

BYRONOME

NIKE SMOKE

ATMOSPHERIC SOUNDING ROCKET

FEATURES
REVOLUTIONARY
SMOKING CONE
SYSTEM!

TRY THIS NEW SMOKING PAYLOAD SYSTEM

The Super Nike Smoke is a complete model of a NASA sounding rocket. The NASA rocket was designed to measure wind currents at high altitudes by passing a flame under from its long nose cone. This new step in the current revealed wind direction and speed at various altitudes.

The Forge model Nike Smoke duplicates this operation. Burn the powder pressure for maximum and purge a few powder (PG41-17) - see page 11 from the powder situation to produce a following current behind the rocket as it climbs into the sky. Test it in one year!

SMOKING FEATURES

Length	300"
Diameter	1.54"
Nose length	28 in.
Maximum altitude	27000 ft.

NIKE SMOKE KIT FEATURES

- Direct back fire
- One valve rocket cone
- Complete kit
- Operating "rocket" system
- Prognostic air indicator



Recommended
Forge Model
8247
Complete
instructions

\$5.95

Catalog No. 8247

Engine made in U.S.A. and Canada

Patented by the U.S. Patent Office

Check powder is carefully loaded into the 200-grain measuring cup. Check should be kept 1/2 inch.

Smoking action of the cone is an indication of the blowing direction. Check the air indicator.



Manufactured and sold by
BYRONOME, INC.

BYRONOME

Throughout the past years, over 25 million model rocket launchings have been made — most of them by young men 10 to 25 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.

ENERJET
A SUBSIDIARY OF CENTURI ENGINEERING CO

Nike-Smoke

Catalog No. KE-3

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

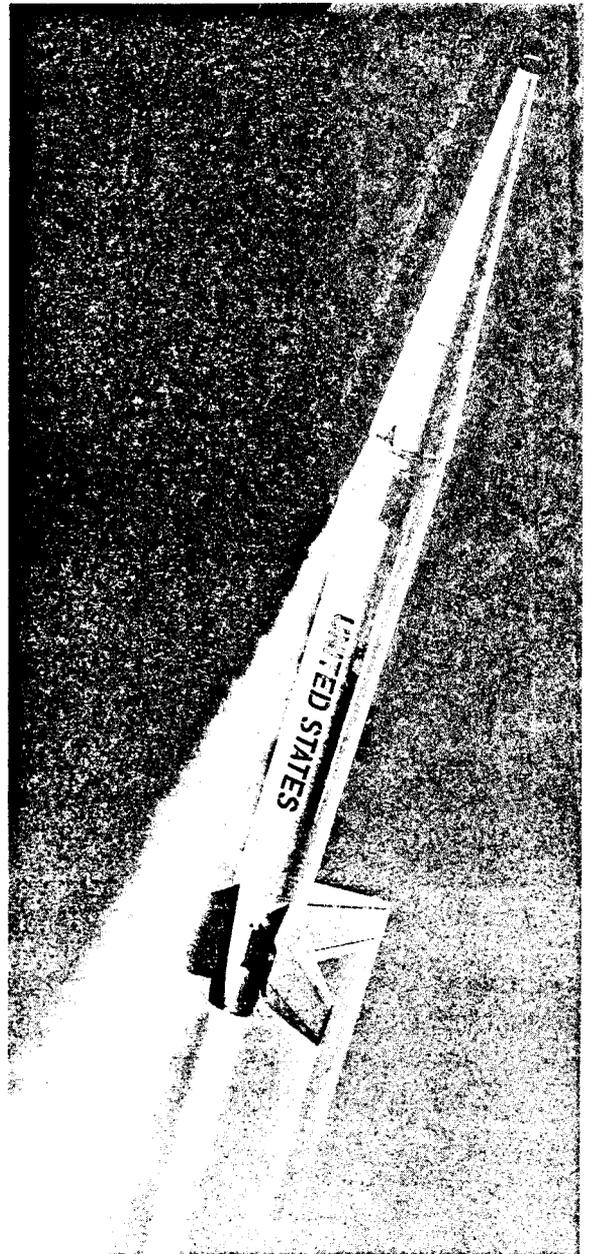
I will not launch rockets so their flight path will carry them against targets on the ground, and will never use an explosive warhead nor a payload that is intended to be flammable. My launching device will always be pointed within 30 degrees of vertical.

