





MARAUDER

PAYLOAD SOUNDING ROCKET

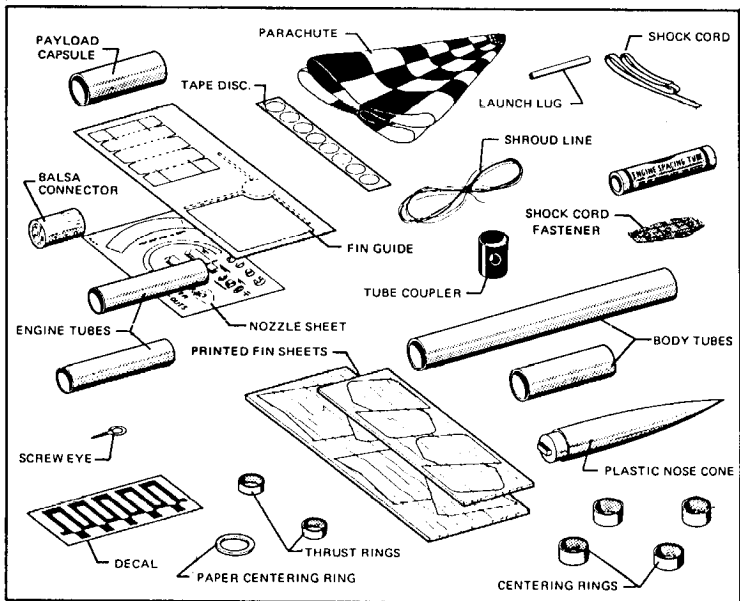
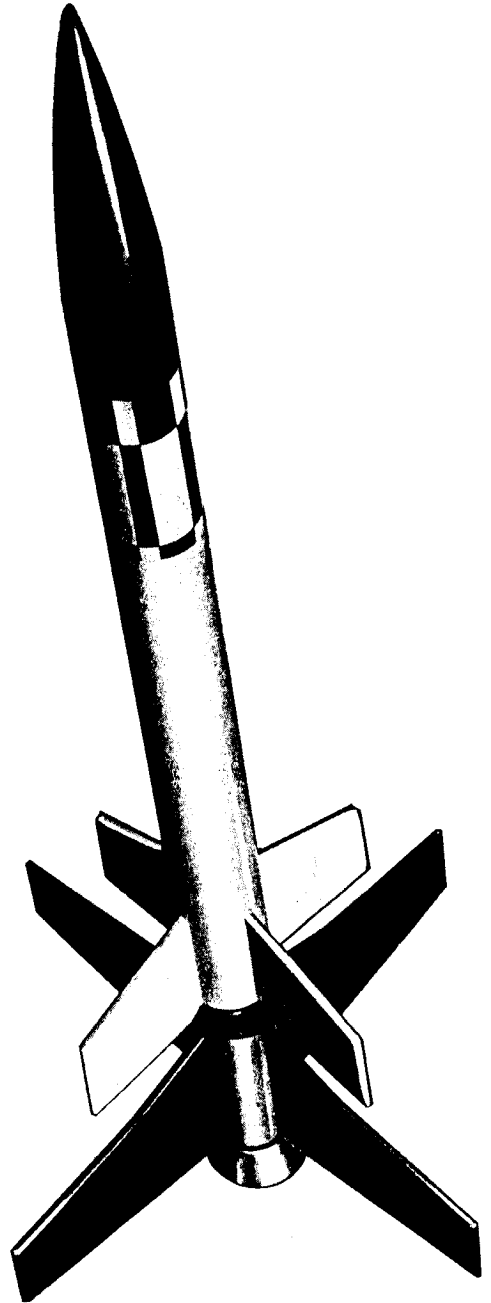
Catalog No. KC-45

ASSEMBLY INSTRUCTIONS

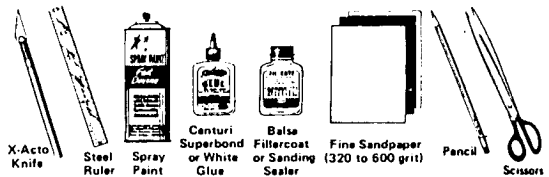
FOLLOW DIRECTIONS CAREFULLY!

