
MARINES

FLYING INSTRUCTIONS

ENGINES

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

Your "Bulldog" rocket can be launched with the following engines:

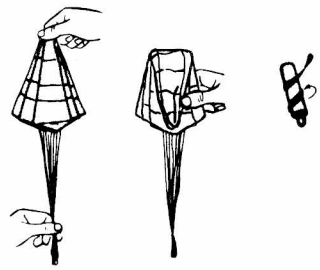
ENGINE	APPROXIMATE ALTITUDE	PURPOSE
B6-4 B8-5	150–300 feet	LOW ALTITUDE–for first test flight and small fields.
C6-5 C5-3S	400–500 feet	MEDIUM ALTITUDES–for general flying and medium sized fields.

FLIGHT PREPPING

1. 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 and repair.

2. Insert flameproof chute wadding to protect your parachute from being melted by the engine's ejection charge. We recommend using 5-6 sheets of Centuri crepe wadding (#5846 SPW-19).

3. Fold parachute as shown and tuck neatly into rocket . . . try to avoid tangles. Chute should be packed just before flight to avoid the possibility of it sticking together.

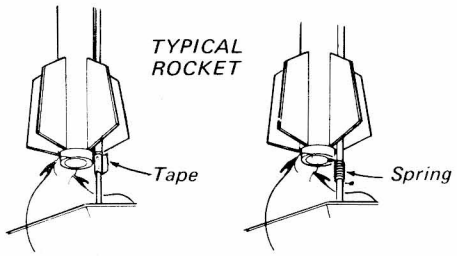


4. Tuck in shock cord and insert nose cone. The cone should fit snugly, yet be loose enough to eject.

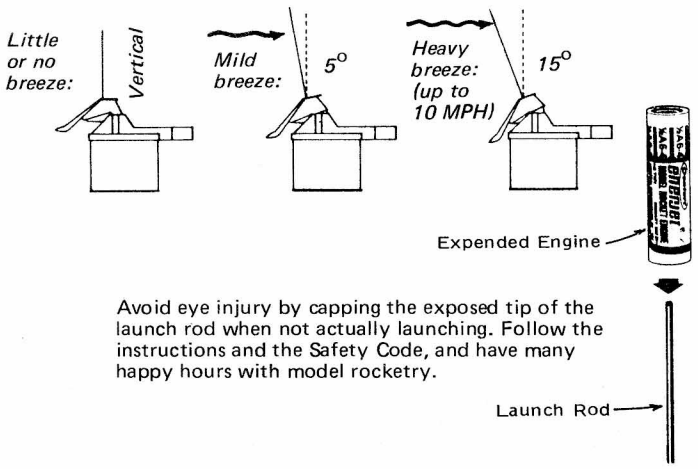
5. Install igniter into engine, following instructions enclosed with engines.

6. Insert engine into its mount, securing with engine lock.

7. 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 at the launch lug.



8. 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 rocket 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.

Centuri Prod. No. 5354

BULLDOG

The real version of your near-scale AGM 83-A Bulldog weighs 600 lb. and has a range of about 7½ miles. It is a Laser Guided Missile and relatively inexpensive since it was designed to make maximum use of existing hardware and technology. The Bulldog was developed for the Marine Corp (for close air support) by the U.S. Naval Weapons Centre, China Lake, California.

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.

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#81692

HOW IT WORKS

Your "Bulldog" model rocket is designed to fly in the same manner as most model rocket kits. The electrically ignited engine boosts the rocket off the launch pad, guiding it into proper flight by the launch rod. The rocket continues coasting to peak altitude while the engine's delay charge operates. Then the ejection charge ignites, pushing out the nose cone and parachute system. Your rocket drifts to earth ready to be prepared 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.

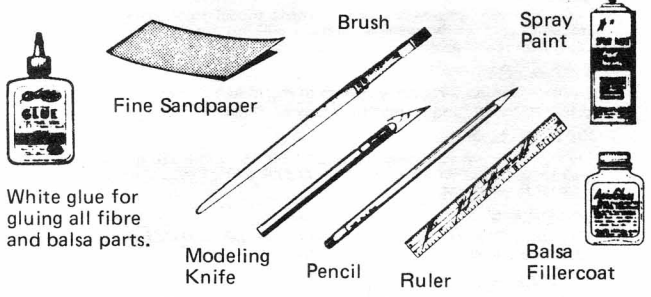
We recommend using Centuri Enerjet engines; each package includes "Sure-Shot II" igniters.

