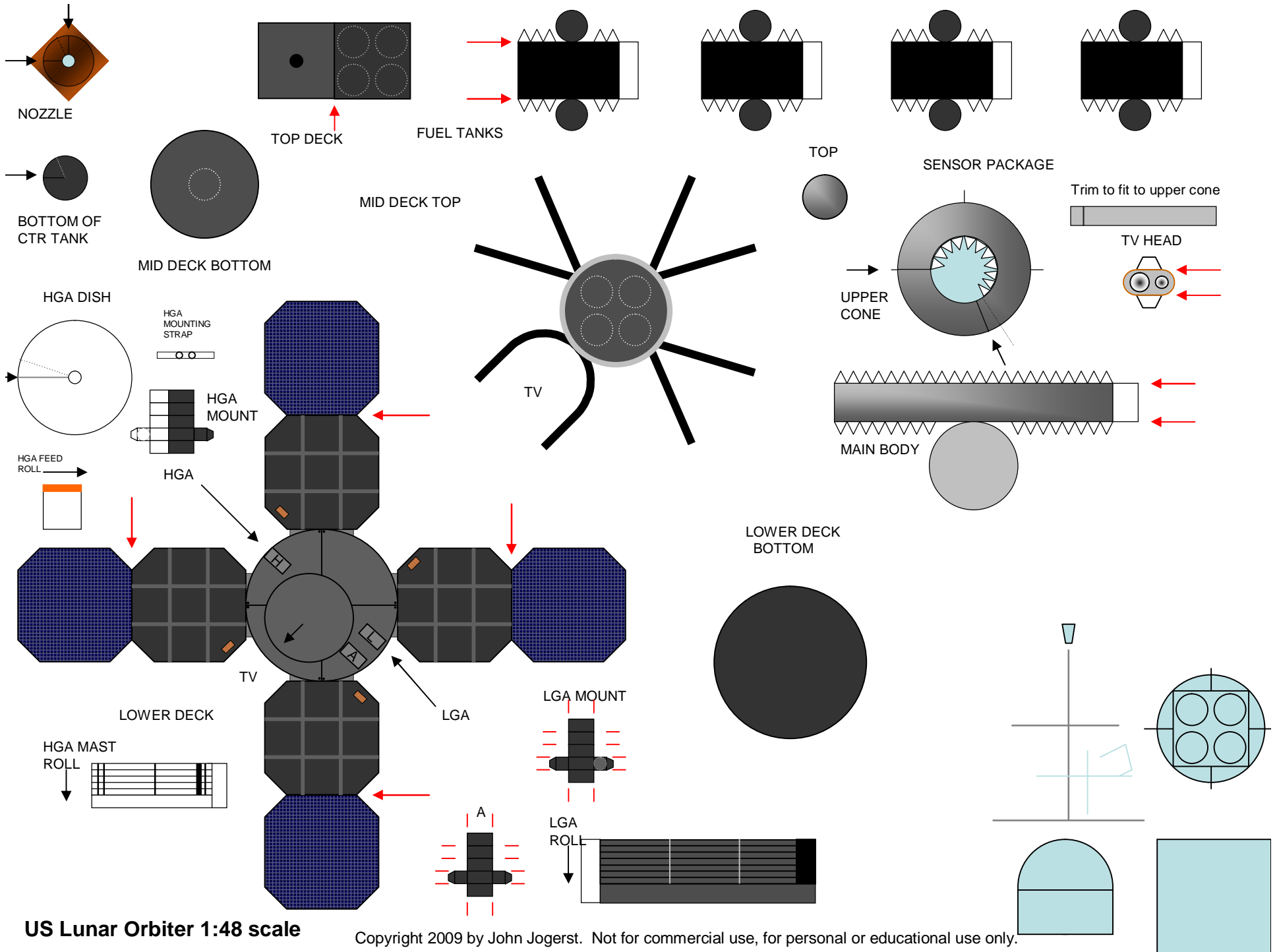


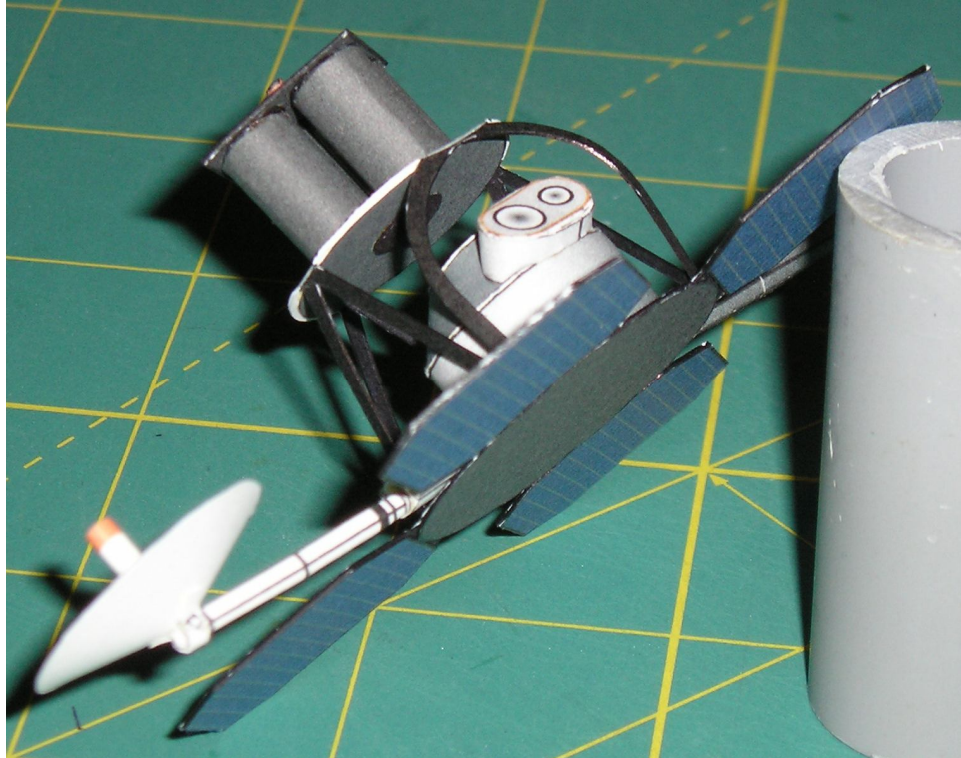
