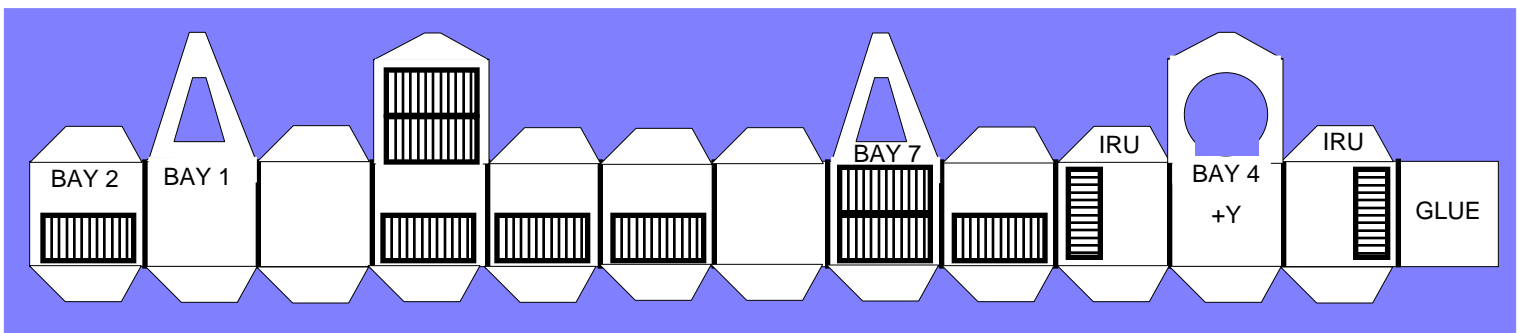
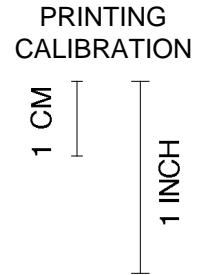
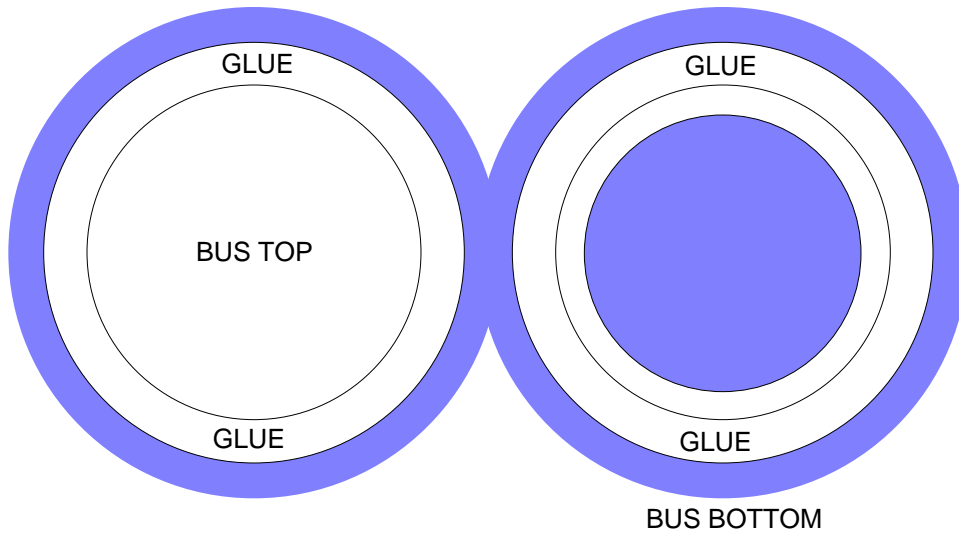


