

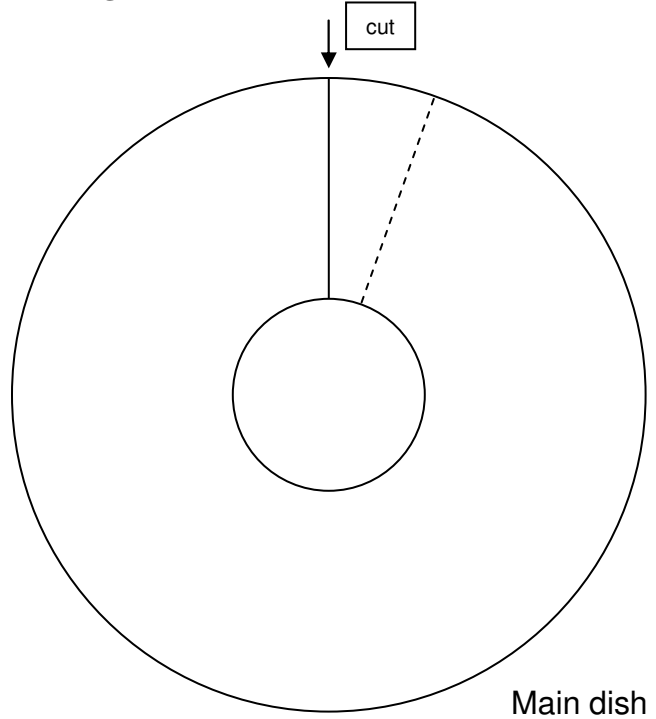
Magellan – Venus

1:48 scale

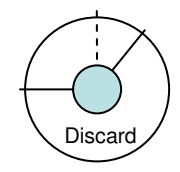
- Score all fold lines and cut out the parts. The actual Magellan spacecraft was virtually all white – some model parts are blacked to heighten contrast/visibility.
- High Gain Antenna (HGA): Form and glue the main dish into a shallow cone, by overlapping the cut radius to the dotted line. Do the same for the reflector. Form the feed horn into a sharper cone as well. Roll the low gain antenna into a cylinder and glue.
 - Overlap the ends of the support base ring and glue into a circle. Bend tabs inward. Glue the support base ring to the printed side of the support base. Glue the main dish to the top of the support base assembly, centering it carefully. Glue the feed horn, small end down, to the blue circle in the center of the support base.
 - Glue the reflector to the underside (unprinted side) of the reflector tripod. Color the back sides of the tripod legs black. Bend the legs downwards (away from the printed side). Glue the tip of one leg to the main dish along the seam, about half way between the center and the dish's outer edge. Glue the other legs symmetrically. Glue the low gain antenna to the blue circle on the top of the tripod – black band up.
- Main Bus: Note the cut and fold marks. Fold the triangular tabs on the side panels inward (away from the printed side), then fold the side panels down. Glue the tabs to form the 10-sided box. Bend the tabs inward and fold the bottom panel down and secure to close the box.
 - Fold the Medium Gain Antenna mount into a wedge and glue. Roll and glue the antenna into a cone. Glue the antenna to the blue circle on the mount.
- Forward Equipment Module: Fold the forward equipment module into a rectangular box and glue. Roll and glue the star tracker (shaded side inward) into a cone. Glue the star tracker to the blue circle marked “s.”
- Upper Assembly
 - Fold all tabs on the Forward Equipment Module inward. Glue the module to the indicated position on the Main Bus – make sure the star tracker is on the opposite side from the dotted rectangle marked “M.”
 - Glue the Medium Gain Antenna mount to the rectangle marked “M” – it ends up pointing out and up.
 - Glue the HGA assembly to the top of the Forward Equipment Module – carefully center main dish with the seam on the top face of the dish centered on face #1 of the equipment module (the one with the square marked “R”).
- Radar Altimeter: Fold and glue the radar altimeter horn with the printed side inward. Attach the horn to the radar altimeter mount.
 - Note the three small tabs on the large end of the mount, the center one is bent down about 120 degrees and goes under the edge of the HGA dish, the outer ones bend down only slightly and fit over the dish's edge. Glue the wide end of the radar altimeter mount (using the tabs as described) to the edge of the HGA dish, centered on face #1 of the equipment module with the square marked “R” (this should also center the radar horn on the seam on the upper side of the HGA dish).
 - Bend the wave guide inward and secure the end to the square marked “R” on the equipment module – adjust as needed to keep the wave guide straight.
 - Fold the mounting legs inward symmetrically to touch the HGA support base ring and secure, using the ends as short tabs.
- Propulsion Module
 - Fold and glue the thrusters into rectangular boxes as shown. Roll and glue the nozzles into small cones.
 - Color the backs of all the truss arms black. Bend the four triangular inter-deck trusses on the upper deck downward, **toward the printed side** – secure to the lower deck at the four points where the lower truss arms attach to the lower deck's ring.
 - The inter-deck truss arms can be stiffened with glue, or you can cut out and assemble the alternate truss. If using the alternate truss box, first remove the inter-deck trusses from the upper deck. Do not remove the material inside the alternate trusses or inside the triangular truss arms attached to the lower deck.
 - Set up the propulsion module with the upper deck down and glue the tops of the thrusters to the ends of the long truss members on the upper deck. Bend the ends of the triangular truss members from the bottom deck so they hold each thruster straight – glue in place. Bend the remaining long truss members from the bottom deck to meet the upper corners of the thruster (trim if needed).
 - Glue the thruster nozzles to the blue circles on the bottom of the thruster boxes.
 - Attach the propulsion module to the upper assembly. Align the thruster arms with the corners of the equipment module. There are also alignment lines on the bottom of the main bus.
- Solar Arrays: Cut out the arrays, fold and glue as indicated. Cut a small dowel to length and split the ends as shown. Drill out the blue circles on sides 1 and 3 of the equipment module and insert the dowel. Secure the solar arrays into the split ends of the dowel, using the small rectangles on the gray (back) side of the arrays as a guide.
- Display Mount: Split the end of a small dowel and wedge the HGA dish (using the overlapped area) into the split. Drill a hole in your base to mount the dowel.

