



Throughout the past years, over 25 million model rocket launchings have been made — most of them by young men 10 to 17 years of age . . . and establishing one of the best safety records of any youth activity. They look upon this hobby as being exciting and educational. They don't think of rockets as toys. Hundreds of thousands of rocketeers have promoted the safety of the hobby by following the Safety Code printed here.

The ENERJET series of engines are powerful, sophisticated products that generally appeal to the older rocketeers. A mature common-sense attitude makes for safe, rewarding projects.

This rocket is designed to be launched only from standard remote-controlled electrical launch systems. Always use the recommended engines and recovery wadding. Comply with all Federal, State and local laws.

MODEL ROCKETEER'S SAFETY CODE

CONSTRUCTION

My model rockets will be made of only lightweight materials such as paper, wood, plastic, and thin metallic foils, with the exception of payloads and engine holders made of wirelike material.

ENGINES

I will use only pre-loaded factory made model rocket engines in the manner recommended by the manufacturer. I will not change in any way nor attempt to reload these engines.

RECOVERY

I will always use a recovery system in my model rockets that will return them safely to the ground so that they may be flown again.

WEIGHT LIMITS

My model rocket will weigh no more than 453 grams (16 oz.) at liftoff, and the engines will contain no more than 113 (4 oz.) of propellant, as prescribed by Federal Regulations.

STABILITY

I will check the stability of my model rockets before their first flight except when launching models of already proven stability.

LAUNCHING SYSTEM

The system I use to launch my rockets will be remotely controlled and electrically operated, and will contain a switch that will return to "off" when released. I will remain at least 10 feet away from any rocket that is being launched.

LAUNCH SAFETY

I will not let anyone approach a model rocket on a launcher until I have made sure that either the safety interlock key has been removed or the battery has been disconnected from my launcher.

LAUNCH AREA

My model rockets will always be launched from a cleared area, free of any easy-to-burn materials, and I will only use non-flammable recovery wadding in my rockets.

BLAST DEFLECTOR

My launcher will have a blast deflector device to prevent the engine exhaust from hitting the ground directly.

LAUNCH ROD

To prevent accidental eye injury I will always place the launcher so the end of the rod is above eye level or cap the end of the rod with my hand when approaching it. I will never place my head or body over the launching rod. When my launcher is not in use I will always store it so that the launch rod is not in an upright position.

POWER LINES

I will never attempt to recover my rocket from a power line or other dangerous places.

LAUNCH TARGETS AND ANGLE

I will not launch rockets so their flight path will carry them against targets on the ground, and will never use an explosive warhead nor a payload that is intended to be flammable. My launching device will always be pointed within 30 degrees of vertical.

PRE-LAUNCH TEST

When conducting research activities with unproven designs or methods, I will, when possible, determine their reliability through pre-launch tests. I will conduct launchings of unproven designs in complete isolation from persons not participating in the actual launching.