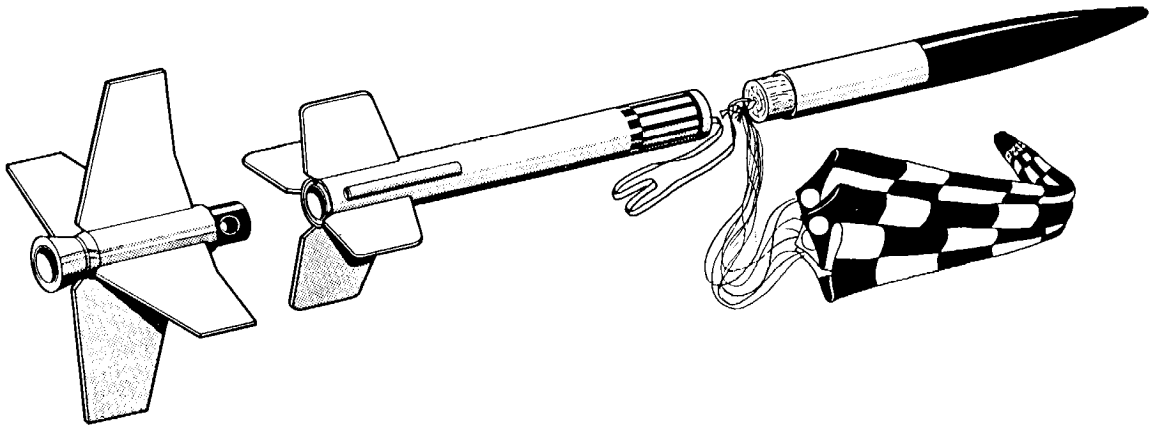
Follow the step-by-step instructions with care and be rewarded with a high performance two stage sounding rocket. Reliable second stage ignition is insured by use of Centuri's exclusive Pass-Port Staging System. The booster tumbles lightly to Earth; the second stage returns gently to Earth under a colorful parachute.

NOTE: Paper tubes and rings are factory cut to exact size. The cutting process leaves a very small flange on the inside portion of the ends of the tubes. These parts are designed to fit within close tolerances. When fitting parts together, lightly sand the inside edges to eliminate the flange. DO NOT force the parts together.