Magellan – Venus

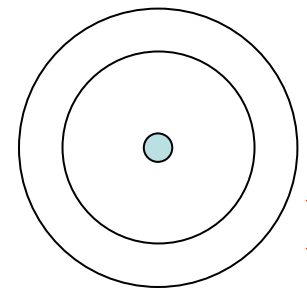
1:48 scale



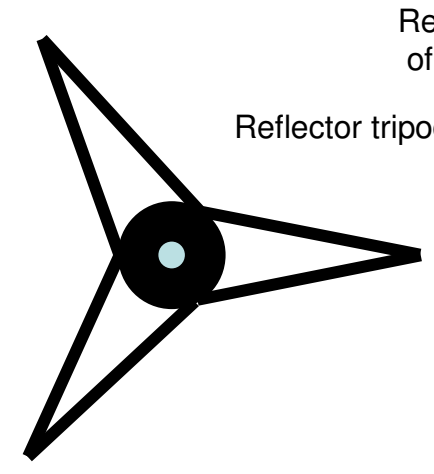
Main dish



Feed horn

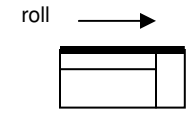
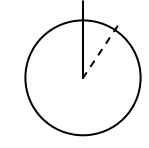


Support base

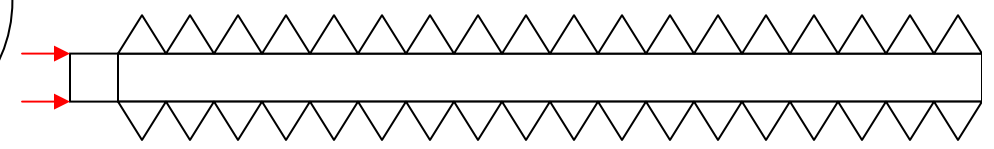


Reflector tripod

Reflector – attach to underside of tripod

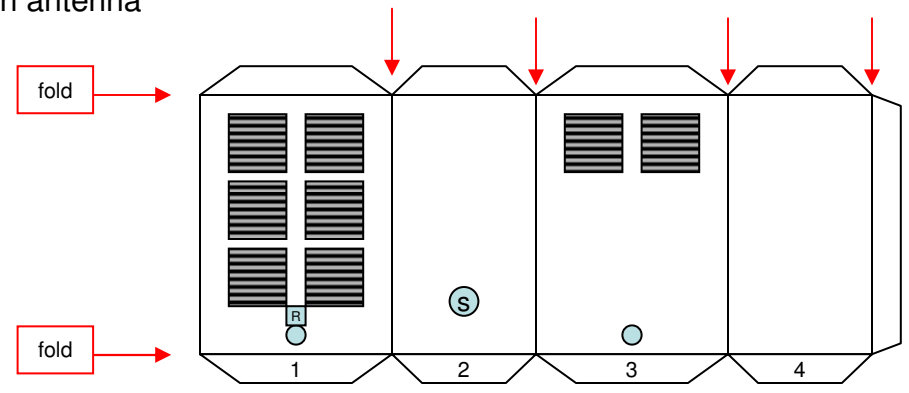


Low gain antenna



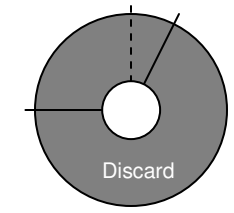
Support base ring

High gain antenna



Forward Equipment module

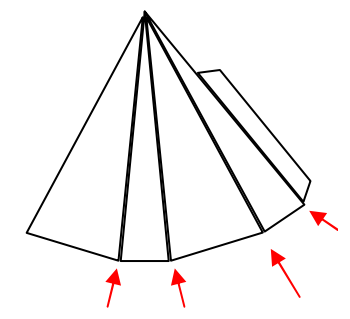
S – star tracker



waveguide

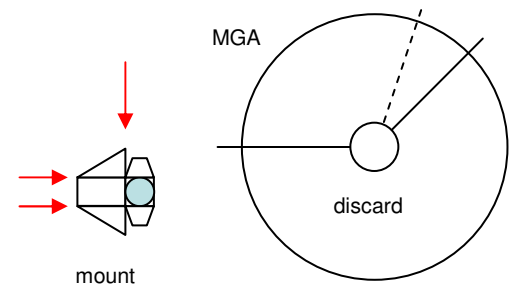
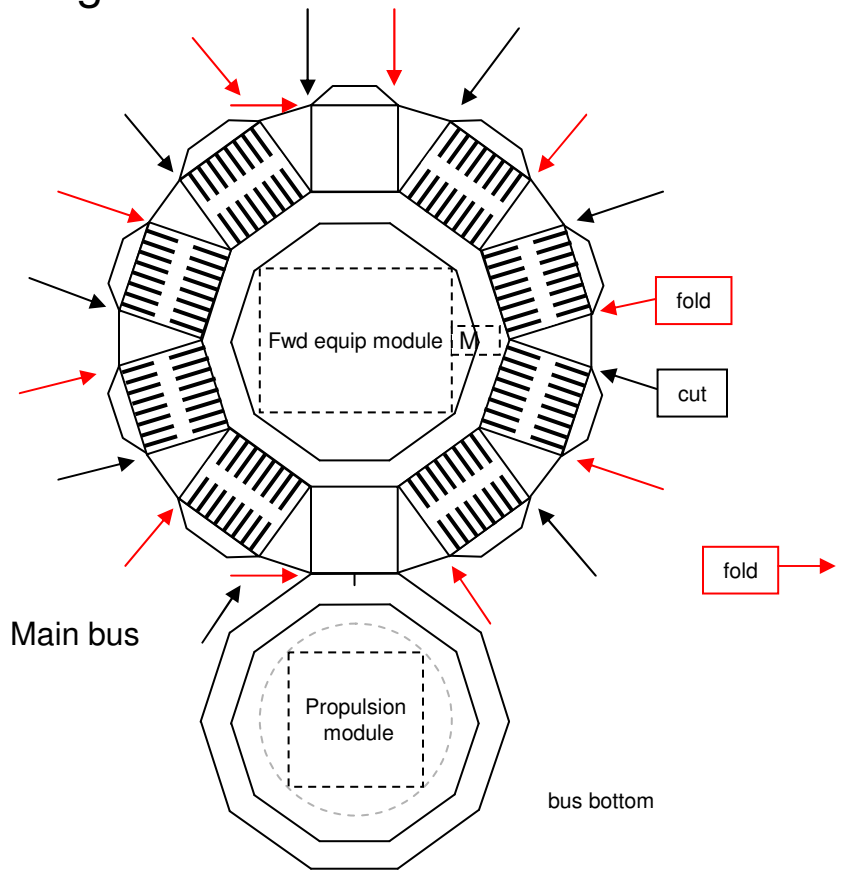
Radar Altimeter Mount

