

# STRIKE FORCE

Dramatically styled flying model rockets of military missiles from around the world.

BOEING A.L.C.M.

## CRUISE MISSILE™

Scaled from the colorful Boeing prototype of the Air launched Cruise Missile.

- Wings fold out for display, in for launch
- Advanced aerospace technology design
- Pre-colored realistic display stand
- 3 types of formed plastic shapes
- Huge 4-color decal sheet
- Official Boeing specs
- Parachute recovery

INTERNATIONAL SERIES

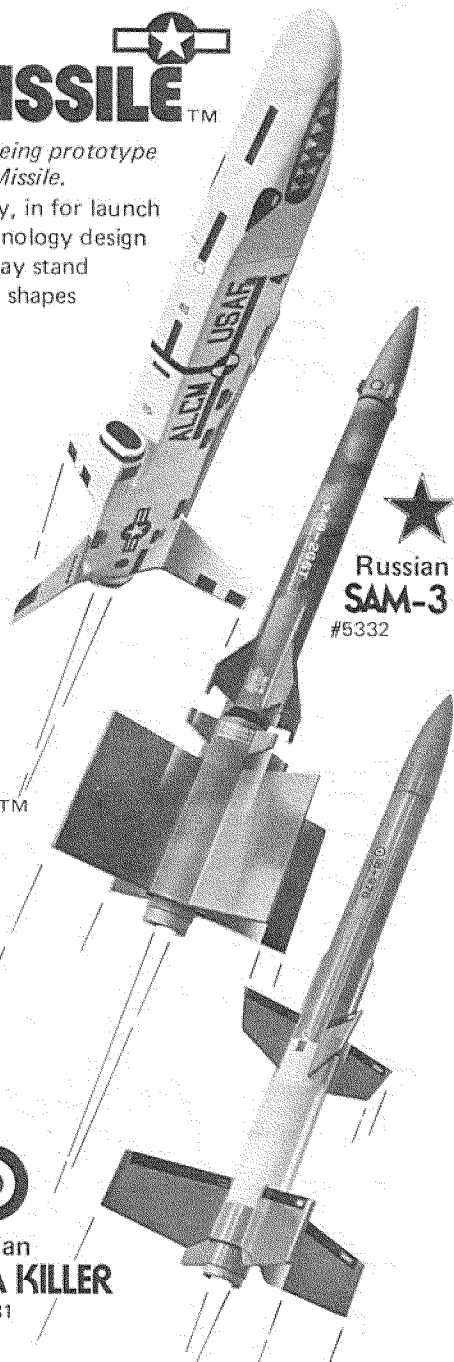
## TACTICAL MISSILES™

- Camouflage chute design
- Single engine reliability
- Multistage appearance
- Flights over 1000 feet
- 14" average length
- Balsa nose cones
- Body detailing
- Military decals
- Pre-cut fins
- Tech data



Italian  
**SEA KILLER**

#5331



Russian  
**SAM-3**  
#5332

Centuri

FROM THE SERIES

STRIKE FORCE

#5333

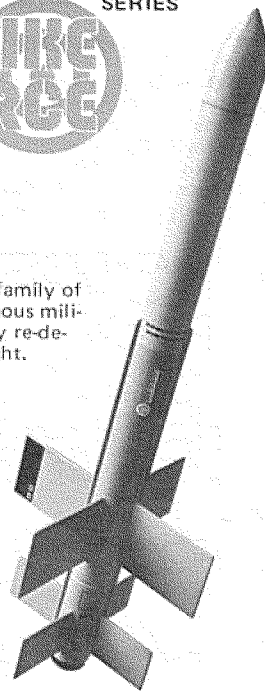
ISRAELI

## Gabriel

The "Strike Force" Tactical Missiles are a family of scale-like model rockets designed after famous military missiles. Each missile has been slightly re-designed for safe and stable model rocket flight.

Real Tactical Missiles are designed for flight at much higher speeds than model rockets fly at. The fin area and placement used on the real missiles are designed to give high performance. Model rockets are much lighter and operate at much lower speeds, so minor modifications have to be made to the fins.

While this kit is not a scale model of the real Tactical Missile, it is designed to look similar to the missile and still fly in a stable manner to many hundreds of feet. The "Strike Force" series of military missiles is the first complete line of weapons in model rocketry. Collect the whole series!



## 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 113.14 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.

CENTURI Engineering Co., Inc., Phoenix, AZ 85001  
Printed in U.S.A. (6/78)

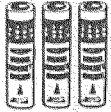
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## HOW IT WORKS

Your Tactical Missile model rocket is designed to fly in the same manner as other model rocket kits. The electrically ignited engine provides the power to boost the rocket to peak altitude. The rocket is guided off the launcher by a launch rod. At peak altitude the engine's ejection charge is activated to eject the parachute. The Tactical Missile returns to earth by parachute, ready for another flight.

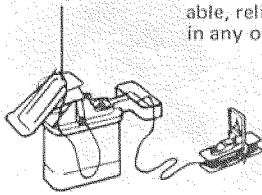
## WHAT IT TAKES TO FLY

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 engines; each package includes the famous "Sure-Shot" igniters, acclaimed as the world's most reliable model rocket igniter.