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



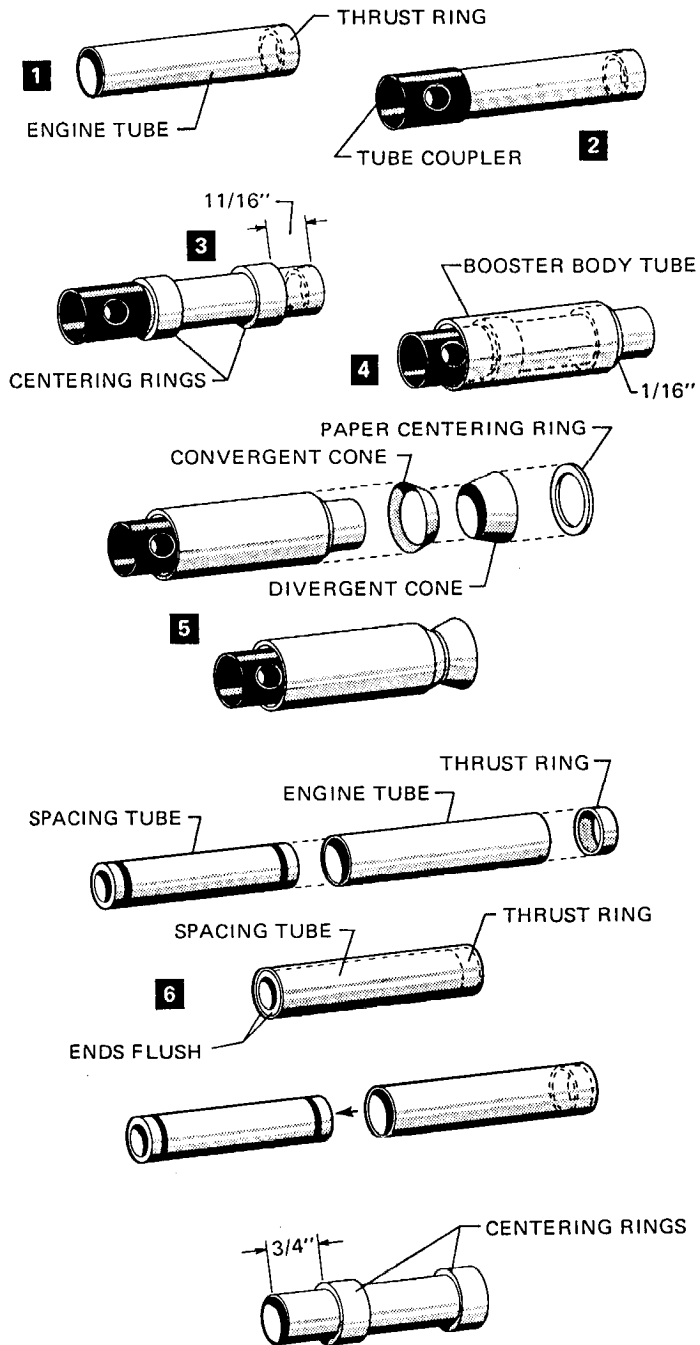


BOOSTER ASSEMBLY

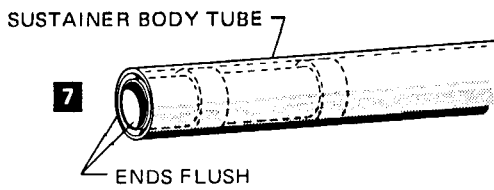
- 1** Glue one of the thrust rings in place at one end of an engine tube. The thrust ring will be flush with the end of the tube.
- 2** Glue the pass port coupler over the engine tube with $5/8''$ protruding.
- 3** Glue one centering ring about $1/16''$ from the tube coupler. The other centering ring will be glued $11/16''$ from the thrust ring end of the engine tube.
- 4** Glue booster body tube over engine tube assembly as shown. $1/16''$ of the rear centering ring should protrude. Position the engine tube rapidly so the glue doesn't set with the tube in the incorrect position.
- 5** The Marauder design uses a simulated exhaust nozzle. Carefully cut out the two paper nozzle bands. So that each band will roll into a complete ring, curl each band by rolling over a round pencil or the handle of the modeling knife. Roll each band into a ring and glue ends together as indicated on the nozzle cut-out card. Before glue has completely set, slip ring into place and adjust ring to fit tightly. The narrow ring forms the convergent cone of the nozzle, and should fit tightly around the booster mounting tube. The wide ring forms the divergent cone of the nozzle and should also fit tightly around the mount tube. Glue both rings in place as shown. Push the flat paper centering ring over the mounting tube and into the divergent nozzle. Glue in place.

SUSTAINER ENGINE MOUNT

- 6** Glue the thrust ring into the forward end of the engine tube so that the spacing tube, when fully inserted, is flush with the aft end. Remove the spacer tube promptly so it doesn't glue itself in accidentally. Position the forward centering ring flush with the end of the tube and the rear centering ring $3/4''$ from the end of the engine tube.

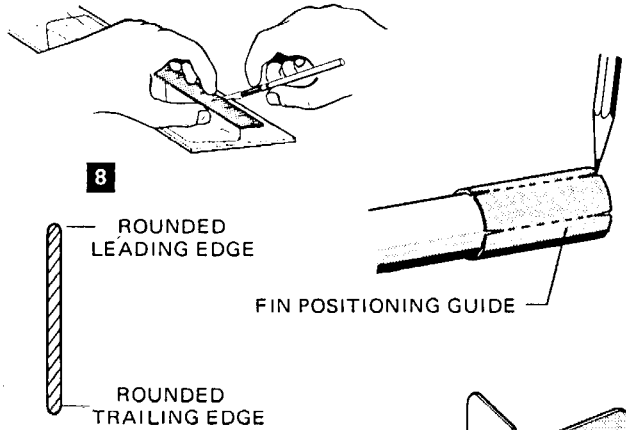


- 7** Apply a generous ring of glue to the inside of the sustainer body tube at one end and slide the engine mount into place thrust ring first until the engine tube is flush with the end of the body tube. This can be done by pressing the body tube down on a flat surface over the engine mount until the body tube touches the table.

