

APOLLO™

Flying Model Rocket

- 2-foot tall rocket inspired by the Saturn 5 rocket that took man to the Moon.
- Unique, pre-molded, modular fin system allows quick construction, yet still offers the challenge of assembly.
- Includes Quest's advanced design features: Kevlar® Shock Cord System, Easy-Lock Motor Mount and Grippers™ Recovery System (see back panel).
- Twin 12" Tuff-Chute™ parachutes deploy at 600', for realistic recoveries.

Estimated Maximum Altitude:
600 feet
Recommended Rocket Motors:
A6-4 (for first flight),
A8-3, B6-4, C6-5
Length: 26.88" (68.2 cm)
Body Diameter: 1.18" (30 mm)
Weight: 2.0 oz. (58 g)

**NASA Research
design with
impressive scale-like
detail.**



Dual 12"
Chutes

UNITED STATES

USA



This kit requires assembly.
White glue, plastic cement, finishing supplies, launch system and rocket motors for launching are not included.

SKILL LEVEL



Recommended for the Experienced Modeler

Assembled in Mexico

PROOF OF PURCHASE

Apollo #2003

0 45856 92003 4



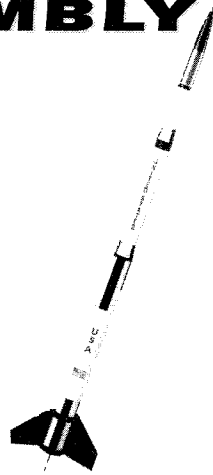
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QUEST
#2003

APOLLO™ ASSEMBLY INSTRUCTIONS



Prod. No. 2003
Skill Level Two



Things You'll Need To Assemble this Kit:
Hobby Knife, Pencil and Tweezers

Sandpaper (220 or 320 Grit)
White Glue

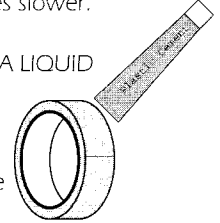
Aliphatic Resin glues work best such as TITEBOND or ELMER'S CARPENTER'S WOOD GLUE - ELMER'S WHITE SCHOOL GLUE also works but dries slower.

Plastic Cement

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

Tape

Scotch Magic Tape or Paper Masking Tape

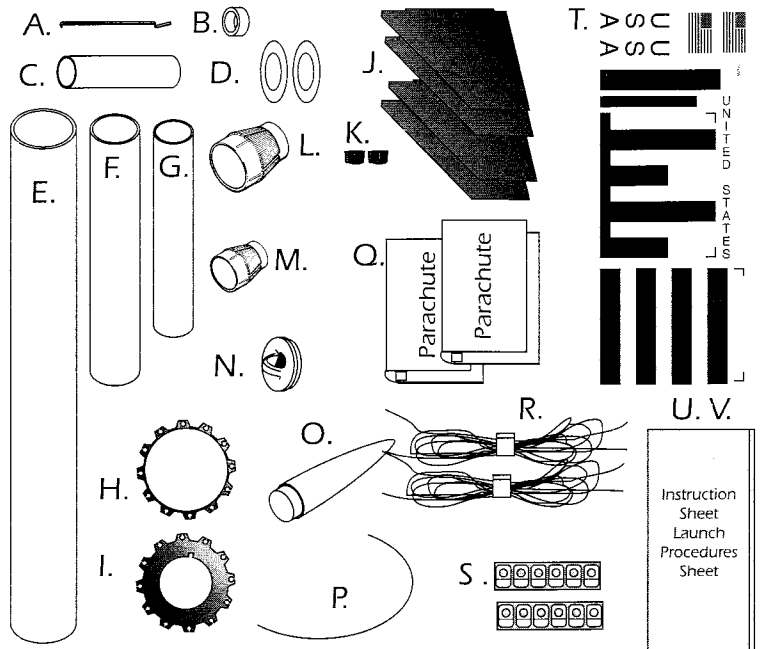


BEFORE STARTING ASSEMBLY READ THROUGH THESE INSTRUCTIONS. IT IS BEST TO TEST FIT ALL PARTS BEFORE APPLYING ANY GLUE. READ AND FOLLOW THE NAR MODEL ROCKET SAFETY CODE.

