

HARPOON AGM

ASSEMBLY INSTRUCTIONS



Product No. 3008

Skill Level Three



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 ELMER'S CARPENTER'S WOOD GLUE - ELMER'S WHITE SCHOOL GLUE also works but dries slower.

Tape & Paint

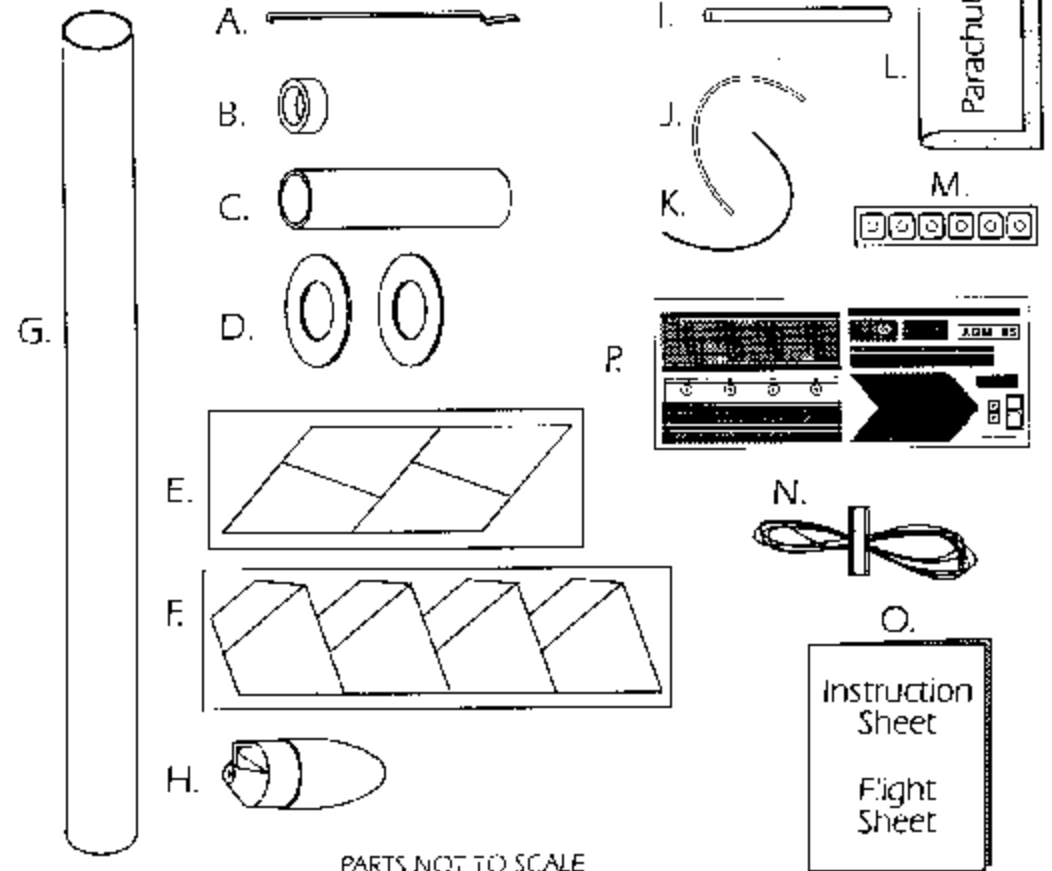
Scotch Magic Tape or Paper Masking Tape and Spray Paint.

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. 49001 Motor Clip
- B. 14000 Blue Thrust Ring
- C. 10303 Yellow Motor Mount Tube
- D. 16007 Flat Centering Ring (2)
- E. 33029 Die-Cut Balsa Fin Set #1
- F. 33028 Die-Cut Balsa Fin Set #2
- G. 11511 18 Inch White Body Tube
- H. 20400 Plastic Nose Cone
- I. 10001 2 inch Launch Lug
- J. 50011 18 inch White Elastic Shock Cord
- K. 50053 24 inch Yellow Kevlar* Shock Cord
- L. 28107 14 inch Parachute
- M. 00500 Set of 6 Gripper Tabs
- N. 50100 Pack of 26 inch Shroud Lines
- O. 03008-1010 Instruction Sheet
- P. 03008-1030 Decal Sheet

*Kevlar is a registered trademark of Dupont.



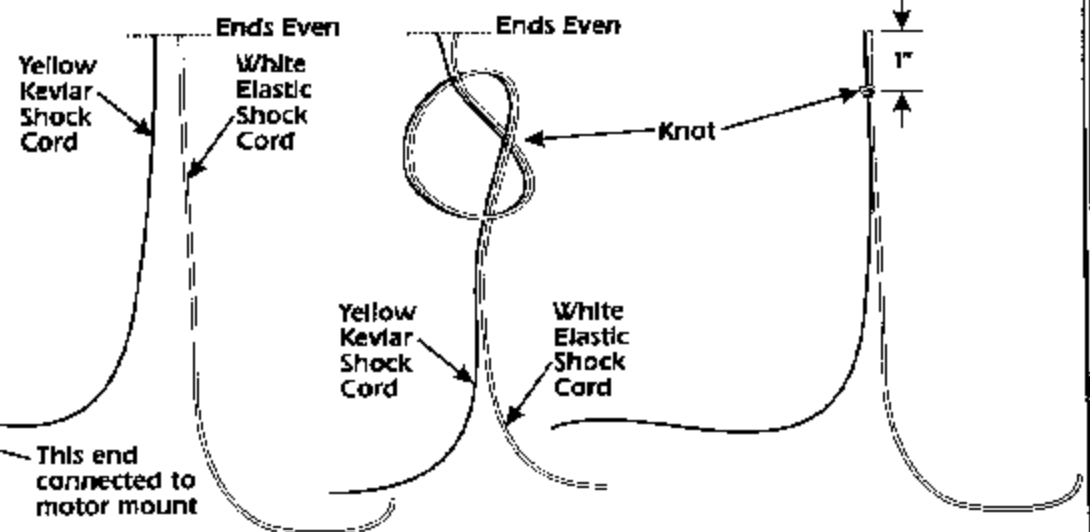
PARTS NOT TO SCALE

STEP 1

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 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.