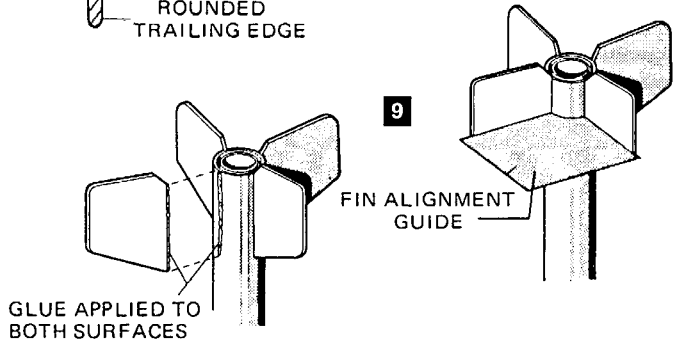


FIN ASSEMBLY

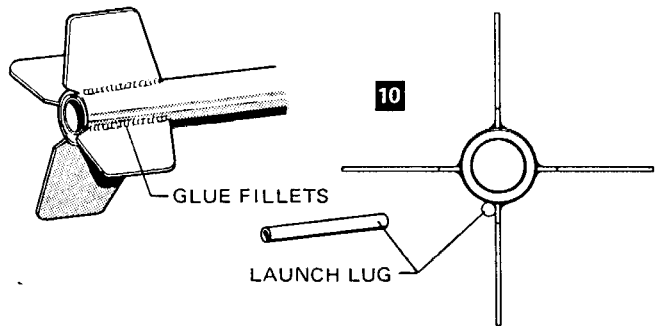
- 8** Using a metal straight edge as a cutting guide, carefully cut out the fins from the balsa sheet with a sharp X-Acto knife. Using fine sand paper, round the leading and trailing edges. Square the root cord edges. Lightly sand the sides of each fin.



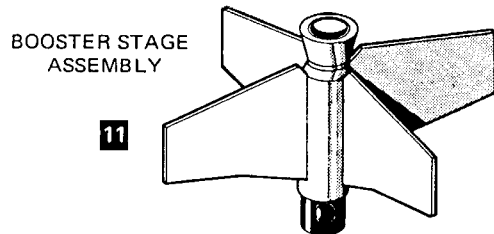
- 9** Cut out the paper Fin Positioning Guide, wrap it around the body tube base and mark the fin locations with a pen or pencil. Apply glue sparingly to each fin root cord edge, one at a time, and also along the body tube where fin is to be attached. When glue has begun to set, place fin in position on the body tube. Stand the tube on its top end and allow glue to dry. With the Fin Alignment Guide, check the angle between fins before glue has set. (Should be 90°.) Allow to dry.



- 10** For increased strength, run a bead of glue along the fin-body joints and smooth into an even fillet with your finger. Glue the launch lug into one of the fin-body joints on the sustainer.

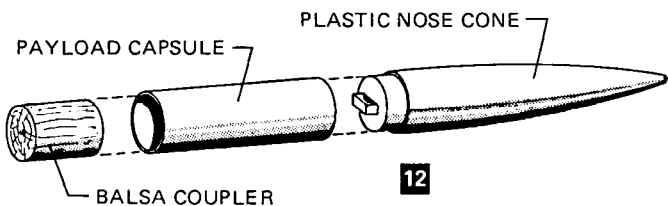


- 11** Cement the fins onto the booster body tube in the same manner as outlined above for the sustainer stage.



PAYLOAD SECTION ASSEMBLY

- 12** Press balsa tube coupler into bottom of payload capsule tube. Balsa coupler should fit about 1/2 inside the payload capsule. If it does not fit tightly, glue it in place. Insert the plastic nose cone base into the nose cone until it locks in and fit into the top of payload capsule.



FASTENER & PARACHUTE ASSEMBLY

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

14 Slightly crease the fastener lengthwise (this allows easy access for insertion into tube). Slide the fastener into the top of the body tube and position so the top of the fastener is about 1" below the top of the tube. Press the fastener firmly against the inside wall of the tube with a finger or eraser end of a pencil. NOTE: All edges of the fastener must be firmly contacted to the tube to insure a permanent bond.

