

INTRODUCTION & BACKGROUND

The CHUTER-TWO Sounding Rocket is designed to carry your payloads, such as crickets, beetles, ants, and other insects to high altitudes and return them safely by parachute. Included in this kit are two parachutes--one to recover the cone capsule, and another for the main body. The payload capsule can be changed to a "see-thru" type by substituting a CPT-80 or 82 for the standard capsule tube.

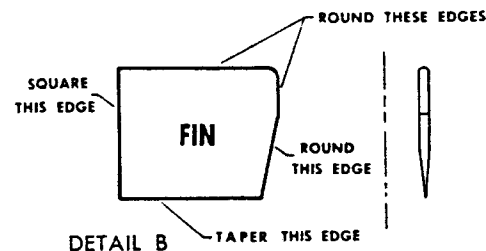
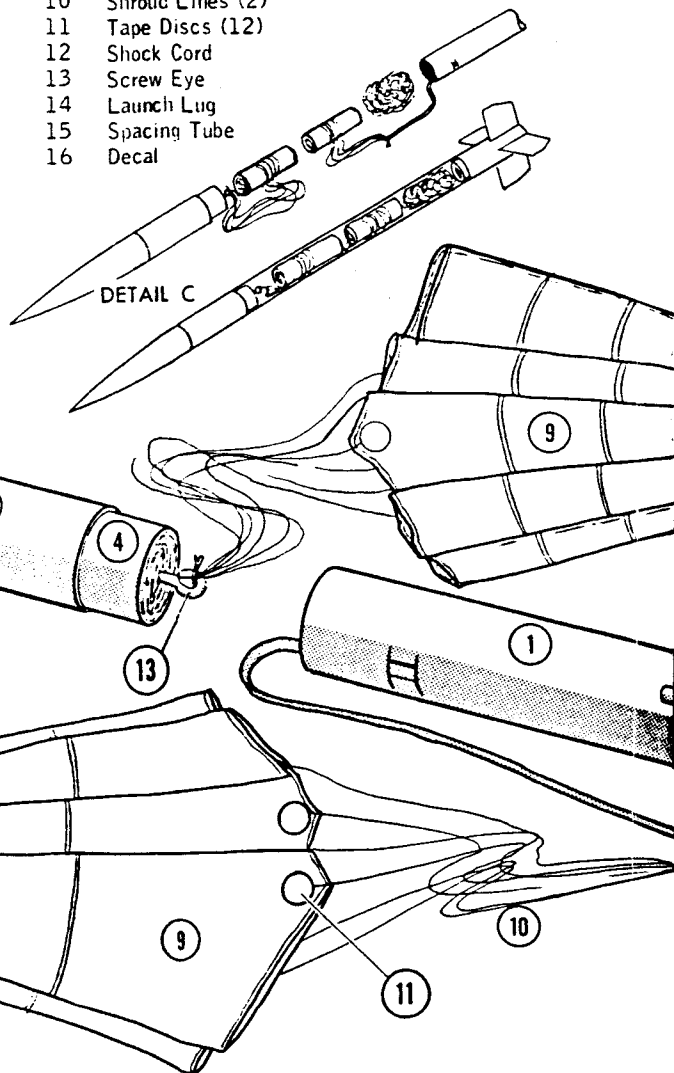
"Sounding", as applied to rockets, means to investigate or examine. A "sounding rocket" is a meteorological rocket used to gather atmospheric data such as temperature, pressure, radiation, and wind velocity. Sensitive instruments within the nose cone and payload compartment are exposed to the upper atmosphere for purposes of measuring the above mentioned objects of study. This information is sometimes recorded within the rocket itself, but is most often telemetered back to earth by means of radio transmitters within the payload compartment.

The primary objective in flying a live payload is to study the effects of acceleration, radiation, pressure changes, and sudden shock on living organisms. There is little radiation or pressure change effect at relatively low altitudes achieved by model rockets. However, with the large sounding rockets used by scientific organizations, these effects would be an important object of study.

PARTS LIST

NO.	NAME
1	Body Tube
2	Nose Cone
3	Capsule Tube
4	Balsa Connector
5	Mounting Tube
6	Centering Rings
7	Thrust Ring
8	Stabilizer Fins
9	Chute Canopy (2)
10	Shroud Lines (2)
11	Tape Discs (12)
12	Shock Cord
13	Screw Eye
14	Launch Lug
15	Spacing Tube
16	Decal

CHUTER-TWO SOUNDING ROCKET ASSEMBLY



ASSEMBLE ENGINE MOUNT

The engine mount consists of one mounting tube (.710" ID x 3" long), two #8 Centering Rings, and one #7 Thrust Ring. These parts should be assembled with white glue or model cement as shown in the Engine Mount detail illustration.

