





1 MODEL KIT  
Plastic nose cone included  
1 MODEL RESULT  
Maximum of 1200 ft. altitude

- SCALE-LIKE DESIGN
- HIGH ALTITUDE PERFORMANCE
- AUTHENTIC RUSSIAN DECOR
- PLASTIC NOSE CONE
- STREAMER RECOVERY



This SAM-3 model kit is a realistic representation of the SAM-3 Russian SAM-N-D model rocket. It features a plastic nose cone, a central body with a small fin, and a large, multi-faceted base. The kit includes a streamer recovery system, a recovery wad, and a streamer. The rocket is designed to fly to a maximum altitude of 1200 feet.



**Centuri**

FLYING  
MODEL  
ROCKET KIT

Length: 48.225" (1222 mm)  
Body Dia: 1.831" (46.5 mm)  
Weight: 5.00 oz (141.7 g)

RECOMMENDED GRADES

UPPER STAGE: A44  
B44, B45, C47, C49  
BOOSTER: D14

# RUSSIAN ★ SAM-3



The 22 foot long Soviet Sam-3 anti-aircraft missile carries a 132 lb. high explosive warhead about 16 miles. The Sam-3 is a two stage rocket with solid fuel engines. It is launched on land and also from ships, and is used by the following countries: The Soviet Union, Cuba, Czechoslovakia, Egypt, East Germany, Hungary, India, Iraq, Libya, Peru, Poland, Syria, Uganda, Vietnam, and Yugoslavia. "Goa" is the code name given to the Sam-3 by NATO.

**Centuri**® Prod. No. 5355

## 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 15 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

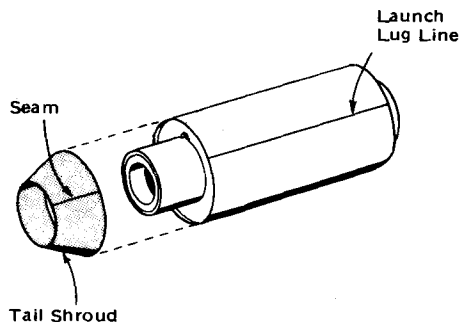
When conducting research activities with unproven designs or methods, I will, when possible, determine their reliability through pre-launch tests. I will conduct launchings of unproven designs in complete isolation from persons not participating in the actual launching.

### FLYING CONDITIONS

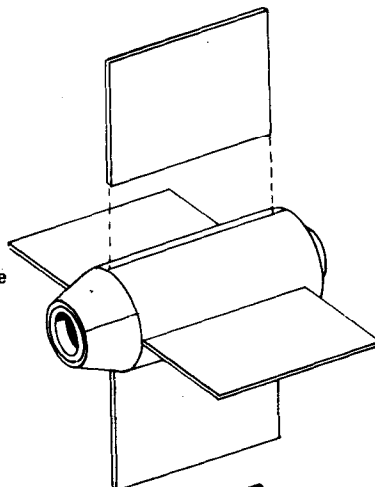
I will not launch my model rocket in high winds, near buildings, power lines, tall trees, low flying aircraft or under any conditions which might be dangerous to people or property.

Centuri Engineering Co., Inc., Phoenix, AZ 85001 Printed in U.S.A.  
Distributed in Canada by: International Games of Canada, Ltd.  
3227 Lenworth Drive, Mississauga, Ontario, Can. L4X 2G8

- 6** Slide the shroud you made in step 4 into position for a test fit. Slide it off again and apply glue to the interior edges of the shroud. Slide back into position and allow to dry. Be sure that the seam in the shroud lines up with the launch lug line you drew in step 2.



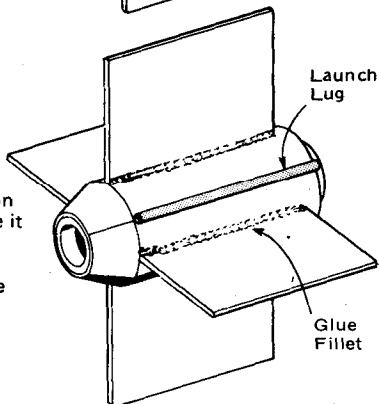
- 7** Apply a line of glue to the root edge of one fin. Place it on the line on the body tube so the rear edge of the fin is even with the rear edge of the tube. Remove fin and allow glue to become tacky. Apply a little more glue and replace fin. Align carefully and allow to dry. Repeat with the other 3 fins.



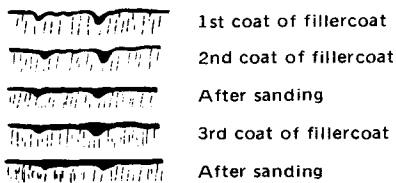
NOTE: Root edge is either of the two longer sides of the fin.

- 8** Glue the launch lug into position on the line drawn for it. Be sure it is aligned properly.

- 9** Carefully fillet all fin/body tube joints and support booster horizontally while glue dries.



- 10** Using a sanding sealer or balsa fillercoat, fill the wood surfaces of your model to obtain a smooth finish. Use several coats and sand between each coat to get a smooth finish.



- 11** 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 dry before applying the next.

When painting plastic parts, never use dope or lacquer! Use enamel only! Dope or lacquer will melt the plastic.