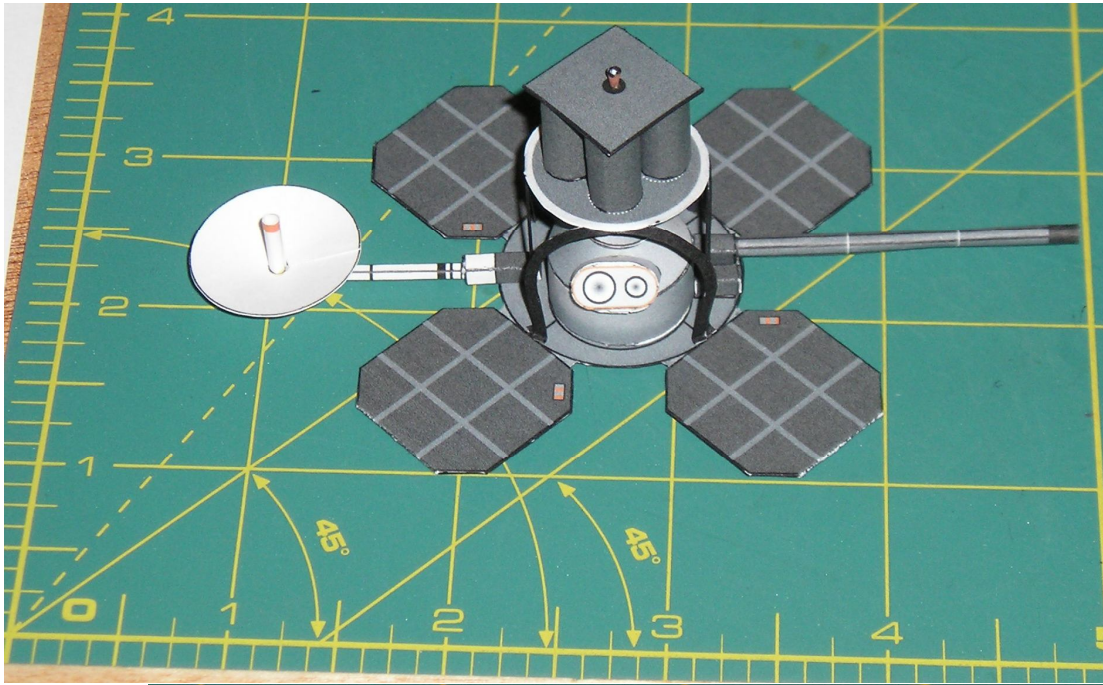
US Lunar Orbiter