First, glue the centering rings securely to the mounting tube. The forward ring should be positioned even with the end of the mounting tube and the rear ring about 1" from the aft end of the mounting tube. Next, glue the thrust ring inside the forward end of the mounting tube, with the end of the ring even with the end of the tube. Set the mount aside and allow to dry.

After the mount has completely dried, apply a heavy bead of white glue around the top outer rim of both centering rings. Insert the spacing tube into the mount and push the mount into the body tube until the end of the spacing tube is even with the end of the body tube. See Detail A.

To force the glue into the tube/ring joints, roll the tube around slowly and hammer it against your hand. Set the tube-mount assembly on the mount end and allow to dry.

ATTACH STABILIZER FINS

From the printed balsa sheet, carefully cut out the four fins. With fine sandpaper, round the leading and tip edges, and taper the trailing edges of all fins. Square the root chord edge. See Detail B.

Cut out the enclosed Fin Positioning Guide, wrap it around the body tube base, mark the fin locations with a pen or pencil.

Apply white glue or modeling cement to each fin root chord edge, one at a time, and also along the body tube where fins are to be attached. When glue has just begun to set, place fins in position along the body tube. Stand tube on top end and allow to dry. With the Fin Alignment Guide, check the angle between fins before glue has completely set. Opposite fins should be in line with each other and adjacent fins should be exactly 90 degrees apart.

For increased fin strength, run a narrow fillet of glue along each fin-tube joint after the initial glueing has thoroughly dried.

CHUTER-TWO

ASSEMBLY INSTRUCTIONS

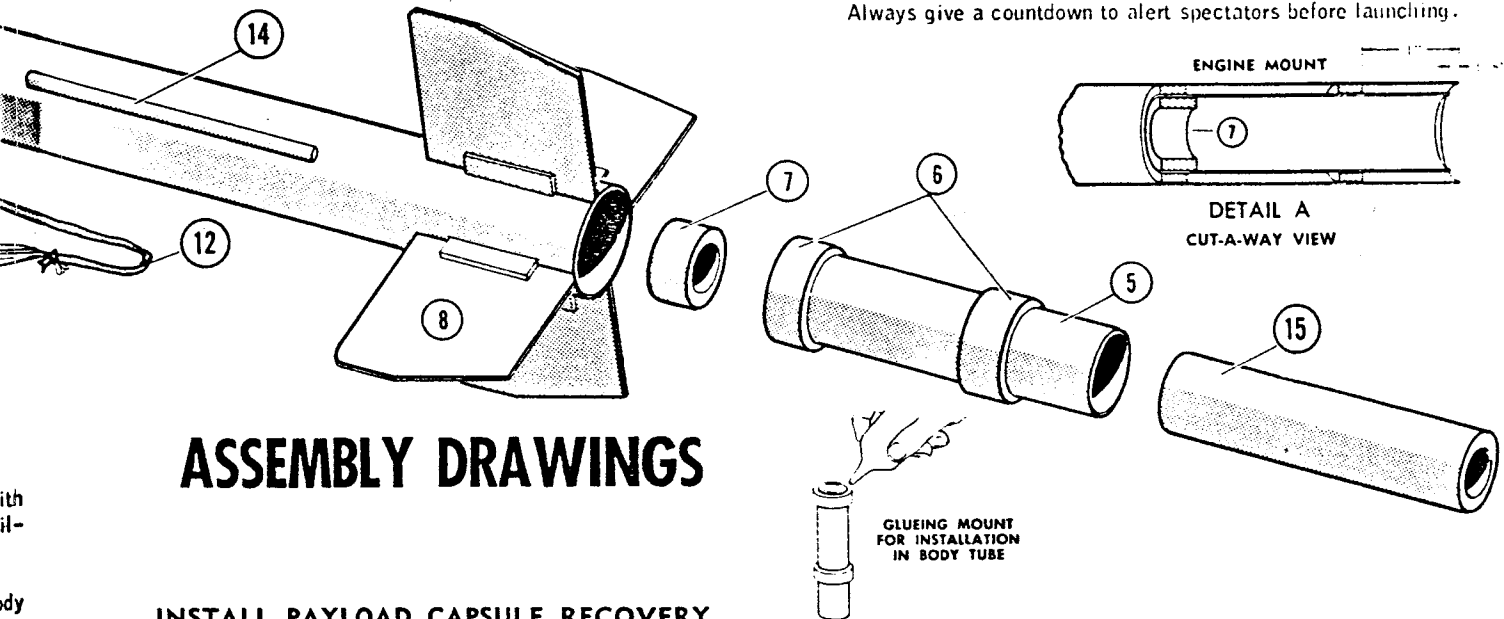
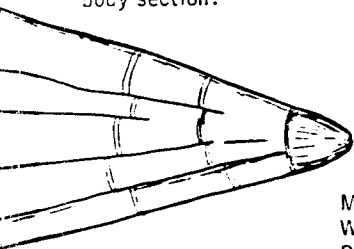
RIG PARACHUTE & SHOCK CORD