NOTE: THIS IS A VERY IMPORTANT STEP. IF YOU TIE A DIFFERENT TYPE OF KNOT THE SHOCK CORDS MAY SEPARATE DURING FLIGHT.

TUBE MARKING GUIDE

← FIN

← LAUNCH LUG

← FIN

← FIN

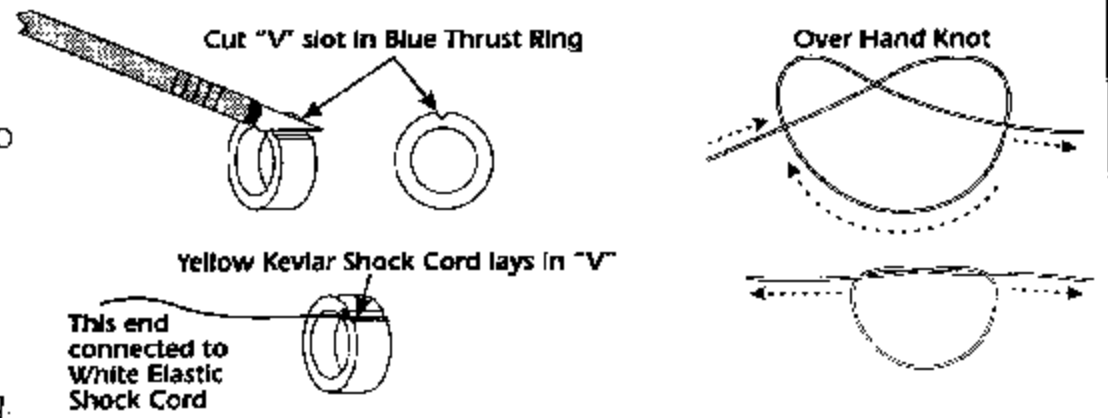
OVERLAP AREA

0 INCHES 1 2 3 4

STEP 2

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.

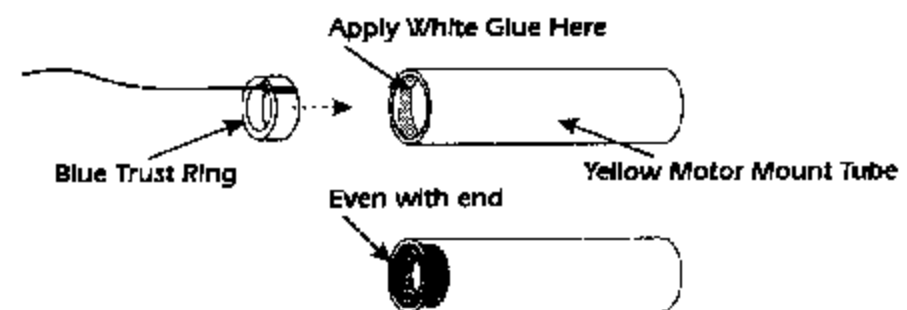
B. Tie the Yellow Kevlar Shock Cord onto the Blue Thrust Ring using two overhand knots as shown. Be sure the Shock Cord lays in the "V" you made in the Blue Thrust Ring.



STEP 3

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

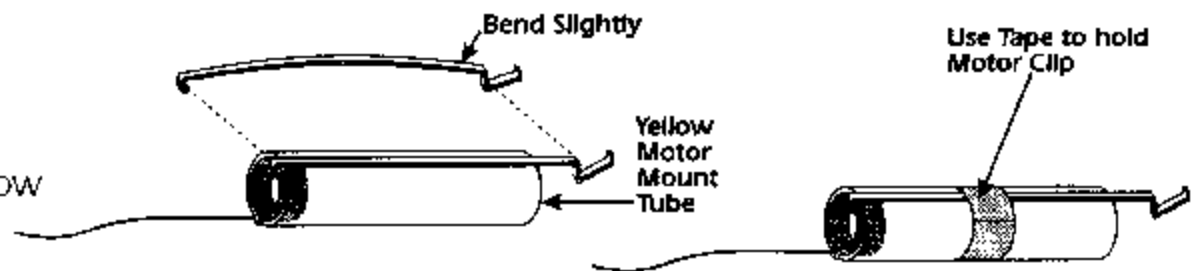
B. Insert the Blue Thrust Ring into the Yellow Motor Mount Tube with the Yellow Kevlar Shock Cord and knot facing as shown until it is even with the Yellow Motor Mount Tube.