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 your own enjoyment.

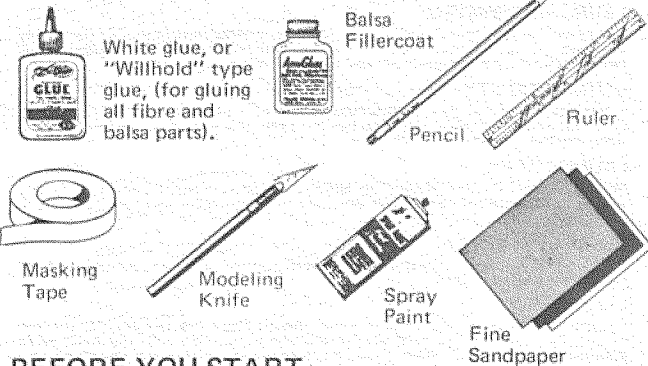
## RIGHT MATERIALS FOR THE JOB

Different model rocket kits are made out of a variety of materials, depending on the needs of each kit. The chart below explains why this particular kit is designed using certain materials.

PART	REQUIREMENTS	MATERIAL
Nose Cone Fins	<ul style="list-style-type: none"> <li>• Light Weight</li> <li>• Strength</li> </ul>	Balsa
Body	<ul style="list-style-type: none"> <li>• Strength</li> <li>• Safe</li> </ul>	Paper

## 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).



## BEFORE YOU START

In case you are new to model rocketry, here are some general tips to get you off to a good start.

- Choose a practical assembly area: well lighted, big enough to work in, and out of the way of relatives or pets who might accidentally mess up your work.
- Cover your worktable with plywood or heavy cardboard to protect the table from glue, paint, cuts, etc.
- Remove the entire contents of your kit package carefully to avoid losing or damaging small parts. Lay them out neatly and identify each by referring to the "exploded view" drawing on this instruction.
- NOTE: Sometimes certain parts are packed INSIDE of other parts, such as tape discs inside parachutes, decals or couplers inside body tubes, etc.

# ASSEMBLY INSTRUCTIONS

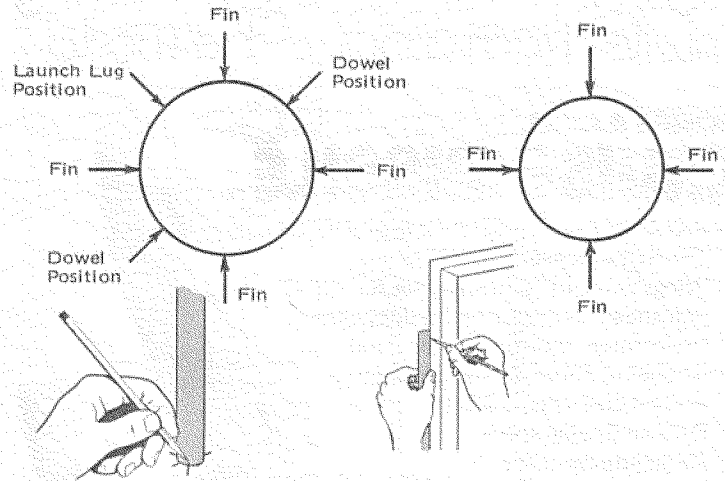
Place the "Exploded View" plan sheet where you can refer to it while following these assembly instructions. Look it over to get familiar with all the parts.

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!

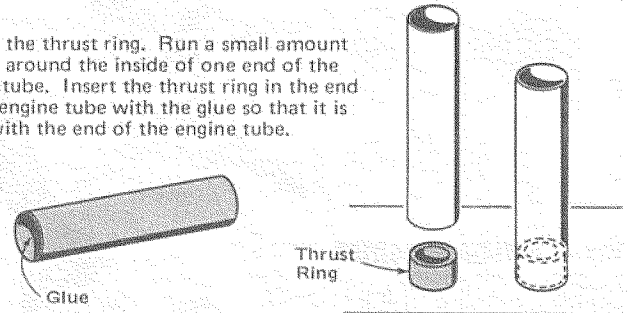
Locate the different flat parts in the pre-cut balsa sheet. Carefully push them out as needed to avoid breaking them. Use a modeling knife, if necessary, to free any partially cut parts.

- 1 To draw the lines for the fin locations, stand the main body tube on the fin guide below and mark the fin positions with a pencil. Repeat for the engine tube.

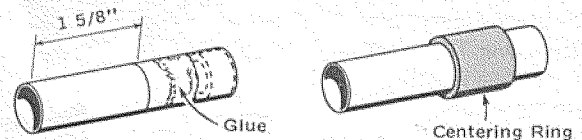
Find a convenient groove or channel such as a door jamb or open drawer. Extend the marks you made the full length of the tubes.



