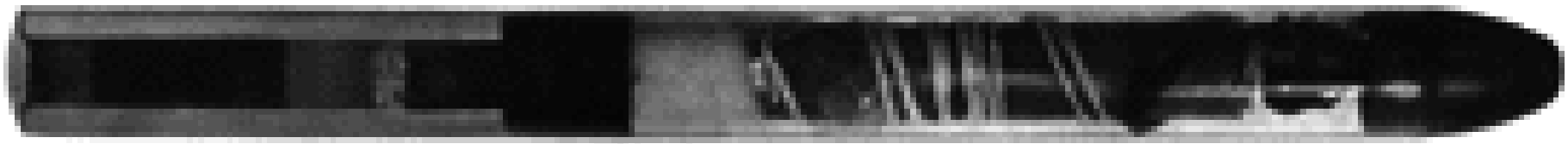
ASTRON

DEMONSTRATES MODEL ROCKET DESIGN

Price $1.75



PERFECT FOR SCIENCE FAIR PROJECTS

PHANTOM

Estes Industries, Inc.

BOX 227 — PENROSE, COLORADO

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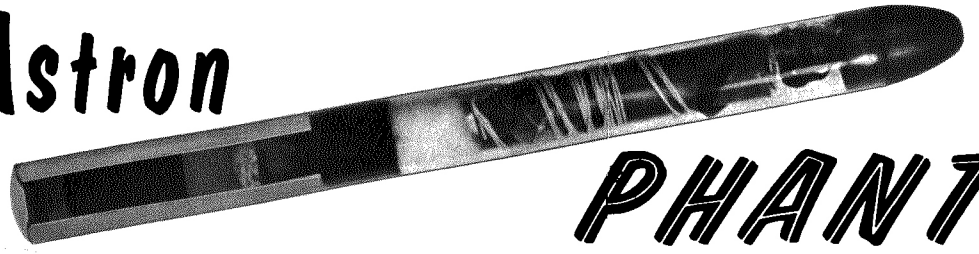
Astron PHANTOM

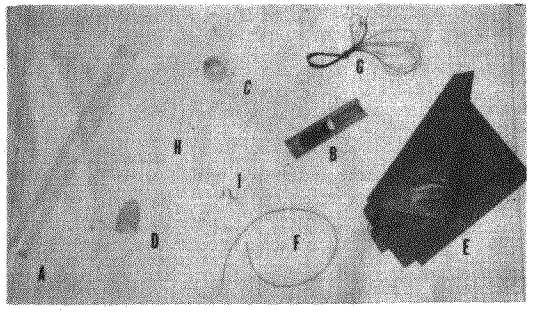


The Astron Phantom is a special demonstration rocket for use in science fair projects and educational programs. It is designed to show the working parts of a typical model rocket through its transparent plastic body tube. The Phantom is easy to assemble, and will prove highly valuable for many special projects.

The Astron Phantom kit consists of the following parts as illustrated in the picture at right:

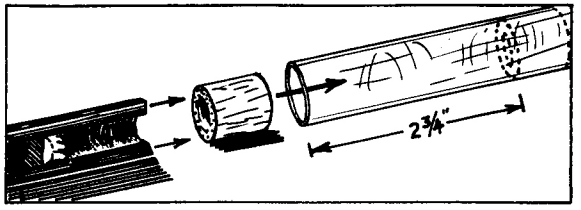
A) Transparent body tube #PST-20
B) Cutaway engine #CE-1
C) Balsa engine block #EB-20
D) Balsa nose cone #BNC-20A
E) Parachute #PK-12A
F) Shock cord #SC-1A
G) Shroud lines SLT-12
H) Tape strips TD-2
I) Screw eye SE-2

In addition to these parts supplied in the kit, you will also need a modeling knife or razor blade, cotton or tissue wadding, and some glue. Check to make sure your kit is complete, then read the full instructions before beginning construction.



ASSEMBLING YOUR PHANTOM

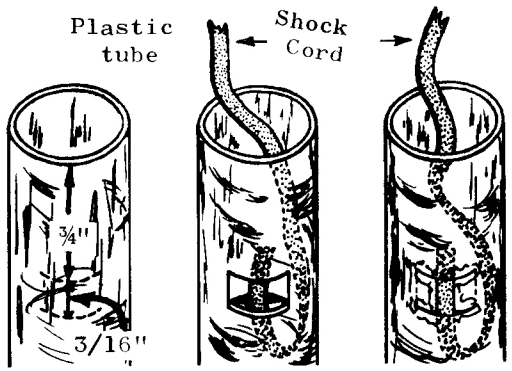
1) Insert the engine block into the body tube, and space it 2 3/4" from one end using the cutaway engine for a spacing guide. It is not necessary to glue the engine block in place, as it will not be under any particular stress.



2) Cut one of the tape strips in half lengthwise and apply it to the end of the body tube nearest the engine block. The strip should be positioned so that the long edge of the strip is exactly even with the end of the tube. Put a small spot of glue on the forward end of the engine casing where it will contact the engine block and another on the tape strip. Push the engine into position so that both points will be glued. When the glue has set the engine will be held in place sufficiently so it will not fall out when examined by other people.