RECOMMENDED COLOR: Pactra "Mud" #20015

FOR A CAMOUFLAGE PATTERN:  
Pactra "Mud" and Pactra "Light Sand" #20002

Be sure to use colors that the white decals will show up against.

## HOW IT WORKS

Your Sam-3 is a "staged" model rocket. It has an upper stage using a standard size engine and a lower stage (or booster) which in this case uses a larger size "D" engine. This Sam-3 may be flown either with or without the lower stage. The electrically ignited engines lift the rocket off the launch pad while the launch rod guides it into a proper flight path. As the Sam-3 climbs skyward, the expended booster unit (if it is used) separates automatically from the upper stage and tumbles gently back to earth. The upper stage goes still higher until its engine's delay charge takes over. It will then coast to peak altitude where the engine's ejection charge ignites, pushing out the nose cone and streamer recovery system. The upper stage then returns gently to earth, and your Sam-3 is ready to be prepared for another exciting flight.

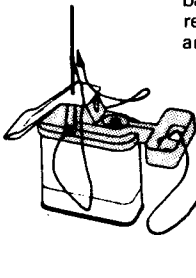
## WHAT IT TAKES TO FLY

You will need engines, igniters, an electrical launch system and parachute wadding to fly your rocket. These supplies are NOT included in individual rocket kits, but are available separately and ARE included in every Centuri Starter Set or Rocket Outfit.



We recommend using Centuri Enerjet engines; each package includes "Sure-Shot II" igniters.

The popular Centuri "Powr Pad" is an ideal basic launch system; compact, highly portable, reliable, and offering features not found in any other launch system.



Always use standard remote-control electrical ignition and follow the engine recommendations. Be sure to comply with any laws that may apply in your area, for the good of model rocketry and for your own enjoyment.

## TOOLS YOU WILL NEED

In addition to the parts supplied, you will need the following tools to assemble and finish this kit (DO NOT use model airplane glue for building model rockets).

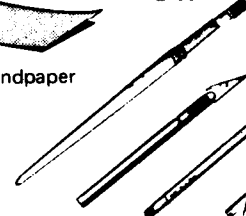


White glue for gluing all fibre and balsa parts.



Fine Sandpaper

Brush

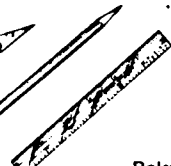


Modeling Knife

Pencil



Pencil



Ruler

Spray Paint



Balsa Fillercoat

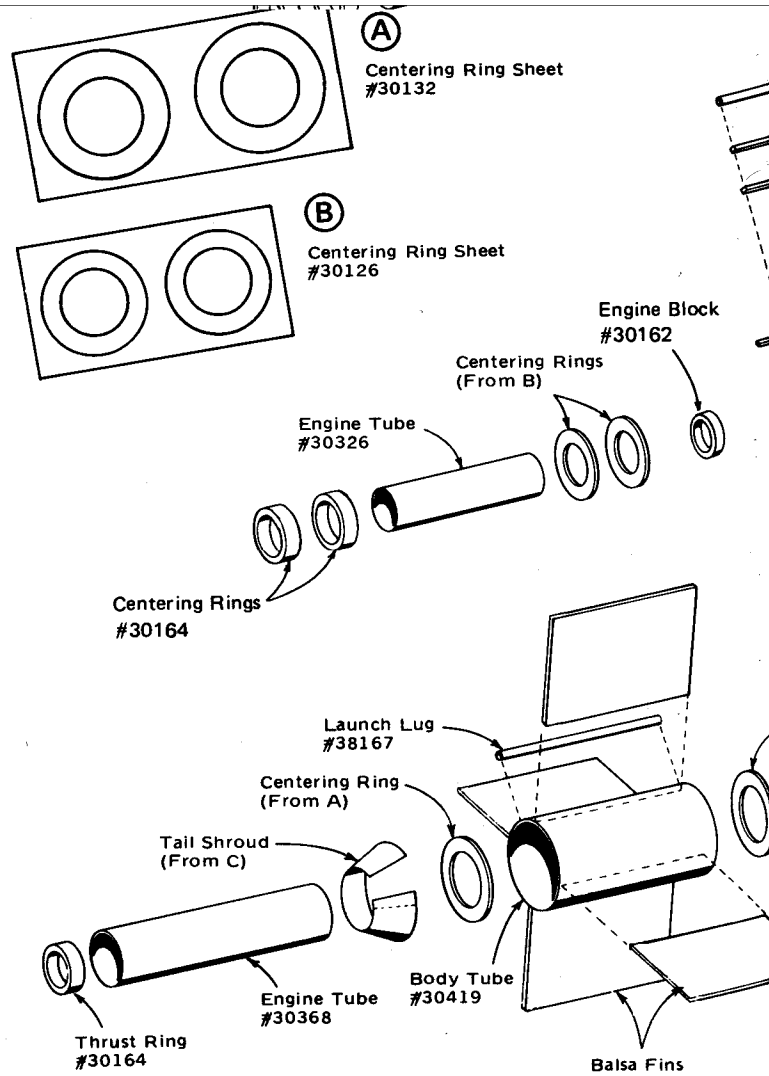
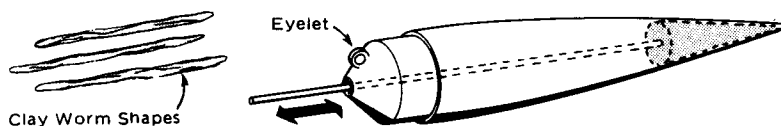