PARTS LIST

- A. 49000 Motor Clip
- B. 14000 Blue Thrust ring
- C. 10301 Yellow Motor Mount Tube
- D. 16001 Paper Centering Ring (2)
- E. 11400 12 Inch White Body Tube
- F. 11302 6 Inch Payload Tube
- G. 11200 4.25 Inch Payload Tube
- H. 21552 Upper Plastic Fin Ring
- I. 21562 Lower Plastic Fin Ring
- J. 21562 Plastic Fins (4)
- K. 27003 Plastic Launch Lug (2)
- L. 21055 Large Reducer
- M. 21054 Small Reducer
- N. 21059 Reducer Base
- O. 20077 Nose Cone
- P. 50052 21 Inch Yellow Kevlar Shock Cord
- Q. 28102 12 Inch Parachute (2)
- R. 50100 Pack of 3-26 Inch Shroud Lines
- S. 28001 Strip of 6 Gripper Tabs
- T. 91001 Decal
- U. 90051 Instruction Sheet
- V. 90151 Launch Procedures Sheet

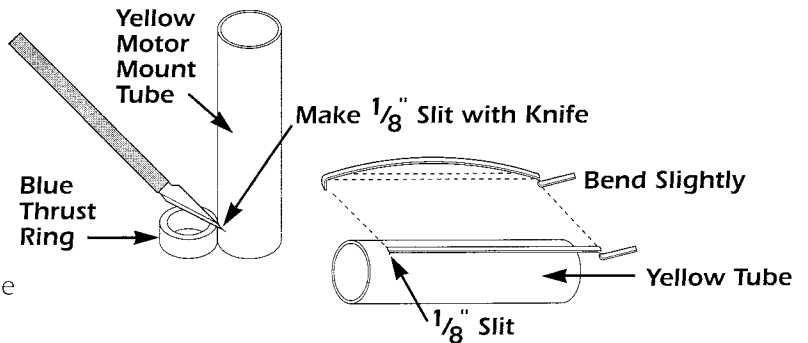
* Kevlar is a registered trademark of Dupont



PARTS NOT TO SCALE

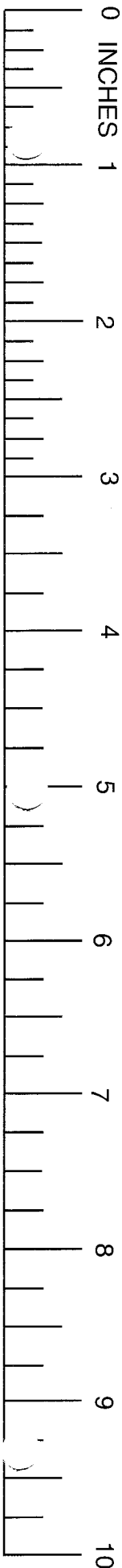
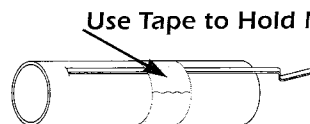
STEP 1

A. Place the Blue thrust ring up against the side of the Yellow motor mount tube and use it as a guide for your knife to make a small 1/8 inch long slit in the side of the Yellow Motor Mount Tube as shown.



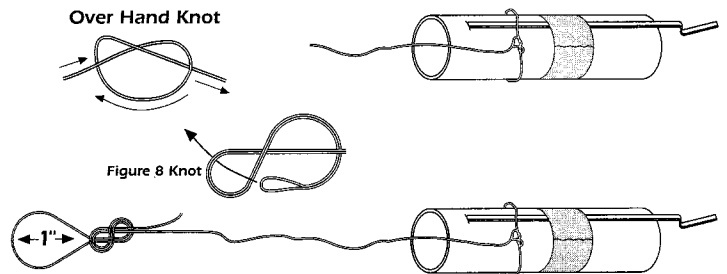
B. Make a slight bend in the motor clip as shown. Insert the clip into the slot you made in the Yellow Motor Mount Tube.

