to the shoulder of the nose cone. If it's too tight lightly sand the shoulder of the nose cone and/or stretch the end of the body tube slightly by inserting the pointed end of the nose cone into the body tube and gently twist it back and forth a few times.

(4) To select the correct rocket motor consult the current Quest Catalog, product packaging or instruction sheet for recommended rocket motors to use in your model. Follow all igniter and rocket motor installation procedures.

(5) Install the TigerTail II Igniter into the rocket motor per the TigerTail II Igniter instructions.

(6) When placing the rocket motor into the easy-lock motor mount be sure the motor mount clip is securely positioned over the end of the rocket motor.

(7) Unwind the wire leads from your Launch Controller and place the controller the full length of the wire leads away from the launch pad (at least 15 feet). Be sure the launch controller is disarmed and is in good working condition. Micro-clips must be clean. **ATTACH THE CONTROLLER'S MICRO-CLIP LEADS TO THE LAUNCH PAD BY TYING THEM TO ONE OF THE LAUNCH PAD LEGS WITH A SINGLE OVER HAND KNOT.** Micro-clip lead wire should be pulled apart so each individual micro-clip lead is 6 inches to 8 inches long.

(8) **ALWAYS USE CAUTION WHEN BENDING OVER YOUR LAUNCH PAD TO AVOID EYE INJURY.** Remove the launch rod safety cap and lower the rocket onto the launch pad, positioning it on the Launch Rod Stand-Off several inches above the blast deflector. The launch lug on the rocket's body tube should glide easily over the launch rod. Check to be sure there are no rough surfaces or obstructions on the launch rod which could hinder the lift-off of the model. For eye safety keep the tip of the launch rod covered with the Launch Rod Safety Cap until you are just ready to begin the countdown.

(9) Be sure the Safety Key is with you before hooking up the micro-clips to the TigerTail II Igniter. Attach one micro-clip lead to each hole in the TigerTail II Igniter where the copper wire is exposed. The micro-clips **MUST NOT** touch each other or the blast deflector. Use the Launch Rod Stand-Off, an empty motor casing or piece of tape wrapped around the launch rod to position the rocket several inches above the blast deflector to keep the micro-clips from touching it and shorting out. For best results bring one micro-clip lead around each side of the Launch Rod Stand-Off and hook up to TigerTail II Igniter.

COUNT DOWN PROCEDURE: (1) When your rocket is ready to launch be sure you and all spectators are standing at least 15 feet away from the launch pad. (2) Make sure the sky is clear of low flying aircraft. Wind conditions should be gentle. Be sure you have the attention of all individuals in the launching and recovery areas. (3) Arm your Launch Controller with the Safety Key. The arming light should go on. If arming light does not go on check battery power, electrical connections and igniter installation. Clean micro-clips with sand paper if necessary (4) With rocket armed announce to the spectators in a loud voice, "the rocket is armed, and counting...5...4...3...2...1...Lift-Off!" (5) Push the launch button down momentarily until the rocket motor begins thrusting, then release it. The rocket should lift-off from the launch pad almost instantly. (6) **BE SURE AND REMOVE THE SAFETY KEY FROM THE LAUNCH CONTROLLER AS SOON AS THE ROCKET LIFTS-OFF. KEEP THE SAFETY KEY WITH YOU AT ALL TIMES.** (7) **REPLACE THE LAUNCH ROD SAFETY CAP IN BETWEEN LAUNCHINGS.**

RECOVERY PROCEDURE: (1) Track the flight of your rocket until the recovery system is deployed and the rocket is returning gently back to Earth. (2) If the rocket appears to be drifting away from the launch area keep your eyes on it until it touches down. (3) If the recovery system malfunctions be prepared to alert the spectators that the rocket is returning to Earth faster than normal and to be "heads-up" and aware of the area where the rocket is falling to.