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

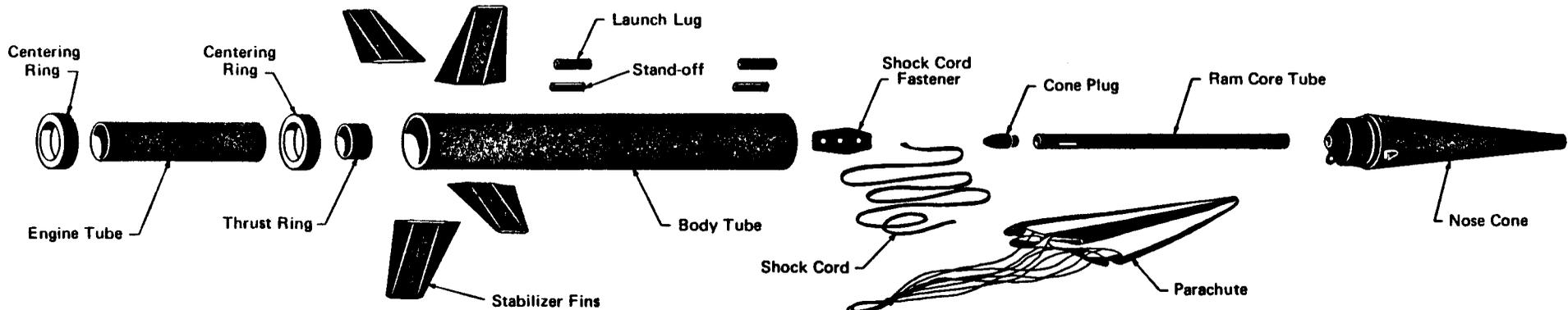
Catalog No. KE-3

Nike-Smoke

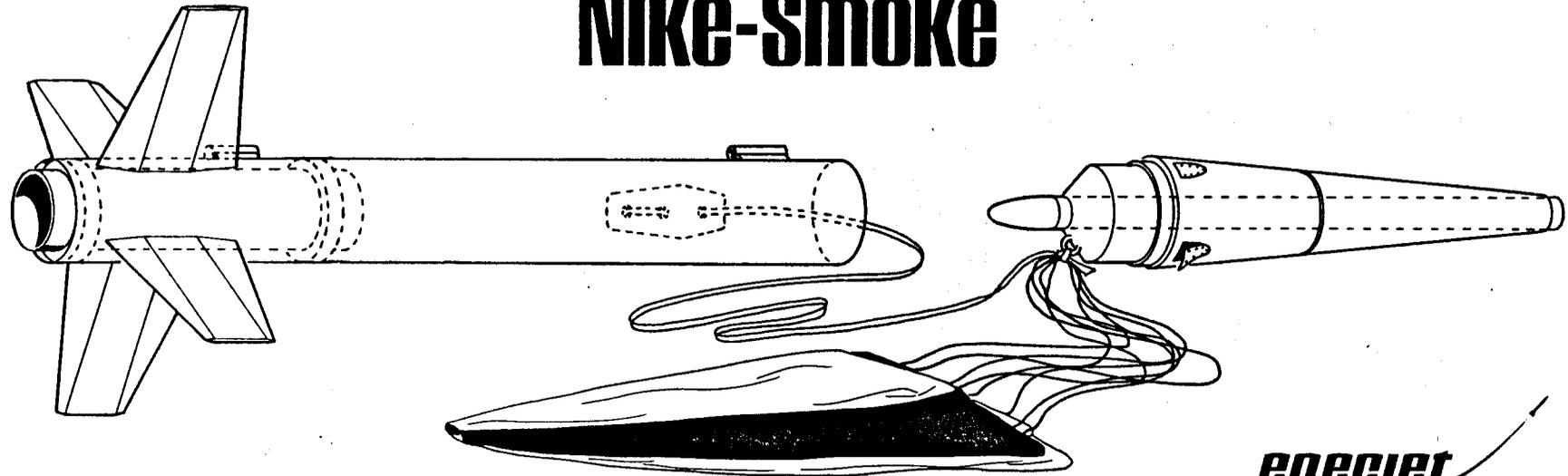
Length	20.6"
Body Diameter	1.64"
Net Weight	3 oz.