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



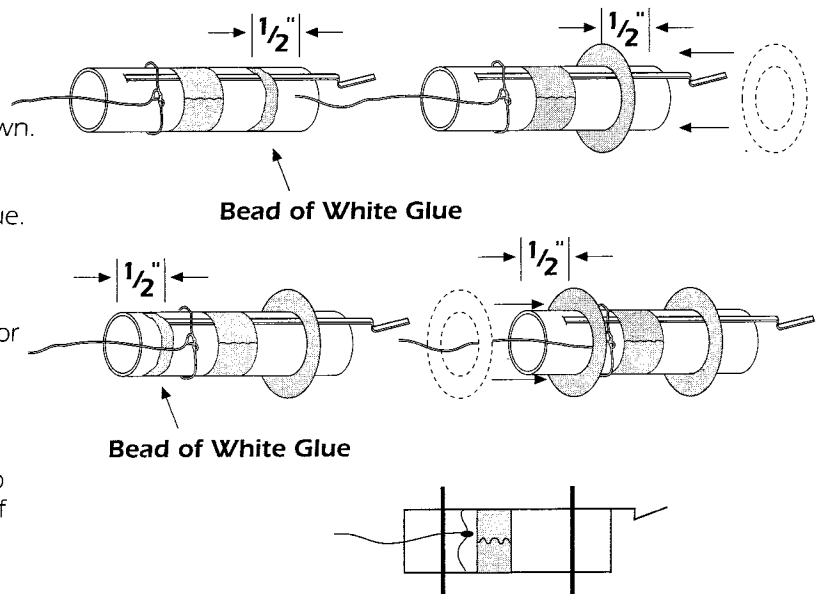
STEP 2

- Use two overhand knots to tie the Yellow Kevlar shock cord around the yellow Motor Mount Tube as shown.
- Tie a figure "8" knot in the loose end of the Yellow Kevlar with a 1 inch loop as shown.



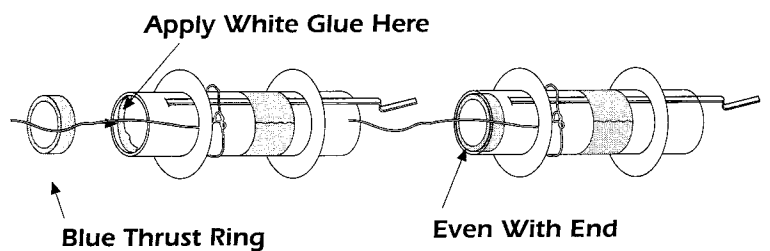
STEP 3

- Apply a bead of white glue around the Yellow Motor Mount Tube 1/2 inch from rear end as shown.
- 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.
- Apply a bead of white glue around the Yellow Motor Mount Tube 1/2 inch from the forward end as shown.
- Pass the Yellow Kevlar shock cord through the remaining paper centering ring. Slide the ring 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.



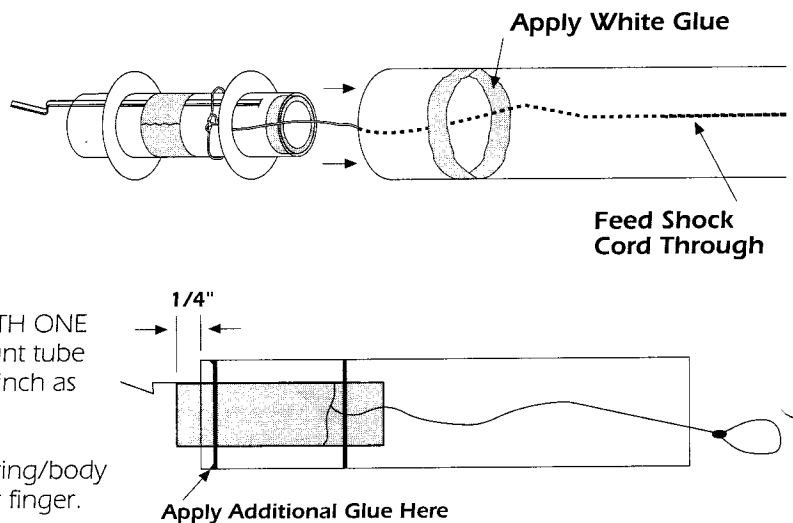
STEP 4

- Apply white glue around inside edge of Yellow Motor Mount Tube as shown.
- Insert the Blue thrust ring into the Yellow Motor Mount Tube so it is even with the end of the Yellow Motor Mount Tube.
- After the glue has set completely, apply a small bead of white glue to both sides of each centering ring. Smooth out the glue with your finger. Wipe excess glue off your finger onto a tissue or paper towel.