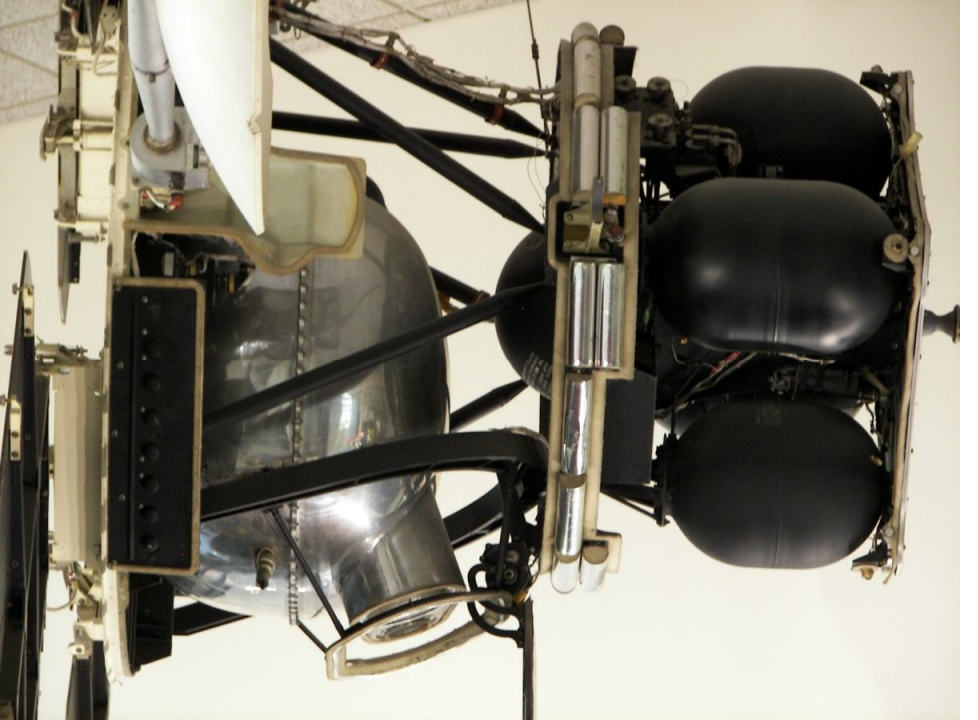
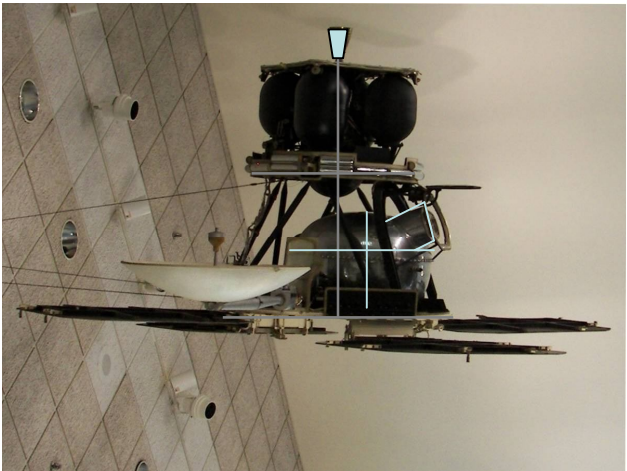
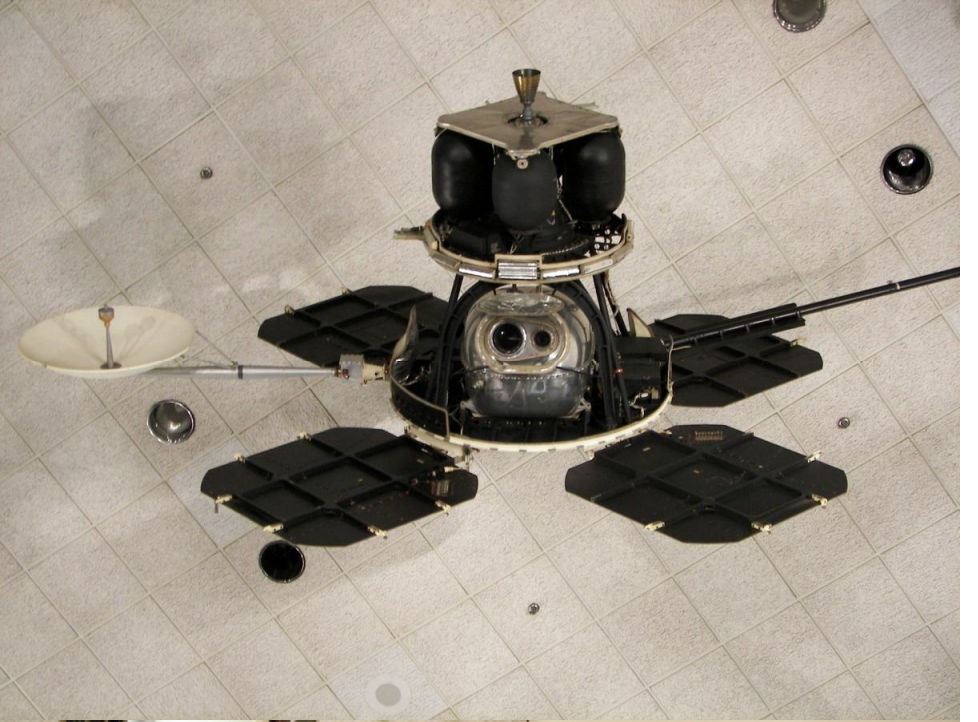
- The main bus of the Lunar Orbiter had the general shape of a truncated cone, 1.65 meters (65"-5.4') tall and 1.5 meters (59"-4.9') in diameter at the base. The spacecraft was comprised of three decks supported by trusses and an arch. The equipment deck at the base of the craft held the battery, transponder, flight programmer, inertial reference unit (IRU), Canopus star tracker, command decoder, multiplex encoder, traveling wave tube amplifier (TWTA), and the photographic system. Four solar panels were mounted to extend out from this deck with a total span across of 3.72 meters (146"-12.15'). Also extending out from the base of the spacecraft were a high gain antenna on a 1.32 meter (52"-4.33') boom and a low gain antenna on a 2.08 meter (82"-6.83') boom. Above the equipment deck, the middle deck held the velocity control engine, propellant, oxidizer and pressurization tanks, Sun sensors, and micrometeoroid detectors. The third deck consisted of a heat shield to protect the spacecraft from the firing of the velocity control engine. The nozzle of the engine protruded through the center of the shield. Mounted on the perimeter of the top deck were four attitude control thrusters.
- Five Lunar Orbiter missions were launched in 1966 through 1967 with the purpose of mapping the lunar surface before the Apollo landings. All five missions were successful, and 99% of the Moon was photographed with a resolution of 60 m or better. Lunar Orbiter 1 launched 10 August 1966; Lunar Orbiter 2 launched 06 November 1966; Lunar Orbiter 3 launched 05 February 1967; Lunar Orbiter 4 launched 04 May 1967; Lunar Orbiter 5 launched 01 August 1967.
- Assembly – Score fold lines and cut out parts.
- Upper deck – Roll and glue the nozzle into a small cone. Fold the top deck in half and glue. Roll/glue the fuel tanks into cylinders, then fold the tabs on both ends inward and glue the top and bottom to hold their cylindrical shapes. Glue the fuel tanks to the underside of the top deck over the dotted circles.
- Mid Deck – Glue the mid deck bottom to the center of the mid deck top (the bottom is slightly smaller to allow more support when you later bend the struts down to connect with the lower deck). Glue the upper deck assembly to the top of the mid deck, aligning the fuel tanks with the dotted circles on the mid deck top. Roll/glue the bottom of the center tank into a shallow cone and glue to the underside of the mid deck over the dotted circle.