STEP 4

A. Make a slight bend in the motor clip as shown. Insert the clip into the Yellow Motor Mount Tube.

B. Wrap a piece of tape all the way around the Yellow Motor Mount Tube to hold the motor clip in place.



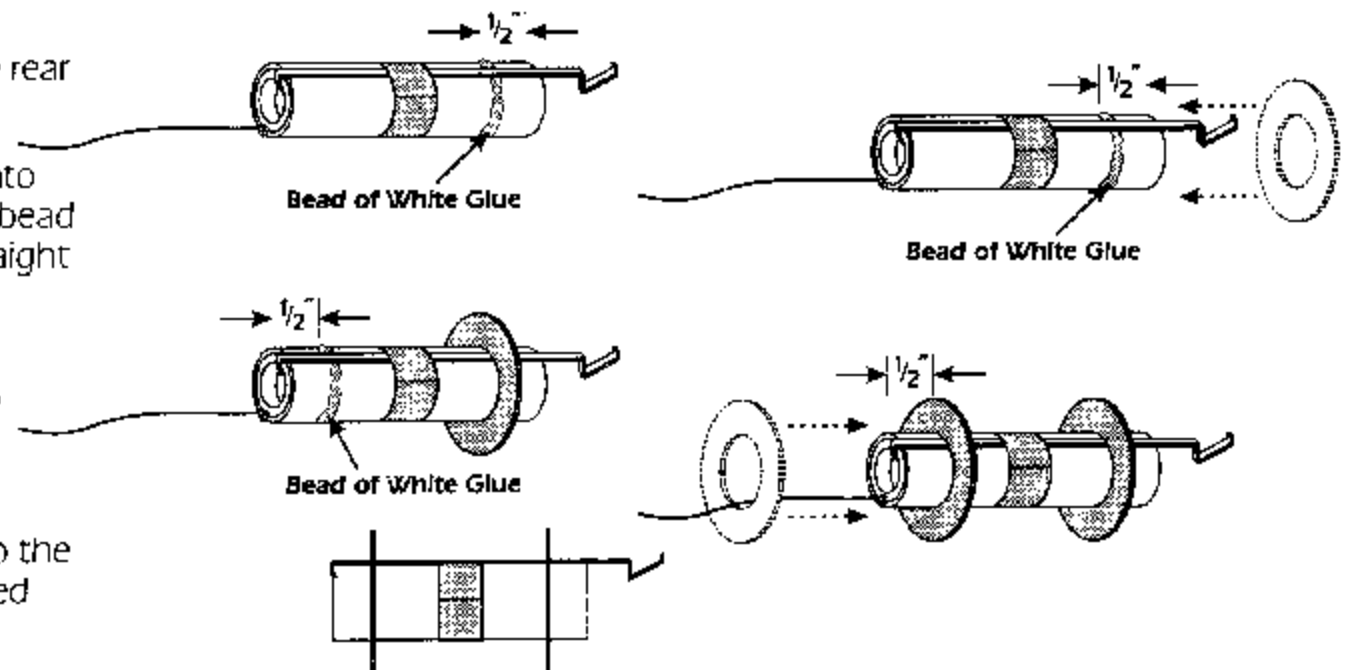
STEP 5

A. Apply a bead of white glue around the Yellow Motor Mount Tube 1/2 inch from the rear end as shown.

B. Slide one of the paper centering rings onto the Yellow Motor Mount Tube and into the bead of glue. Check to be sure ring is aligned straight on Yellow Tube as shown.

C. Apply a bead of white glue around the Yellow Motor Mount Tube 1/2 inch from the forward end as shown.

D. Slide the remaining paper centering ring onto the Yellow Motor Mount Tube and into the bead of glue. Check to be sure ring is aligned straight on the Yellow Tube as Shown.



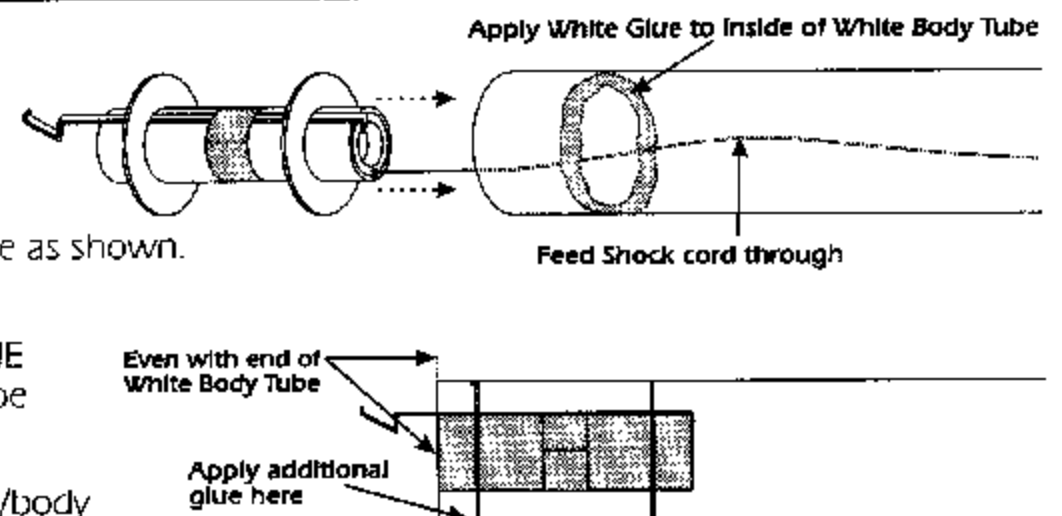
STEP 6

A. "Feed" the Shock Cord attached to the Motor Mount Assembly into the White Body Tube until the cord comes out the other end of the White Tube.

B. Apply white glue around the inside of the White Body Tube as shown.

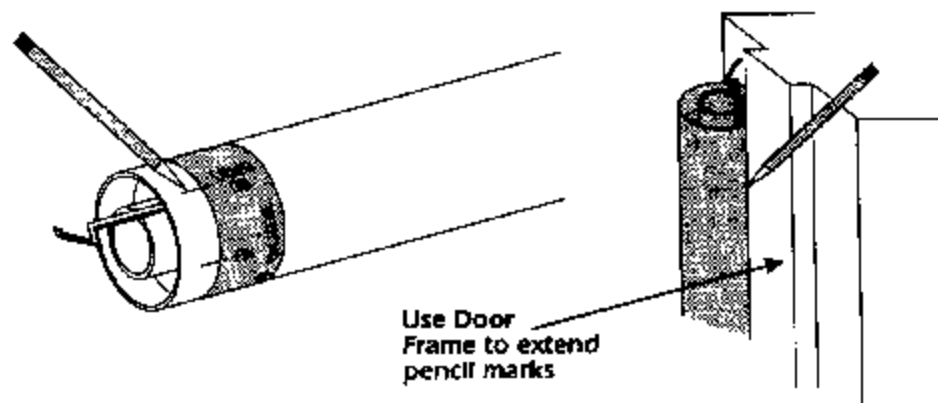
C. Immediately insert the Motor Mount Assembly into the White Body Tube and PUSH INTO THE BODY TUBE WITH ONE FAST & SMOOTH MOTION until the Yellow Motor Mount Tube is even with the end of the White Body Tube as shown.

D. Apply additional white glue to the exposed centering ring/body tube joint as shown. Wipe away excess glue with your finger.