FLYING CONDITIONS

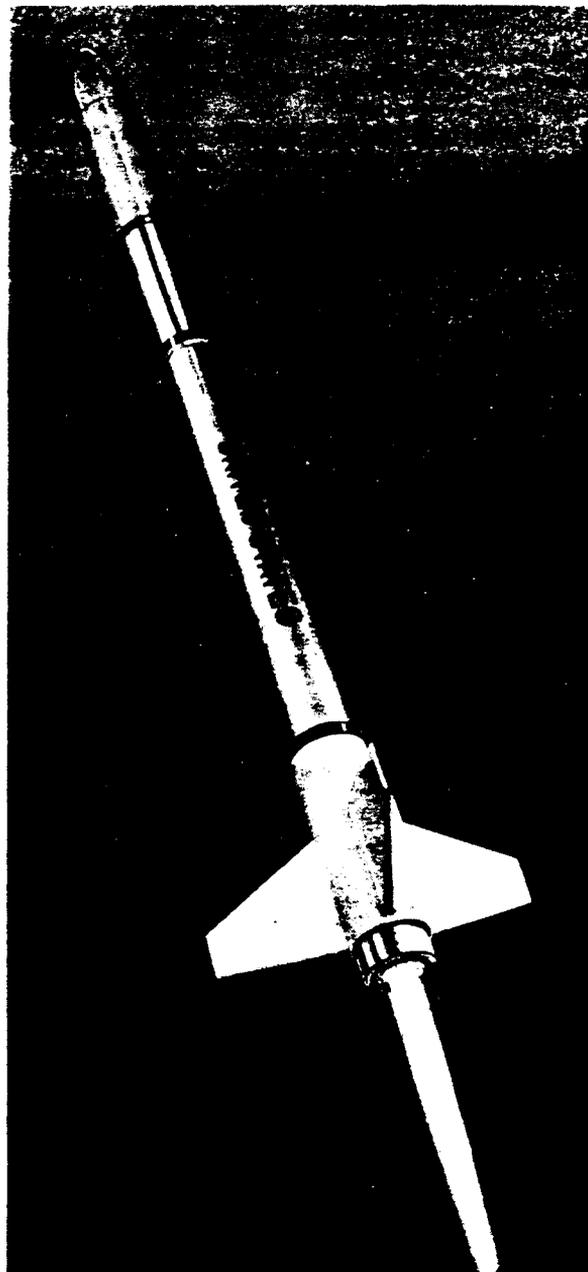
I will not launch my model rocket in high winds, near buildings, power lines, tall trees, low flying aircraft or under any conditions which might be dangerous to people or property.

ENERJET

A SUBSIDIARY OF CENTURI ENGINEERING CO.

NIKE-RAM

Catalog No. KE-1



ENERJET

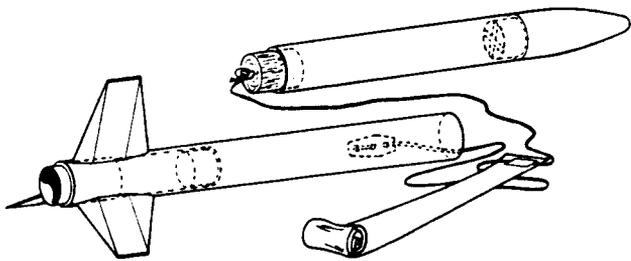
Catalog No. KE-1

NIKE-RAM

Length	23.2"
Body Diameter	1.34"
Net Weight	3.10 oz.

Recommended Engines E24-10 F52-12 F67-14

NIKE-RAM



INTRODUCTION

The NIKE-RAM is a high performance rocket. The use of a streamer helps assure recovery within a reasonable area. The rocket's generous payload capsule makes it ideal for research such as carrying transmitters up to a mile high. The NIKE-RAM can accelerate up to the speed of sound, when carefully finished and flown empty.

The Nike-Ram kit is a spin-off from Enerjet research into a small low-cost sounding rocket. Its' flight testing concluded at Aberdeen Proving ground, the site of NARAM-13, when it climbed out of sight loaded to the one pound limit.

Enerjet engines produce considerably more stress on the vehicle than regular A-B-C series engines. For the most satisfaction, please be especially careful in assembling and flying your model.

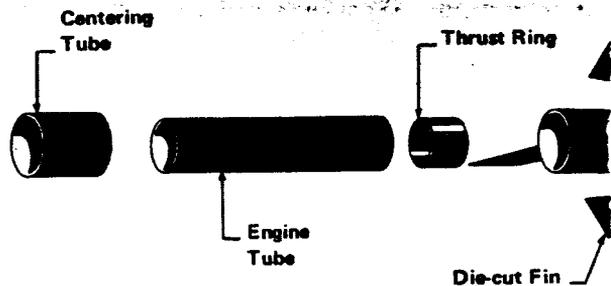
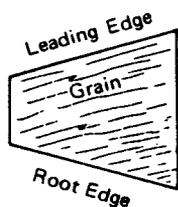
ASSEMBLY INSTRUCTIONS

READ BEFORE STARTING ASSEMBLY

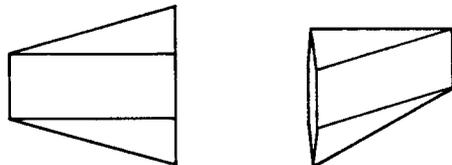
TOOLS: In addition to the parts supplied, you will need the following standard model rocket tools to assemble and finish this kit. **DO NOT** use model airplane glue for building flying model rockets.



