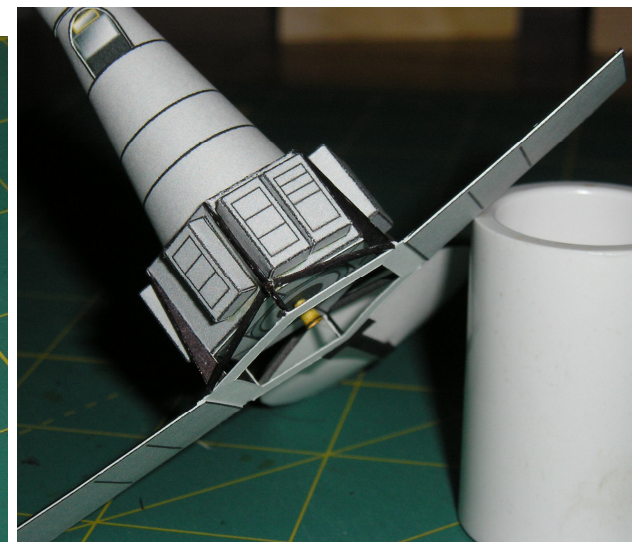
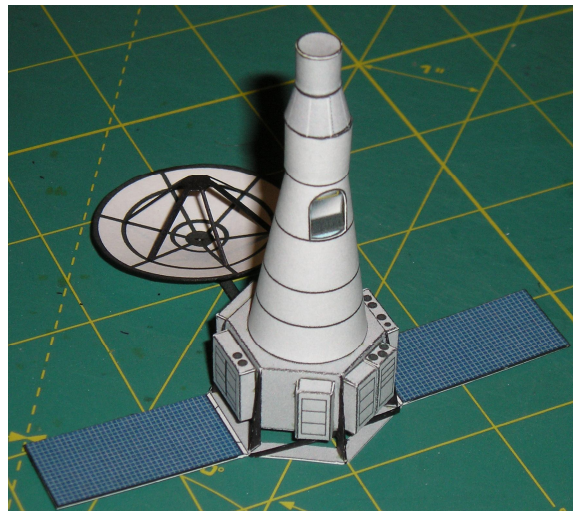


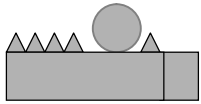
# Ranger Block 3 Lunar Probe

1:48 scale

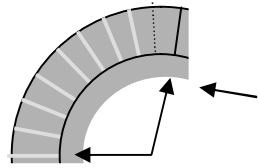
- Rangers 6, 7, 8, and 9 were the so-called Block 3 versions of the Ranger spacecraft. The spacecraft consisted of a hexagonal aluminum frame base 1.5 m (59") across on which was mounted the propulsion and power units, topped by a truncated conical tower which held the TV cameras. Two solar panel wings, each 73.9 cm (29") wide by 153.7 cm (60") long, extended from opposite edges of the base with a full span of 4.6 m (181"), and a pointable high gain dish antenna was hinge mounted at one of the corners of the base away from the solar panels. A cylindrical quasiomnidirectional antenna was seated on top of the conical tower. The overall height of the spacecraft was 3.6 m (142").
- Assembly – Score folds and cut out parts.
- Instrument Tower – Roll/glue part 1 into a cylinder, then bend in the tabs and secure the top. Roll/glue part 2 into a cone, then glue part 1 on top, sliding the cylinder down to overlap the top of the cone. Roll/glue part 3 into a cylinder, then bend in the tabs and glue the assemblies parts 1 & 2 on top.
  - Cut out the opening for the TV camera aperture on part 4, then roll/glue into a tall cone (frustum). Bend the tabs on the TV insert back slightly, bend the curved section at the bottom up. Carefully position the insert behind the opening in the cone and glue in place with the side tabs. When dry, carefully bend the top of the insert to meet the inner surface of the cone and secure with a tiny dab of glue. Glue the parts 1-3 assembly on top, sliding it down to overlap the top of the cone.
- Main bus – carefully fold the mounting tabs upward (toward the printed side). Fold the side panels down and secure by gluing the backs of the mounting tabs together (align carefully). When dry, bend the remaining tabs inward and glue the bottom panel in place – note the markings that align with panels 1 & 4. Fold/glue the electronics boxes, then glue to the main bus side panels over the dotted outlines.
- Lower Truss and Solar panels. Fold/glue the solar panels together – printed side out. Color the backs of the small, narrow struts black. Carefully apply glue to the bottoms of the main bus mounting tabs and glue to the top of the lower truss – the solar panels align with panels 1 & 4 and the black rectangle on the lower truss (HGA mount) lines up between panels 2 & 3. Fold the narrow struts up and glue to the corners at the bottom of the main bus between panels 2 & 3 and 5 & 6 – trim the ends as needed to fit. See picture on page 3 for details.
- High Gain Antenna (HGA) – make a radial slit in the HGA just left of the printed line, overlap to the dotted line and secure to form a shallow cone. Accordion fold the HGA mast (joined black rectangular piece), fold the end tabs out, and glue to make a stiff mast (do not get glue on the tabs). Color the mast black. Apply glue to the inside of one set of tabs, center then clamp it around the black rectangle on the lower truss pointing straight out. With the model set flat on its base, fold open the other set of tabs and glue the middle of the HGA dish in place with the printed side pointing upward and one set of radial lines pointing to the center of the truss (see picture on page 3 for detail). The actual HGA rotates at the end of the mast and may be oriented to show best in your final display. Bend the radial arms down on the secondary reflector and glue to the HGA dish where the radial lines meet the circle about a quarter of the way in from the edge.
- Propulsion – roll the nozzle into a small cone and secure to the center of the bottom of the main bus.