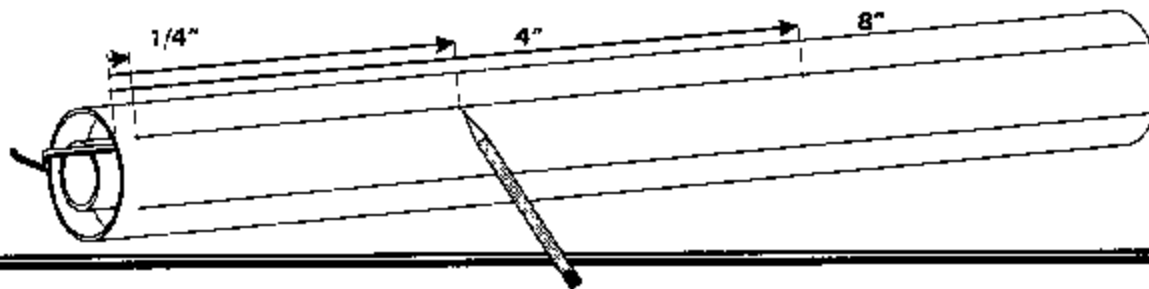
STEP 7

- 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 White Body Tube at each of the arrows with a pencil.
- Use a door frame as a guide and extend each of the fin pencil marks the entire length of the body tube. Extend the Lug Line 10 inches from the rear.



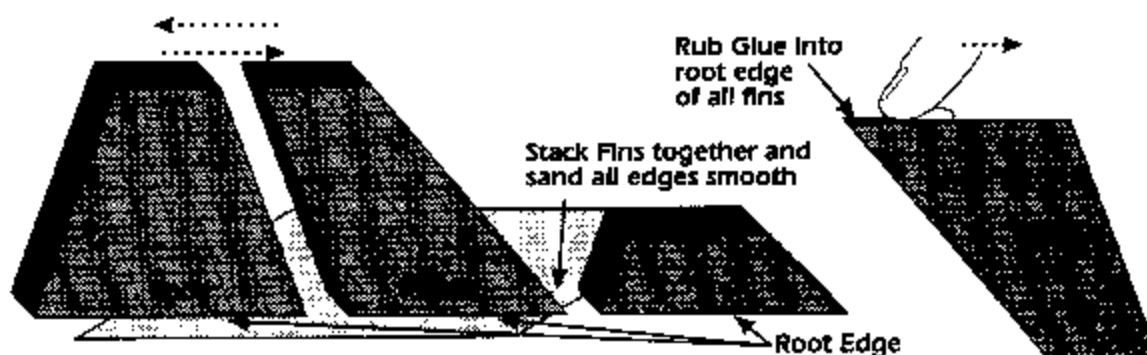
STEP 8

- Mark each of the four fins lines 1/4 inch, 4 inches, and 8 inches from the rear of the tube as shown.



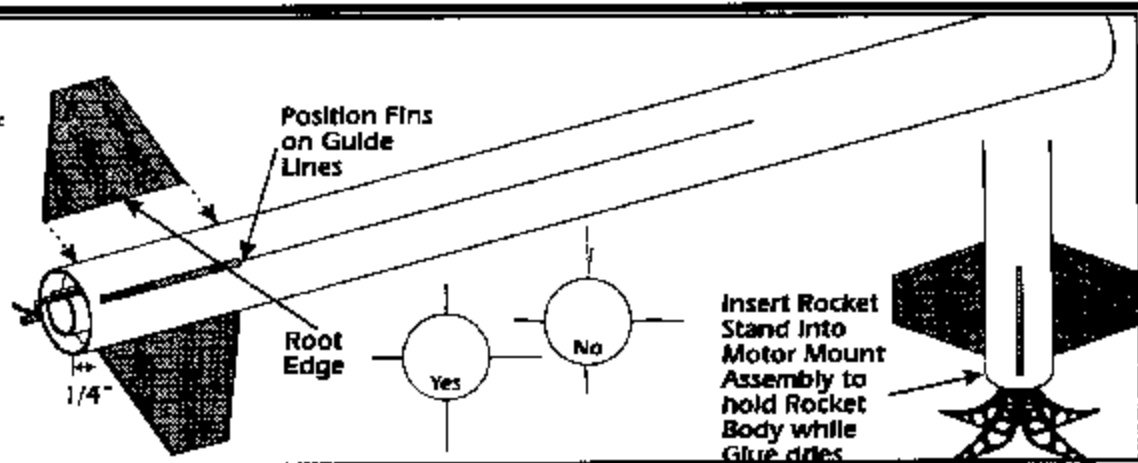
STEP 9

- Carefully remove each of the Die-Cut Balsa Fins from the sheet with a sharp hobby knife.
- Stack like 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.



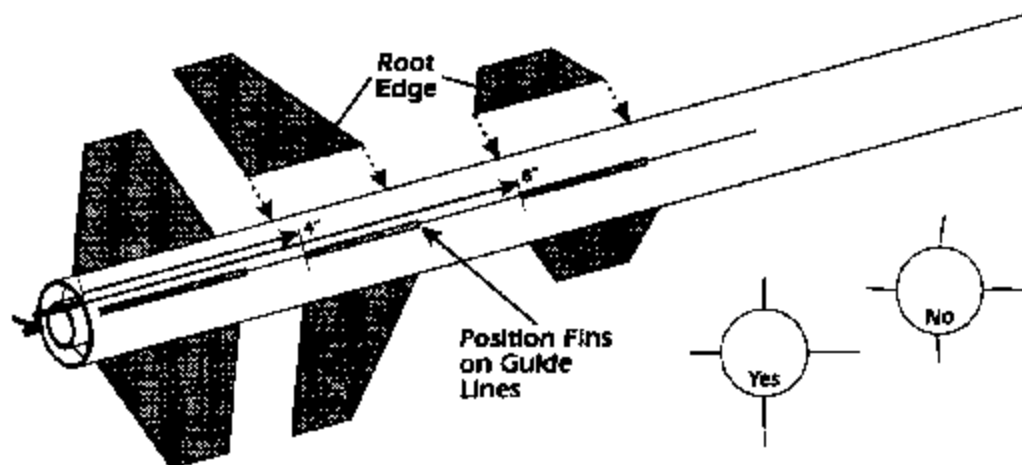
STEP 10

- Apply a small line of white glue along the root edge of a Back Fin and position it along one of the fin lines at the 1/4 inch mark from the end of the White 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 three remaining Back Fins.