- Sensor Package – Roll/glue the upper cone, then bend in the tabs and glue on the top. Roll/glue the main body into a cylinder, then bend in the bottom tabs and glue the bottom circle to hold its shape. Bend the upper tabs in slightly, then glue the upper cone to the main body. Glue the band for the TV head into a ring, then carefully form it into an oval to match the shape of the TV head. Bend the tabs on the TV head down (away from the printed side) and glue inside the ring. Trim the back of the TV head assembly to fit against the curve of the sensor package's upper cone – see pictures for positioning. The TV head looks upward at an angle.
- Lower Deck – Fold/glue the front and back of the solar array panels together. Glue the lower deck bottom in place. Glue the sensor package in place over the circle on the upper side of the lower deck facing outward as indicated by the arrow. Fold/glue the HGA mount, LGA mount and part A into small boxes (the tops – marked with a circle – of the LGA and HGA mounts may be omitted and the antennae attached by inserting them into the boxes rather than gluing them to the circles if desired). Glue these three parts in place where indicated – the circles on the antennae mounts face outward. The white portion of the HGA mount extends outward beyond the edge of the lower deck.
- Deck assembly – Bend the struts on the mid-deck assembly downward (away from the printed side). Bend the tips (1-2mm) to form attachment tabs. Glue the ends of the struts in place over the dots on the lower deck – the arch straddles the TV head on the sensor package.
- High Gain Antenna (HGA) – Roll/glue the HGA dish into a shallow cone. Roll/glue the HGA mast into a long cylinder. Bend the HGA mounting strap into a “U” shape and glue only the center of the strap to the banded end of the HGA mast. Fold the ends of the mounting strap outward and use to attach the HGA dish to the mast. Roll/glue the HGA feed horn into a narrow cylinder, then glue in place in the center of the HGA dish. The white end of the mast attaches to the mounting – either glue it to the circle printed on the end of the mounting box or remove the end of the mounting box and insert the mast into the box and secure.
- Low Gain Antenna (LGA) – Roll/glue the LGA into a narrow cylinder. The white end of the antenna attaches to the mounting – either glue it to the circle printed on the end of the mounting box or remove the end of the mounting box and insert the antenna into the box and secure.
- Glue the nozzle in place in the center of the black circle on the top deck.