Radar Altimeter Horn



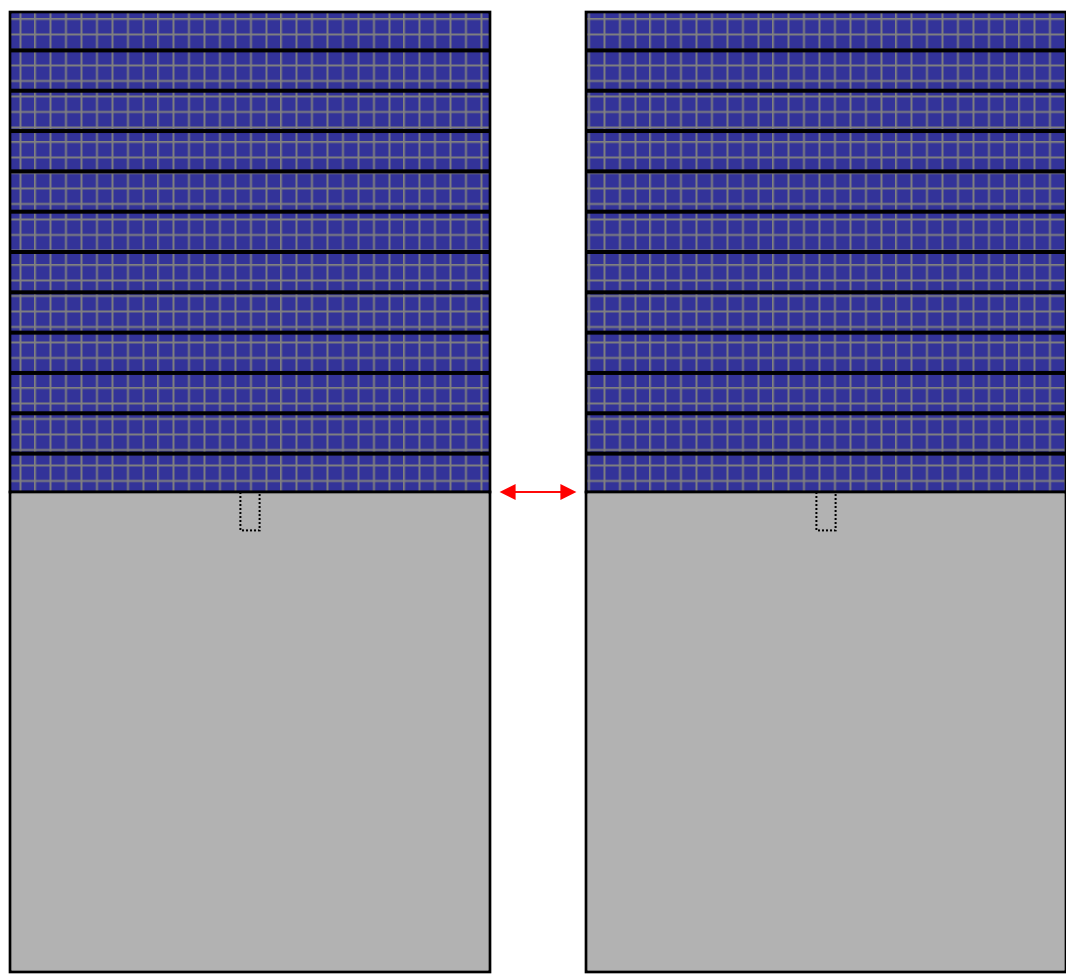
For more robust model, do not remove material inside support struts.

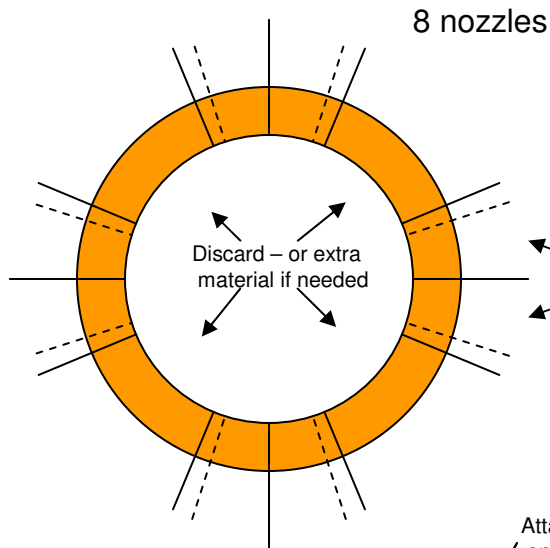
Magellan – Venus 1:48 scale



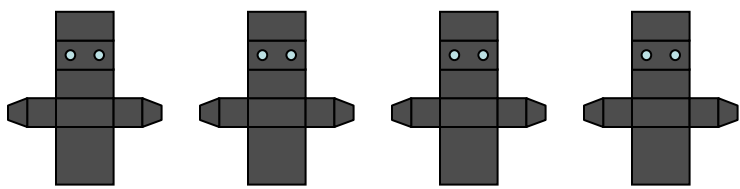
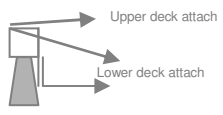
M - Medium Gain Antenna