MISFIRE PROCEDURE: (1) Occasionally, at the end of the countdown the rocket will fail to lift-off because the rocket motor did not ignite. This usually occurs because the igniter was not making the proper contact with the surface of the rocket motor's propellant. (2) Disarm the launch controller and wait one minute before approaching the launch pad. (3) If arming light glows, but motor does not ignite, try repositioning the micro-clips on the TigerTail II Igniter and repeat the countdown procedure. (4) If rocket motor still does not ignite, disarm the launch controller, wait one minute before approaching the pad, then remove the model from the launch pad. (5) Remove the TigerTail II Igniter from the motor nozzle, clean the micro-clips and install a new TigerTail II Igniter. (6) Repeat the countdown procedure again.

BATTERY TEST: If batteries are weak replace them. Battery strength can be tested by attaching both micro-clips together and inserting the Safety Key. The arming light should glow brightly. Batteries are weak if light is dim. **Be sure to use alkaline type batteries for best results.**

FLYING YOUR NOVIA ROCKET

WHAT ELSE YOU WILL NEED:

To successfully fly your rocket you will need the following items:

- QUEST Launch Pad (No. 7600)
- QUEST Launch Controller (No. 7500)
- QUEST Parachute Recovery Wadding (No. 7020)
- QUEST Rocket Motors, Type A6-4, B6-4, C-5, or C6-7
- Use a A6-4 Motor for your first flights.

ESTIMATED ALTITUDES

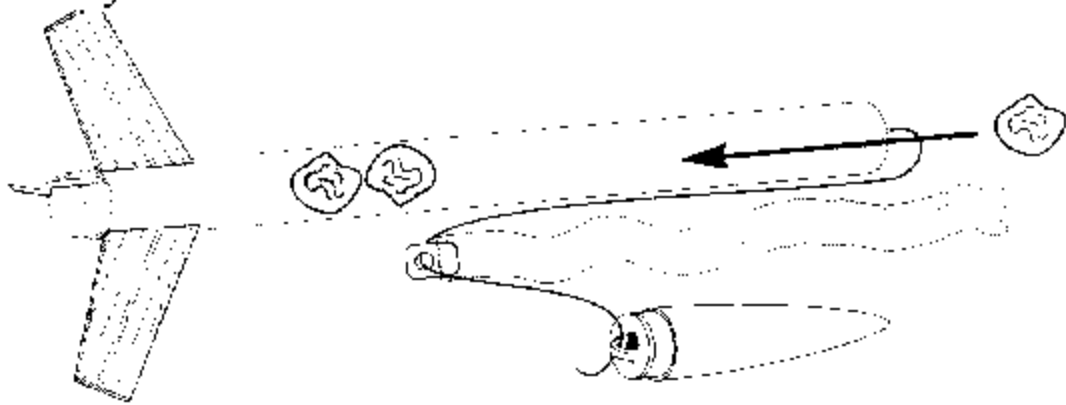
The following is a guide to assist you in determining which motor to use based on the wind conditions and size of flying field available.