Thread the screw eye into the balsa connector base, and then unthread the screw. Squirt glue into the resulting hole and rethread the screw eye. Assemble the parachute according to instructions printed on chute material. Tie the shroud ends and the loose end of the shock cord to the screw eye.

FINISHING THE MARAUDER

15 Paint all balsa surfaces with balsa fillercoat. Allow to dry, then sand with fine sandpaper. Repeat procedure until all grainline is filled.

Spray paint the Marauder in several light coats from a distance of 18 inches. Do not attempt to paint completely in one application or paint will run or sag. Dark colors, especially black or fluorescent colors are easiest to track at high altitudes.

LAUNCHING THE MARAUDER

16 The MARAUDER can be launched with any of the following engine combinations:

Group 1	Group 2	Group 3	Group 4
A8-0	A8-0	A8-0	A8-0
A8-5	B4-6	B6-6	C6-7
Group 5	Group 6	Group 7	Group 8
B6-0	B6-0	B6-0	C6-0
B4-6	B6-6	C6-7	C6-7
Group 9	Group 10	Group 11	
B14-0	B14-0	B14-0	
B4-6	B6-6	C6-7	

17 The Marauder is capable of carrying a maximum payload weight of one ounce when the initial stage is powered by engine Groups 9, 10, and 11; and a maximum payload weight of 1/2 ounce when powered by engine Groups 1 through 8. Extremely fragile payloads should be packed in cotton or foam rubber. CAUTION: Do not overweight the capsule. Weigh your payload before launching. An A8-0 engine, which weighs about 1/2 ounce, can be used to compare with your payload.

18 The top stage of the Marauder can be launched by itself without the booster stage. Use any of the following engines for single-stage flights:

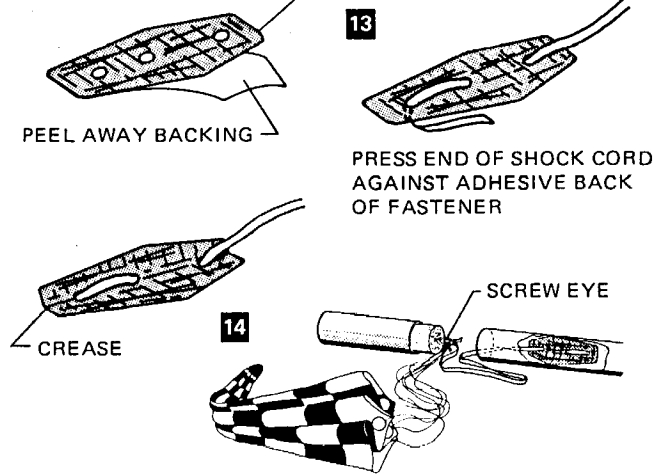
A8-3 B4-4 B6-4 B14-5 C6-5

19 Launch the MARAUDER from a standard model rocket launcher having a 1/8" diameter x 36" long steel launching rod. Use electrical ignition only, as outlined in Centuri's Engine Operating Instructions. Choose a clear, unobstructed launching field away from buildings, busy highways, power lines, and tall trees.