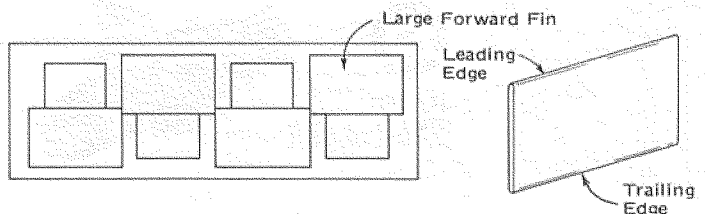
- 2 Locate the thrust ring. Run a small amount of glue around the inside of one end of the engine tube. Insert the thrust ring in the end of the engine tube with the glue so that it is flush with the end of the engine tube.



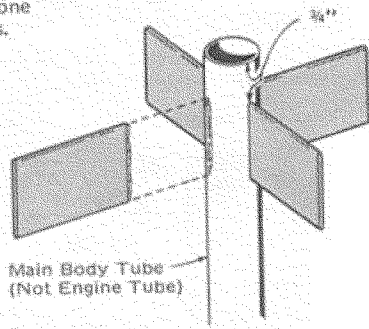
- 3 Locate the large centering ring. Complete assembly of the engine mount by marking the engine tube 1 5/8" from the end without the thrust ring. Apply white glue to the engine tube above the mark and slide the large centering ring in place so the rear edge of the centering ring is even with the mark on the engine tube.



- 4 Carefully remove the large forward fins from the pre-cut balsa sheet. Use a modeling knife to aid in the removal if necessary. Square up the fin edges by running them over a piece of fine sandpaper. Round the leading and trailing edge of each fin. Do not sand the root edge.

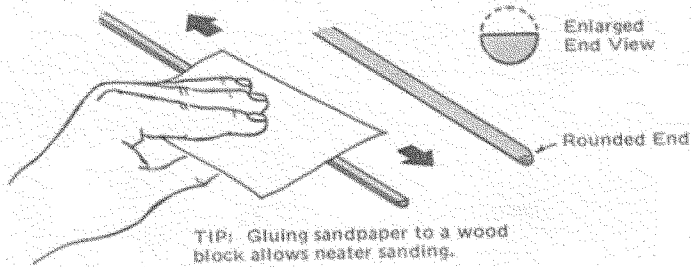


- 5** Mark the main body tube  $\frac{3}{4}$ " from one end on each of the fin location lines. Apply glue to the root edge of one large forward fin and glue it to the body tube so that the rear edge is at the mark you just made. Remove the fin, allow the glue to "set" for a moment, and then apply a small amount of additional glue to the fin. Replace the fin on the body tube and make sure it is aligned pointing straight away from the body tube. Allow to dry. Repeat with the other fins.

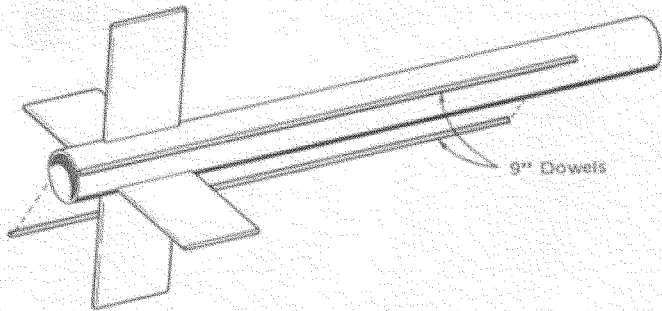


- 6** Assemble the parachute according to the instructions printed on it.

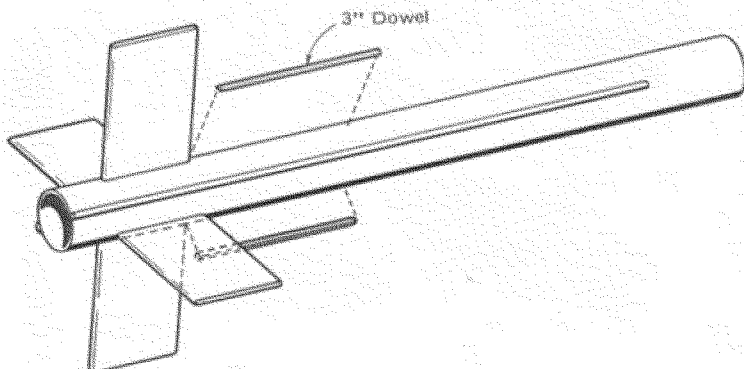
- 7** Locate the 3 dowels in your kit. In order to make the detail for your rocket, sand one side of each dowel flat, so you end up with a half-round dowel. Lay the dowel on your work surface. Pass the sandpaper over the dowel, holding it so only one side of the dowel comes in contact with the sandpaper. Continue this process until the dowel is half round. Round the tips of each dowel.