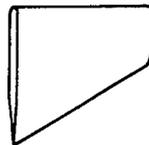
- 1 Carefully push each fin from the die-cut balsa sheet. If necessary, use a sharp modeling knife to trim around each piece to avoid ragged edges. Square up the edges by running over a piece of fine sandpaper. Sand the sides of the fins lightly. Do not round the root edges.



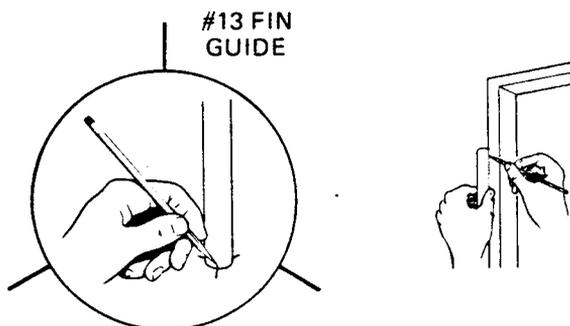
- 2 For best appearance, cut and sand fins to a double-taper cross section:



Or, simply round the leading edge and taper the trailing edge.

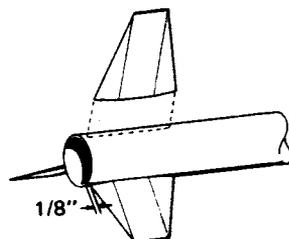


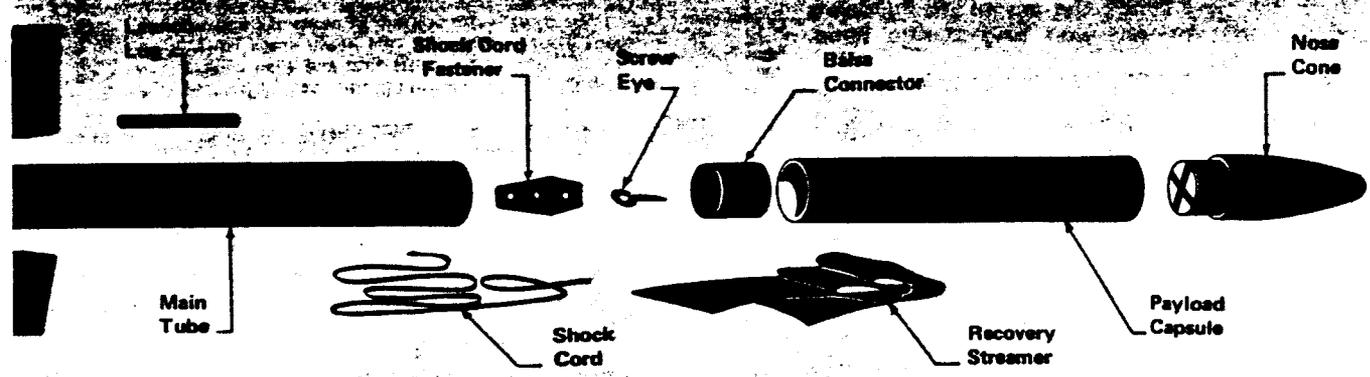
- 3 Stand the main body tube on its fin guide and mark each fin position on the tube.



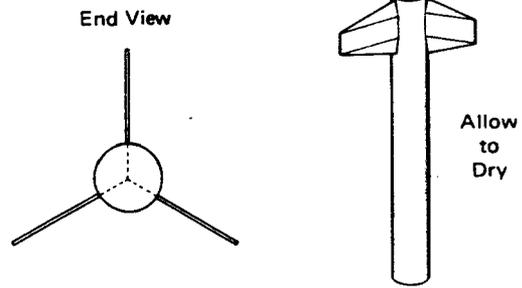
Find a convenient groove or channel with straight sides, such as a door jamb or partially open drawer. Extend the marks into straight guide lines the entire length of the tube.