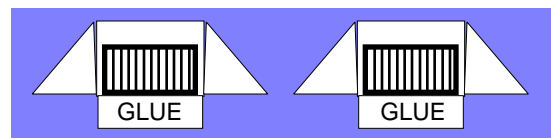
PARTS SHEET 1 The Spacecraft Bus

Parts Set version May 1999

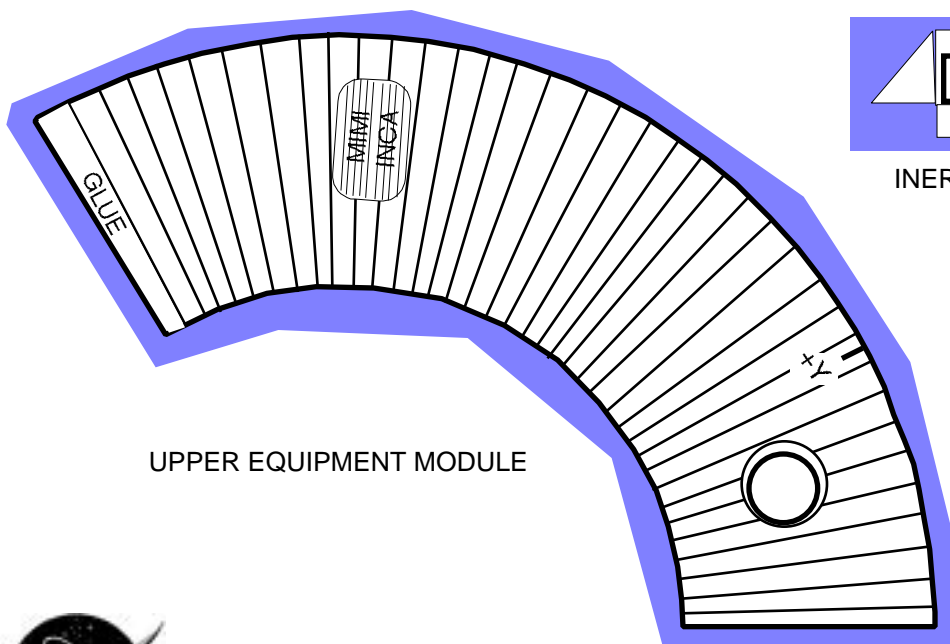
Cassini's spacecraft bus consists of twelve equipment bays arranged in a regular polygon with three extra bays added as appendages to it. The bus contains electronics and computers used for radio communications, detection, storage, and execution of commands, data storage, attitude control, power switching and control. One appended bay is for the radar, and two are for inertial reference units. Many of the bays are equipped with louvers on their outward facing side, to control thermal radiation. The bus is connected mechanically to the Propulsion Module by an upper equipment module which supports scientific instruments and other equipment.



SPACECRAFT BUS



INERTIAL REFERENCE UNITS (IRUs)