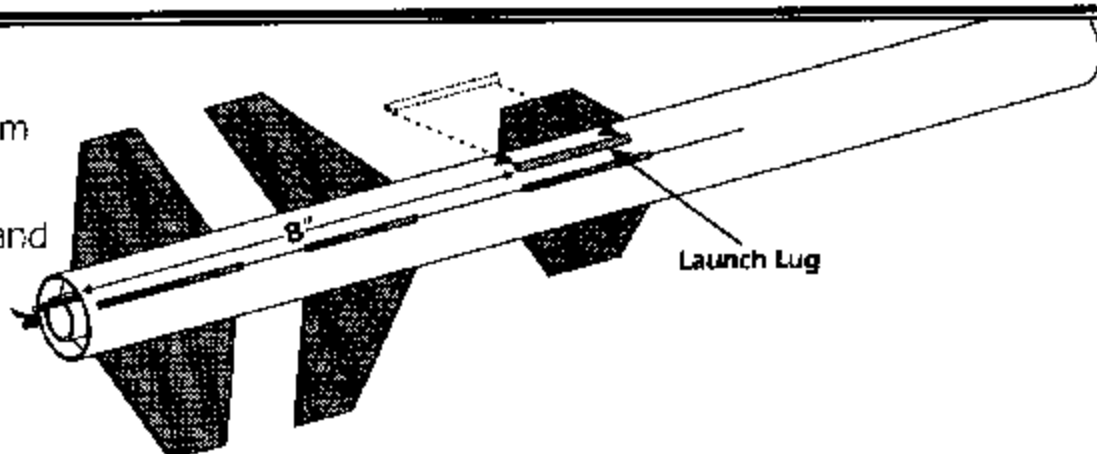
STEP 11

- Apply a small line of white glue along the root edge of a Middle Fin and position it along one of the fin lines at the four inch mark from the end of the White 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 three Middle Fins.
- Repeat the above steps for the remaining Top Fins.



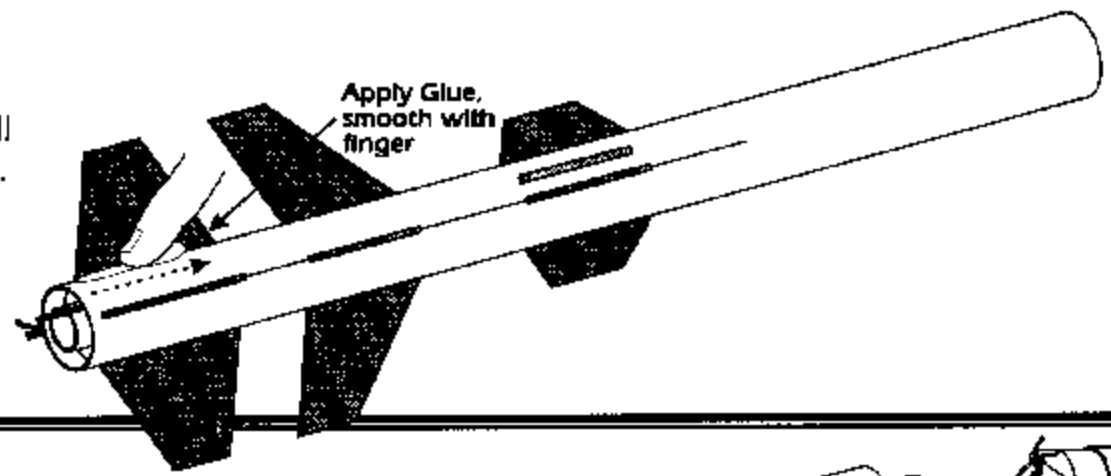
STEP 12

- Make a pencil mark on the launch lug line 8 inches from the rear of the rocket as shown.
- Apply white glue to the root edge of the Launch Lug and place it along the pencil line with one end even with the mark 8 inches from the rear of the rocket as shown.



STEP 13

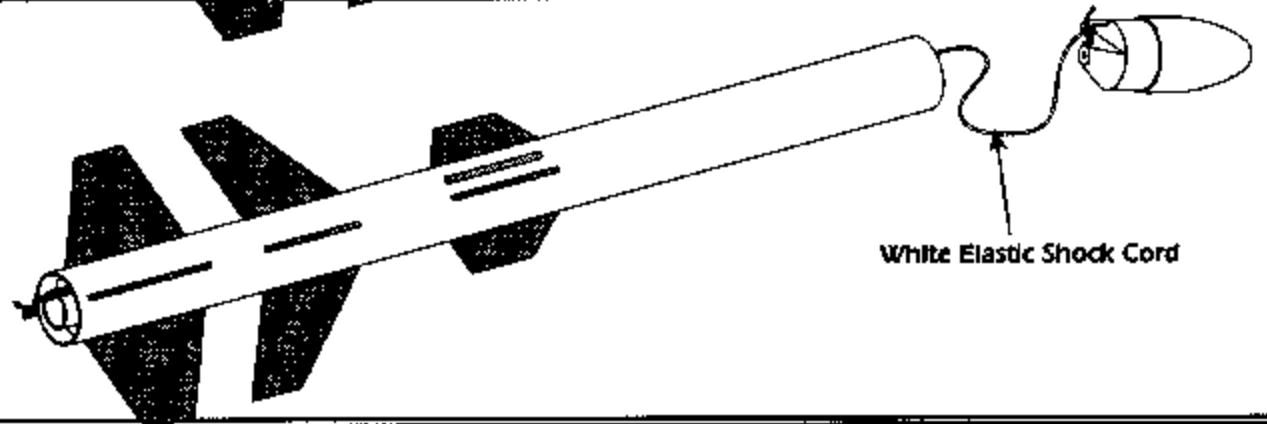
A. After the Fin glue is completely dry apply a small bead of white glue to both sides of a fin-body joint. Smooth out the glue with your finger. Wipe excess glue off your finger onto a tissue or paper towel.