Solar arrays





Side view finished thruster



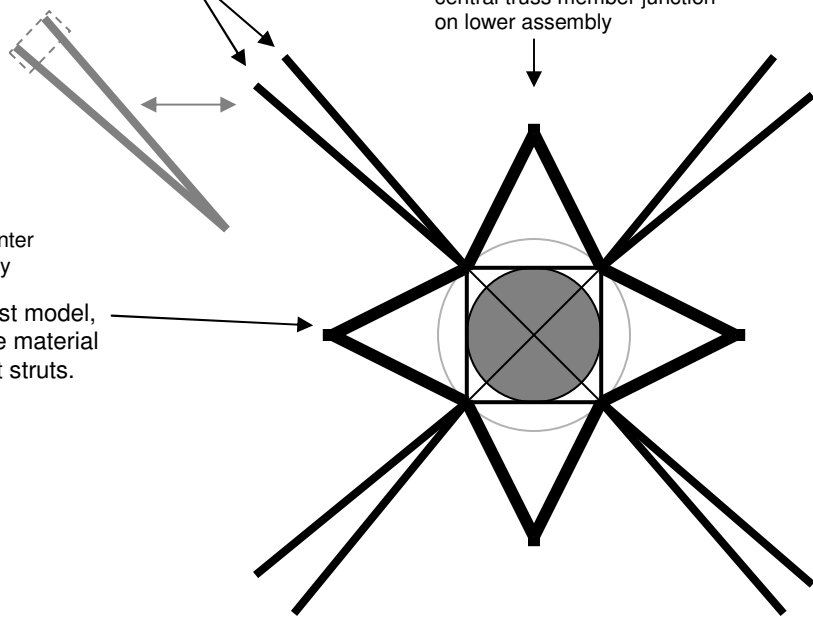
Thrusters - fold on lines

thruster nozzles roll into cones

Thruster mounting position

Attach to top of thruster assembly

Inter-deck truss assembly: Bend down and attach to central truss member junction on lower assembly

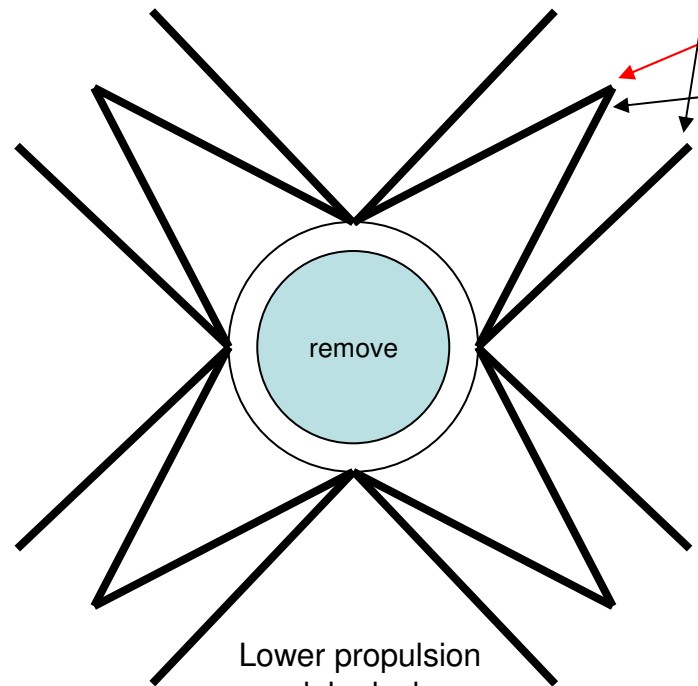


Upper propulsion module deck
Glue to heavy card stock

Attach to upper corners on sides of thruster assembly

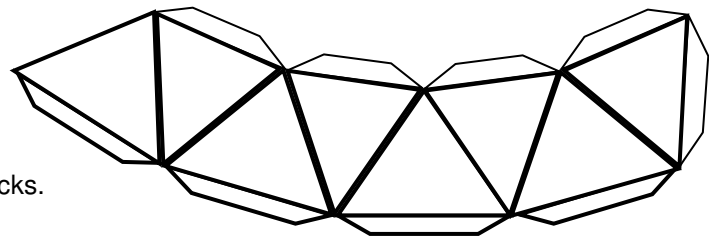
Attach to bottom/center of thruster assembly

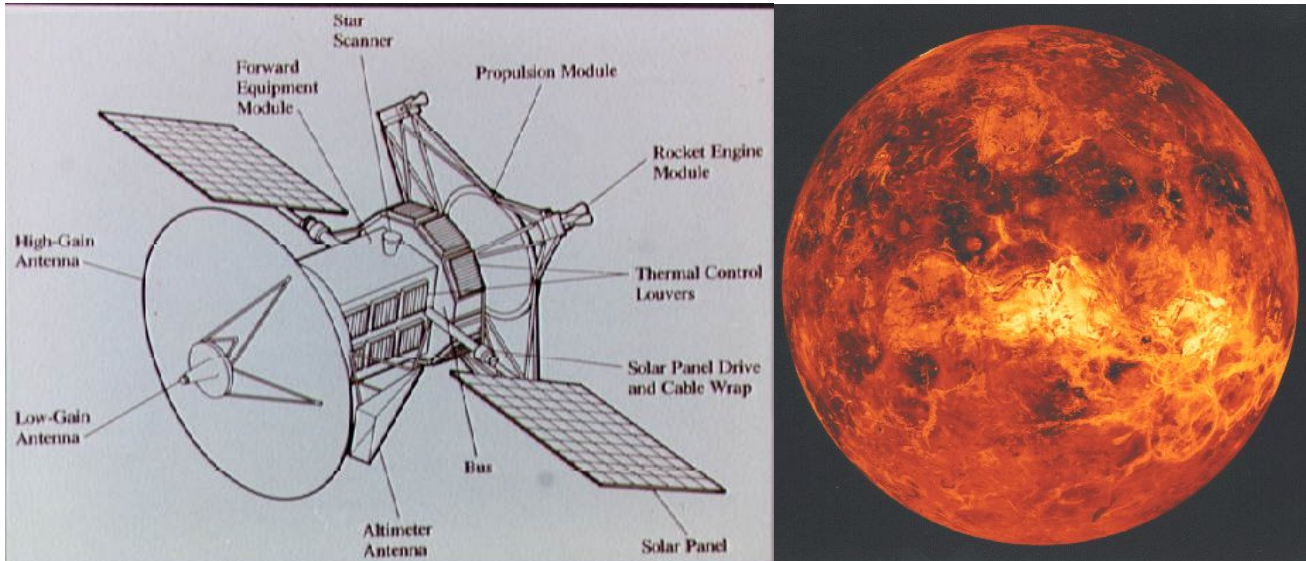
For more robust model, do not remove material inside support struts.