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

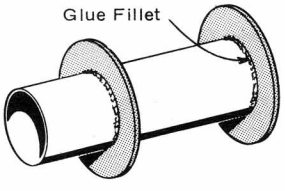
In addition to the parts supplied, you will need the following tools to assemble and finsih this kit (DO NOT use model airplane glue for building model rockets).

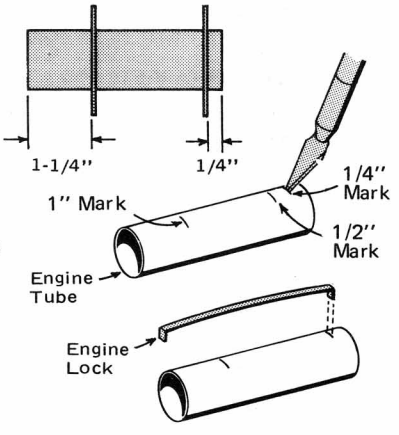


ASSEMBLY INSTRUCTIONS

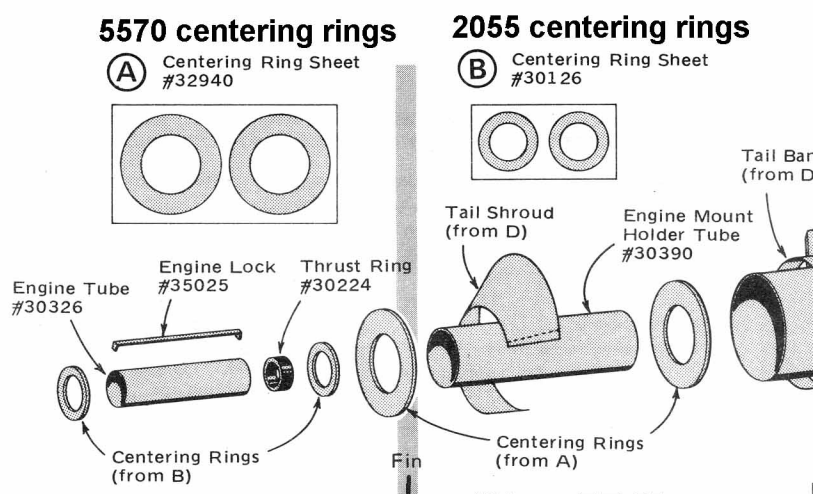
You MUST follow these instructions for satisfactory flights. The shape and placement of the model's parts has been carefully engineered for safe flights. DO NOT try to change the design, "customize" it, or leave off any parts.

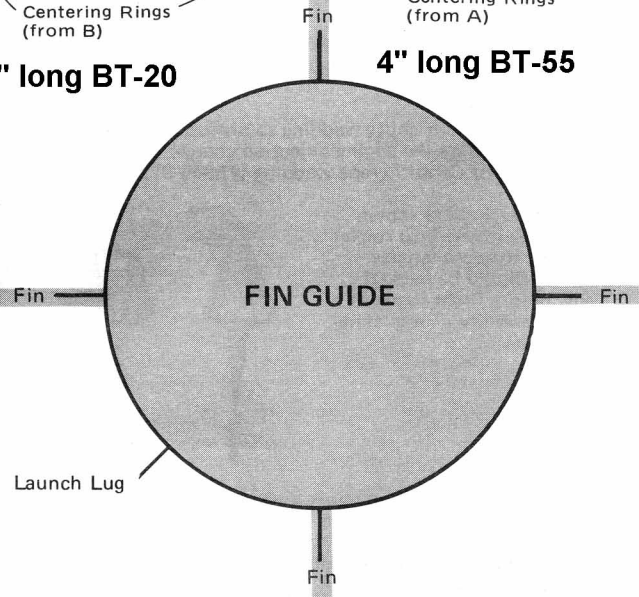
1 Locate the 4" long tube and make a mark on it 1-1/4" from one end. Make another mark on it 1/4" from the other end. Then carefully remove the two largest rings from the die-cut sheet and glue them into position on the marks on the tube as shown here. Smooth the excess glue out into a fillet with your finger. Stand this assembly up vertically to dry.