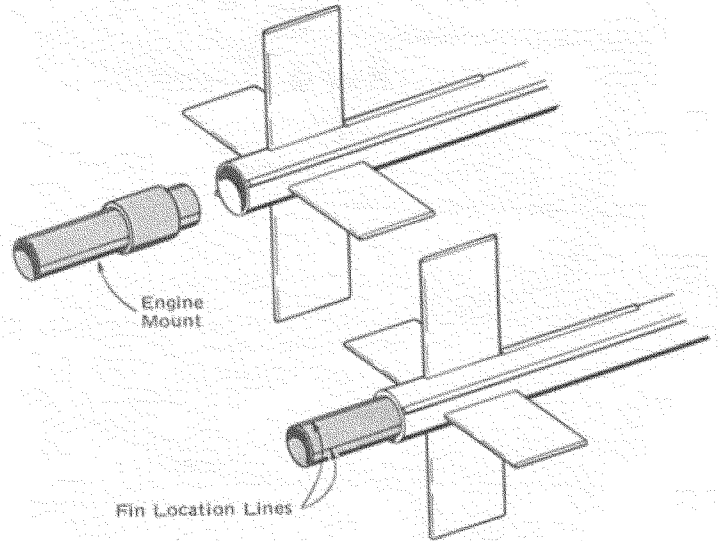
- 8** Glue one of the 9" long dowels between two of the forward fins so that the rear of the dowel is even with the end of the main body tube and so that the dowel is positioned between the two fins. Be sure the dowel is aligned along the length of the body tube. Glue the second 9" dowel on the opposite side of the body tube, aligned the same way.



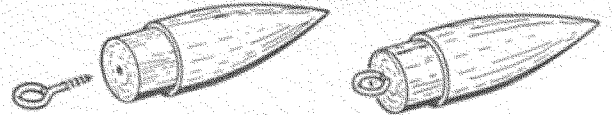
- 9** Cut the remaining 6" long dowel in half. Glue each 3" piece along the fin alignment lines so that the rear edge of the dowels meet the front edge of the large forward fin to the left of each strip glued in the previous step. See diagram. When you have completed this step, you should have four dowels glued to the model: two located between the fins on opposite sides of the model, and two in front of the fins directly to the left of the other dowels.



- 10** When the engine mount is dry, place a generous bead of glue in the end of the body tube. Insert the engine mount, with the thrust ring forward, into the body tube until the rear edge of the centering ring is flush with the end of the body tube. Do not stop during this procedure, as the engine mount may become lodged in the wrong place. Be sure that the fin location lines on the engine mount match the fin location lines on the body tube. Allow this assembly to dry.

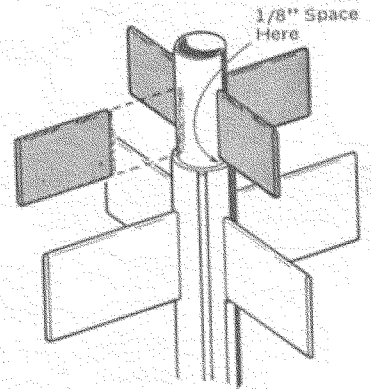


- 11** Locate the screw eye and nose cone. Carefully turn the screw eye into the center of the nose cone base. Remove the screw eye, squirt a small amount of glue into the hole and replace the screw eye.

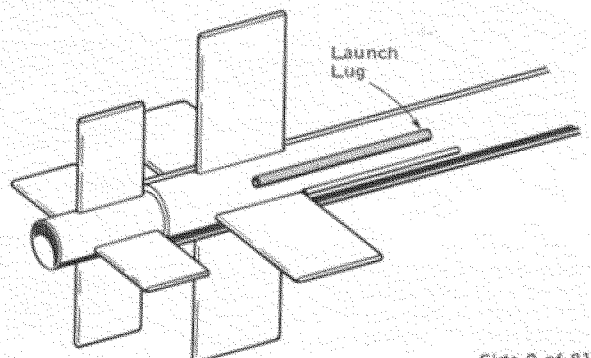


- 12** Carefully remove the smaller lower stage fins from the pre-cut balsa sheet, using the same procedure you used in step 4. Round the leading and trailing edges of each fin. Do not sand the root edge.

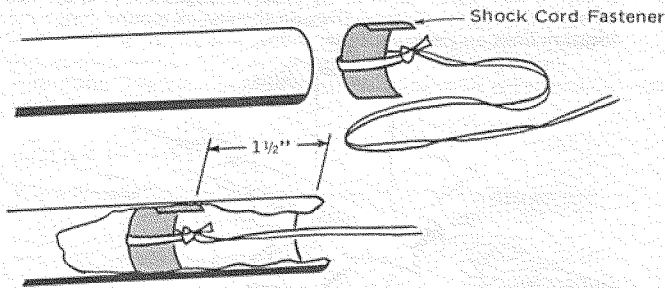
- 13** Using the same procedure used in step 5 to glue the forward fins, glue the four lower stage fins in place so that the forward edge of each fin is  $\frac{1}{8}$ " back from the centering ring and so that the fin is aligned along the location line.



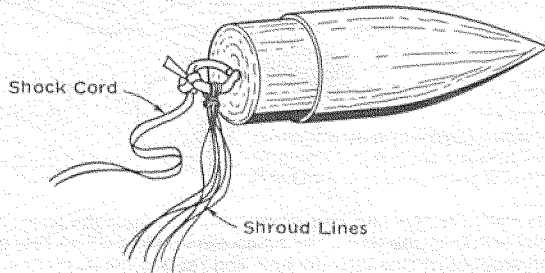
- 14** Glue the launch lug on its alignment line so that the rear is about 1" from the end of the main body tube.