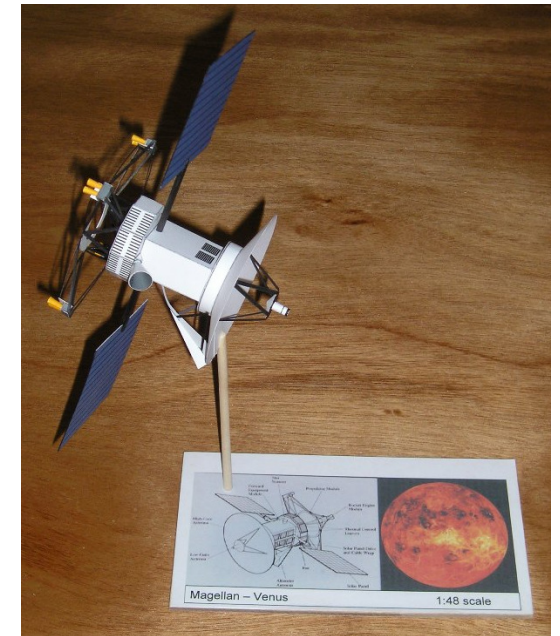
Lower propulsion module deck
Glue to heavy card stock.

Alternate propulsion module inter-deck truss. Fold on lines, fold tabs inwards. Glue between decks.

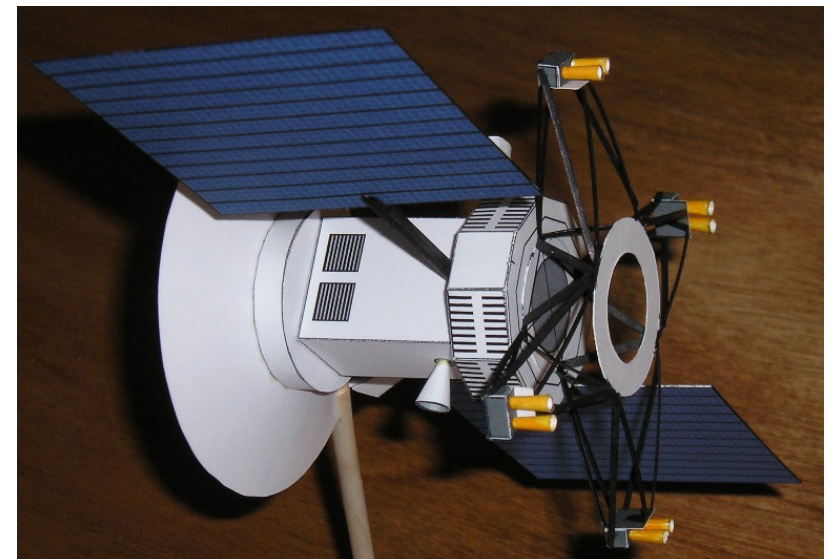
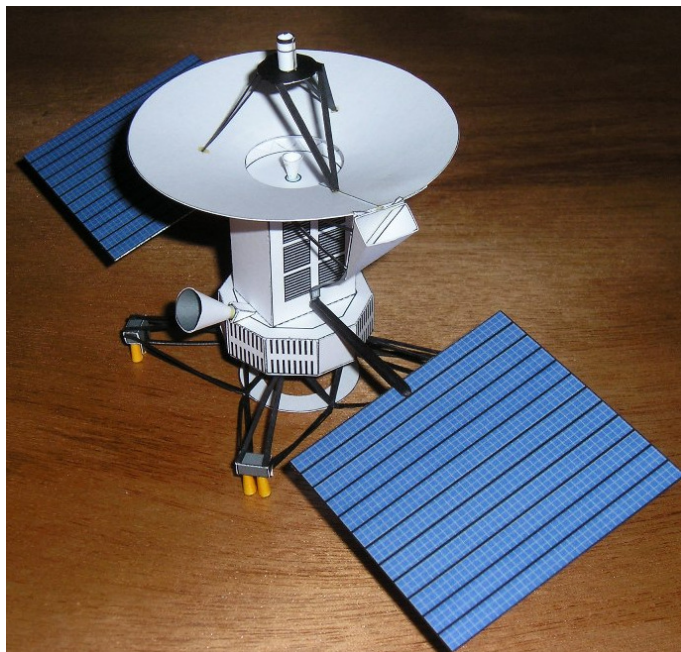