Recommended Engines E24-7
(Also F32-8, F67-9, only as specified)

EXPLODED VIEW



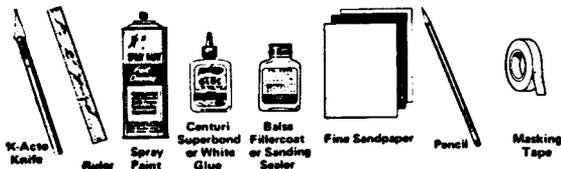
Nike-Smoke



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.

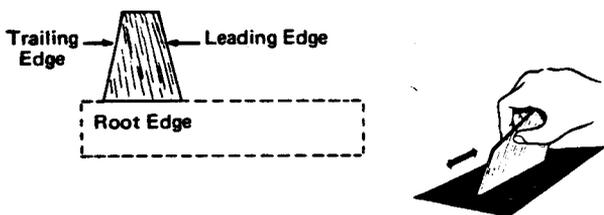
ASSEMBLY INSTRUCTIONS

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.

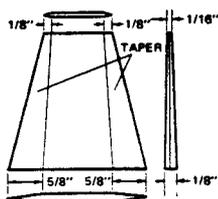


SET THE EXPLODED VIEW NEAR YOU TO REFER TO WHILE ASSEMBLING THE NIKE-SMOKE.

1 Carefully push the die-cut parts from their sheet. Start at one point on the fin and work gently around. Use a knife, if necessary, to avoid ragged edges. Square-up edges by running over fine sandpaper.

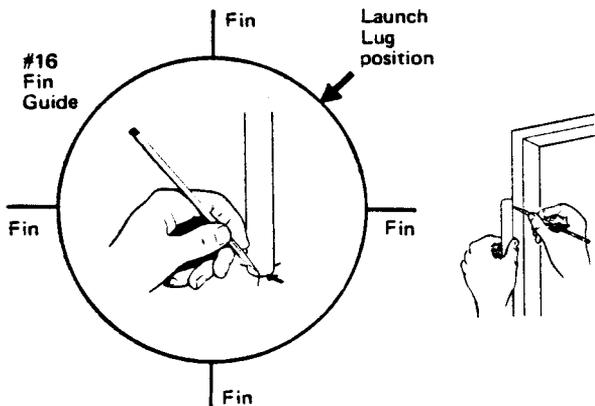


2 Sand and shape the fins according to the configuration shown in the illustrations.



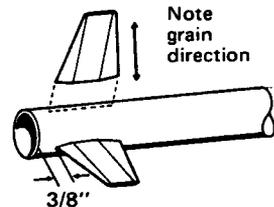
3 Stand body tube on its fin guide and mark each fin position and launch lug position on the tube.

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.

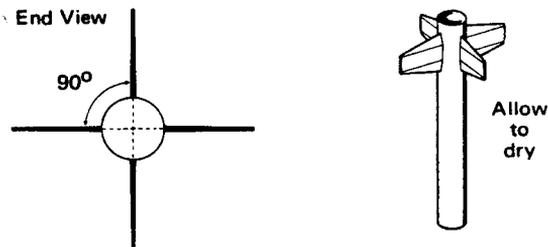


4 One at a time, apply glue to the root edges of the fins. Press in place on the drawn lines. Remove the fin. Repeat with remaining fins. Apply glue to each fin and re-position on the body.

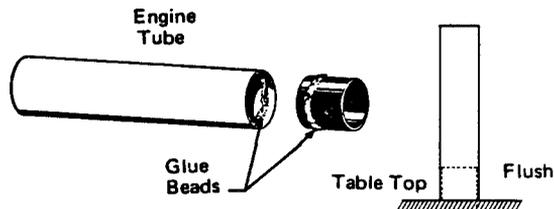
Be sure fins are positioned with leading edges forward and trailing edges 3/8" from rear of tube.



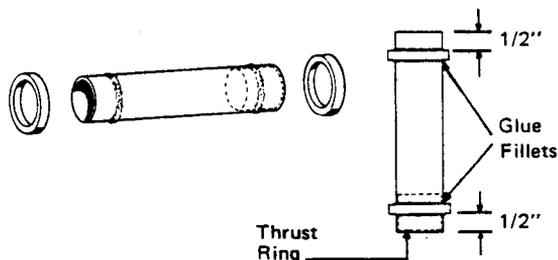
5 Check fin alignment visually by sighting along tube. Imaginary center lines of fins should all converge at center of body tube. Stand assembly upright to dry, but avoid glue sags.