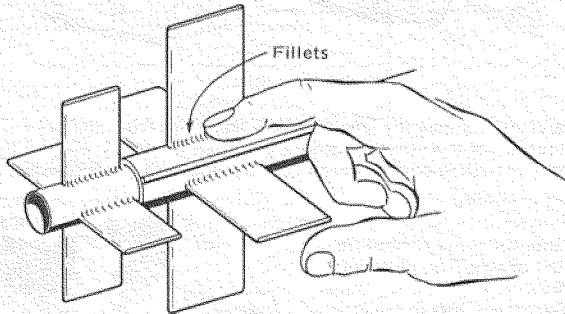
- 15** Locate the shock cord and shock cord fastener. Tie a loop around the shock cord fastener. Bend the fastener into a semi-circle and glue it into the upper end of the main body tube, making sure it is at least 1/2" inside the body tube so that it will not interfere with the nose cone when placed in the body tube.



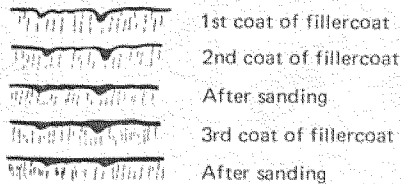
- 16** Tie the free end of the shock cord to the screw eye in the nose cone base. Attach the parachute to the screw eye by running the loops of shroud line through the screw eye and passing the parachute through the loops and then pulling the shroud lines tight.



- 17** After the glue has dried completely, run another bead of glue along both sides of each fin and smooth it into a fillet. Using this procedure fillet each fin joint. Allow to dry.



- 18** Paint all wood surfaces with balsa fillercoat or sanding sealer and allow to dry. Sand lightly with fine sandpaper. Paint and sand again, repeating the process until all the grain is filled.



- 19** 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 of paint. Instead give it a couple of quick, light coats first, then a finish coat. Let each dry before applying the next. Follow the diagram below for proper paint scheme. For best results, spray first with enamel primer. (You can paint your model in either of two ways: simple or challenging. See the table below and the package for color scheme.)

<i>Simple:</i>	<i>Challenging:</i>
Gray	Upper Body—Yellow Lower Body & Fins—Blue

- 20** When all paint has completely dried, apply the decals according to the instructions printed on the decal backing. See package photo for most decal placements. We have added extra decals which can be added to your model at your discretion.

## FLYING INSTRUCTIONS

### ENGINES

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

Your Tactical Missile can be launched with the following engines:

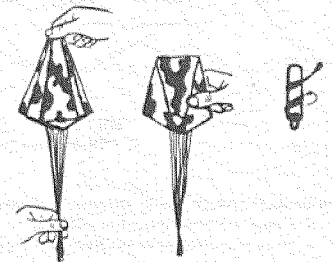
ENGINE	APPROXIMATE ALTITUDE	PURPOSE
1/2 A6-2 A8-5	100-300 feet	LOW ALTITUDE—for first test flight and small fields.
B4-6 B6-6	300-700 feet	MEDIUM ALTITUDES—for general flying and medium sized fields
C6-7	700-1000 feet	HIGH ALTITUDES—for extremely high altitudes and large launch fields.

### FLIGHT PREPPING

Inspect entire recovery system for good condition before each flight. If the recovery system is tangled from the last flight, cut it apart to untangle it.

Insert flameproof chute wadding to protect your parachute from being melted by the engine's ejection charge. We recommend using 3 sheets of Centuri crepe wadding (#5846/SPW-19).

Fold parachutes as shown and tuck neatly into rocket . . . trying to avoid tangles. Chutes should be packed just before flight to avoid them possibly sticking together.



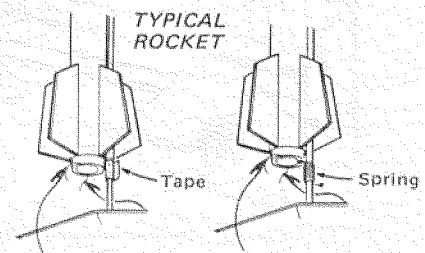
Tuck in shock cord and insert nose cone. The cone should fit snugly, yet be loose enough to eject.

Install igniter into engine, following instructions enclosed with engines.

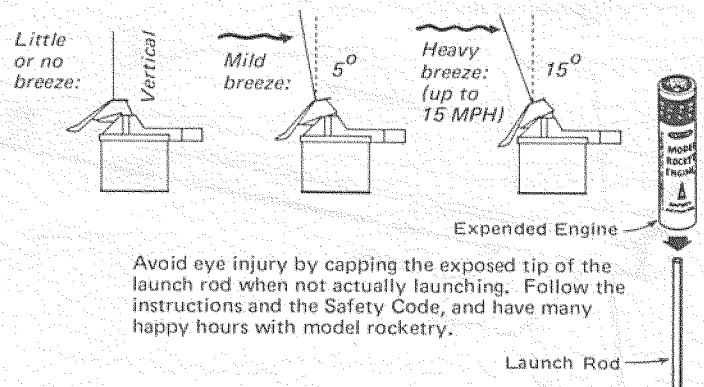
Insert engine into its mount. Wrap masking tape around one end for a tight, secure fit.