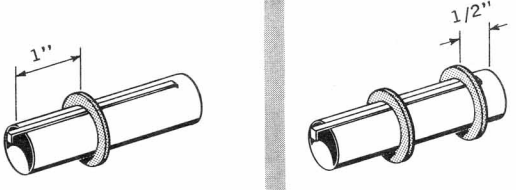


2 Locate the engine lock, engine mount tube, thrust ring, and the two centering rings. Mark the engine tube at 1/4", 1/2", and 1" from one end. Using a modeling knife, make a 1/8" slit in the engine mount tube at the 1/4" mark. Bend the engine lock slightly into a bow and insert it into the slit.

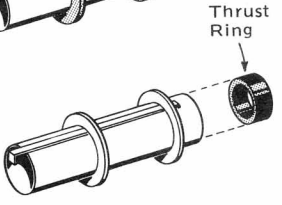




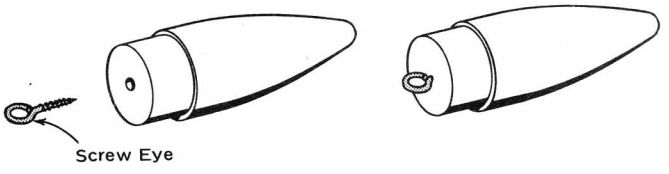
3 Locate the smaller die-cut ring set and carefully remove the rings. Glue the rings into position on the marks on the tube as shown here. Smooth the excess glue into a fillet with your finger.



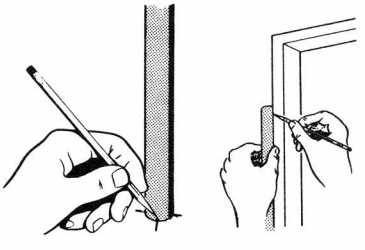
4 Apply a ring of glue inside the forward end of the engine mount tube and insert the dark thrust ring until it seats against the engine lock. Wipe away all excess glue from this area. Stand this assembly vertically to dry.

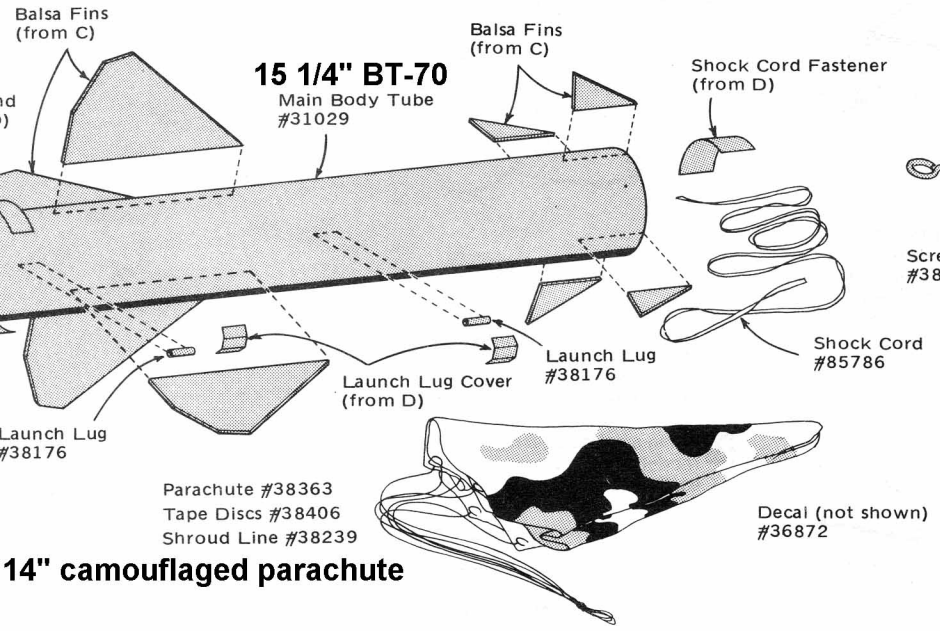


5 Glue the screw eye into the base of the balsa nose cone. First insert the screw eye into the balsa, then remove it. Squirt glue into the hole and replace the screw eye.