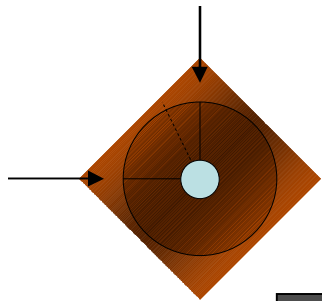


US Lunar Orbiter 1:48 scale

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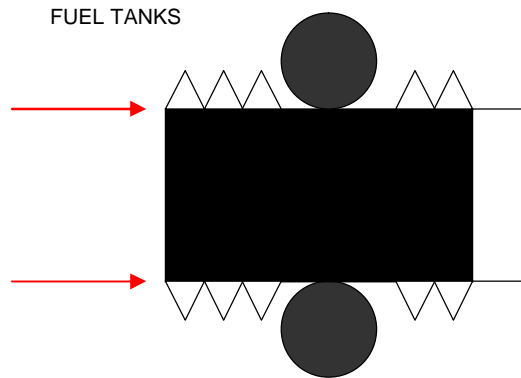
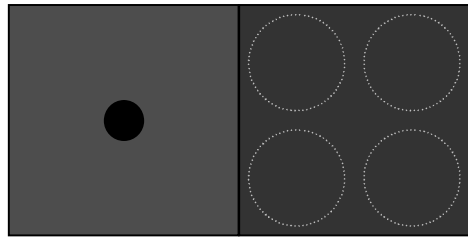




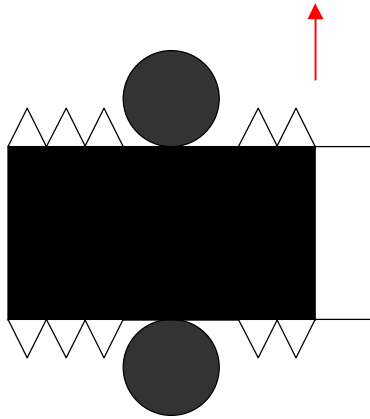
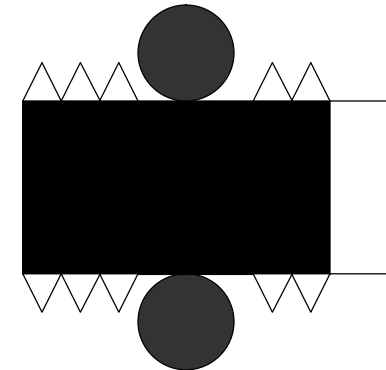