RUSSIAN SAM-3 #5355

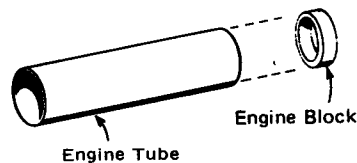
# ASSEMBLY INSTRUCTIONS

You MUST follow these instructions for satisfactory flights. The shape and placement of the model's parts has been carefully engineered for safe flights. DO NOT try to change the design, "customize" it, or leave off any parts.

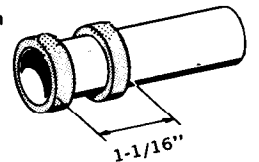
- 1 Clean the flash from the nose cone and nose cone eyelet. Cut a hole in the rear of the cone about 5/16" wide, then insert all the clay in short worm like shapes. Tamp each one into place with a pencil or dowel. Wash the outside of the cone with soap and warm water when done. Set aside to dry.



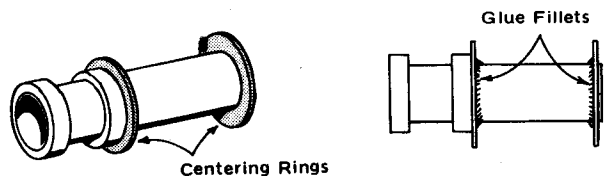
- 2 Locate the 2-3/4" long engine tube and the engine block. Smear some glue around the inside of one end of the engine tube and around the outside of the engine block. Push the engine block into the engine tube until the ends of the engine tube and engine block are flush. Clean off the excess glue outside the tube.

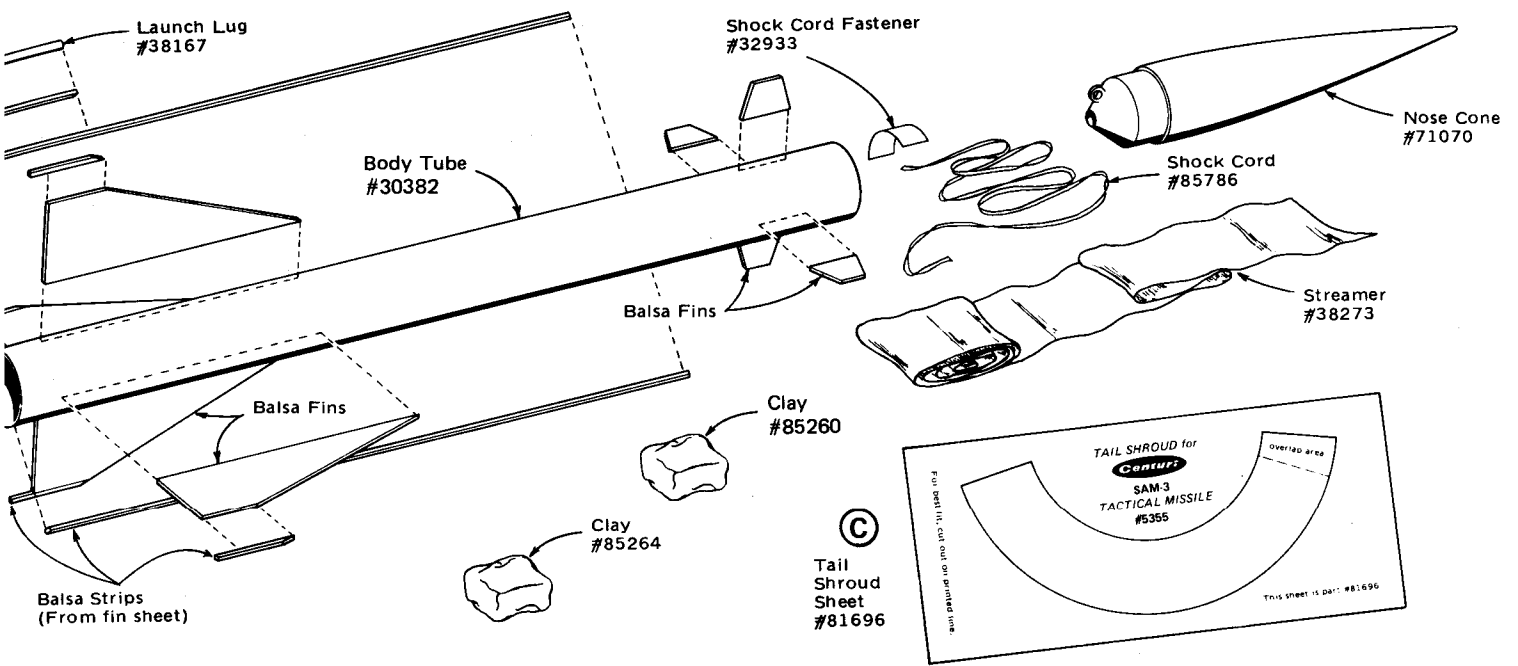


- 3 Locate the two centering rings. Glue them into position on the engine mount unit you just made, as shown. Hold the rings in place (after you have removed any excess glue).