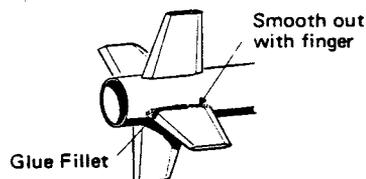
6 Apply a bead of glue inside one end of engine tube and around outside of thrust ring. Push thrust ring into place until flush with end of engine tube.



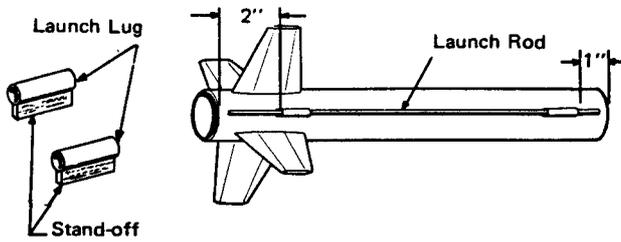
7 The centering rings will be positioned 1/2" from each end of the engine tube. Run beads of glue around the engine tube, and slide the centering rings in place as shown. Apply a bead of glue around both sides of each centering ring. Smooth into a neat fillet with your finger. Set aside to dry, standing engine mount upright.



8 Apply a bead of glue on both sides of each fin-body tube joint and smooth into even fillets with your finger. Lay the tube horizontally and allow glue to dry thoroughly, checking fin alignment again.



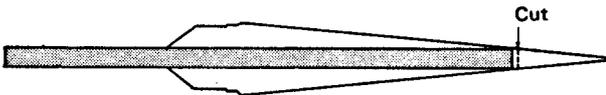
- 9** Cut the 2" launch lug in half and remove the balsa stand-offs from the balsa sheet. After sanding the stand-offs, glue on the launch lugs. Using a launch rod to align launch lugs glue them to body tube along line drawn back in fin guide step. Reinforce with glue fillets.



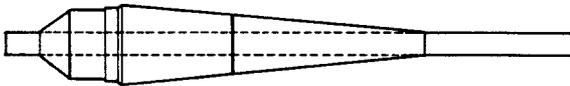
- 10** Use your modeling knife to carefully ream the rear end of nose cone, until the ram core tube fits snugly through it.



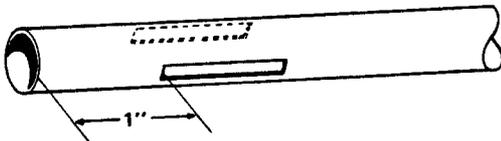
- 11** When the tube can pass through, slide it carefully until it butts up against the cone tip. Hold the cone against a strong light and you will be able to see the core tube inside. Carefully cut off the cone tip 1/8" ahead of the core tube, with a sharp knife or razor saw.



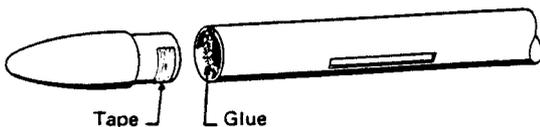
- 12** Ream the forward hole until the tube can slide through without crushing.



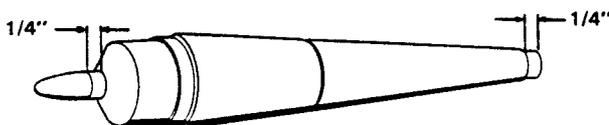
- 13** Remove the core tube and carefully cut two slots (1/8" wide, 1" long) in the base of the core tube about one inch from the rear end. Use a sharp blade, and avoid crushing the tube.



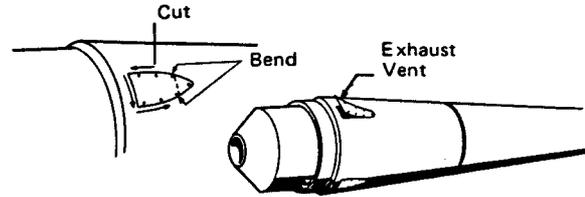
- 14** Apply a small strip of masking tape to the small cone plug's base and glue into rear of core tube.



- 15** Slide the core tube into place, 1/4" protruding from the cone base. Neatly trim off excess at the nose, leaving 1/4" showing. It may be necessary to ream the nose cone a little more for a good fit.