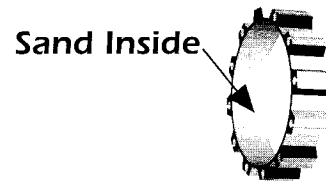
STEP 5

- "Feed" the Yellow Kevlar 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.
- Apply white glue around the inside of the White body tube as shown.
- 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 extends out from the end of the white body tube 1/4 inch as shown.
- Apply additional white glue to the exposed centering ring/body tube joint as shown. Wipe away excess glue with your finger.



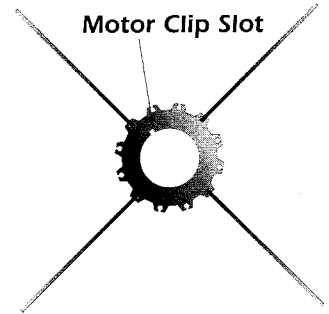
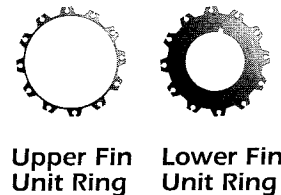
STEP 6

- A. Use a sharp hobby knife to remove any "flash" from the plastic fin parts.
- B. Lightly sand the inside surface of each of the two fin unit rings. Test fit the rings onto the white body tube. Rings should slide easily over the white tube.



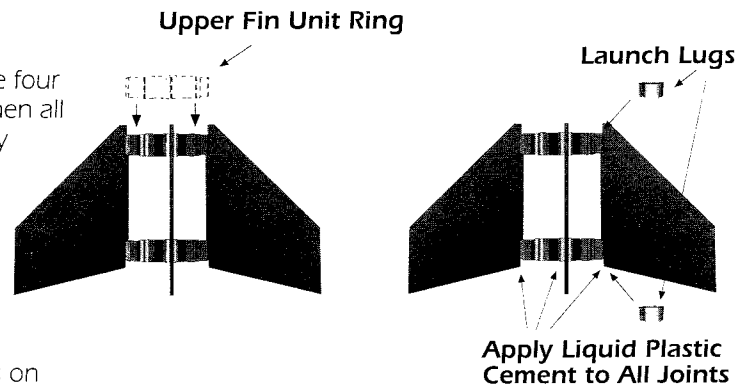
STEP 7

- A. Locate and identify the lower fin unit ring.
- B. Locate the pre-molded slot for the motor clip in the lower fin unit ring. Insert one of the molded plastic fins into one of the slots in the lower fin unit ring so that the motor clip will be positioned between two fins.
- C. Skip two slots and insert another molded plastic fin into a slot in the lower fin unit ring.
- D. Repeat "skips" and insert remaining two molded plastic fins into the lower fin unit ring.



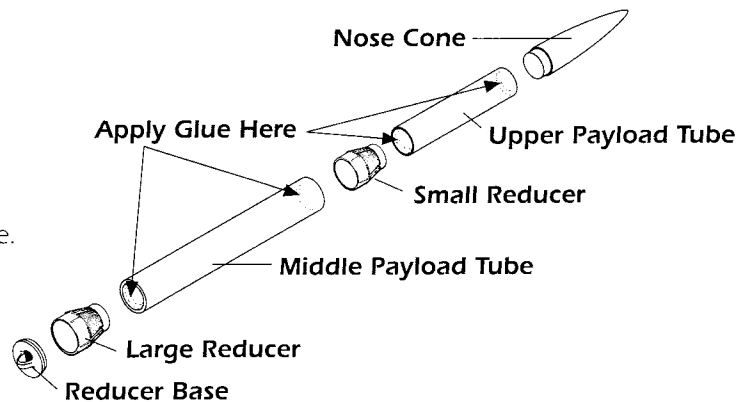
STEP 8

- A. Carefully line-up the upper fin unit ring with each of the four fins by barely inserting each fin into the upper ring. When all four fins are properly inserted, press the ring all the way down onto the four fins as shown.
- B. Insert one of the molded launch lug into a slot between two fins in the lower fin unit ring. Insert the second launch lug into the corresponding slot in the upper fin unit ring.
- C. Apply liquid plastic cement to each of the fin/ring joints on the completed fin unit. Set aside to dry.