Mount the rocket on launcher and prepare for ignition. The rocket must be raised slightly off the launcher's deflector to avoid a short-circuit which might prevent ignition. If your launcher has a "positioning spring" use it as shown. Otherwise just wrap a little tape around the launch rod to support the rocket and the launch lug.



If your launcher has a rod-tilting feature, use it only for launching in breezes . . . normally model rockets are launched straight up. For reliable, impressive flights, never tilt the rod more than 15 degrees when flying your Fighter Kit . . . do not tilt the rod to its maximum angle.



Avoid eye injury by capping the exposed tip of the launch rod when not actually launching. Follow the instructions and the Safety Code, and have many happy hours with model rocketry.



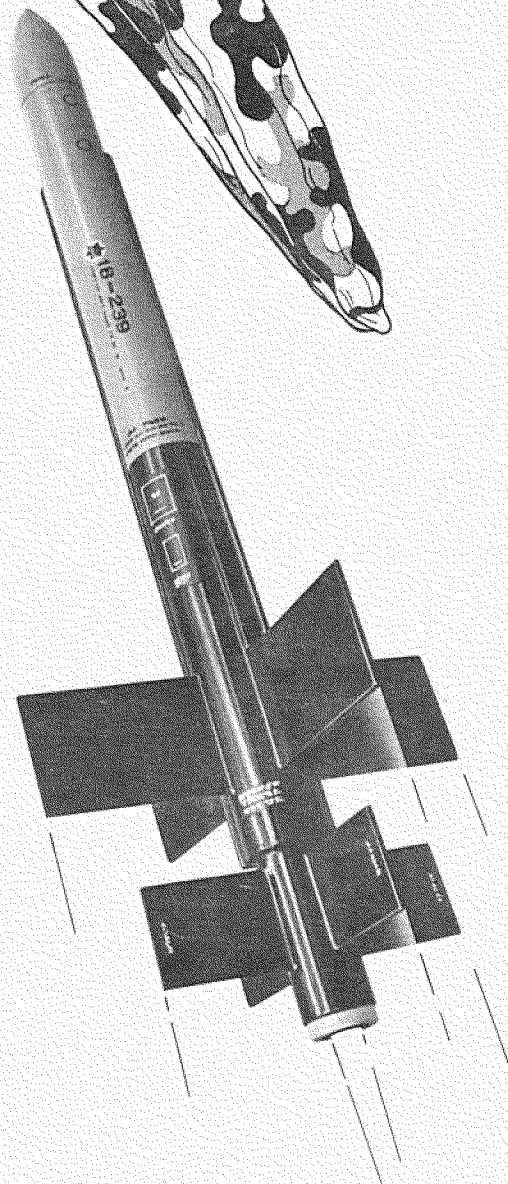
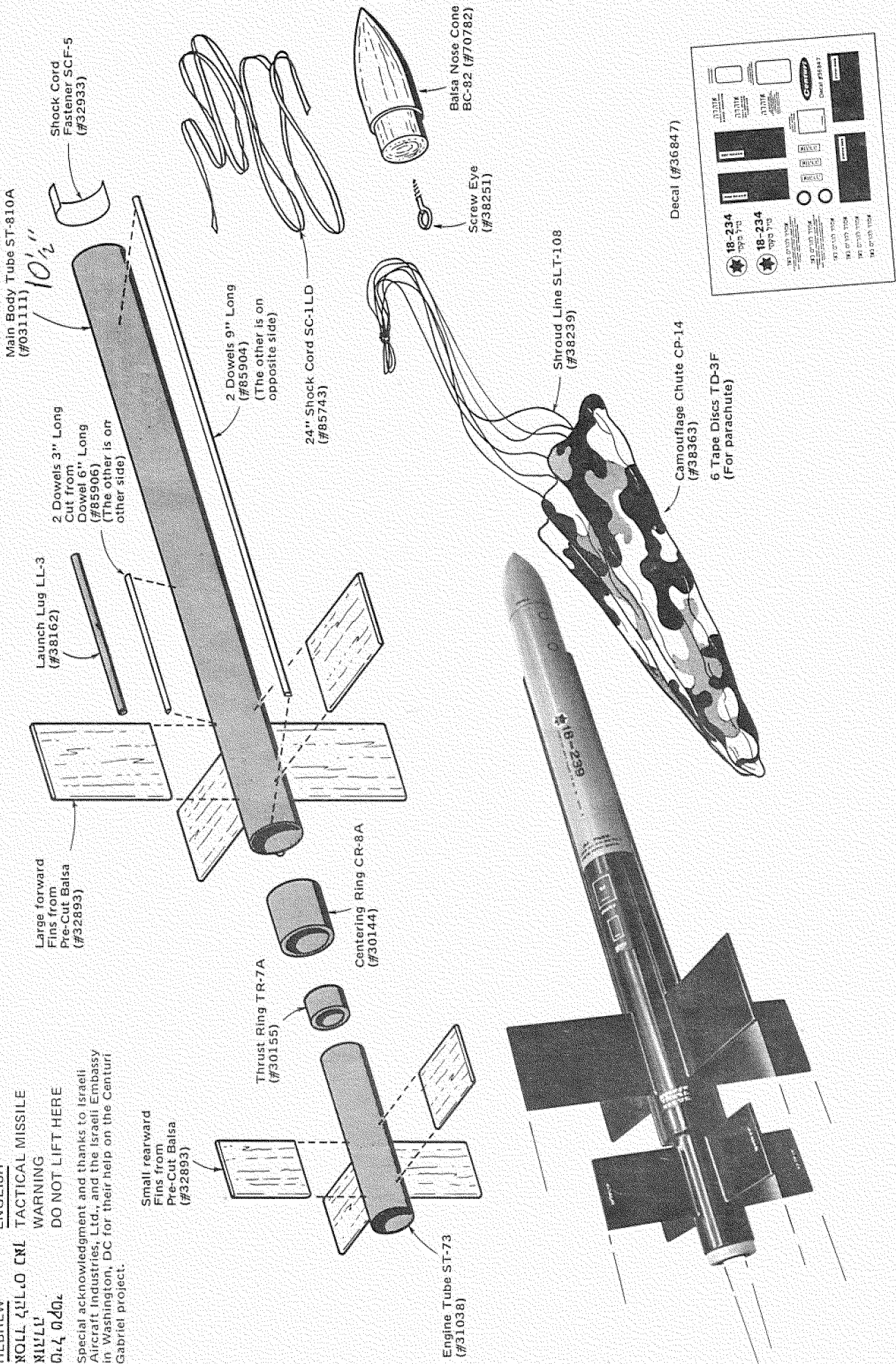
# Israeli GABRIEL Exploded View