- 16** Use a sharp modeling knife to cut away one of the molded hatches as shown, leaving the plastic flap bent up. The flap will prevent laminar air flow from retarding the flow of "smoke" out of the exhaust vent.



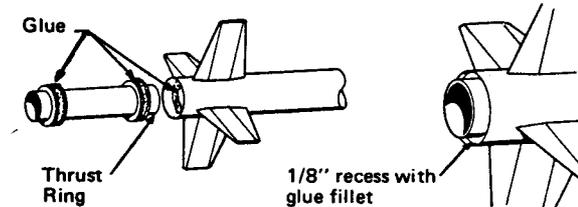
- 17** This is a good time to apply glue fillets to the fins, one last time.

- 18** Peel backing from self-adhesive shock cord fastener. Thread one end of shock cord through holes as shown, taking care not to touch the adhesive backing.

Slip fastener far enough into the body tube to allow clearance for the nose cone base. When positioned, press firmly into place, starting at the bottom and working to the top.

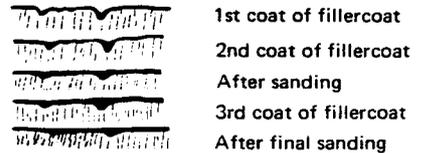


- 19** Run generous beads of glue around the inside rear end of body assembly, and around the outside rim of centering rings. Insert engine mount with firm, even, turning motion until rear centering ring is recessed about 1/8". Apply a glue fillet around recess. Allow to dry standing upright.



- 20** 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 or sanding sealer, allow to dry, and sand with fine sandpaper. Repeat until wood surface is smooth.

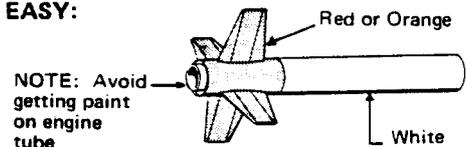


- 21** The one piece, sculptured nose cone of the NIKE-SMOKE ROCKET is a true scale white color. It is molded of a flexible type plastic as a safety feature. Do not paint this nose cone as the special type plastic will not respond to normal painting techniques.

Spray painting your finished 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.

RECOMMENDED COLOR SCHEMES

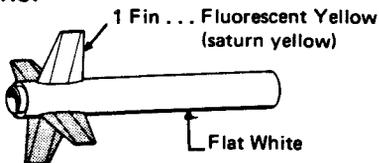
EASY:



NOTE: Avoid getting paint on engine tube

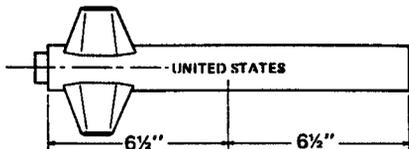
TRUE SCALE COLORS!

3 Fins ... Fluorescent Red-Orange (blaze orange)

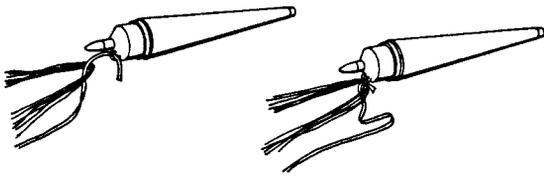


- 22 Apply the decals, one at a time, according to instructions printed on the decal backing paper.

Apply "UNITED STATES" decals on opposite sides of body, centered between fins and centered lengthwise on the body tube.

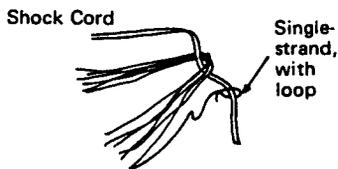


- 23 When decals are dry, attach parachute. Gather the silk chute's shroud lines neatly. Pass the free end of shock cord through gathered shroud lines, through eyelet, and tie a firm knot.



- 24 Here are a few parachute tips:

- A. If your chute has one single-strand shroud line (in addition to the looped ones), simply tie a small loop in the end of the line and pass the shock cord through it.



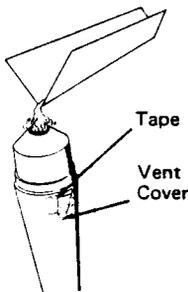
- B. You may wish to incorporate a snap swivel on the shroud lines, to facilitate changing chutes quickly.



PREPARING THE SMOKE SYSTEM FOR FLIGHT

To avoid a mess, we suggest preparing the cone outdoors or over a bathtub as powder is inevitably spilled during the process.