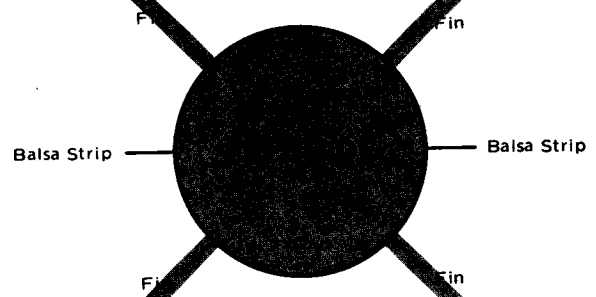
- 4 Find the set of small die-cut rings. After carefully removing them both, glue them into position on the engine mount as shown here. Use enough glue so that you can smooth the excess out into a nice fillet with your finger.



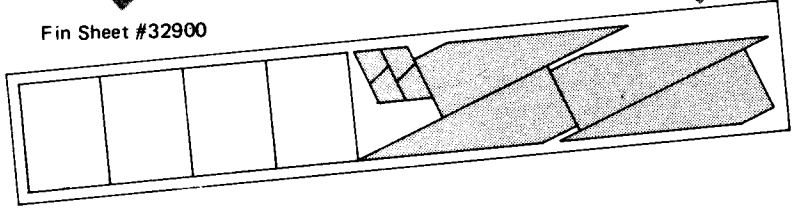


stering Ring  
om A)

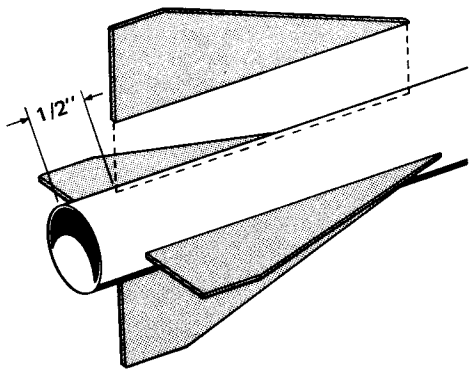
**5** Locate the long main body tube for the upper stage. Place the body tube over the Fin Guide. Mark the body tube with a pencil at each location of the fins and balsa strips. Find a convenient groove or channel such as a partially open drawer or door jamb and extend the marks all the way down the tube.



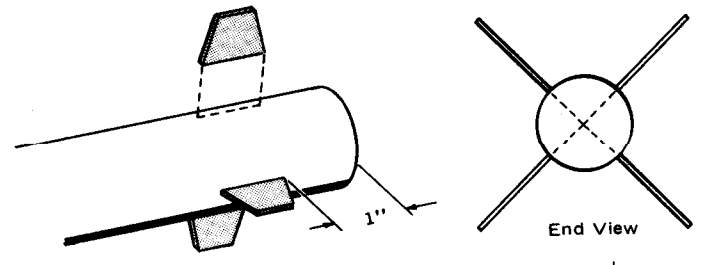
**6** Carefully remove the fins shown shaded here (for the upper stage) from the die-cut balsa sheet. Use a model knife if necessary. Sand the surfaces to remove any rough edges, but sand carefully so as not to change the shape of each fin. Keep the edges nice and square. Save excess balsa for later steps.



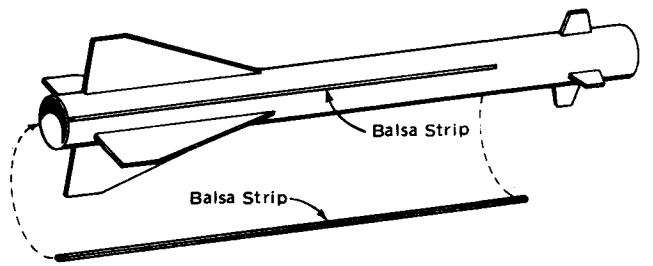
**7** Mark each fin line 1/2" from the end of the body tube. Apply a line of glue to the root edge of one fin. Place it on the line on the body tube so the rear edge of the fin is even with the mark you just made. Remove fin and allow to become tacky. Apply a little more glue and replace fin. Align carefully and allow to dry. Repeat with the other 3 fins.



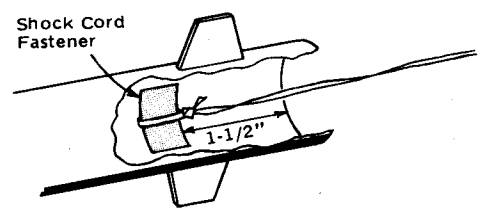
**8** Repeat step 7 on the forward end of the body tube, this time marking the tube on the drawn fin lines 1" from the end. Glue the fins into position as shown. NOTE: All 8 fins should line up with the visual center of the body tube when viewed from the end. Stand this assembly on end to dry.