6 To draw positioning lines for all the fins and the launch lugs, stand the main body tube on end over the fin guide. Mark the fin and launch lug locations with a pencil. Find a convenient groove or channel, such as a door jamb or partially open drawer, and extend the marks you made the full length of the tube.



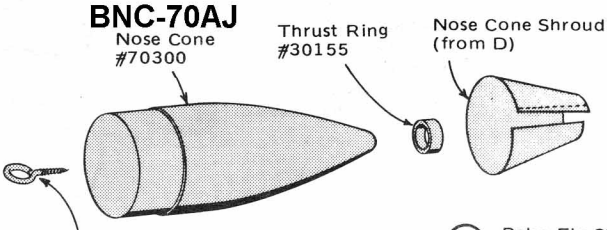


Parachute #38363
Tape Discs #38406
Shroud Line #38239

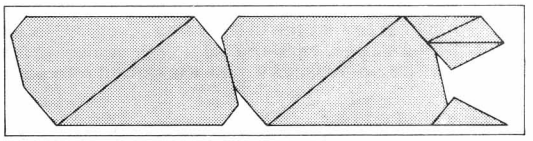
14" camouflaged parachute

Decal (not shown)
#36872

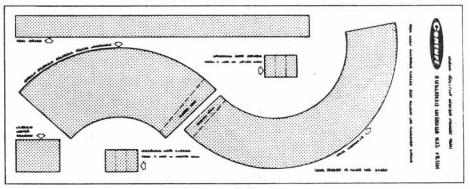
BNC-70AJ



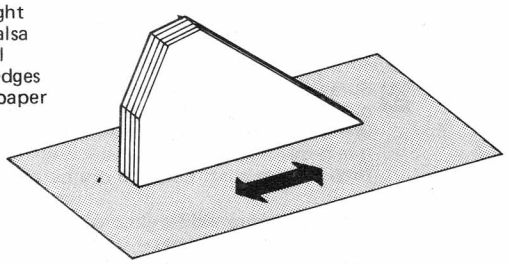
Ⓒ Balsa Fin Sheet
#32882



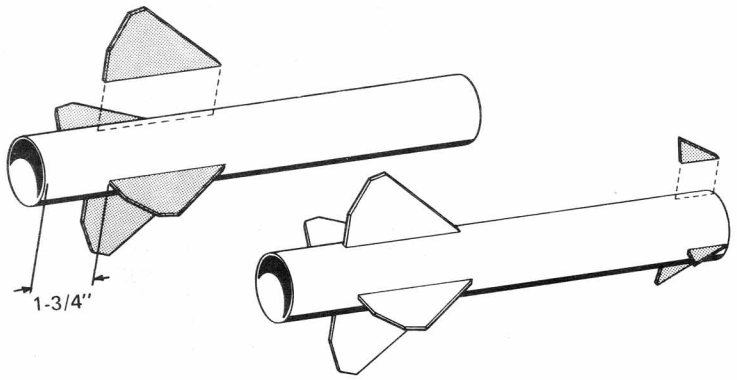
Ⓓ Paper Parts Sheet
#81691



7 Carefully remove all eight die-cut fins from the balsa sheet. Holding identical fins together, sand all edges on a piece of fine sandpaper laid on a flat surface.



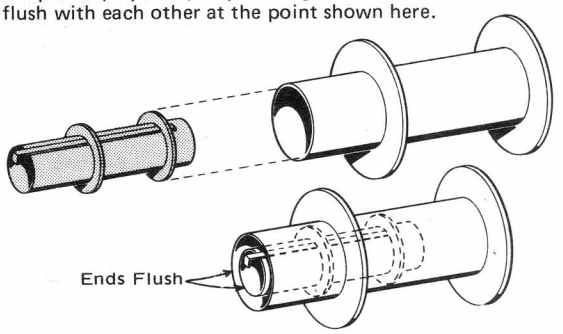
8 Pick either end of the large main body tube and make a mark 1-3/4" from that end only, on each fin line you drew in Step 6. Then apply a line of glue to the root edge of one of the large rear fins. Place it on one of the fin lines so the rear edge of the fin is even with the mark you just made. Remove the fin and allow the glue to become tacky. Apply more glue and replace fin. Align carefully and allow it to dry. Repeat this with the other rear fins. Glue the forward fins into position flush with the other end of the body tube. Stand this assembly vertically to dry.