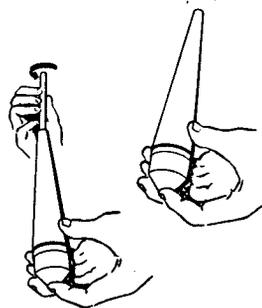
- A. Remove the core tube from the cone. Plug the open nose with kleenex or cotton. Pour "Parachute Powder" (PDR-17) into the cone with a funnel or by sliding it down a paper chute.



- B. Closing the exhaust vent with a band of tape will reduce spilling and messiness.

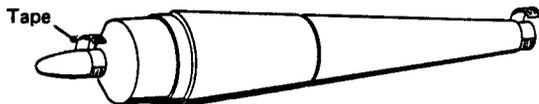
- C. When the cone is 2/3 full, hold your finger over the rear hole and turn the cone right side up.

- D. Remove the wad from the nose and slide the core down through the powder with a rotating motion until the base of the core tube touches your finger.



- E. Push the core through until the base of the core tube projects 1/4" from the cone base. Plug the end of the core tube with the kleenex wad so the powder doesn't spill out during transportation to the launch site.

- F. When cone is loaded, run a few wraps of narrow tape around each end of the protruding core tube to hold it in place.



- G. Remember at the launch site to remove the tape over the exhaust vent and the plug from the nose. The cone operates by ram air pressure, forced in by the movement of the rocket agitating the powder in the cone and forcing it out the exhaust vent, leaving a trail of dense smoke behind the rocket. The faster the rocket goes the better the system works.

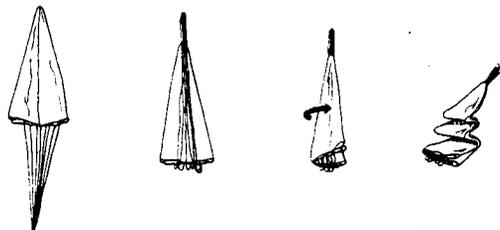
FLIGHT PREPARATION

When all glue joints, paint and decals are dry, and cone is loaded, the Nike-Smoke is ready to be prepped with an engine.

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

Recommended Engine	Approximate Altitude (feet)	Purpose
E24-7	2200	General purpose flying - Medium size launch areas.
F52-8	2800	Experimental flying - Higher altitudes.
F67-9	3600	NOTE: Must have loaded cone or equivalent payload weight for flight stability.

1. Inspect shock cord fastener for firm bond.
2. Insert Flameproof Parachute Wadding according to its directions.
3. Tuck in shock cord.
4. Fold chute as shown below and insert.
5. Socket nose cone in place.

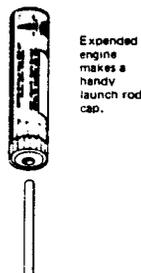


Carefully prepare and check all parts of your rocket before each flight.

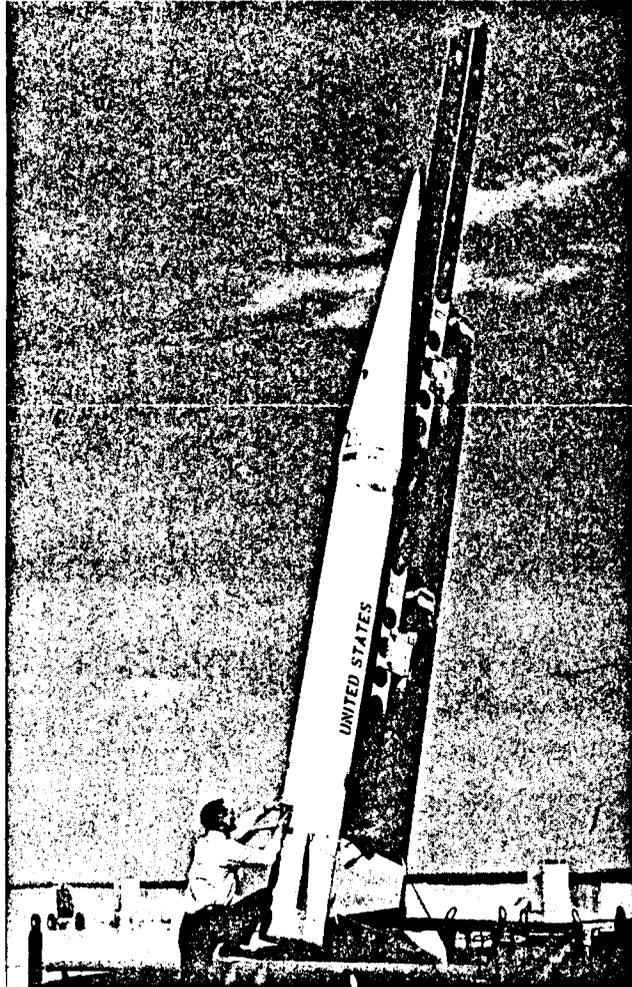
Launch the Nike-Smoke from any standard model rocket launcher having a one-piece 36" long steel launch rod.