MOTOR	ESTIMATED ALTITUDE
A6-4	450 FEET
B6-4	800 FEET
C6-5	1400 FEET
C6-7	1800 FEET

PREPPING YOUR ROCKET FOR FLIGHT

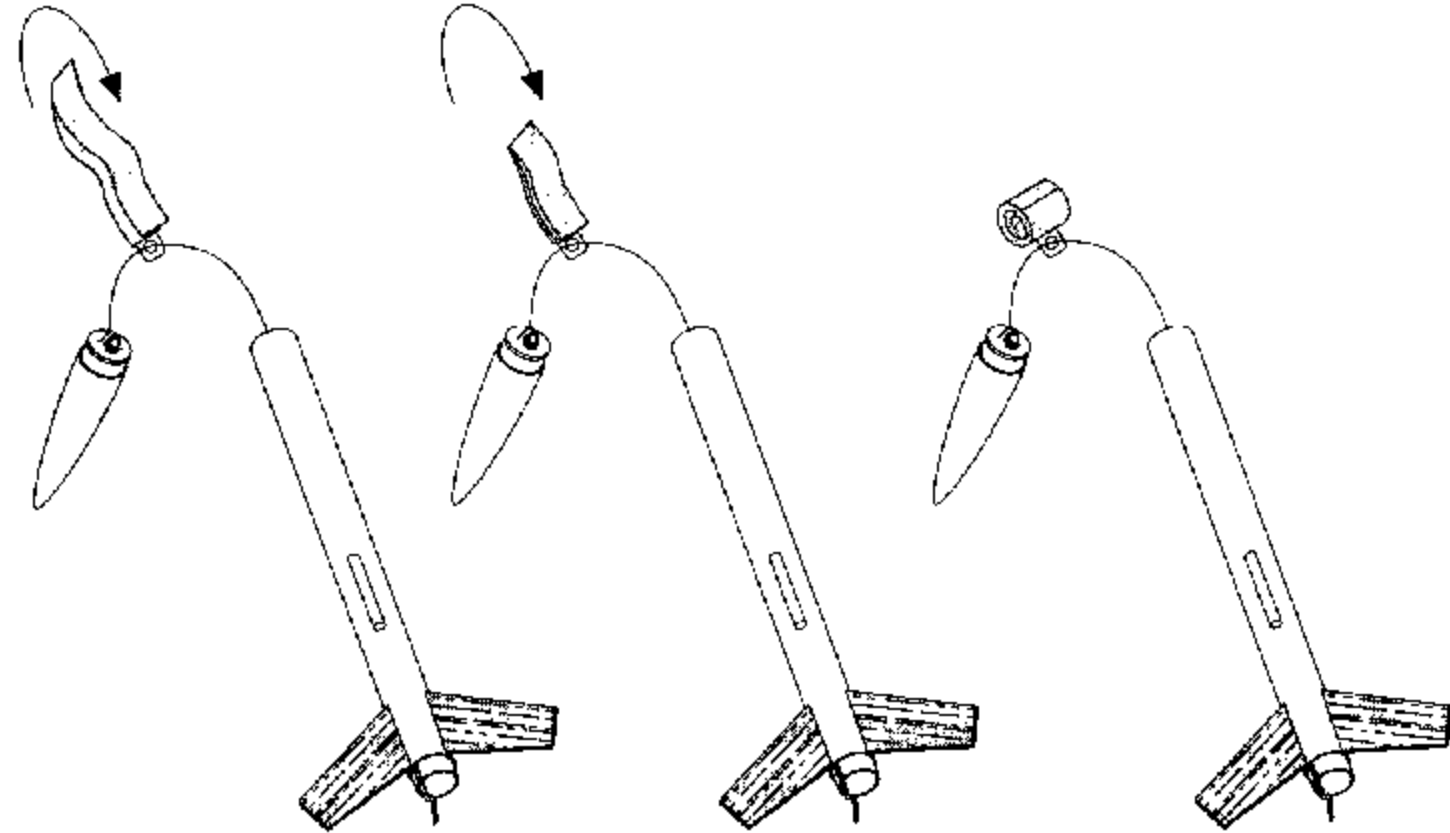
STEP 1

Pull the shock cord all the way out of the body tube. Crumple three sheets of recovery wadding and insert one by one into the body tube making sure that the Knot between the Kevlar and white elastic shock cord is on the nose cone side of the wadding. Wadding should fit loosely in the tube but tight enough to form a good seal against the wall of the body tube.



STEP 2

A. Grab the plastic streamer at its center and fold it in half. Continue to fold the streamer in half until small enough to roll tightly.



STEP 3

- A.** Pack the streamer into the body tube. **THE STREAMER MUST SLIDE EASILY INTO THE TUBE.** If it is a tight fit, remove and re-fold the streamer.
- B.** Push the shock cord into the tube and re-fit the nose cone onto the rocket. **BE CAREFUL NOT TO CATCH ANY OF THE SHOCK CORD BETWEEN THE SHOULDER OF THE NOSE CONE AND THE BODY TUBE.**

READ AND FOLLOW THE ENCLOSED LAUNCHING PROCEDURE SHEET

READ AND FOLLOW THE N.A.R. SAFETY CODE DURING ALL YOUR MODEL ROCKETRY ACTIVITIES.



IRONCLAD GUARANTEE

If for any reason, you are not totally satisfied with our product, QUEST will provide whatever you think is fair, from refund to replacement.



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