(Side 2 of 81613)

## TRANSLATION OF MISSILE MARKINGS

HEBREW: מילון צבאי  
 ENGLISH: MILITARY GLOSSARY  
 מילון צבאי: מילון המילים המבצעיות  
 ENGLISH: MILITARY GLOSSARY: Military Terms Dictionary  
 מילון צבאי: מילון המילים המבצעיות  
 ENGLISH: MILITARY GLOSSARY: Military Terms Dictionary

Special acknowledgment and thanks to Israeli Aircraft Industries, Ltd., and the Israeli Embassy in Washington, DC for their help on the Centuri Gabriel project.



**Century**  
**Data Sheet**  
ISRAELI  
**Gabriel**  
SCALE DATA  
ON THE REAL  
MISSILE

Israel's Gabriel sea launched ship to ship missile is representative of that country's military growth following the 1967 Arab-Israeli War. Incidents such as the sinking of the Israeli destroyer Eilat by the missile-equipped Egyptian vessel Osa in 1967 prompted the Israelis to develop their own missile system for sea use.

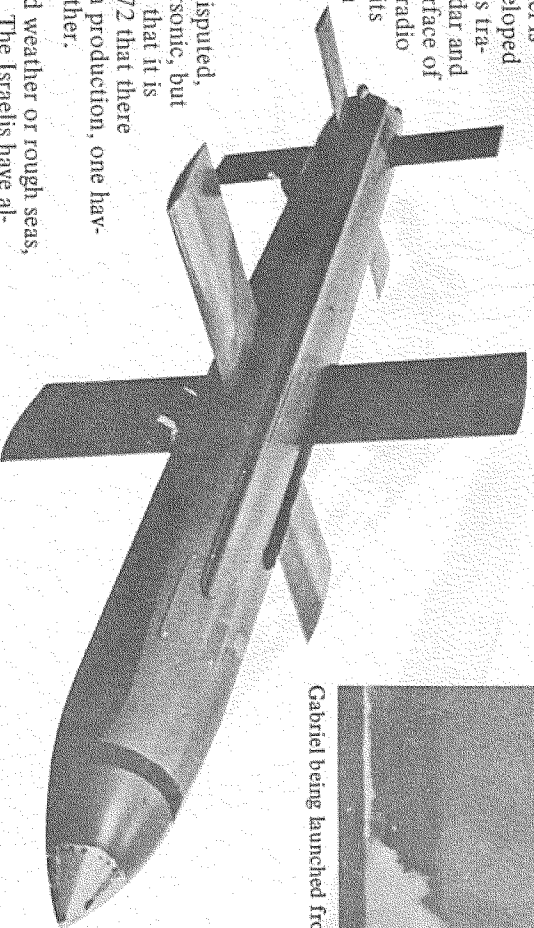
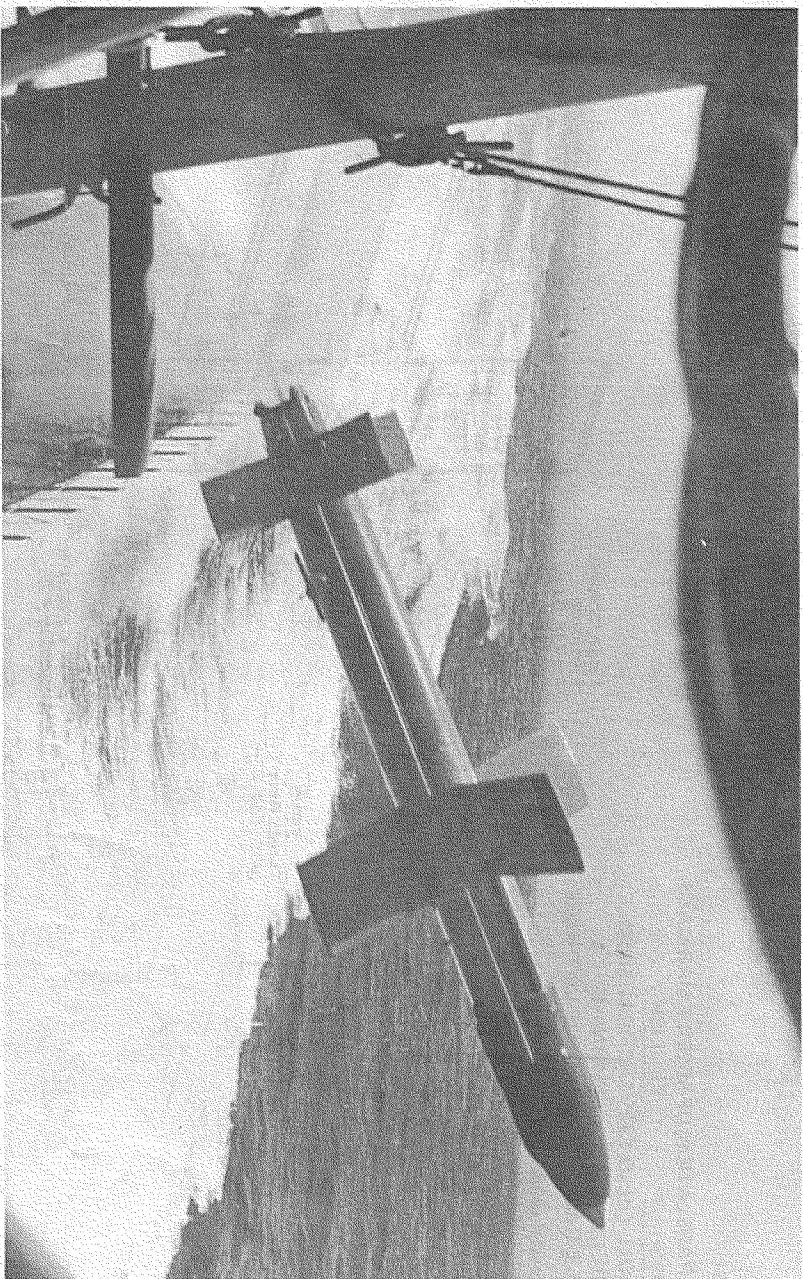
Developed during the late 1960's and operational in the 1970's, the Gabriel is a sea-skimming missile, designed to approach other sea targets at very low altitudes in order to avoid radar. The missile is currently deployed aboard Israel's fast patrol boats.

The Gabriel is delivered inside a glass-fibre container which serves as a launching rail and is simply installed aboard ship-board mountings, with no additional adjustments needed. The fibreglass containers also contain a hydraulically operated container door. The missile is pre-adjusted and tested and requires no further tests or adjustments after installation. The standard launcher carries three missile cells on a rotatable pedestal, but single, possibly fixed cells also exist. Power is a two-stage solid rocket motor.