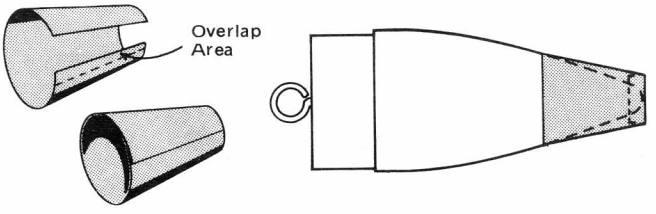
9 Assemble the parachute by following the instructions printed on it.

10 Glue the remaining thrust ring to the front of the balsa nose cone. Place a generous bead of glue inside the ring and smooth it out with your finger. Allow this assembly to dry by placing it in the drying fin/body tube assembly from step 8.

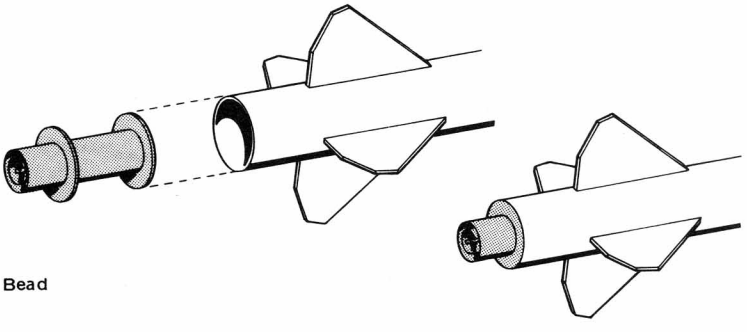
11 Test fit the engine mount assembly into the engine mount holder assembly made in step 1. Glue these two assemblies together using a generous amount of glue smoothed out into neat fillets with scrap balsa, a pencil, or your finger. Note that both assemblies are flush with each other at the point shown here.



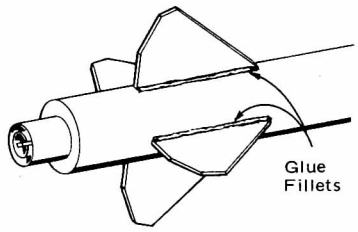
12 Carefully cut out the "Laser-Seeker Homing Head" shroud. Form it with your fingers into the approximate shape required. Apply a modest amount of glue to the overlap area and smooth it out with your finger. Join the shroud ends together so that the overlap area is covered exactly by the other end of the shroud. Hold this joint with your fingers and continue to form the shroud into the required shape. When dry, glue the shroud into position on the nose cone as shown.



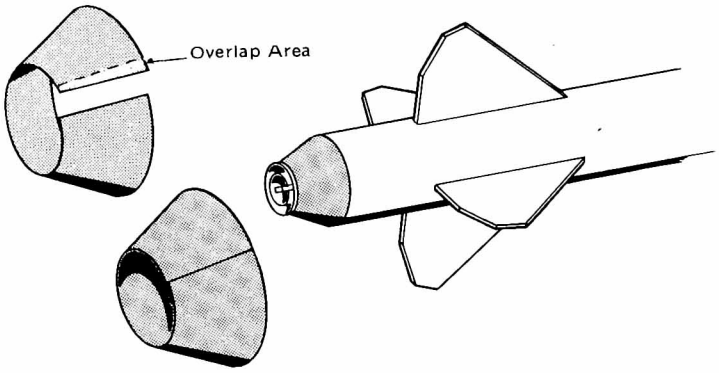
13 Glue the entire engine mount assembly from step 11 into the rear of the main body tube as shown. Be sure that the rear centering ring is inside the end of, but also, "flush" with the end of the body tube as shown. Be sure engine lock is opposite the line you drew for positioning the launch lugs.