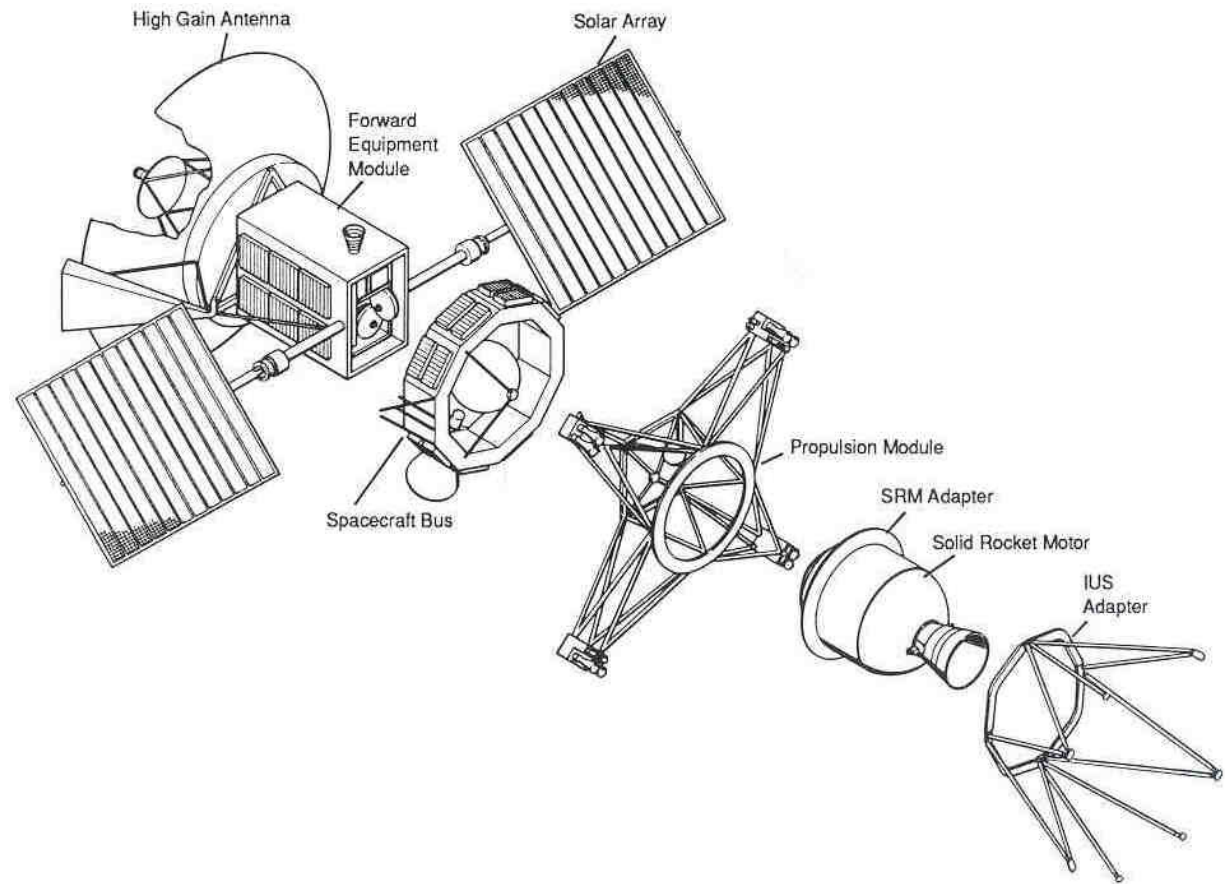
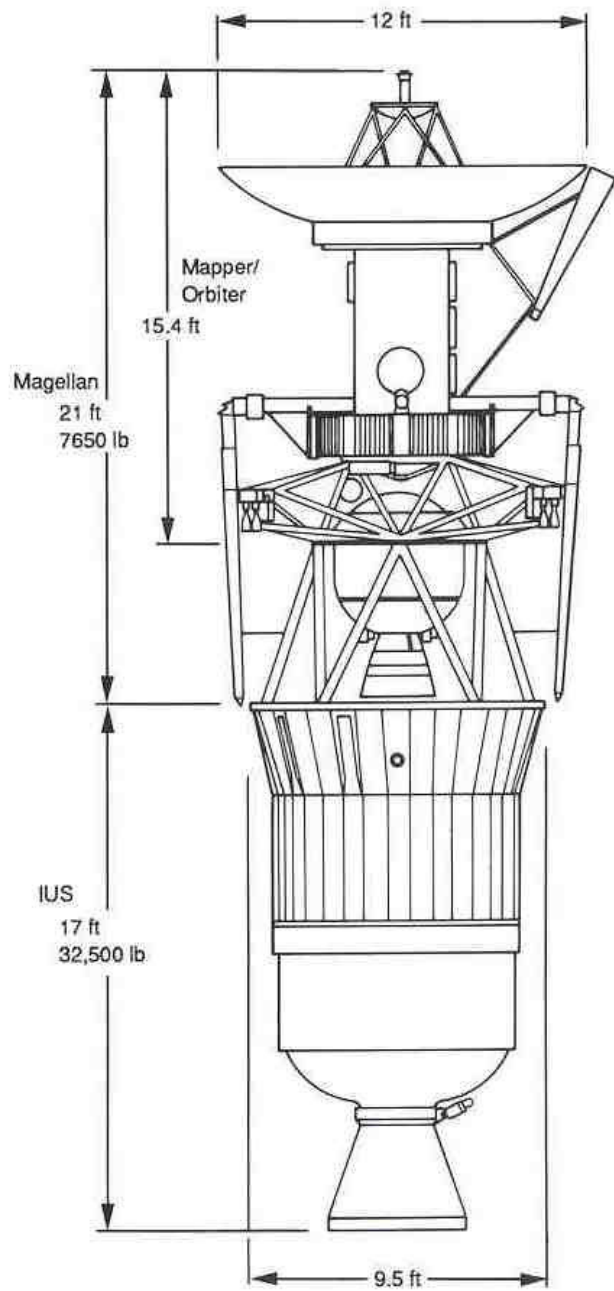