STEP 14

A. Remove any excess plastic from inside the molded eyelet in the nose cone using a sharp hobby knife.

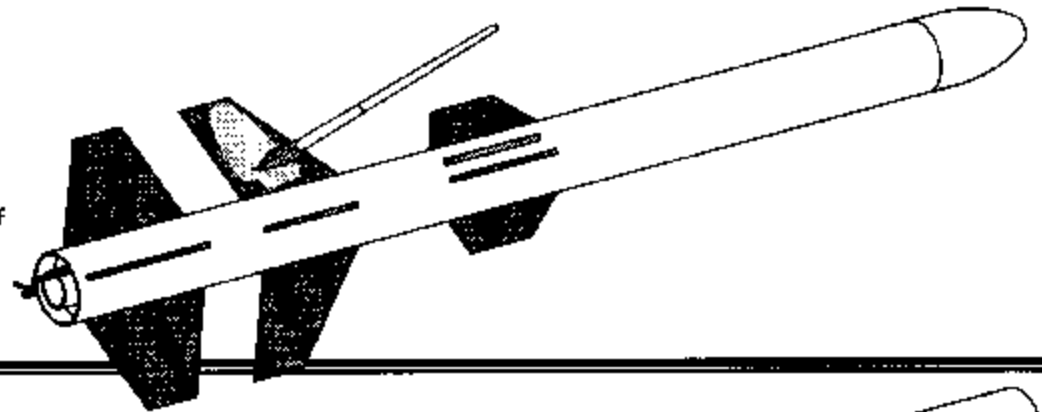
B. Use two overhand knots to tie the loose end of the Shock Cord onto the eyelet in the Nose Cone.



STEP 15

A. After all the glue is completely dry, apply a coat of sanding sealer to each Fin. When sealer is dry, lightly sand each Fin.

B. Repeat the sanding and sealing process until the surface of each fin is smooth.

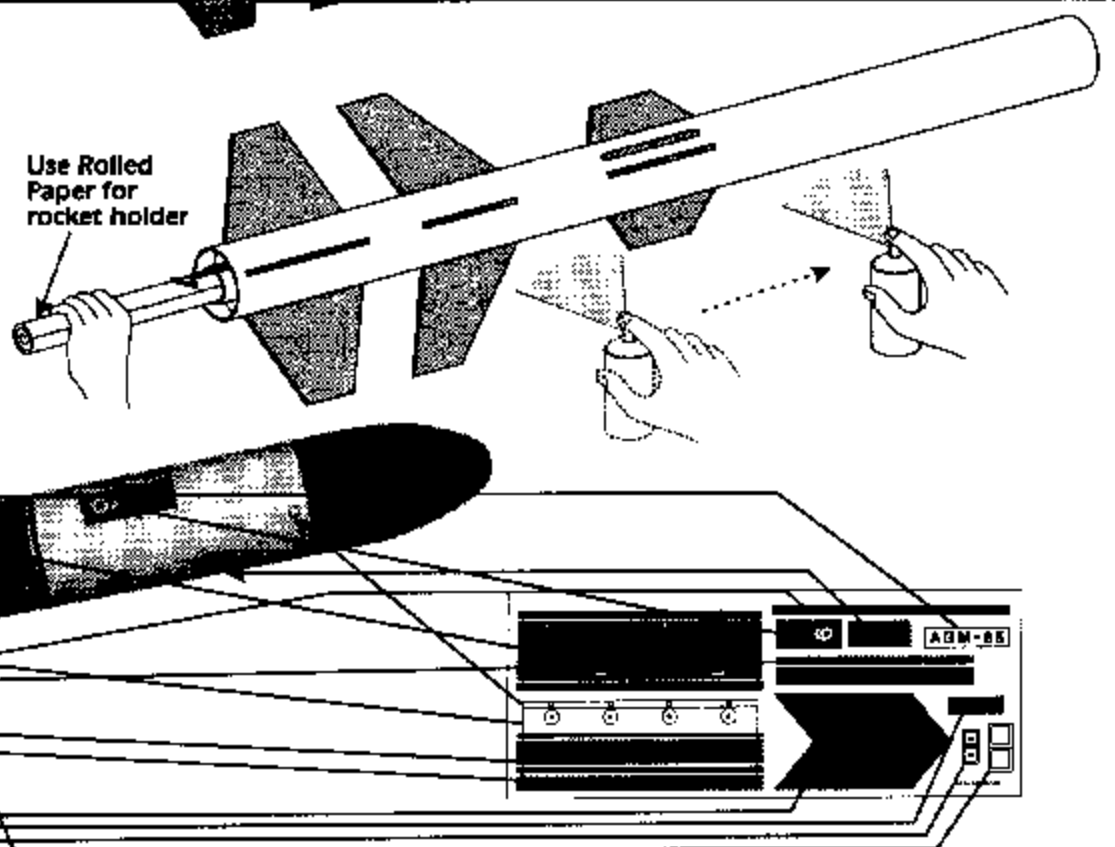


STEP 16

A. Paint the entire rocket with gloss white spray enamel. Follow the instructions on the spray can for best results.

B. When all paint is dry, apply the self-adhesive decal as shown.

NOTE: Use caution when removing the decal from the backing to prevent decal from curling over onto itself.