STEP 9

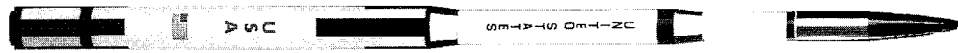
- A. Apply plastic cement (not white glue) around the inside edge of the large plastic reducer. Push the base into the reducer.
- B. Wrap a piece of paper masking tape around the upper shoulder of the large reducer, both shoulders of the small reducer and the shoulder of the nose cone.
NOTE: If you wish to paint the two upper payload tube sections, paint them before gluing reducers and nose cone.
- C. Apply plastic cement into both ends of the middle payload tube as shown. Insert the large reducer into one end and the small reducer into the other end as shown.
- D. Apply plastic cement into both ends of the upper payload tube as shown. Insert the small reducer into one end and the nose cone into the other end as shown.



STEP 10

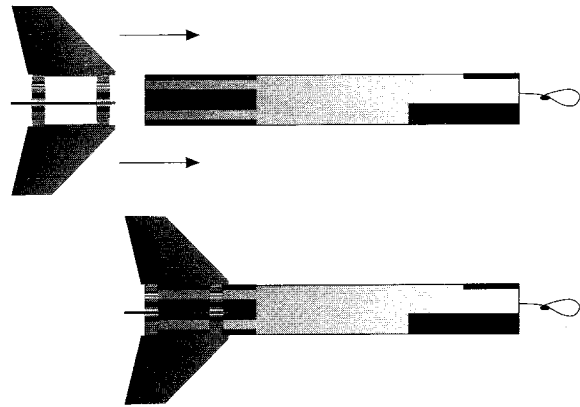
USE THESE PICTURES AS YOUR GUIDE FOR PLACEMENT AND FOLLOW THESE STEPS TO APPLY THE DECALS.

- A. Use your hobby knife to cut out the decals. Make a smooth continuous cut all the way through the backing sheet. Cut out names and words as a block. Small knicks can cause the decal to tear as you peel it off the backing sheet.
- B. Carefully peel off each decal (hold small decals with a pair of tweezers). Dip decals into a bowl of warm water containing a drop of dish washing detergent. Position the decal on the rocket. Use a tissue to gently press air bubbles out from under the decal. After all decals are positioned and have dried, spray the entire rocket with a coat of clear gloss.



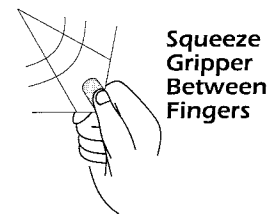
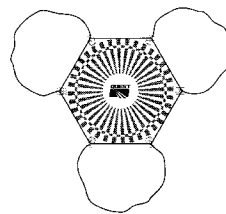
STEP 11

- A. Carefully slide the plastic fin unit assembly from the rear of the white body tube. Align the motor clip with the molded slot in the lower fin unit ring.
NOTE: If Fin unit does not slide on easily or begins to tear or scratch the decals. Sand the inside of both fin unit rings to loosen fit.
- B. Apply a small amount of plastic cement to the lower fin unit ring/body tube joint to hold the fin unit assembly permanently in place



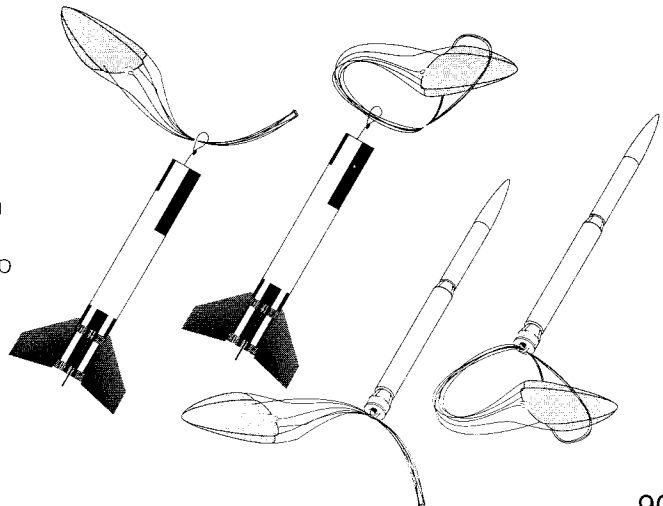
STEP 12

- A. Assemble both parachutes according to the instructions printed on them.
- B. Firmly squeeze each gripper tab and parachute between your fingers.



STEP 13

- A. Pass the shroud line loops of one parachute through the eyelet in the large reducer. Pass the parachute through the loop ends and pull lines tightly against the eyelet.
- B. Pass the shroud line loops of the second parachute through the loop you made in the Yellow Kevlar attached to the booster stage in step 2. Pass the parachute through the loop ends and pull lines tightly against the Kevlar.