Assemble the parachutes as shown in the enclosed Chute Assembly Directions. Attach one end of the rubber shock cord to the body tube as shown below. Cut two slits, about 3/8" long and 3/8" apart, in the body tube one inch down from the top end. Insert one end of the rubber cord into the tube from the top end, and depress the tube paper between the slits. Bring the cord out through the first slit, and back into the body tube through the second slit. Apply glue to the connection to form a strong bond.

Tie the opposite end of the shock cord to the ends of the chute shroud lines. This completes the recovery system for the main body section.

In addition to the parts supplied, you will need the following items to assemble this kit:

- Modeling knife or single edge razor blade
- White glue or modeling cement
- Paint for finishing - preferably spray type
- Fine sandpaper - Scissors - Pen or pencil



ASSEMBLY DRAWINGS

INSTALL PAYLOAD CAPSULE RECOVERY

Thread the screw eye into the balsa connector base, and then unscrew the eye. Squirt glue into the resulting hole and screw the eye back into the base. This glueing prevents the eye from pulling out during recovery. Tie the shroud ends to the screw eye. Glue the balsa connector into the capsule tube, leaving at least 3/4" of the connector extending.

The connector end of the capsule should slip snugly but not tightly into the main body tube. If the fit is loose, build it up with tape. If the fit is too tight, sand the connector down slightly until just snug.

PACKING THE PARACHUTES

Fold up both parachutes as shown in the Parachute Assembly Instructions, and pack as shown in Detail C. Fold both chutes temporarily and pack into place. Glue the launch lug to the body tube in the position shown.

The CHUTER-TWO is capable of carrying a maximum payload weight of one ounce when powered by an A.8-3, B.8-4, or B 3-5 engine. Extremely fragile payloads should be packed in cotton or foam rubber. When the rocket is to be flown without a payload, it is best to use only one parachute. The capsule without additional weight may drift a considerable distance. A single chute recovery system is shown in Parachute Assembly Directions.

FINISHING THE CHUTER-TWO

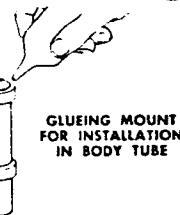
For maximum altitude flights and ideal appearance, the grain texture of the nose cone and fins should be filled in with several coats of balsa filler. Sand smooth between applications. The body tube does not require this special treatment. Finish with lightweight paint such as spray dope or laquerized enamel. For ease of tracking, use bright colors such as white, yellow, orange, or red. Fluorescent colors are extremely easy to spot at high altitudes.

LAUNCHING THE CHUTER-TWO

The CHUTER-TWO can be powered by any of the following engines:
 1/2 A.8-4 A.8-3 B.8-4 B 3-5*

*The B 3-5 engine, which packs a terrific wallop, should be used for high acceleration studies, while the B.8-4 engine will provide maximum altitude flights.

Launch the CHUTER-TWO from a 1/8" diameter x 36" long launching rod. Use electrical ignition only, as outlined in the Engine Operating Instructions. The CHUTER-TWO should be launched from the center of a large open field measuring at least 500 feet on a side. Choose a clear, unobstructed launch site away from houses, highways, and trees. Do not launch from a backyard or city street. Always give a countdown to alert spectators before launching.



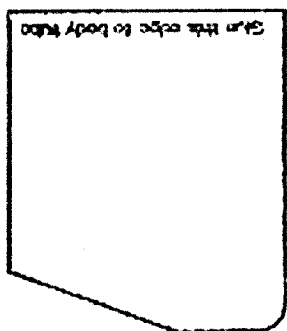
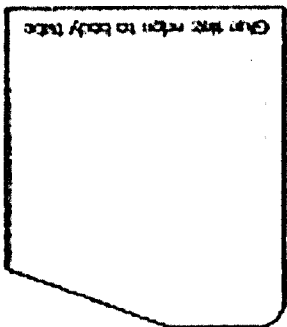
GLUEING MOUNT FOR INSTALLATION IN BODY TUBE

When launching the CHUTER-TWO with both parachutes, it is advisable to have two persons observing the flight--one person to watch the capsule parachute and the other to follow the main body chute.

For additional information or Centuri engines, kits, launching devices, custom parts, write to:

CENTURI ENGINEERING COMPANY.
 P.O.Box 1988
 Phoenix, Arizona 85001

Cut out with sharp modeling knife



CHUTER-TWO

#KC-16

Contur's