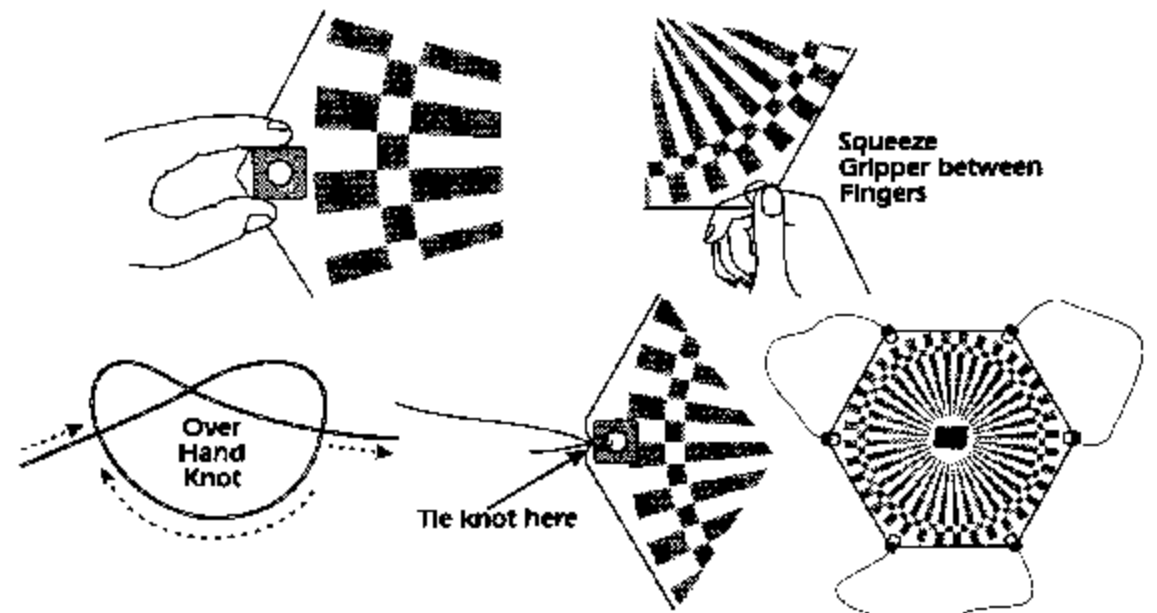


STEP 17

A. Remove the Gripper Shroud Line Fasteners from the strip. Always handle Grippers by the edge so you don't touch the adhesive. Place the Gripper on one of the six corners of the Parachute.

B. Firmly squeeze each Gripper and parachute material between your fingers.

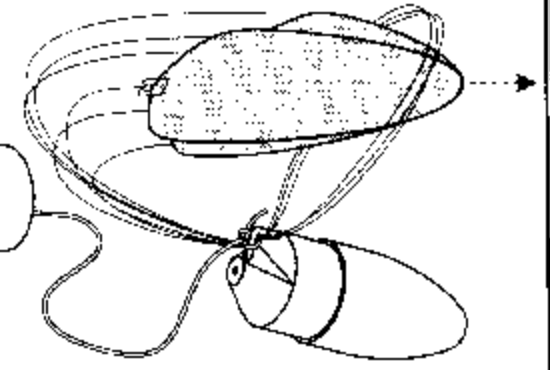
C. The Shroud Line is pre-cut into three equal lengths. Take one length of the Shroud Line, pass it through the hole in the Gripper and tie one end with two overhand knots. Tie the other end of the shroud line to the nearest Gripper. Repeat for remaining Shroud Lines.



STEP 18

A. Pass the shroud line loops of the Parachute through the eyelet on the Nose Cone. Pass the Parachute through the loop ends and pull lines tightly against the eyelet.

B. The Nose Cone should fit snug but not too tight into the body tube. If the Nose Cone fits too tight, sand the shoulder to loosen the fit or stretch the end of the White Body Tube slightly by inserting the pointed end of the Nose Cone into the White Body Tube and gently twist it back and forth.



FLYING YOUR HARPOON AGM ROCKET

WHAT ELSE YOU WILL NEED:

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

- QUEST Launch Pad (No. 7610)
- QUEST Launch Controller (No. 7510)
- QUEST Parachute Recovery Wadding (No. 7020)
- QUEST Rocket Motors, Type B6-4, C6-3 or C6-5
- Use a B6-4 Motor for first flights.

ESTIMATED ALTITUDES:

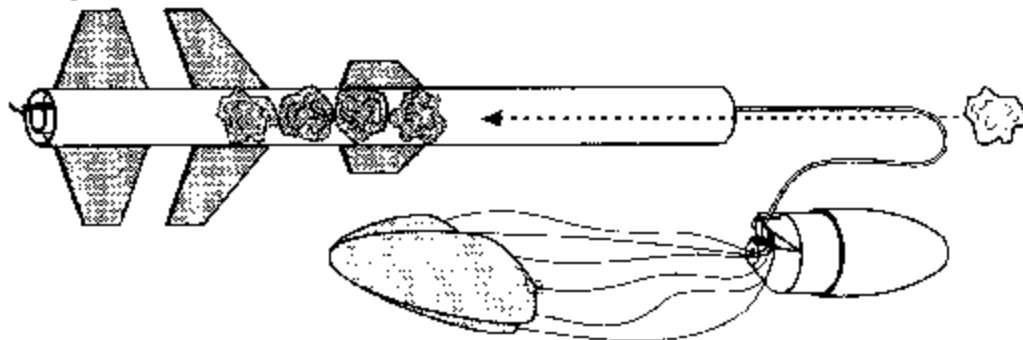
The following is a guide to assist you in determining which motor to use based on the wind conditions and size of flying field available.

MOTOR	ESTIMATED ALTITUDE
B6-4	280 FEET
C6-3	700 FEET
C6-5	700 FEET

PREPPING YOUR ROCKET FOR FLIGHT:

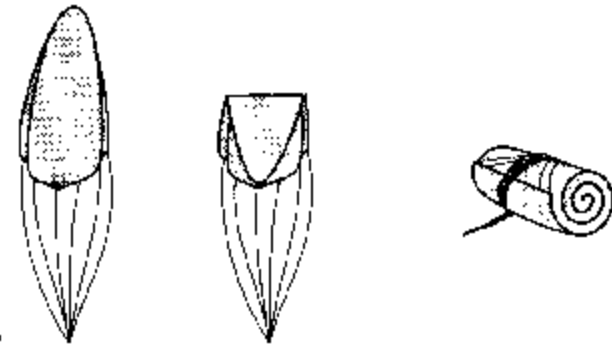
STEP 1

Pull the shock cord all the way out of the body tube. Crumble **five** 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 parachute at its center and allow the rocket to hang from it. The weight of the rocket will pull the parachute into several triangular shapes.
- B.** Gather the triangles together into one flat triangle.
- C.** Fold the top of the parachute down over itself once.
- D.** Now continue to roll the parachute over itself and roll the shroud lines around it.



STEP 3

- A.** Pack the parachute into the body tube. **THE PARACHUTE MUST SLIDE EASILY INTO THE TUBE** If it is a tight fit, remove and re-fold the parachute.
- TIP: LIGHTLY DUST YOUR PARACHUTE WITH TALCUM OR BABY POWDER TO KEEP IT FROM DEVELOPING A SET SHAPE. THIS TECHNIQUE IS ESPECIALLY EFFECTIVE IF THE WEATHER IS HOT AND HUMID OR VERY COLD.**
- B.** Push the shock cord into the Body 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.