- 4 One at a time, apply glue to the root edges of the fins. Press in place on the drawn lines. Remove the fin. Repeat with remaining fins. Apply fresh glue to each fin and re-position on the body. Be sure fins are positioned with leading edges forward, and trailing edges 1/8" from the rear of tube.

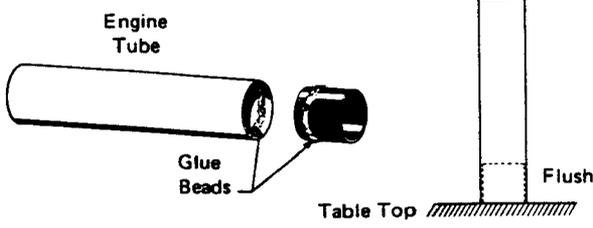




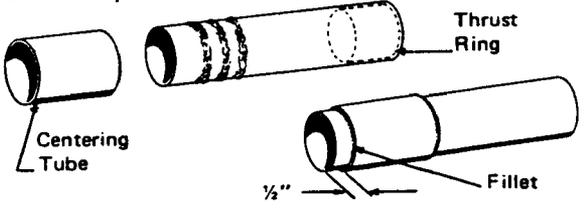
5 Check fin alignment visually by sighting along tube. Imaginary center lines of fins should all coverage at center of body tube. Stand assembly upright to dry, but avoid glue sags.



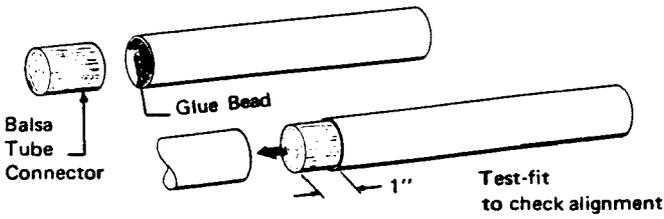
6 Apply a bead of glue inside one end of engine tube and around outside of thrust ring. Push thrust ring into place until flush with end of engine tube. Wipe away excess glue from inside of engine tube.



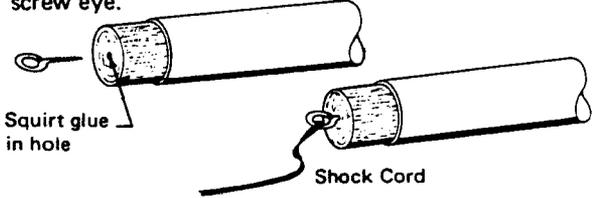
7 Run several beads of glue around the engine tube, and slide the centering tube in place as shown. Rear of centering tube is 1/2" from rear of engine tube. Apply a bead of glue at the rear of the centering tube and smooth into a neat fillet with your finger. Set aside to dry.



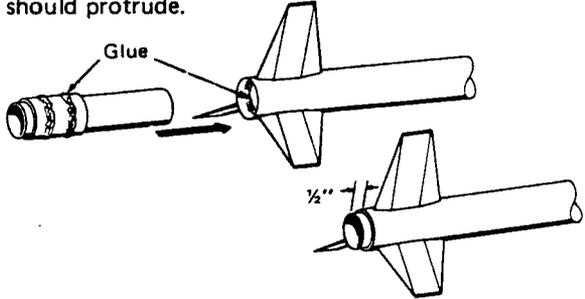
8 Run a generous glue bead around the inside of one end of the payload capsule tube. Insert the balsa tube connector with a firm continuous motion to a depth of one-half inch. One inch of connector should protrude. Gently test-fit assembly into main body tube to be sure connector is in straight, then remove, and allow to dry.



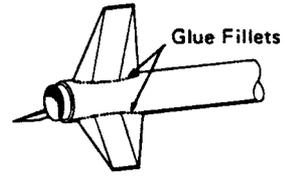
9 Thread the screw eye into the base of the connector, remove, squirt glue into the hole, and replace the screw eye. Tie the free end of the shock cord to the screw eye.