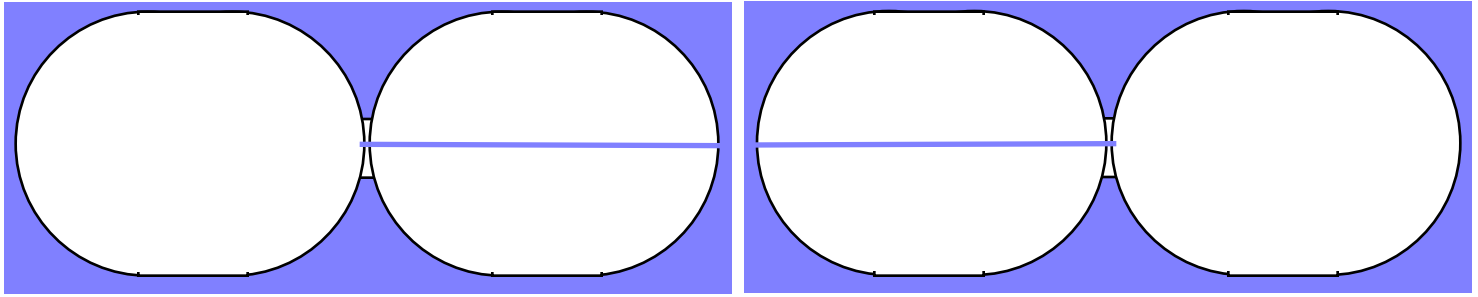


UPPER EQUIPMENT MODULE

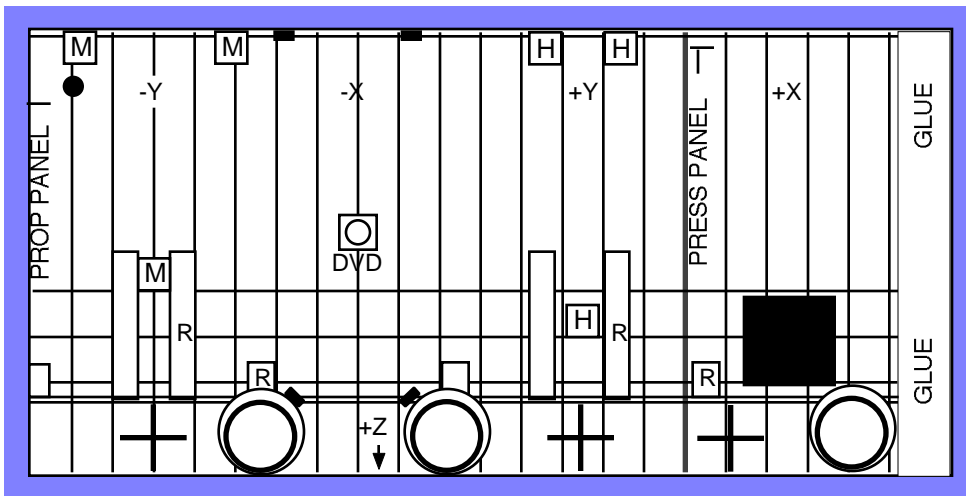


PARTS SHEET 2 The Propulsion Module

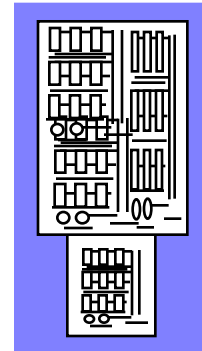
Cassini's Propulsion Module carries a large mass of propellant mainly to power its rocket engine for deceleration into orbit at Saturn, a maneuver called Saturn Orbit Insertion (SOI). The module also provides the means for managing the spacecraft's attitude, and for small propulsive maneuvers called Trajectory Correction Maneuvers (TCMs). To simplify model construction, part of the Lower Equipment Module (LEM) is also attached to the Propulsion Module. The rest of the LEM is on Sheet 4.



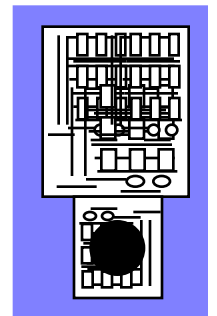
BIPROPELLANT TANK HALVES



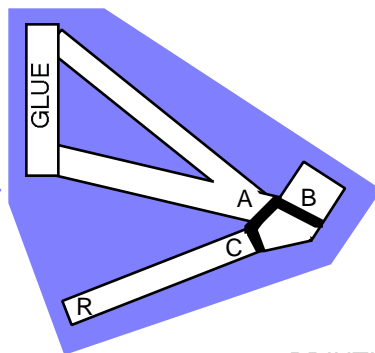
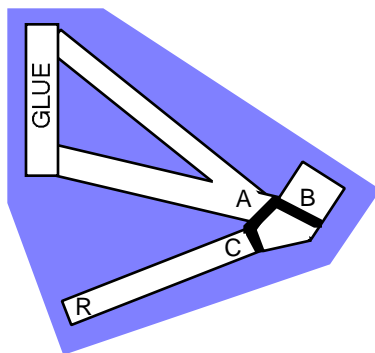
PROPULSION MODULE AND LOWER EQUIPMENT MODULE STRUCTURE



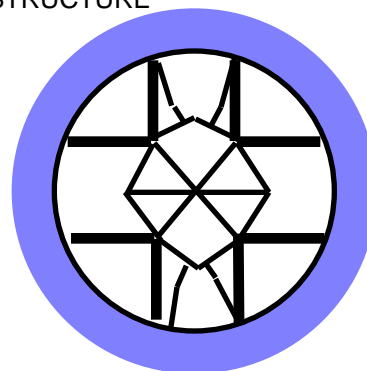
PRESSURANT CONTROL PANEL



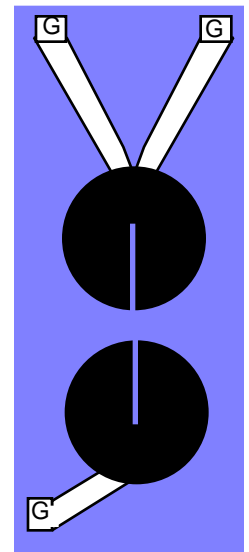
PROPULSION CONTROL PANEL



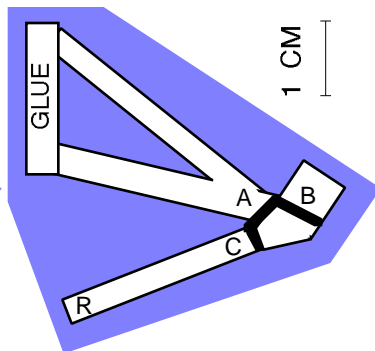
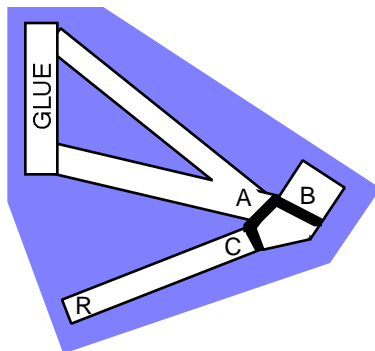
RCS THRUSTER CLUSTERS