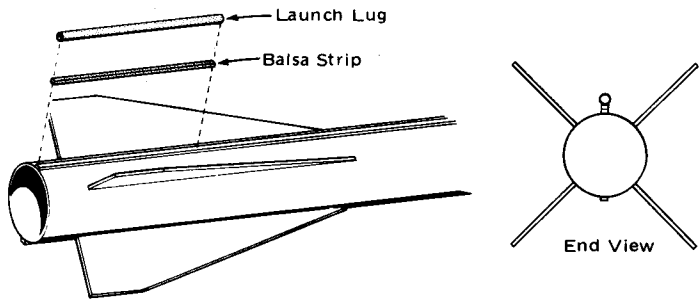
**9** Cut two strips 1/8" wide by 14-3/8" long from the edge (scrap part) of the die-cut fin sheet. Glue these strips into position on the lines drawn for them on the body tube. Wipe away the excess glue and let them dry. Note that the strips are flush with the rear end of the body tube.



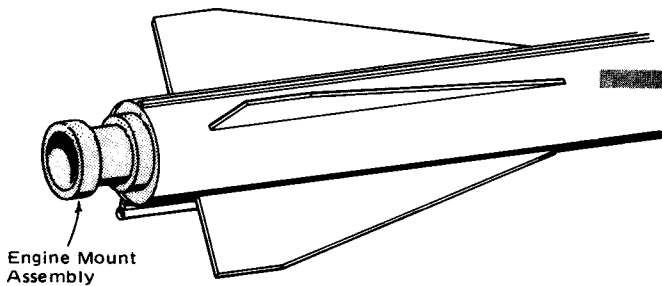
**10** Locate the shock cord and shock cord fastener. Bend the shock cord fastener slightly so it can be glued to the inside wall of the body tube. Tie the shock cord around the fastener and apply glue to one side. Glue it in place inside the body tube, making sure it is at least 1-1/2" below the forward end of the tube. Use your finger to tamp the fastener firmly in place against the wall of the tube. Allow to dry.



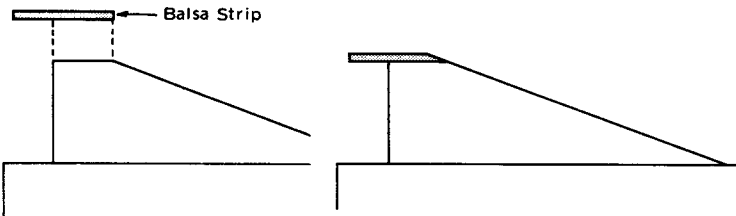
- 11** Cut a strip of scrap balsawood 1/8" wide by 3" in length. Locate one of the launch lugs. Glue this to the scrap strip. Glue this entire assembly to the upper stage fin and body tube unit on either of the strips you glued on in step 9.



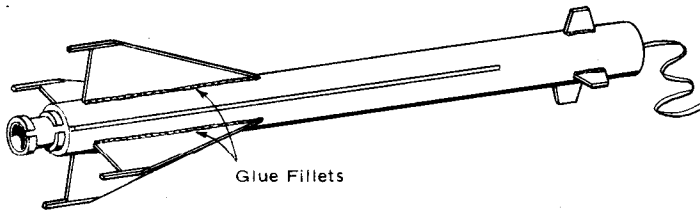
- 12** Test fit the engine mount assembly in the rear of the upper stage assembly. If it is too tight a fit, sand carefully to reduce the diameter of the rings until the unit fits easily but not sloppily into the tube. Apply a bead of glue to the inside of the rear of the upper stage assembly. Push the engine mount assembly into the tube as shown. Note that the die-cut centering ring is recessed 1/16" inside the tube.



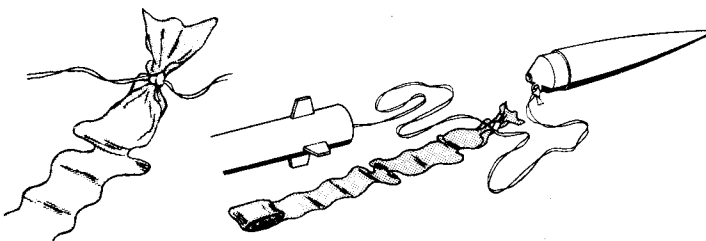
- 13** Cut another strip of scrap balsawood 1/8" wide from the die-cut sheet. Cut from it four 1-1/2" lengths. Glue each of them on the main upper stage fins as shown here. Wipe away excess glue. When they are dry enough, trim or sand them into the shape indicated below.



- 14** Fillet all fin/body tube joints by running a small bead of glue along each joint and then smoothing it out with your finger. Be sure all the fins line up with one another when viewed from either end of the body tube. Set this whole assembly aside to dry horizontally.

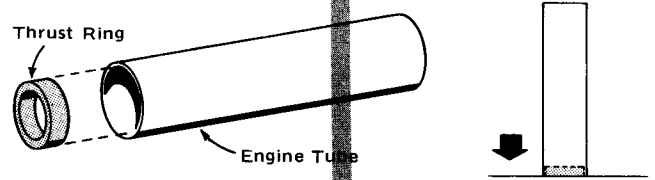


- 15** Attach the recovery streamer to the middle of the shock cord. Make sure streamer is attached securely. Tie the free end of the shock cord to the eyelet on the nose cone. Pack the streamer into the body tube along with the shock cord (see Flight Prepping Instructions) and seat the nose cone.