1-Top Cylinder (omni-LGA)



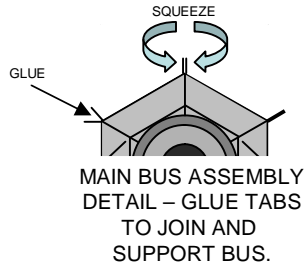
2-Frustum



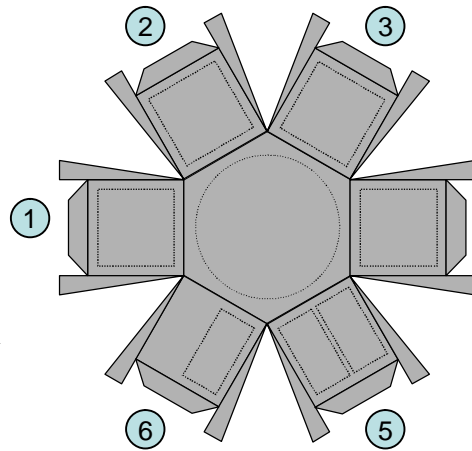
3-Cylinder



4-Instrument Tower



5-Main Bus



Ranger Block 3 Lunar Probe

1:48 scale

TOP

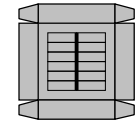
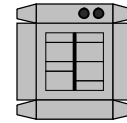
VALLEY FOLDS

4

BOTTOM

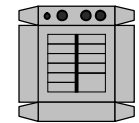
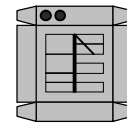
1

2



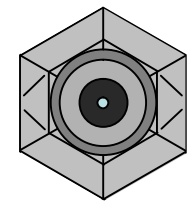
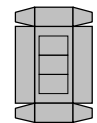
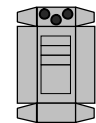
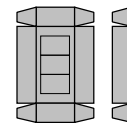
3