ENGINE GIMBAL ASSEMBLY



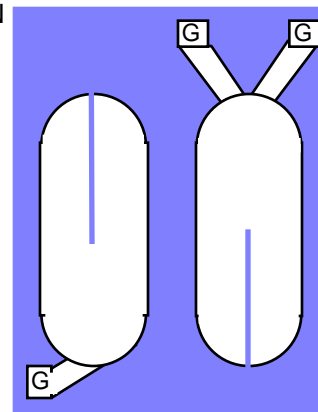
MONOPROPELLANT TANK HALVES



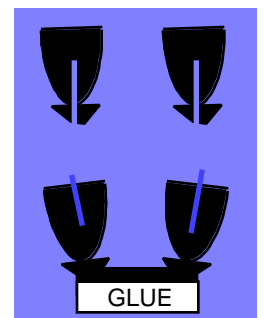
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1 CM

1 INCH



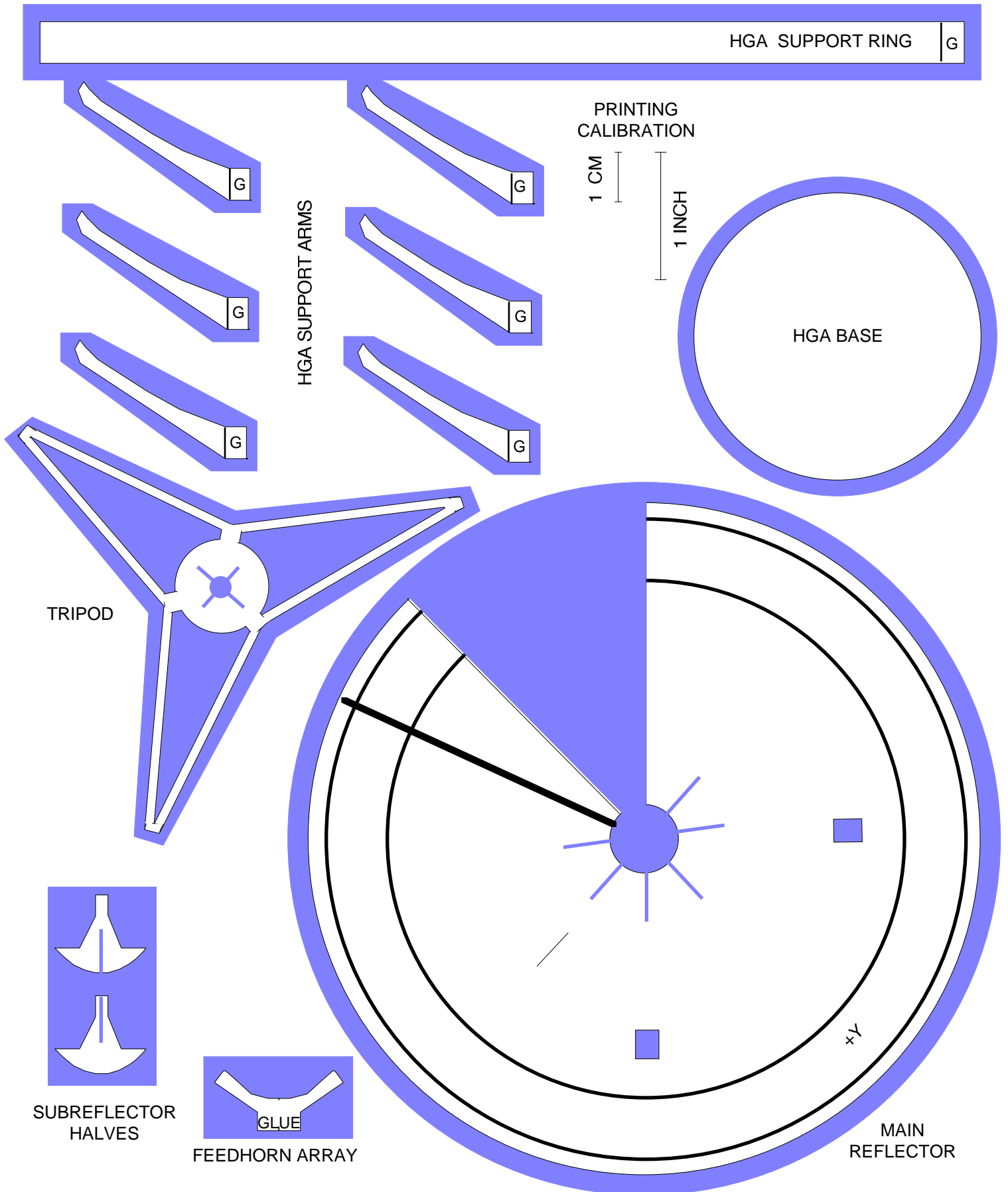
HELIUM TANK HALVES



MAIN AND BACKUP ENGINES

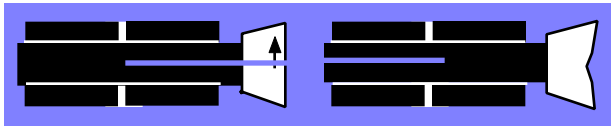
PARTS SHEET 3 The High-Gain Antenna (HGA)

Cassini's HGA is used for high-rate radio communications with Earth. It is also used as a radar dish for penetrating the hazy atmosphere of Titan, Saturn's largest satellite, to image its surface. It works with the Radio Science experiment, and it also serves as a sunshade for the spacecraft while it flies in the inner solar system en route to Saturn.

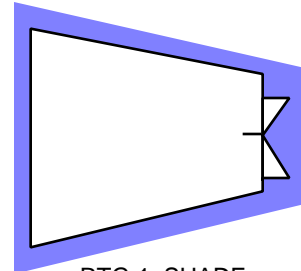


PARTS SHEET 4 The Lower Equipment Module (LEM)

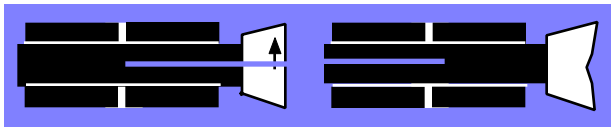