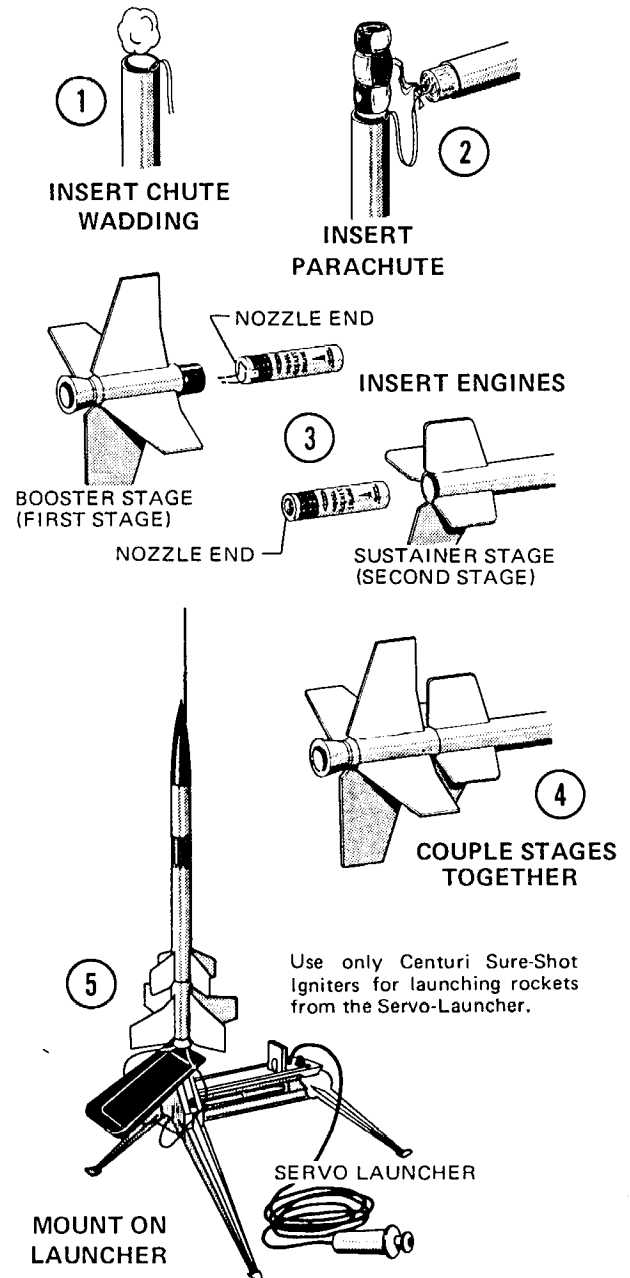
Avoid launching near dry grass or brush. Launch from the center of an open field measuring at least 500 feet on a side. Always give a countdown to alert spectators before launching.

For more information concerning CENTURI Model Rocketry Products, see your local hobby dealer or address inquiries to: CENTURI Engineering Company, PO Box 1988, Phoenix, Arizona 85001.

SHOCK CORD FASTENER



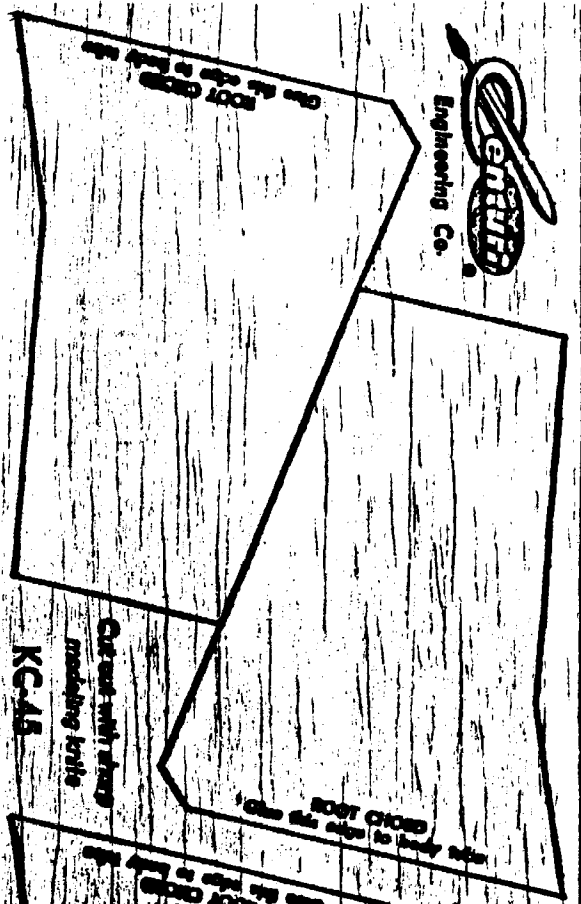
PREPARE THE MARAUDER FOR LAUNCHING ACCORDING TO THE ILLUSTRATIONS BELOW.



Use only Centuri Sure-Shot Igniters for launching rockets from the Servo-Launcher.