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

FLYING YOUR APLLO 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 or C6-5
- Use a A6-4 Motor for your first flights.

ESTIMATED ALTITUDES

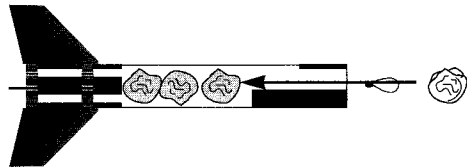
The following is a guide to assist you in determining which motor to use based on the wind conditions and size of flying field available.

MOTOR	ESTIMATED ALTITUDE
A6-4	150 FEET
B6-4	280 FEET
C6-5	600 FEET

PREPPING YOUR ROCKET FOR FLIGHT

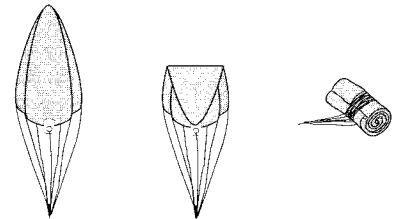
STEP 1

Pull the shock cord all the way out of the body tube. Crumple four 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

- 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.
- Gather the triangles together into one flat triangle.
- Fold the top of the parachute down over itself once.
- Now continue to roll the parachute over itself and roll the shroud lines around it.



STEP 3

- 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.
- Push the shock cord into the tube and re-fit the payload Section onto the rocket. **BE CAREFUL NOT TO CATCH ANY OF THE SHOCK CORD BETWEEN THE SHOULDER OF THE PAYLOAD SECTION AND THE BODY TUBE.** IF PAYLOAD SECTION FIT IS TOO LOOSE, ADD TAPE TO THE SHOULDER.

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.



Manufactured by:
QUEST AEROSPACE
EDUCATION, INC.
Distributed Exclusively by:
HOBBICO, INC.
1610 INTERSTATE DRIVE
CHAMPAIGN, IL 61821



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 model 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.

TIGERTAIL IGNITER INSTALLATION

Launch your model rockets by electrical means only. Use a Quest Launch Controller and TigerTail Igniters. Install TigerTail Igniter carefully, following these instructions.

STEP 1 Remove Black Die-Cut Dots as Shown

A) Carefully remove self-adhesive TigerTail sticker from its backing sheet.

B) Remove the two die-cut black dots from the TigerTail sticker.

C) Wrap the "T" shaped end of the TigerTail sticker around the nozzle end of the rocket motor.

D) Bend sticker to the side away from the rocket motor.

E) Place the coated end of the copper igniter wire into the rocket motor nozzle, as far as it will go.

STEP 2

A) Using your finger to hold the igniter in place, bend the copper igniter wire onto the adhesive surface of the TigerTail sticker, centered over the hole as shown.

B) Fold TigerTail sticker over and onto the copper igniter wire. Be sure the copper igniter wire is centered and visible through both holes in the TigerTail sticker.

STEP 3

A) Using your finger to hold copper igniter wire against motor nozzle, straighten the TigerTail Igniter as shown.

B) Place rocket motor with TigerTail Igniter into the motor mount of the rocket.

C) For best results DO NOT place motor mount clip over TigerTail Igniter.

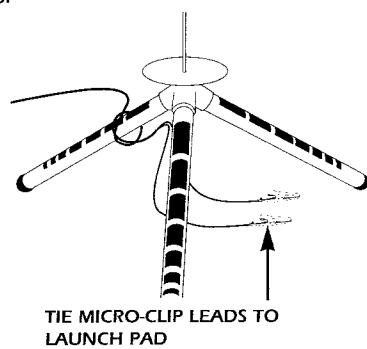
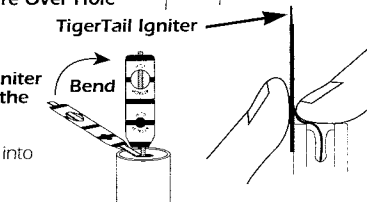
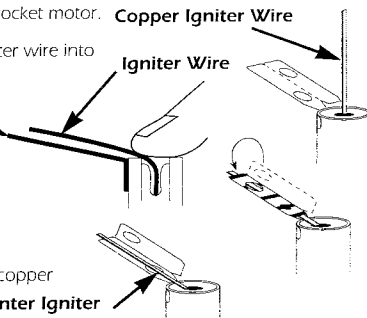
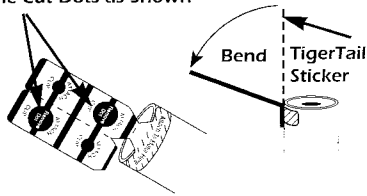
STEP 4

A) ANCHOR THE LAUNCH CONTROLLER'S MICRO-CLIP LEADS TO THE LAUNCH PAD BY ATTACHING THEM TO A LAUNCH PAD LEG USING A SINGLE OVERHAND KNOT. This prevents micro-clip leads from easily pulling away from the launch pad.