The guidance system for the Gabriel is carried by the missile and was developed in Israel. Over the major part of its trajectory, the missile is guided by radar and maintains its altitude above the surface of the sea by means of an automatic radio altimeter. When the missile nears its target, the missile's homing system takes over, guiding the missile to its target. The maximum range of the Gabriel is 12.6 miles (20km).

Gabriel's cruising speed has been disputed, some reports saying that it is supersonic, but on balance it seems more probable that it is subsonic. It was announced in 1972 that there were two versions of the Gabriel in production, one having nearly twice the range of the other.

The Gabriel can be launched in bad weather or rough seas, making it a most versatile weapon. The Israelis have already received orders for the missile from several other countries. The versatility and range of the Gabriel make it a valuable part of the Israeli military force.



Gabriel being launched from Israeli patrol boat.



**Type:** Shipborne surface-to-surface  
**Configuration:** Cylindrical body with pointed nose. Rectangular cruciform wings near mid-length, and similar, but smaller, tail surfaces  
**Length:** 11 ft (3.35m)  
**Diameter:** 12.8 in (32.5cm)  
**Span (Max):** 4 ft 6½ in (138cm)  
**Weight:** 882 lb (400kg)  
**Propulsion:** Two-stage solid  
**Range:** 14 miles (22km) Long-range version reported with maximum of 25 miles (41 km)  
**Guidance:** Autopilot plus radio altimeter cruise phase, possible with a command element from the launch vessel, and self-contained terminal homing.  
**Warhead:** High explosive 150 or 180kg  
**Main Contractor(s):** Israel Aircraft Industries, Ltd.

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