Magellan – Venus 1:48 scale

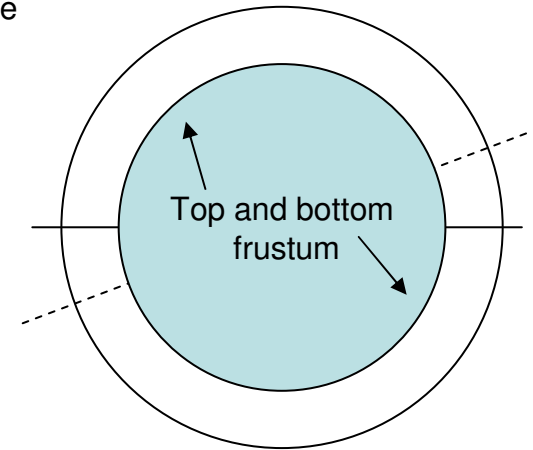
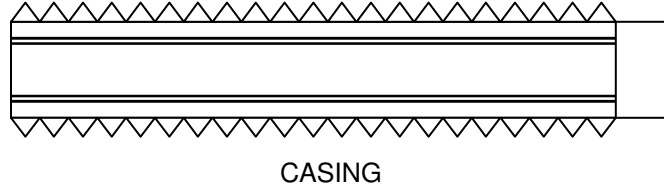
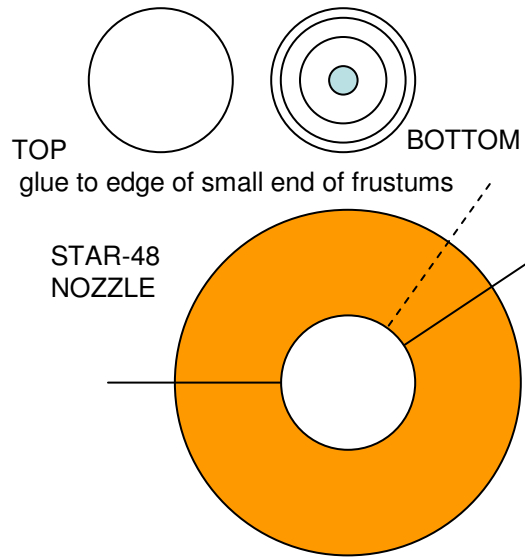


Base graphic



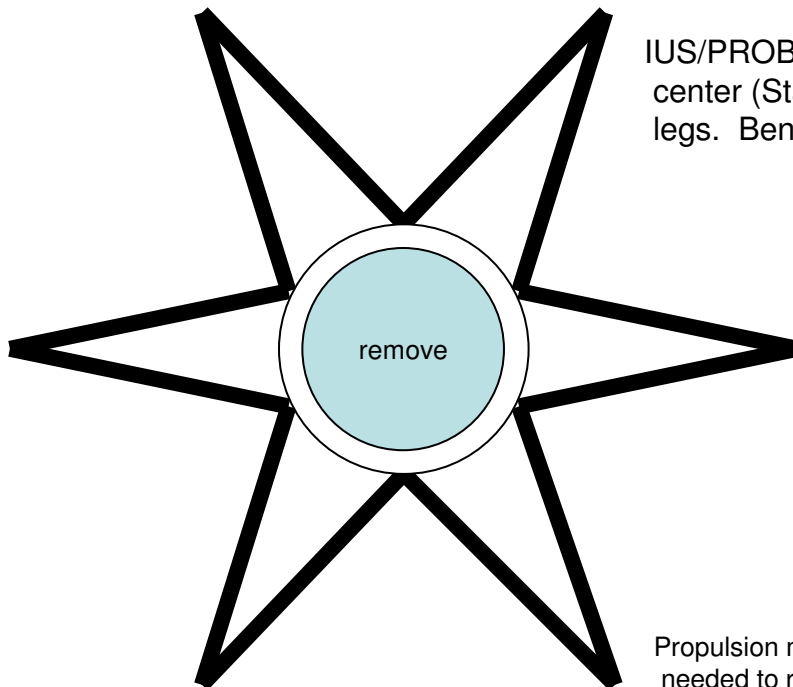


Simple Star-48 kick motor – attach to bottom of propulsion module



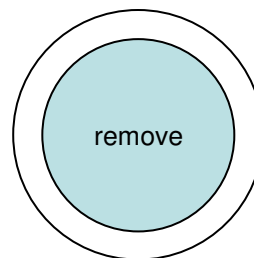
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Simple Boeing Inertial Upper Stage (IUS)

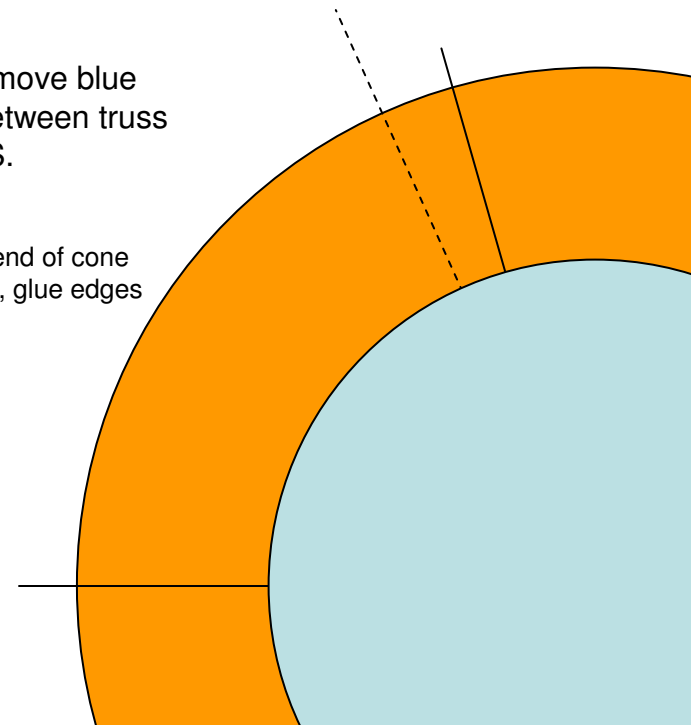


IUS/PROBE ATTACHMENT TRUSS: remove blue center (Star-48 will fit there) and area between truss legs. Bend truss legs to meet top of IUS.