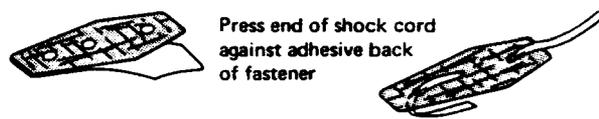
10 Apply a generous glue bead around the inside rear end of the main body assembly. Apply a thin film of glue around the engine mount's centering tube. Insert mount into body with a firm, even, turning motion before glue sets up. One-half inch of the engine tube should protrude.



11 The fin-to-body tube joints must be reinforced to withstand the engine's thrusting. Run a thin bead of glue along each joint and smooth into neat fillets with your finger. Check fin alignment again.



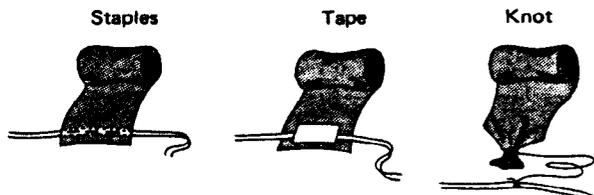
12 Peel the backing from the shock cord fastener. Thread the other end of the elastic shock cord through the fastener as shown. Take care not to touch the adhesive backing any more than absolutely necessary.



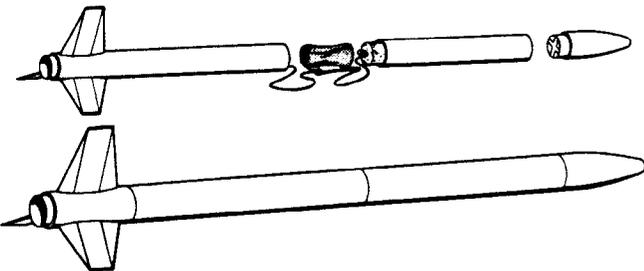
13 Slightly crease the fastener lengthwise to allow easy insertion 1" past the top of the body tube. Press firmly against the inside wall of the tube with a finger or eraser end of a pencil. NOTE: All edges of the fastener must be firmly contacted to the tube to insure a permanent bond.



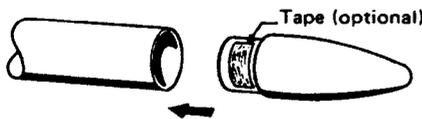
14 Attach the recovery streamer to the shock cord about 6" from the nose cone. Use any of the following techniques, but be sure you have a firm bond.



15 Roll streamer tightly, insert in body, tuck in shock cord, connect payload section, and insert nose cone.

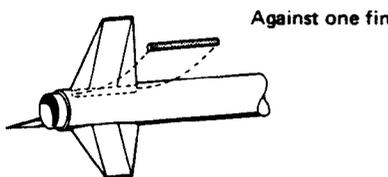


16 Nose cone should be snug fit, so it does not fall out in flight or at streamer ejection. If necessary, apply a small piece of tape to nose cone base to ensure snug fit.