4

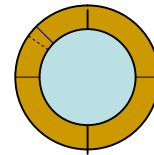


5

6



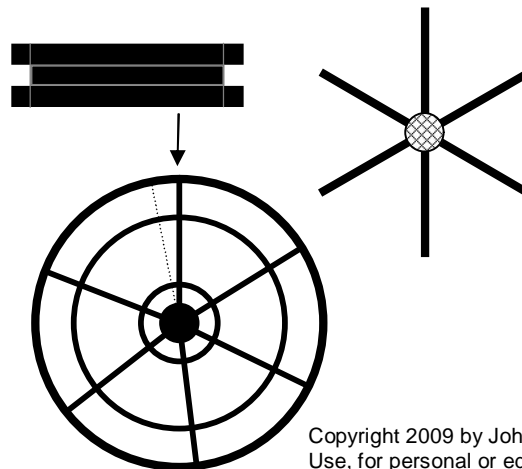
NOZZLE



1

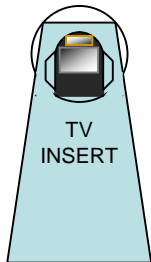
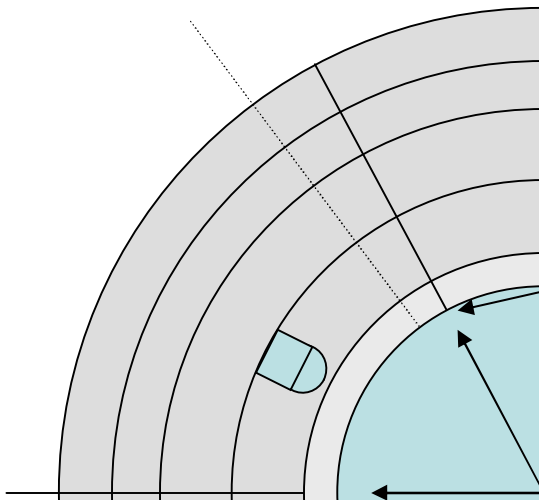
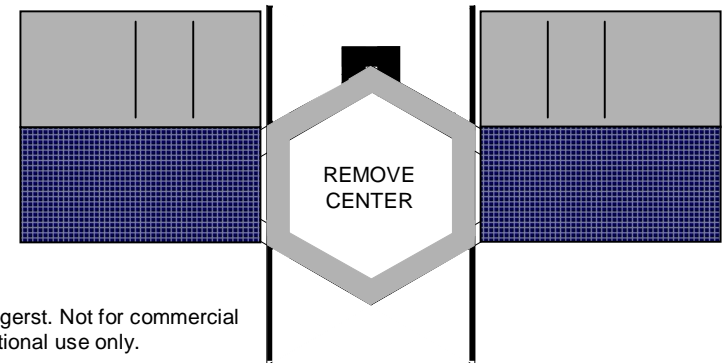
7-High Gain Antenna (HGA)

FORM INTO CONE AND ATTACH SECONDARY REFLECTOR AND SUPPORT AS SHOWN IN PICTURE. FOLD MAST TO 3-PLY, USING END TABS ON OUTER LAYERS TO ATTACH TO LOWER TRUSS AND HGA



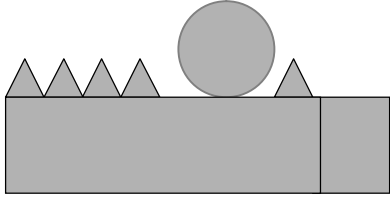
6-Lower Truss and Solar Panels

SOLAR PANELS ALIGN WITH MAIN BUS PANELS 1 & 4. HGA ATTACHES BETWEEN PANELS 2 & 3. SMALL STRUTS FOLD UP TO ATTACH TO MAIN BUS - SEE PICTURE.

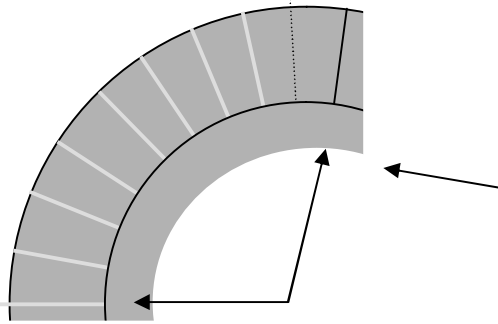


ALIGN TV APERTURE  
BETWEEN PANELS 5 & 6.

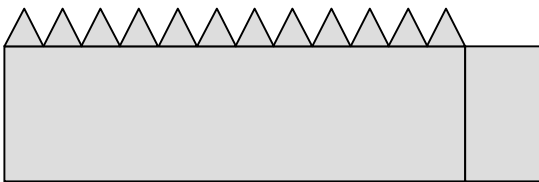
1-Top Cylinder (omni-LGA)