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!

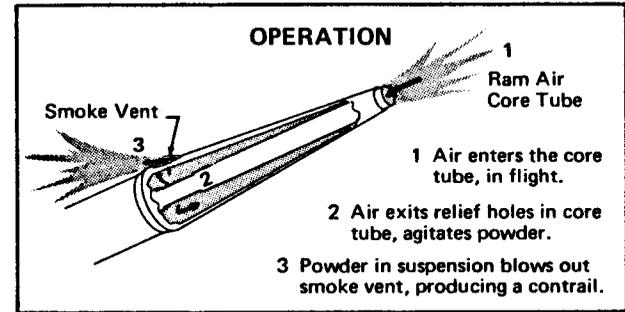


The real Nike-Smoke is a sleek, slim-lined bird used to measure upper atmosphere movements. The "Nike" portion of this "rocketsonde" is a standard M-5 Nike solid propellant booster. The "Smoke" is a stainless steel nose cone that contains payload of 10 gallons of $TiCl_4$. A 1" pipe in the nose tip allows the rushing air to pressurize the payload compartment during thrust. The canister for the $TiCl_4$ is so designed that when the coasting phase of flight begins, the chemical is forced out at a steady rate into the atmosphere. When the $TiCl_4$ combines with the water in the atmosphere, it forms a dense white "smoke" (hydrochloric acid) that is photographed by time lapse cameras situated on a 90° azimuth, 10 miles from the launch site. The resultant photographs give scientists information on velocity and directional movement of wind up to altitudes of 75,000 feet.



Over 100 Nike-Smoke rockets have been launched at Cape Kennedy and Wallops Island, Virginia.

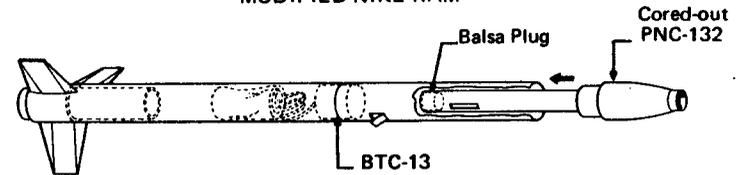
Enerjet's 1/10th semi-scale model kit is a high performance experimental rocket incorporating operating "smoke"-making system similar to its full scale counterpart. While the principles are the same, the hazardous $TiCl_4$ has been replaced by a harmless powder. We suggest using Parachute Powder (available from Enerjet, Inc.), or cornstarch, or talcum powder. Here's how it works:



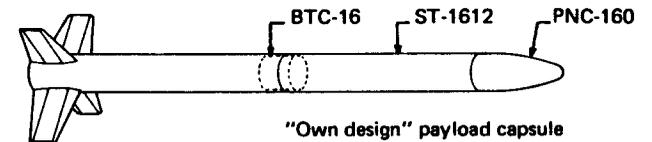
FURTHER EXPERIMENTING

You can adapt the principles of the Nike-Smoke system to payload capsules of all sizes. At supersonic speeds, however, the ram inlet causes turbulence and the rocket may break up.

MODIFIED NIKE-RAM



Your Nike-Smoke can be adapted to payload use easily. The Nike makes a good booster.



The Nike booster can boost camera payloads, too, for spectacular high altitude shots.

It is necessary that the smoke cone be full for each flight, especially if engines heavier than the E24-7 are used. The forward weight is needed for stable flight.

UNITED STATES
UNITED STATES

SUPER-SCALE MODEL BY
Centuri
ENGINEERING COMPANY

Centuri Engineering Co

1/10 SCALE

NIKE-SMOKE DECALS

Cat. No. DC-NS 50¢