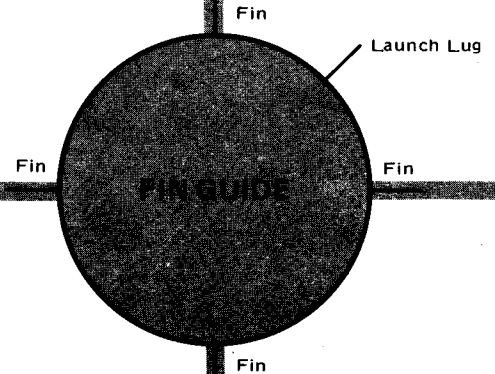


## BOOSTER STAGE ASSEMBLY INSTRUCTIONS

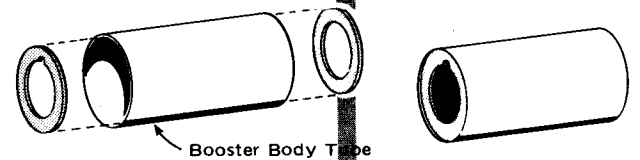
- 1** Locate the 4" long engine tube and large thrust ring. Smear a little glue inside one end of the engine tube. Rub glue around the outside of the ring, then push the tube down over the ring on your flat work surface. Wipe away the excess glue inside the tube.



- 2** Locate the 3" long large diameter body tube. Stand it over the Fin Guide below. Mark the body tube with a pencil at each location of the fins and launch lug. Extend the marks the full length of the tube as explained in step 5 of the upper stage assembly. Be sure to label the launch lug line as such.

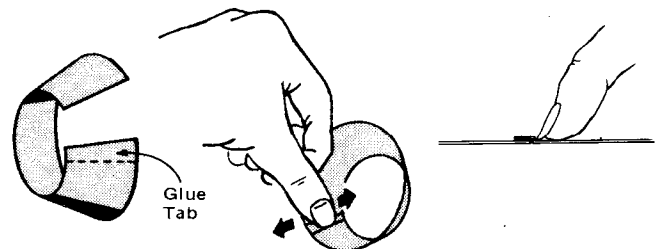


- 3** Carefully remove the two rings from the larger die-cut ring set. Glue each of them just inside the very ends of the 3" long large diameter tube. Apply enough glue so that you can smooth out the excess into smooth fillets with your finger. Allow this assembly to dry.

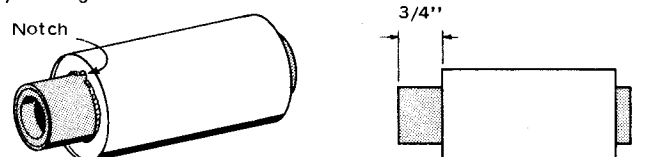


- 4** Carefully remove the paper shroud from the printed sheet by cutting right on the printed lines. Form the shroud by gently rolling it over a round pencil or pulling it over the edge of a table. Apply a small amount of glue to the glue tab portion of the shroud and glue the ends of the shroud together, making sure the tab is on the inside of the shroud.

Turn the shroud over and lay the shroud joint on your work surface. Using your fingernail, smooth the shroud joint so the outside surface is even. Allow it to dry thoroughly.



- 5** Mark the engine tube at a point 3/4" from the end with the thrust ring. Slide this unit into the tube and ring unit you assembled in step 3. Position it as shown here, and be certain that the ring with the notch in it is on the 3/4" mark. Glue these two units together very securely by running a bead of glue around each joint and smoothing it out with your finger.



# FLYING INSTRUCTIONS

## ENGINES:

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

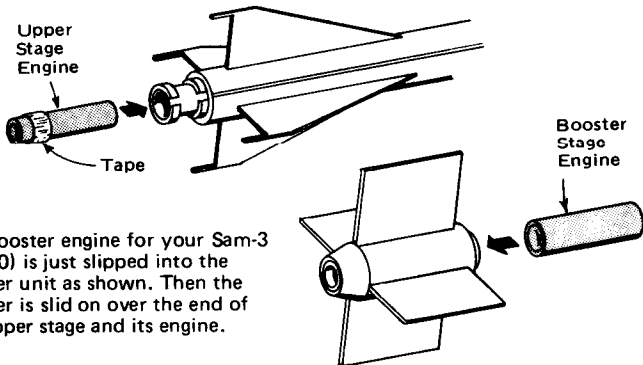
For lower altitude flights, you may fly the upper stage of your Sam-3 by itself, using any of the engines listed under "Upper Stage". You may launch your Sam-3 with any of the listed engines and the D12-0 Booster engine, but be prepared to have someone help you keep an eye on one stage of the rocket while you watch the other stage, so that you do not lose either part of your rocket.

Booster (1st Stage)	Upper Stage (2nd Stage)	Approximate Altitude in feet	Purpose
D12-0 D12-0	A8-3 B4-4	1800 2000	HIGH ALTITUDE— for general flying and large launch areas.
D12-0 D12-0 D12-0	B8-5 C6-7 C5-3S	2200 2300 2400	EXTREMELY HIGH ALTITUDES—and very large launch areas.