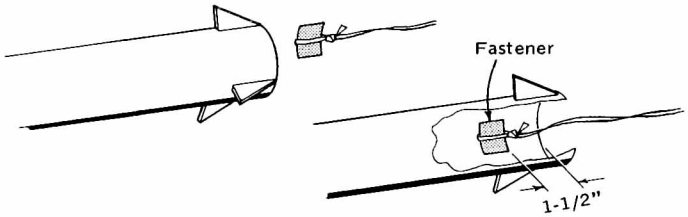
14 At this time, run a fresh bead of glue along each fin/body tube joint and smooth it out right away with your finger into a fillet for extra strength. Also check alignment of all the fins. Each one should point visually to the center of the rocket when viewed from the end.



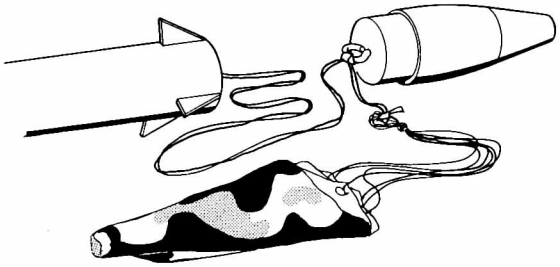
15 Carefully cut out the tail shroud and form it to the approximate shape required with your fingers. Apply a modest amount of glue to the overlap area and smooth it out with your finger. Join the shroud ends together so that the overlap area is covered exactly by the other end of the shroud. Hold this joint with your fingers and continue to form the shroud. When dry, glue the shroud into position as shown.



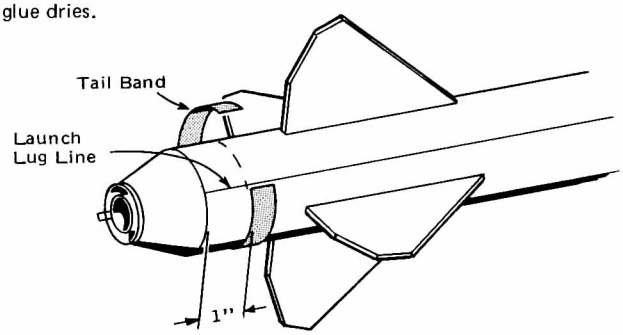
16 Cut the shock cord fastener out and tie one end of the shock cord around it. Bend it neatly into a half-circle and apply glue to the outer surface. Insert this assembly into the end of the body tube. Make sure it is at least 1-1/2" into the tube. Rub the fastener down firmly and hold till dry.



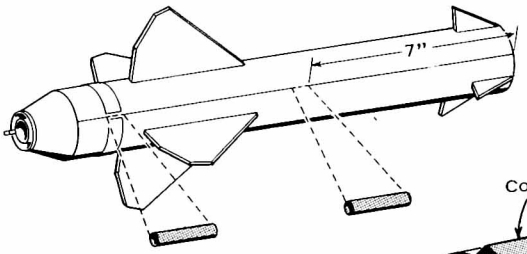
17 Tie the free end of the shock cord to the screw eye of the nose cone, leaving approximately 2" of shock cord beyond the knot. Tie the 2" free end of the shock cord to the loop at the end of the parachute shroud lines.



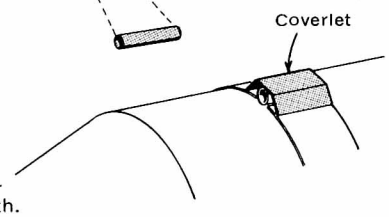
18 Make several marks around the main body tube 1" away from the tail shroud. Then cut out the tail band and glue it into position carefully by first smearing a light coat of glue on the back of the band and then wrapping it around the body tube. Be sure to center the launch lug line in between the two ends of the tail band. Hold in position until glue dries.



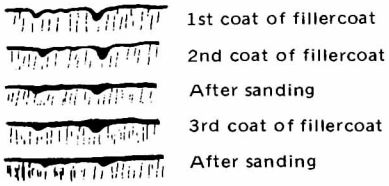
19 Make a mark on the launch lug line 7" from the forward end of the body tube as shown here. Glue both launch lugs into position.



20 Cut out and glue launch lug coverlets in place following the directions printed on them. Center the rear coverlet within the tail band width.