NOZZLE

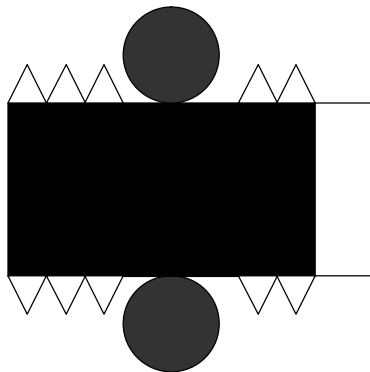
TOP DECK



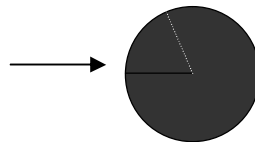
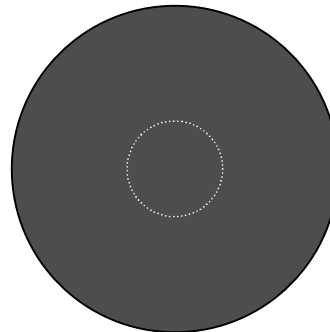
FUEL TANKS



FUEL TANKS

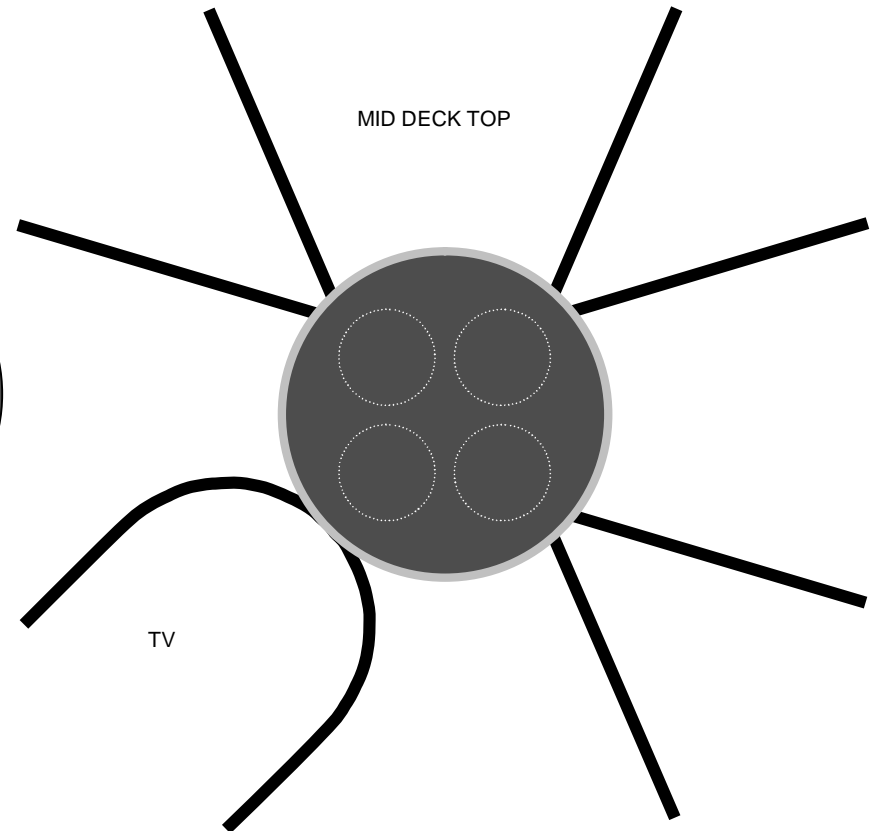


MID DECK BOTTOM



BOTTOM OF
CTR TANK

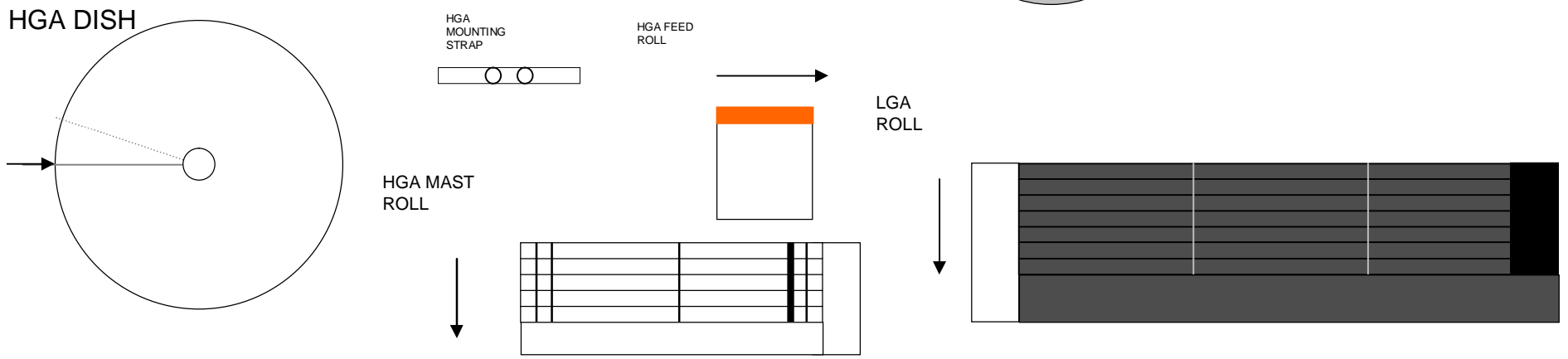
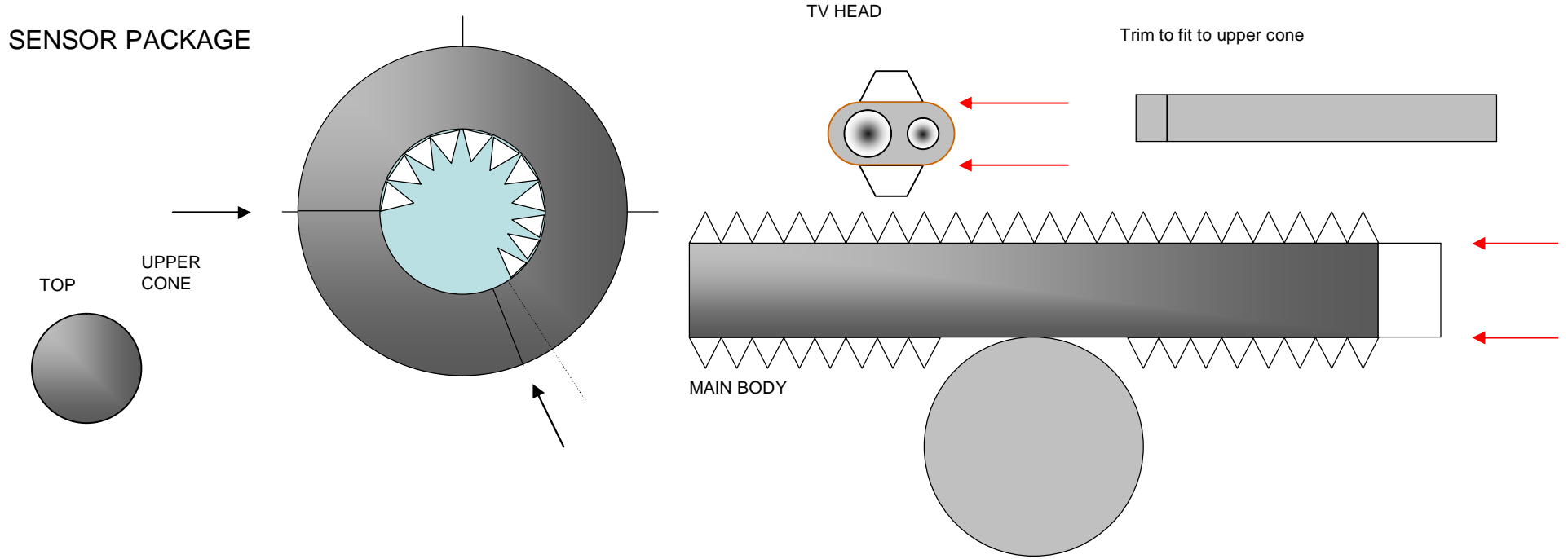
MID DECK TOP