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Manufactured by:
QUEST AEROSPACE
A Division of
MARVEL ENTERPRISES, INC.
Yuma, AZ 85364

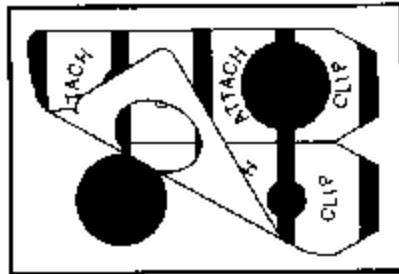
IGNITER INSTALLATION INSTRUCTIONS

Launch your model rockets by electrical means only. Use a Quest Launch Controller and Tiger Tail II igniters. Install Tiger Tail II igniter carefully, follow these instructions.

STEP 1

Remove Tiger Tail sticker from backing sheet.

Leave "dots" behind on sheet.

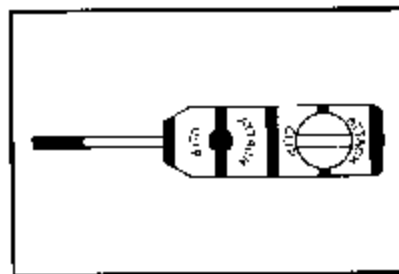
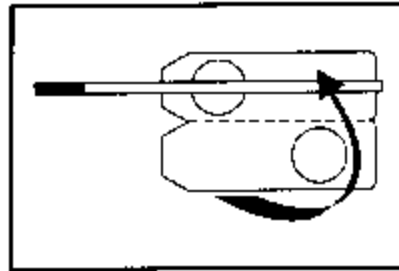


Step 2

Center the copper igniter wire over the hole.

Fold Tiger Tail sticker over the igniter wire.

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



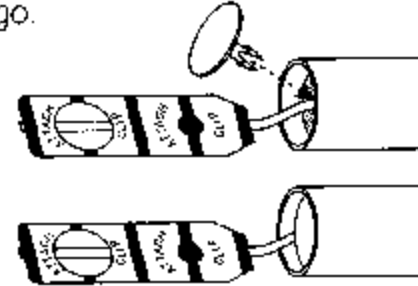
STEP 3

Place black coated end of the igniter wire into the motor nozzle as far as it will go. Black igniter tip **MUST TOUCH** the bottom of the nozzle or motor will not ignite.



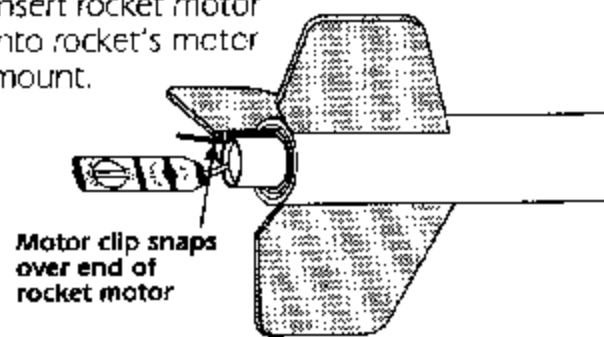
STEP 4

Push the plastic Tiger Tac into nozzle as far as it will go.



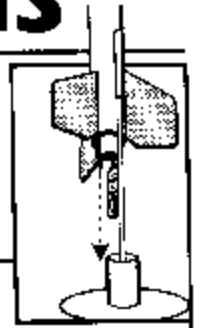
STEP 5

Insert rocket motor into rocket's motor mount.



STEP 6

Slide rocket onto launch rod and position on launch pad.



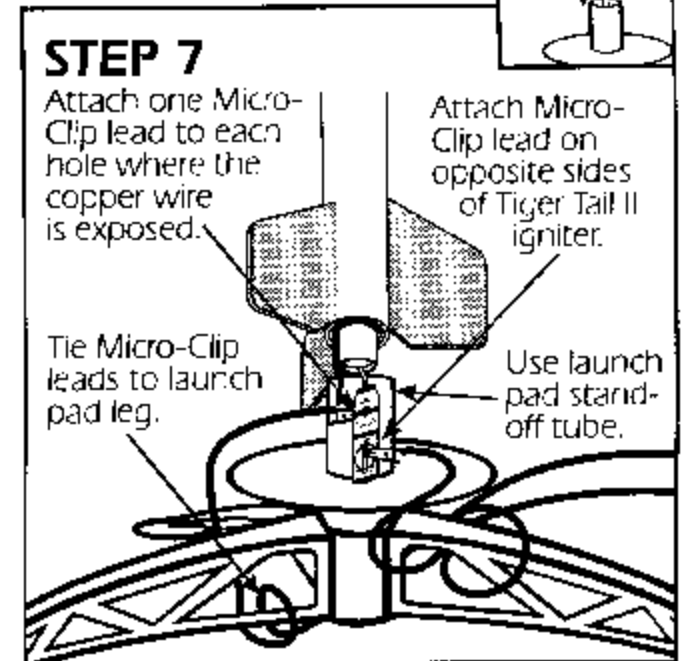
STEP 7

Attach one Micro-Clip lead to each hole where the copper wire is exposed.

Attach Micro-Clip lead on opposite sides of Tiger Tail II igniter.

Tie Micro-Clip leads to launch pad leg.

Use launch pad stand-off tube.



IMPORTANT: To avoid potential short circuit and/or misfire **DO NOT** clamp Micro-Clips too tightly to the Tiger Tail II igniter.

NOTE: If you are using a different brand rocket motor and the Tiger Tac does not fit into the nozzle, substitute the Tiger Tac 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 PROCEDURES

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 rectangle area, it is the shortest side in feet.

Motor Type	Installed Total Impulse (Newton-Seconds)	Minimum Site Dimensions (feet)
A	1.26-2.5	100
B	2.51-5.00	200
C	5.01 - 10.00	400

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 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 the Micro-Clips with sandpaper 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.

MISFIRE PROCEDURE

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