3) Tamp a wad of cotton, facial tissue, or similar material down into the tube immediately over the engine block. This is the wadding used in model rockets to provide a piston and gas seal for proper operation of the recovery system.

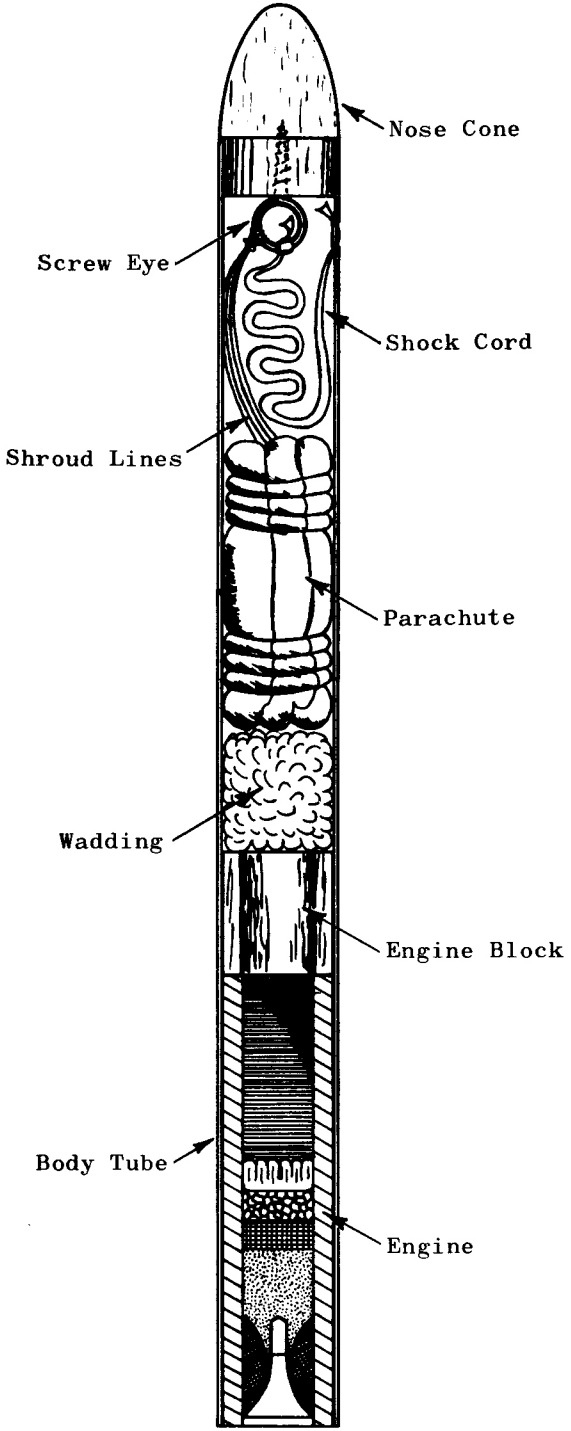
4) Cut two slits 3/16" apart in the tube about 3/4" down from the end of the tube



as in the drawing. Press the section between the slits inward and pass the shock cord through as indicated. Push the caved in portion outward to hold the shock cord in place.

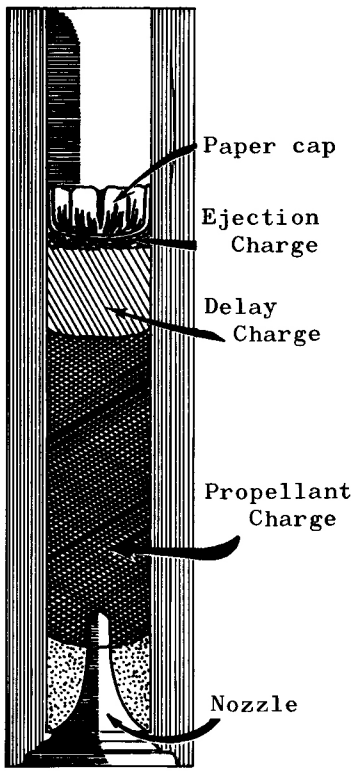
5) Cut out the parachute on the edge lines. Cut six 12" lengths of shroud line cord. Using a tape strip positioned the long way, attach one end of each cord to a corner of the parachute material. Tie the other ends of the six cords together.

6) Screw the eye into the base of the nose cone, and tie the loose ends of the shock cord and the shroud lines to the eye. Fold the parachute and insert it into the body tube, pack the shroud lines and shock cord in over it, and put the nose cone in place. If desired, the nose cone may be painted before the screw eye is attached.



ABOUT THE ROCKET ENGINE

The engine of the Astron Phantom has been specially prepared to present no fire hazard. Clay and similar materials have been substituted for the fuel, and have been colored to show the various components of the engine.



Under no circumstances should an actual engine containing fuel be cut open. Rocket engines are safe only as long as they are intact, and should you open an engine, you may well ignite the fuel and burn yourself seriously.

Images by Gerry Fortin