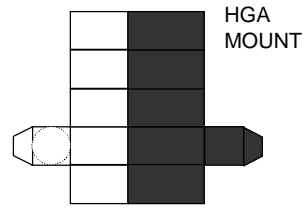


TV

US Lunar Orbiter 1:24 scale

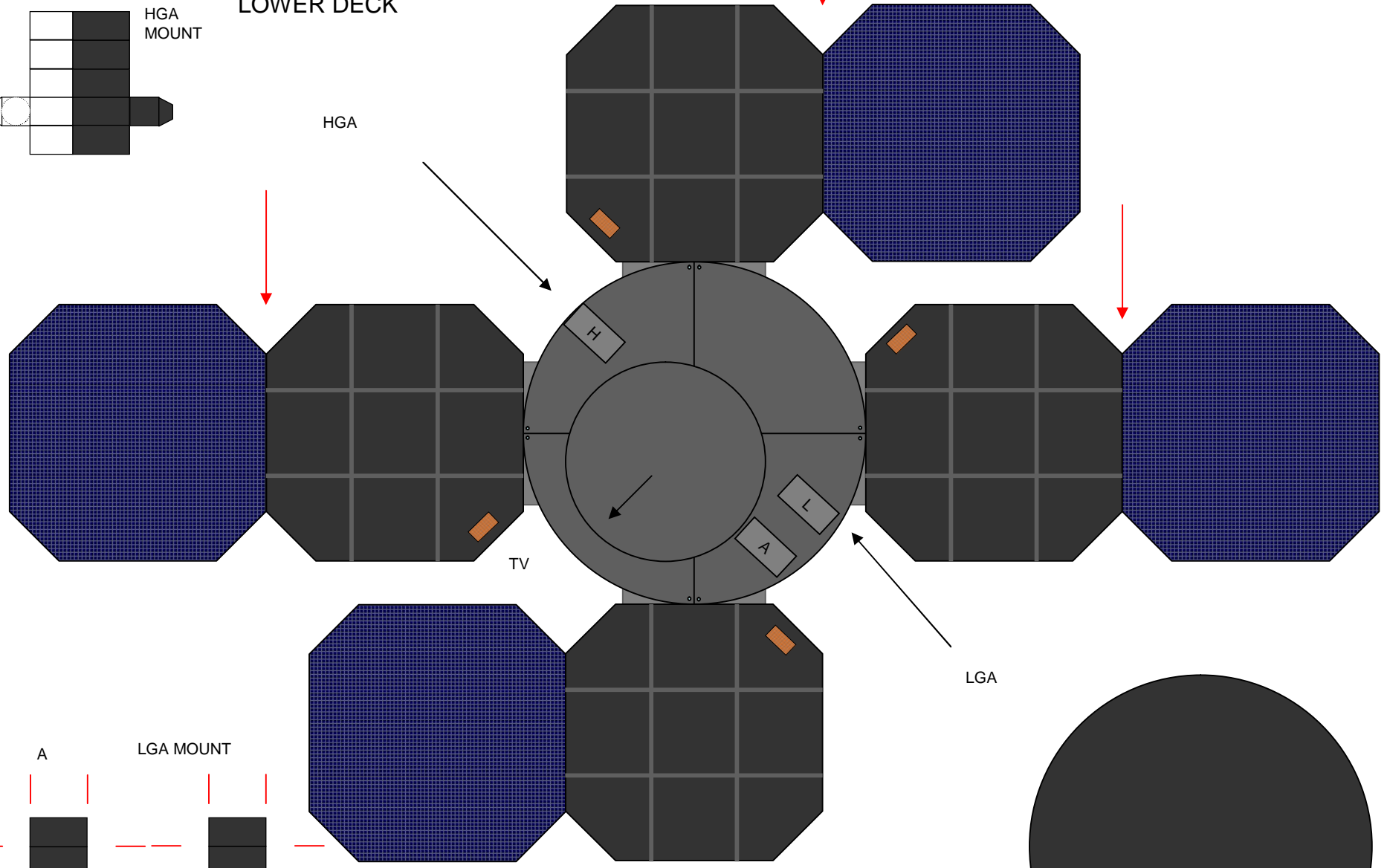
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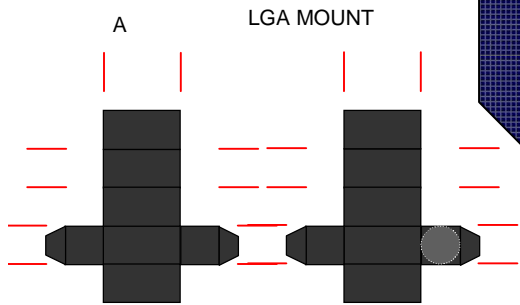


LOWER DECK

HGA



LGA



US Lunar Orbiter 1:24 scale

LOWER DECK
BOTTOM