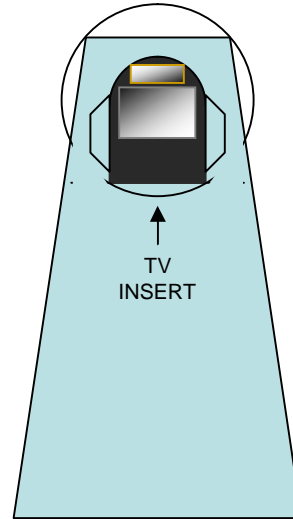
2-Frustum



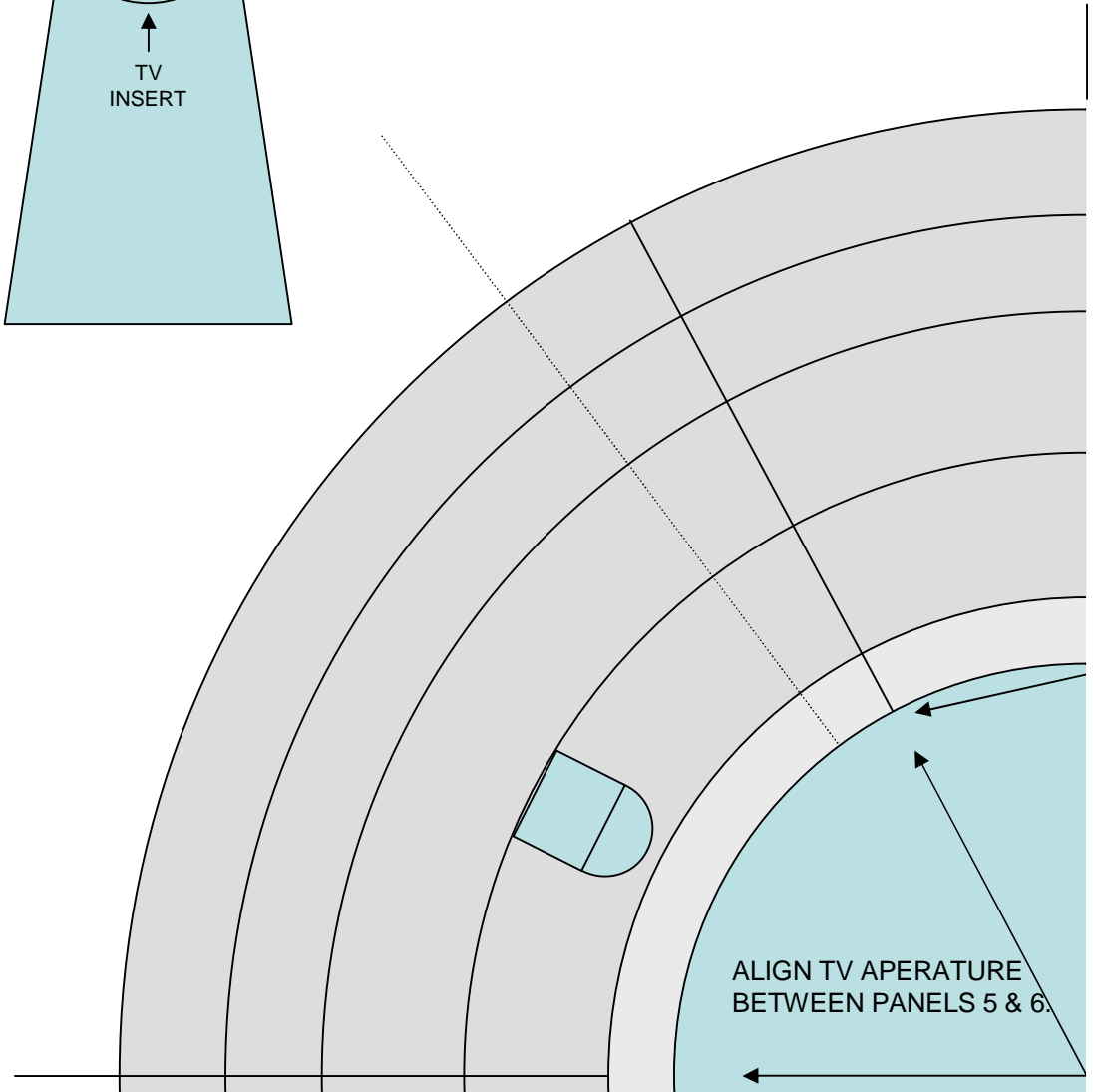
3-Cylinder

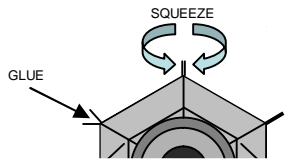


4-Instrument Tower



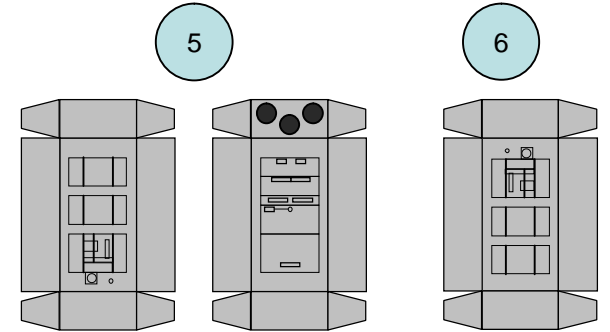