B) Micro-clip lead wire should also be pulled apart so each individual micro-clip lead is 6" to 8" long.

C) Attach one micro-clip lead from the launch controller to each hole, where the copper igniter wire is exposed, on the TigerTail Igniter. For best results bring one micro-clip lead around each side of the Launch Rod Stand-Off tube before hooking up to TigerTail Igniter.

D) Be sure TigerTail Igniter points straight down under rocket motor nozzle when micro-clip leads are attached. Micro-clips should be positioned on opposite sides of the TigerTail Igniter.



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.

Motor Type Minimum Site Dimensions (feet)

A	100
B	200
C	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 Igniter into the rocket motor per the TigerTail 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. For best results DO NOT place the motor mount clip over the tigertail igniter.

(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 OVERHAND 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 be sure their 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.

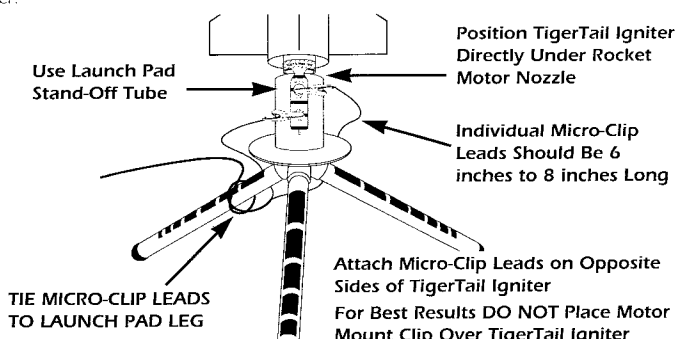
(9) Be sure the Safety Key is with you before hooking up the micro-clips to the TigerTail Igniter. Attach one micro-clip lead to each hole in the TigerTail igniter where the copper wire is exposed. The micro-clips MUST NOT touch each other or the blast deflector. Use the Launch Rod Stand-Off, an empty 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 the hook up to TigerTail 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, wait one minute, then remove the model from the launch pad. (3) Remove the TigerTail sticker from the end of the motor casing, clean the micro-clips and install a new TigerTail Igniter. (4) Repeat countdown procedure again. (5) IF TIGERTAIL IGNITER TEARS APART, DO NOT ATTEMPT TO REPAIR. REPLACE WITH A NEW TIGERTAIL IGNITER.

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.



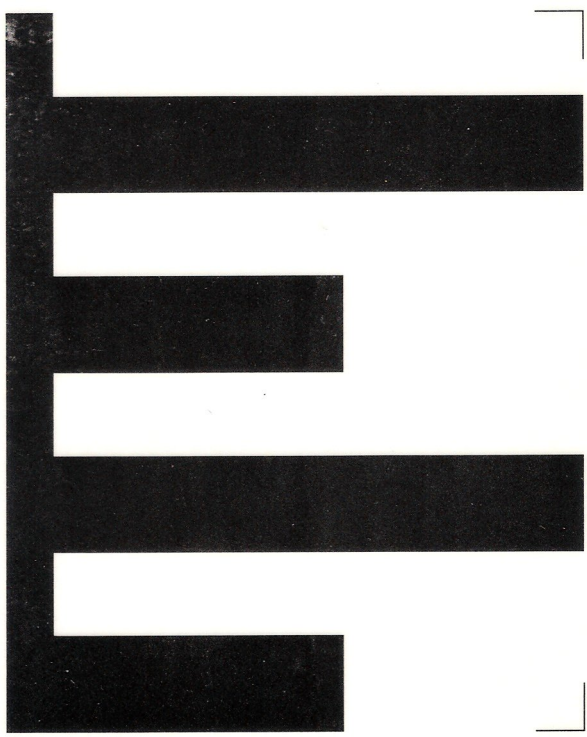
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