Altitudes achieved will depend on engines chosen and on model workmanship. Remember that extremely high flights are usually unable to be "tracked" by inexperienced observers. Do not launch on overcast days as the model may be lost to sight forever.

Engines must be held firmly in place to withstand forward movement while thrusting, and rearward motion during burn-through.

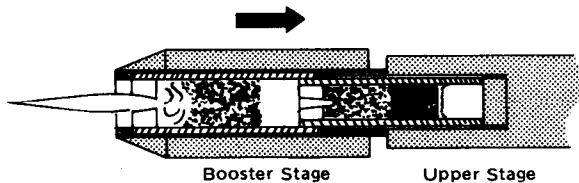
Test-fit the recommended upper stage engine into the upper stage vehicle to see how far up it must go. Remove, wrap engine with masking tape and insert again. Enough tape must be used to insure a firm, tight fit. When properly taped, leave engine in place.



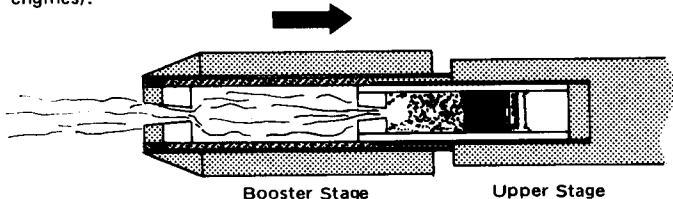
The booster engine for your Sam-3 (D12-0) is just slipped into the booster unit as shown. Then the booster is slid on over the end of the upper stage and its engine.

## AN UNDERSTANDING OF BASIC STAGING PRINCIPLES IS NEEDED TO FLY YOUR SAM-3 SUCCESSFULLY.

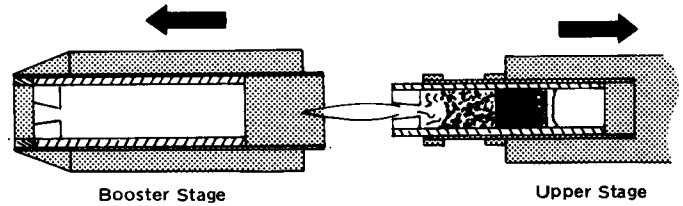
Staging is a concept where one engine's velocity is added to an already existing velocity of another engine. The booster (or 1st stage engine) is ignited by a standard electrical model rocket launch system.



The larger booster engine contains propellant but no delay or ejection material and is designed with a code ending in zero (example: A8-0). As the intense flame burns forward, it breaks through the top of the propellant grain. Hot particles of still-burning propellant shoot forward into the nozzle of the second stage engine, igniting its propellant. (Ordinary flame, such as from a match, will not ignite model rocket engines).



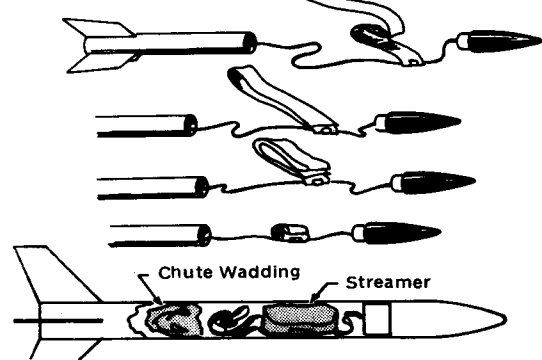
The rapidly expanding gases push the booster away. The booster stage is an aerodynamically unstable body that will tumble safely to earth. Meanwhile, the rocket climbs, the thrust of the upper stage being added to the already existing velocity created by the booster stage. The upper stage contains a recovery system and an engine with the standard configuration of propellant, delay, and ejection material.



## FLIGHT PREPPING:

1. Insert the recommended engines, taping the upperstage engine for a firm, tight fit.
2. Be sure booster type engine is in booster stage and standard type engine is in the second stage.
3. Be sure upper stage engine has its nozzle pointing rearward.
4. Never use a standard engine in a booster stage because this will almost certainly cause a crash.
5. Clean any exhaust residue from coupler area to insure a good fit. NOTE: When fully prepared, stages must couple together smoothly and snugly. IMPORTANT: Fit should be tight enough so that booster stage does not fall out of upper stage by its own weight.
6. Inspect shock cord for firm bond.
7. Insert Centuri crepe recovery wadding into your model. This should be loosely packed and you should use enough to protect your streamer from being burned by the engine's ejection charge. Do not pack too tightly.
8. Tuck in shock cord.
9. Roll streamer neatly and insert. It must be able to slip out easily.

## TYPICAL ROCKET SHOWN HERE

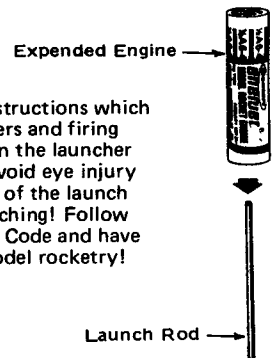


10. Socket nose cone in place. (Apply a piece of thin tape on the nose cone base, if necessary, for a snug fit).

Launch the Sam-3 from any standard model rocket launcher having either a 1/8" or 3/16" diameter X 36" long steel launch rod.