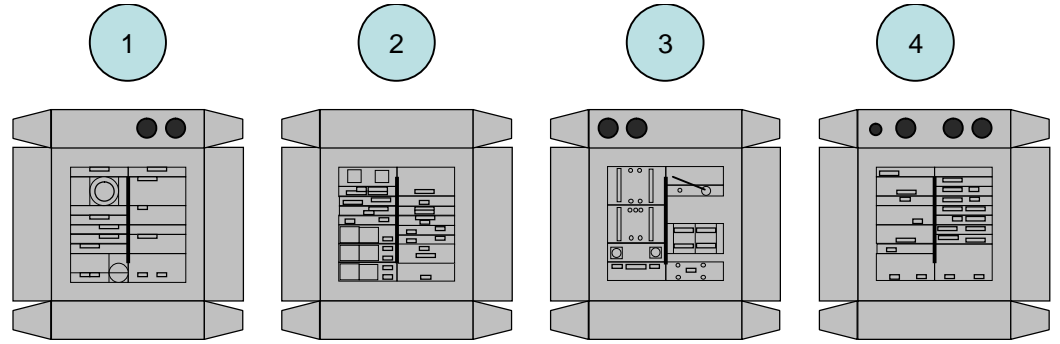
# Ranger Block 3 Lunar Probe 1:24 scale





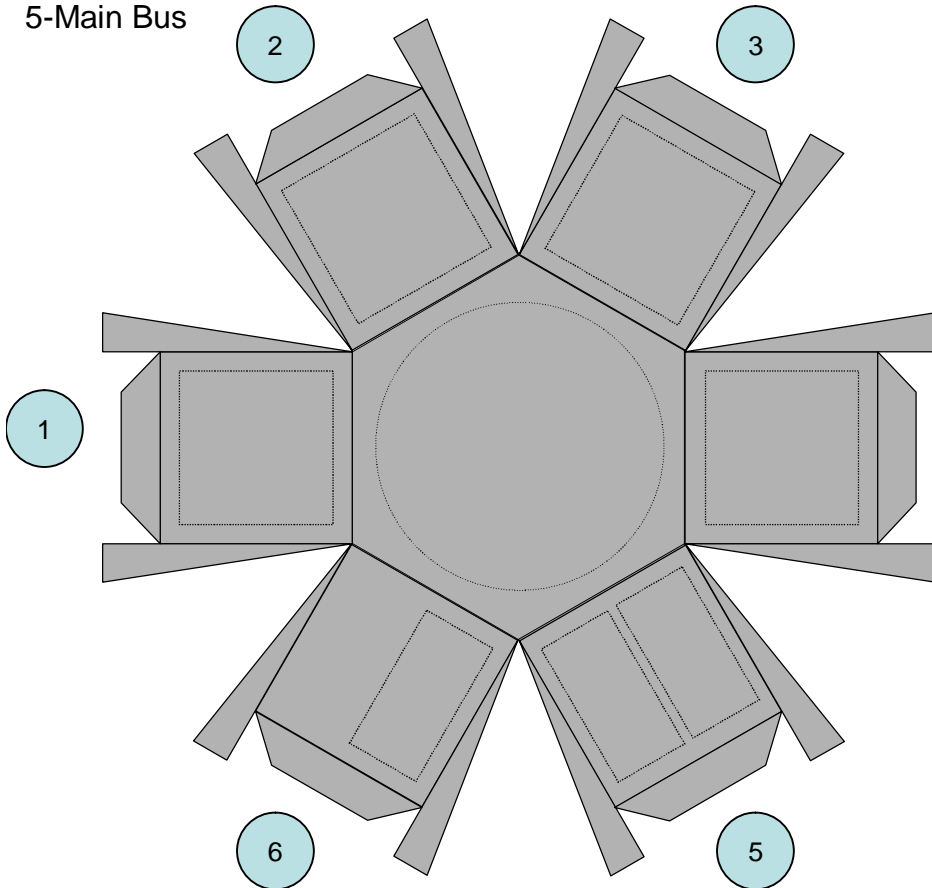
MAIN BUS ASSEMBLY  
DETAIL – GLUE TABS  
TO JOIN AND  
SUPPORT BUS.