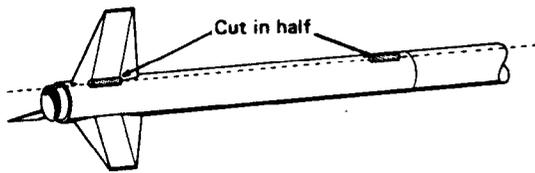


17 Apply one more glue fillet to each fin-body tube joint, for extra strength.

18 The launch lug may be glued on in one of two ways:
A. For general flying.

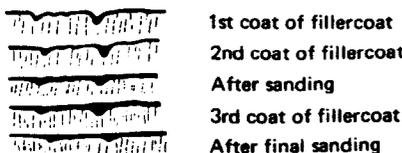


B. For carrying heavy payloads.



19 Balsa wood fins may be sealed when glue joints are dry.

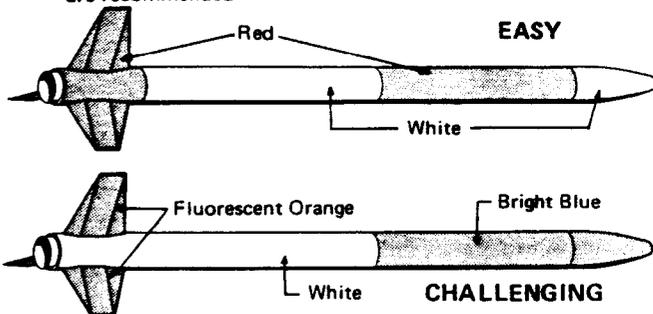
Your model will look and perform better if the wood grain is eliminated before painting. Apply fillercoat, allow to dry, and sand with fine sandpaper. Repeat until wood surface is smooth.



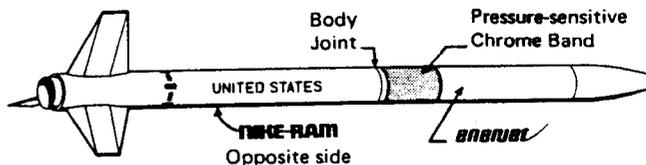
20 When painting plastic parts, never use dope or lacquer! First spray with a primer suitable for plastic. The plastic parts may then be spray painted in place on the model with the same spray paint used on the rest of the model. Or the parts may be masked off or removed for painting a separate color.

Spray painting your model with a fast-drying enamel will produce the best results... IF IT IS DONE PROPERLY!! Most important is the number of coats of paint. DO NOT try to paint your model with one heavy coat! Instead, give it a couple of quick, light coats first and then a finish coat. Let each coat dry before applying the next.

21 The Nike-Ram's high altitude capabilities make it important to use high-visibility colors. Be sure to use colors that the decals will show up well against. The following paint schemes are recommended:



22 Apply the decals, one at a time, according to the instructions printed on the decal backing paper. NOTE: Additional detail may be added with narrow colored tape.



FLIGHT PREPARATIONS

When all glue joints, paint and decals are dry, the Nike-Ram is ready to be prepped.

Igniters and complete engine installation instructions are included in "Engine Operating Instructions" which accompany all ENERJET engines.

Recommended Engine	Approximate Altitude (feet)	Purpose
E24-10	2500	First test flights, medium size launch areas.
F52-12	3200	General flying, large launch areas.
F67-14	5000	Maximum altitudes, extremely large launch areas.

1. Inspect shock cord fastener for firm bond.
2. Insert Flameproof Parachute Wadding according to its directions.
3. Tuck in shock cord.
4. Roll streamer tightly and insert.
5. Socket payload section in place and check for snug fit.

Carefully prepare and check all parts of your rocket before each flight.

Launch the NIKE-RAM from any standard model rocket launcher having a one-piece 36" long steel launch rod.

Do not leave the rocket sitting in the sun for long periods as this may soften the adhesives.

Referring to the specific instructions which accompany launchers and firing panels, mount the rocket on the launcher and prepare for ignition. Avoid eye injury by capping the exposed tip of the launch rod when not actually launching!



Expendable engine makes a handy launch rod cap.

A FEW FINAL TIPS:

Launching the Nike-Ram on hazy or cloudy days will assure its being lost. We recommend adding a clay weight or instrumentation to the payload capsule when using the heavier engines (F52-12, F67-14).

Adding a liberal amount of chute powder in the chute compartment will cause the rocket to produce a highly visible puff of white smoke at ejection, facilitating tracking closure and recovery.