Launch over soft dirt or grassy area to minimize damage to the tumbling booster.

Referring to the specific instructions which accompany Centuri 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! Follow instructions and the Safety Code and have many happy hours with model rocketry!

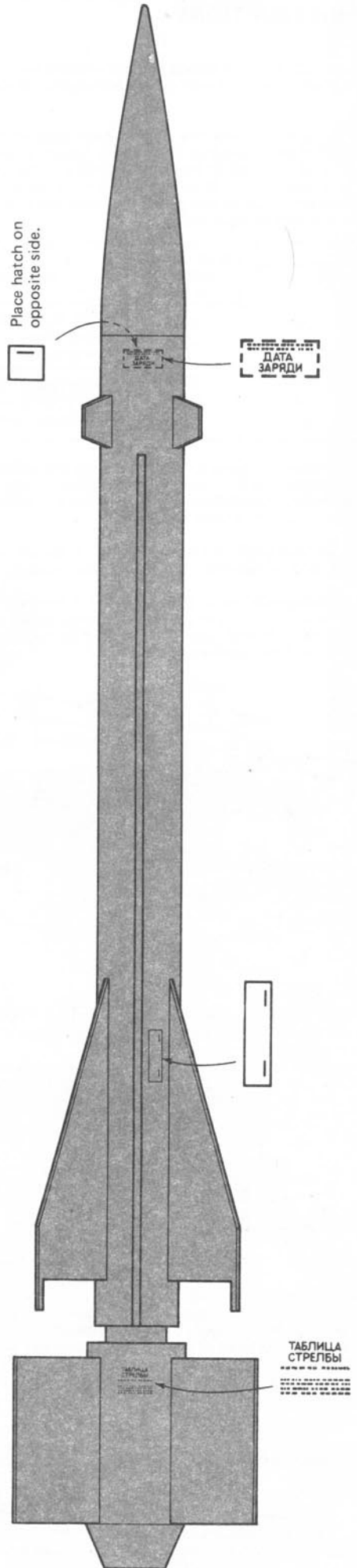
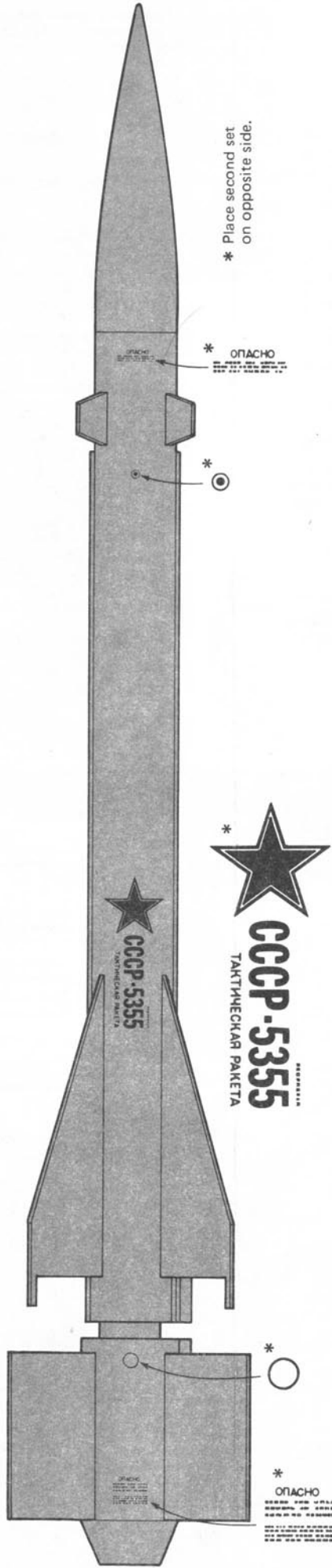


## DECAL PLACEMENT

After the paint is dry apply the decals. Make sure surface is free of oil and dust. Dip decal in water approximately 10 seconds. Hold decal by one end until it uncurls. Have surface wet for easy sliding into position. Slide decal from paper to remove excess adhesive and blot dry with a tissue.



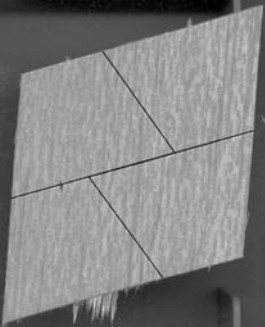
Decal #36873





**x4**





TAIL SHROUD for



SAM-3  
TACTICAL MISSILE

#5355

Overlap area

For best fit, cut out on printed line.

This sheet is part #81696



ТАКТИЧЕСКАЯ РАКЕТА

СССР-5355

УЗНАВАЮЩАЯ



СССР-5355

ТАКТИЧЕСКАЯ РАКЕТА

Decal # 36873

ОПАСНО

ВНИМАНИЕ! НЕЛЬЗЯ ЗАЖИГАТЬ РАКЕТУ ВНЕ ПОЛОЖИТЕЛЬНОГО НАПРАВЛЕНИЯ!

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ТАБЛИЦА СТРЕЛБЫ

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BT-60	Booster tube	3"
Bt-55	Upper Stage tube	18"
BT-50	Booster Motor Tube	4"
BT-20	Upper Motor Tube	2.75"