IUS NOZZLE: fit small end of cone over opening in bottom, glue edges

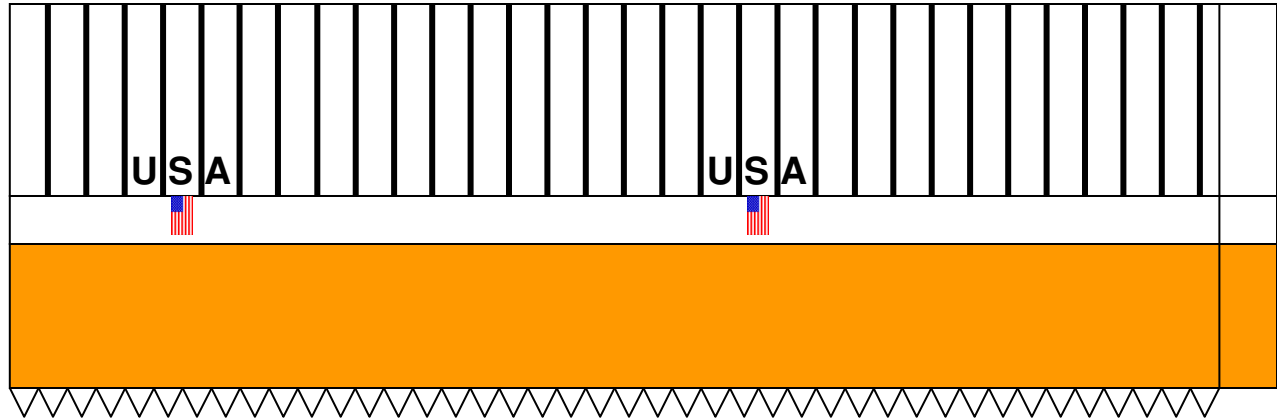
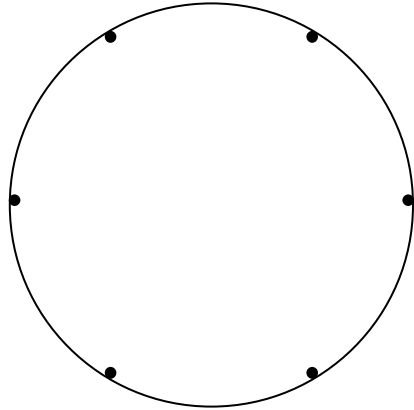


Propulsion module lower deck doubler: use if needed to reinforce ring on lower deck (pg 4)



Simple Boeing Inertial Upper Stage (IUS)

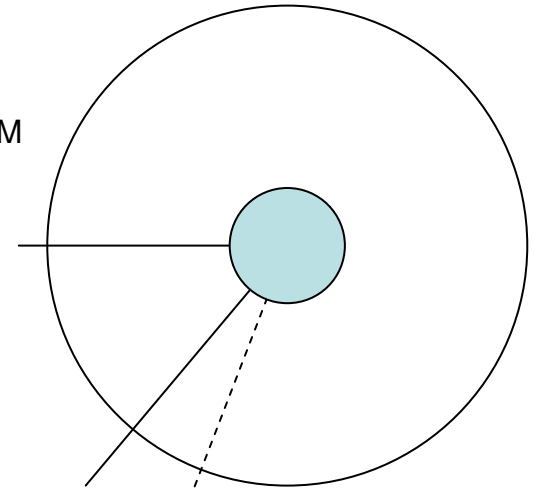
TOP: fit inside upper adapter cone.
Attachment truss mates to dots on rim.



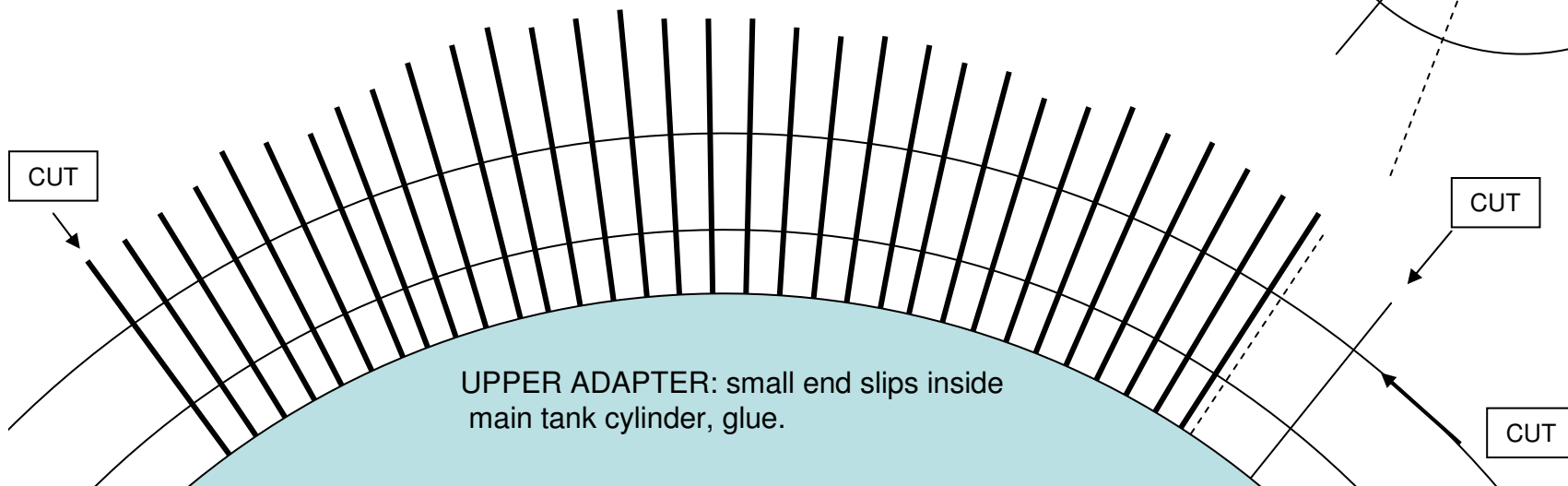
MAIN TANKS: top slips over small end of upper adapter, fold tabs inward to fasten to bottom.

**Notes – 2" diameter tank, 2-1/4" for upper adapter
nozzle dia=5/8" and 1", height 1"**

BOTTOM



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UPPER ADAPTER: small end slips inside
main tank cylinder, glue.