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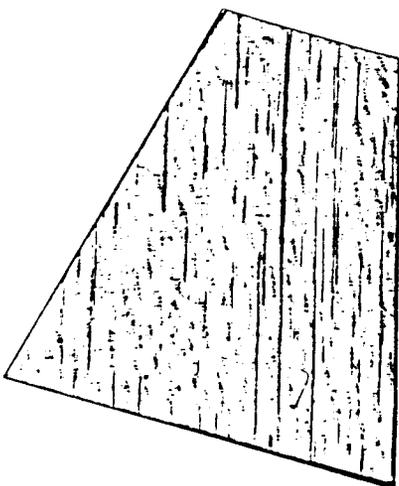
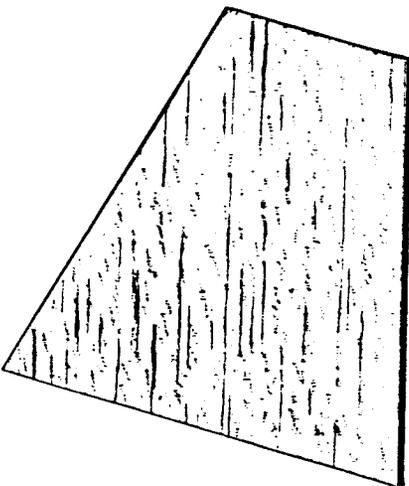
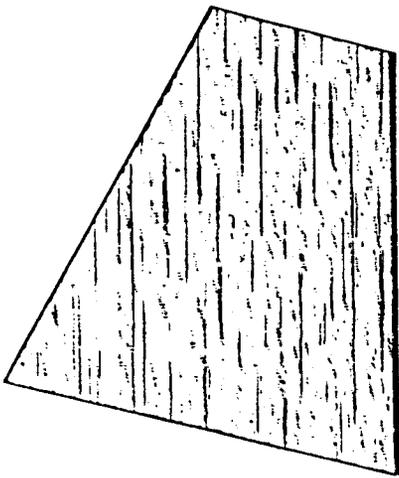
enerjet

M-332



MIKE-RAIN

UNITED STATES



Centuri/Enerjet Nike Ram (KE-1)

Parts list: Sean Lannan (selannan@yahoo.com)

The parts and measurements were taken from the 1972 Enerjet catalogue on the Ninesinger site. With this catalogue, the switch was made from the heavier, thick walled tubes previously used in Centuri's high power line to the standard tubes found in their model rockets. Gone were the Hustler, Lil' Hustler, Jaguar and Scorpion; in were a modified Nike Smoke with 'smoke' payload, the Athena (a modified Orion), a revamped Egg Crate, and yet another incarnation of the Aero Dart. Two new arrivals were the Pterodactyl parasite glider and the Nike Ram, a small three-finned sounding rocket.

- Airframe:** The original kit used a 12.5" piece of ST13 (1.30" i.d., 1.34" o.d.) for the main tube and a 8" piece for the payload. Either Estes BT-56 or Totally Tubulars' T-56 can be used as a direct replacement.
- Motor Mount:** Since both the Enerjet 'E' and 'F' motors were 29mm, the kit was fitted with a 29mm mount. I don't have exact measurements, but judging from the diagram in the plans I would guess that a 5" piece of TT's T-52H should work. You can use a BT-56 coupler to mount the motor tube into the main airframe*.
- Nose Cone:** PNC-132. Clones of this nose cone are available from Mike Jerauld (sp?) at: (<http://www.blastfromthepastrocketry.com/>) or Mike Schmidt at: (<http://moldinoldies.rocketshoppe.com/centuri.htm>).
- Fins:** The fins are the standard 'Nike' type fins used in the Centuri and Enerjet Nike Smoke kits. They were die-cut from 1/8" balsa**. When you print out the pattern, the root edge and fin span should be 2.1".
- Misc:** I have no information on the original launch lug, shock cord, streamer or balsa bulkhead other than the parts listed in the Enerjet catalogue. My best guesses would be:
- Launch Lug: 2" lug
 - Shock Cord: Way too short. Use at least 2' of your favorite material (braided elastic or kevlar).
 - Balsa Bulkhead: 1.5"
 - Streamer: 3" x 4' (This based on a picture in the catalogue of a falling Nike Ram with the streamer folded in half.)

*Personally, I think a 24mm mount might be a better choice. Even with a streamer, getting this one back using a D12 could be a challenge, let alone an Aerotech E15/E30 or any of their 24mm reloads (or the new Estes E9). And if you *really* want to fly it on a F, you can use Aerotech's new 24mm F21.

**You may want to substitute basswood. It's a little more work to sand, but easier to get nice clean facets on the diamond shaped airfoil.

SEL 07/23/02