# Ranger Block 3 Lunar Probe 1:24 scale

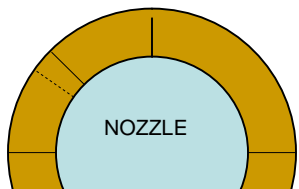
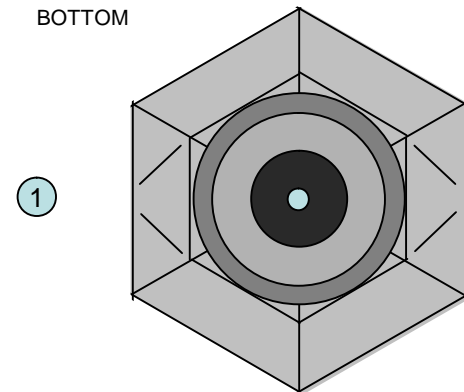


5-Main Bus

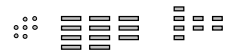
TOP



BOTTOM

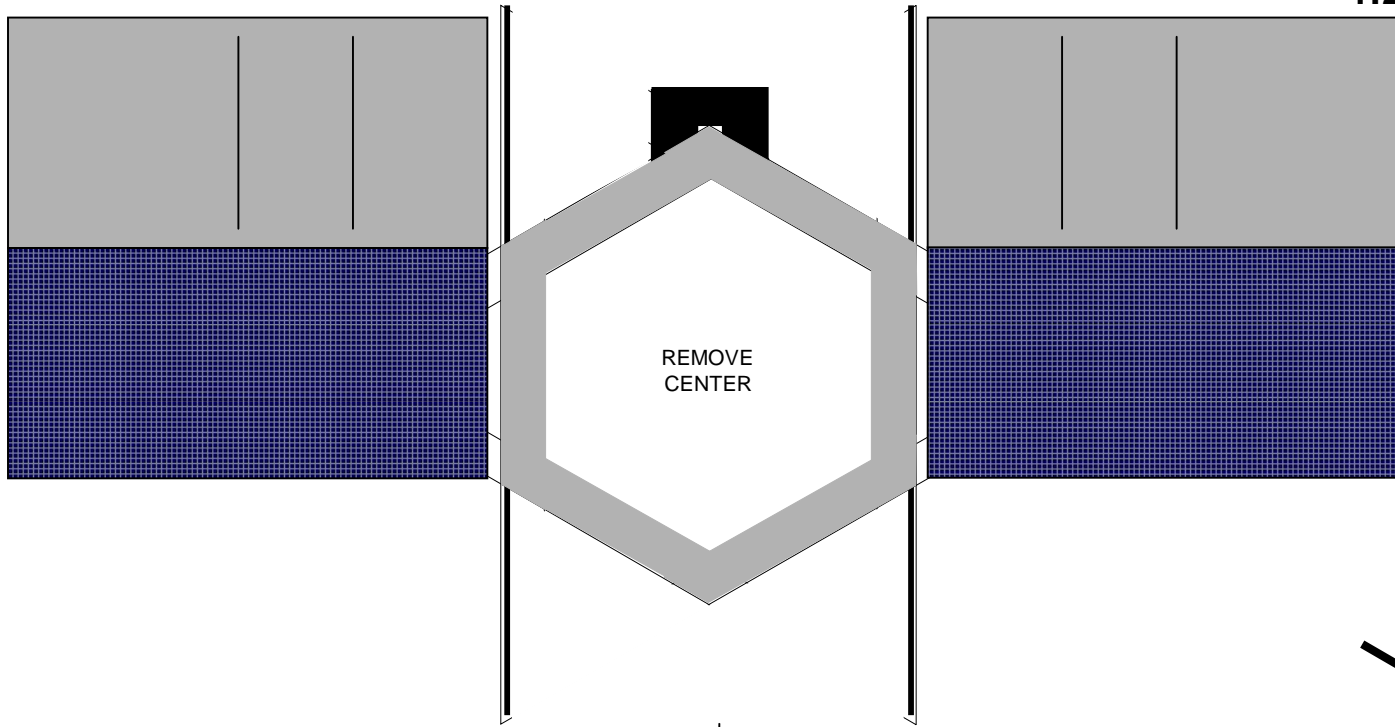


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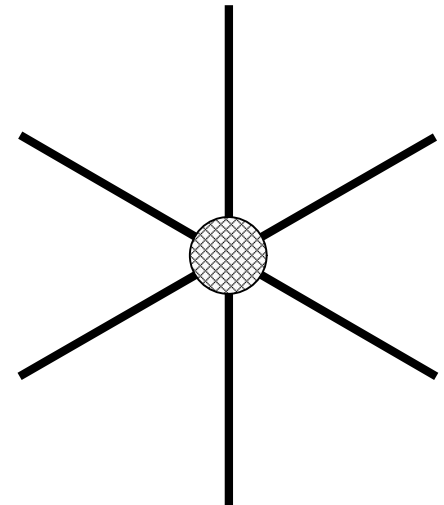
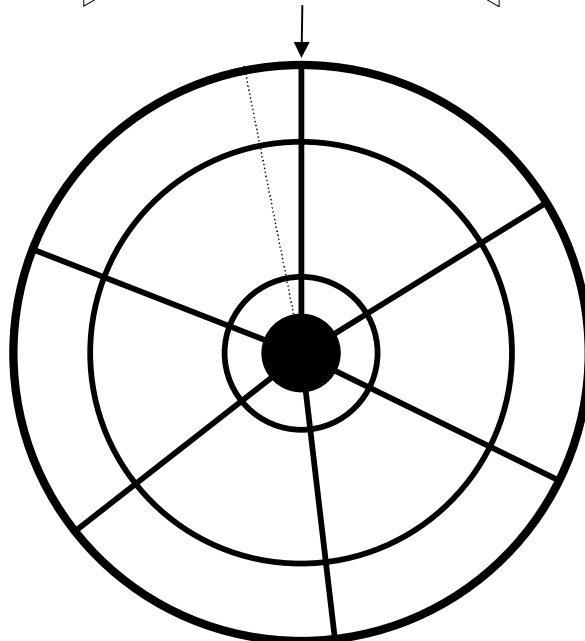


6-Lower Truss and Solar Panels

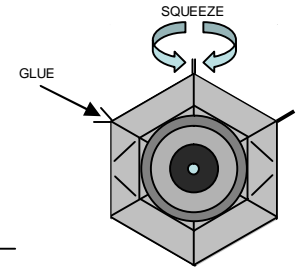