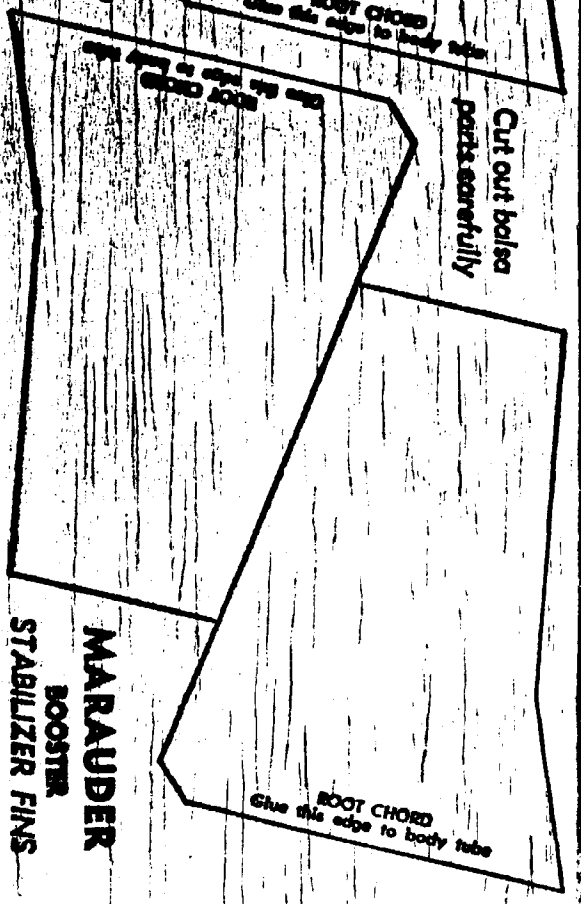


Engineering Co.

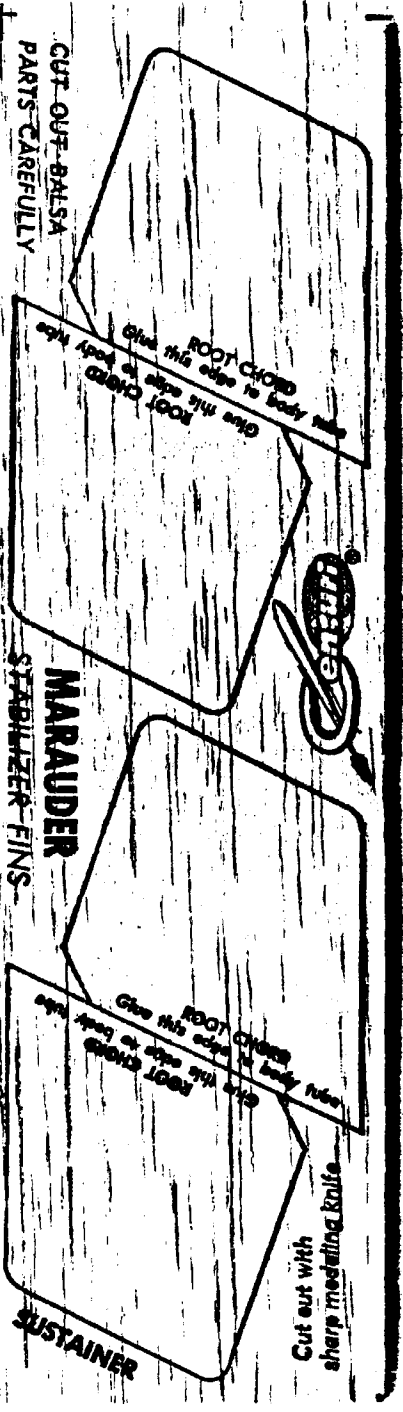


KC-45

Cut out pieces parts carefully



MARAUDER BOOSTER STABILIZER FINS



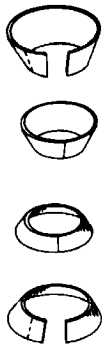
CUT-OUT-BALSA PARTS CAREFULLY

MARAUDER STABILIZER FINS

SUSTAINER



Cut out with sharp modeling knife



Cut out on solid line

BOOSTER BODY $\frac{1}{16}$ "

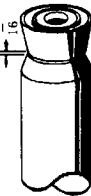
CONVERGENT CONE

DIVERGENT CONE

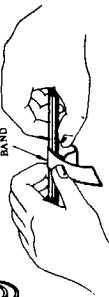


PAPER CENTERING RING

$\frac{1}{16}$ " MOUNTING TUBE



NOZZLE BAND



MARAUDER NOZZLE CUT-OUTS