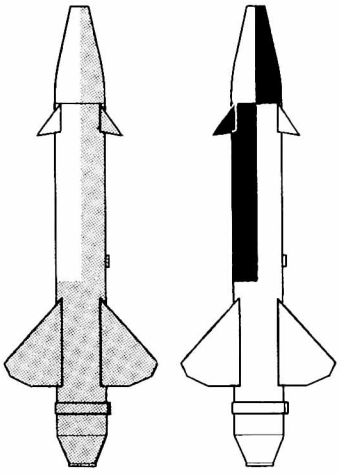
21 Using a sanding sealer or balsa fillercoat, fill the wood surfaces of your model to obtain a smooth finish. Use several coats and sand between each coat to get a smooth finish.

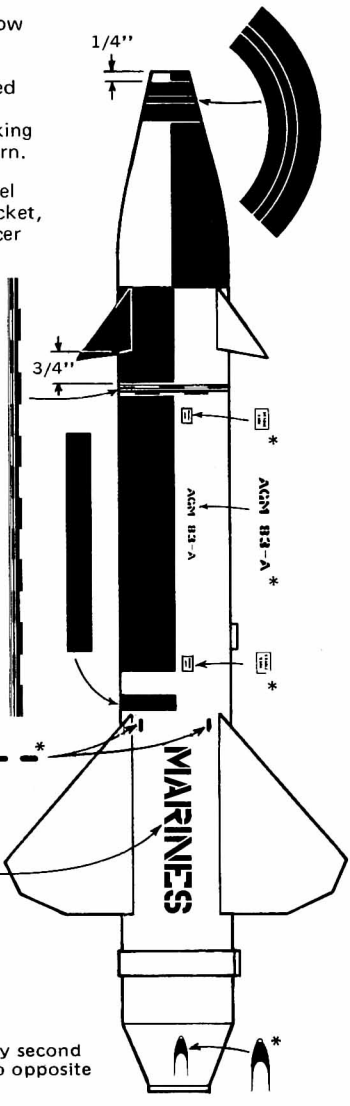


22 Spray painting your finished model with a fast-drying enamel will produce the best results . . . IF IT IS DONE PROPERLY!! Most important is the number of coats of paint. DO NOT try to paint your model with one heavy coat! Instead, give it a couple of quick, light coats first and then a finish coat.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

Paint the entire model gloss white. Allow about a day for the paint to dry. Then mask off the area of the rocket that is shown shaded below. Spray the exposed portion gloss red. When the red paint has dried completely, remove the masking and give the nose cone a 180 degree turn.

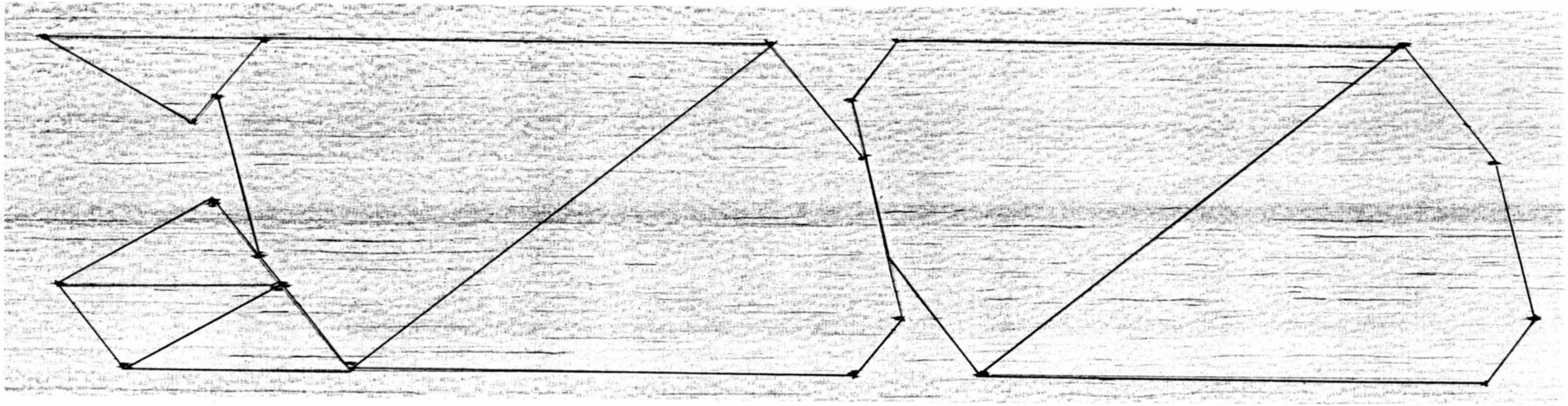
NOTE: If you are an experienced model maker, you may wish to paint your rocket, following the pattern shown on the facer panel of this kit.