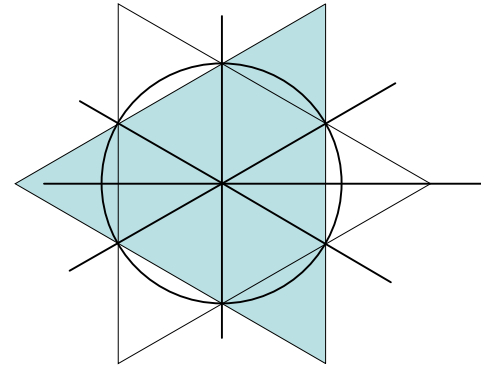
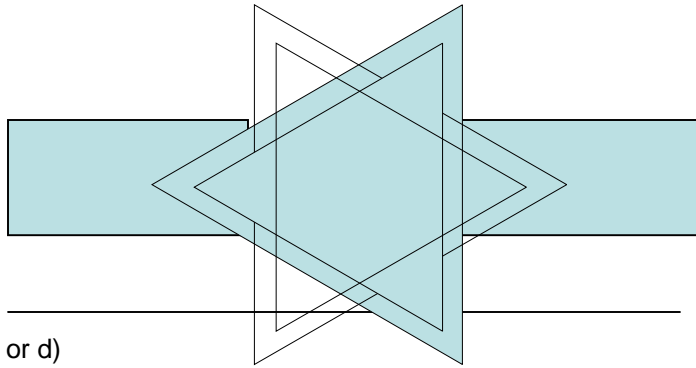
Ranger Block 3 Lunar Probe  
1:24 scale



7-High Gain Antenna (HGA)







**PARTS (HxW or d)**

Cylinder – 1/4 x 1/4

.25 x .785

Conic – 1/4 x 3/8

.5154sr x .7731lr x 87deg

Cylinder – 3/8 x 3/8

.375 x 1.18

Conic – 1 1/4 x 3/4

1.264sr x 2.528lr x 53deg

Taper hex – 1/8

Hex bus – 1/2 face 1/2

Bottom truss – 1/4

HGA – 1 1/2 dia w/ 1" mount arm?