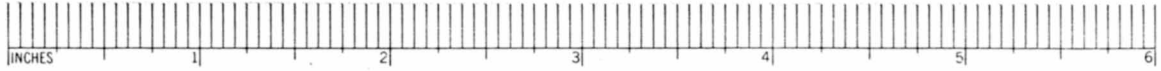


23 After the paint is dry apply the decals. Make sure surface is free of oil and dust. Dip decal in water approximately 10 seconds. Hold decal by one end until it uncurls. Have surface wet for easy sliding into position. Slide decal from paper to remove excess adhesive and blot dry with a tissue.

* Apply second set to opposite side.



Scanned for JimZ's site by John Joseph 24 October 2002
Centuri Bulldog (#5354) die-cut fin pattern sheet. 3/32" balsa.



LIGHT-WEIGHT PAPER PARTS FOR:

Centuri **BULLDOG MISSILE KIT #5354**

FOR BEST FITTING PARTS, CUT RIGHT ON PRINTED LINES.

THIS SHEET IS PART NO. 81691

TAIL SHROUD

LAUNCH LUG COVER
score & fold on dotted lines

overlap area

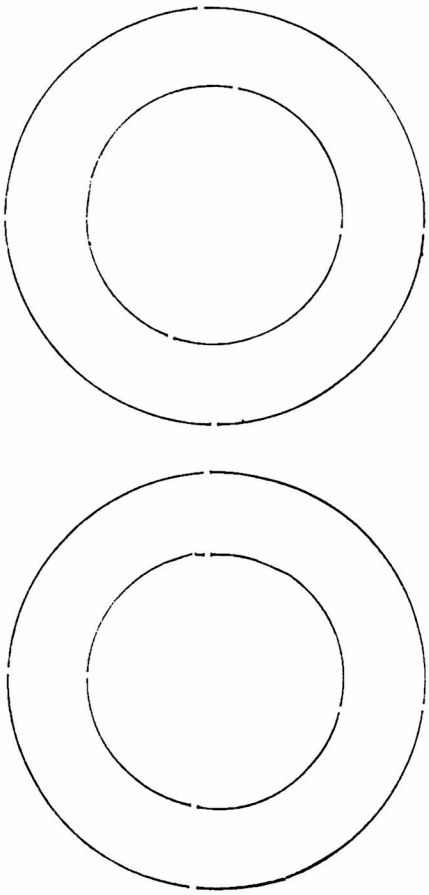
overlap area

LAUNCH LUG COVER
score & fold on dotted lines

TAIL BAND

LASER-SEEKER-HOMING HEAD SHROUD

SHOCK CORD MOUNT



Centuri Bulldog (#5354) 5570 centering rings
Scanned for JimZ's site by John Joseph 24 Oct 2002

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Centuri

MARINES MARINES

AGM 83-A

AGM 83-A

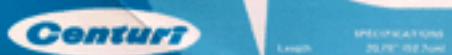
AGM 83-A

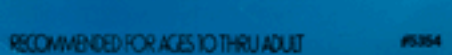
Decal #36872

- SIMULATED LASER-SEEKING HOMING HEAD
- QUICK-RELEASE ENGINE MOUNT
- SCALE-LIKE MILITARY MISSILE
- PARACHUTE RECOVERY
- DIE-CUT BALSA FINS
- BIG 2-COLOR DECAL

BULLDOG

AGM · 83A





Century

FLYING MODEL ROCKET KIT

RECOMMENDED FOR AGES 10 THRU ADULT

#5354