Cassini's Lower Equipment Module supports the three Radioisotope Thermoelectric Generators (RTGs) which provide electrical power and heat for the spacecraft, and three reaction wheels. The reaction wheels, also called momentum wheels, are massive discs driven by electric motors. Applying torque to one causes the whole spacecraft to rotate in the opposite direction. Three such wheels permit the spacecraft to be rotated about any axis. The fourth reaction wheel, a spare, is mounted on the upper equipment module. Low-gain antenna #2 is also mounted on the LEM.



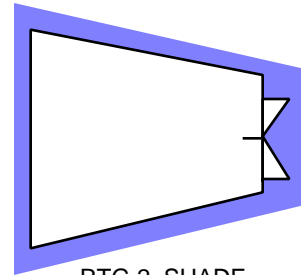
RTG 1 HALVES



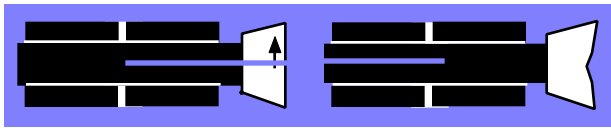
RTG 1 SHADE



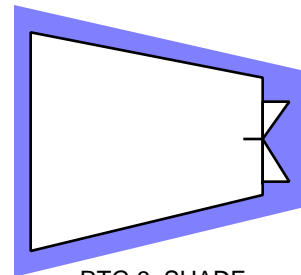
RTG 2 HALVES



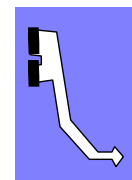
RTG 2 SHADE



RTG 3 HALVES

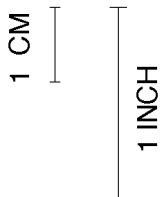


RTG 3 SHADE



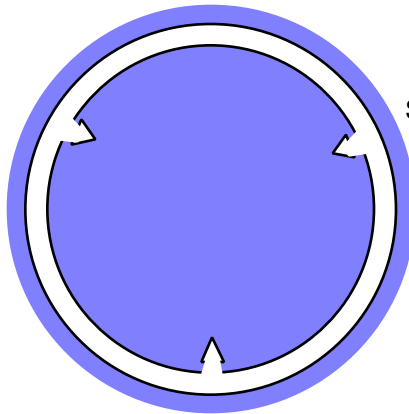
LGA-2

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CALIBRATION

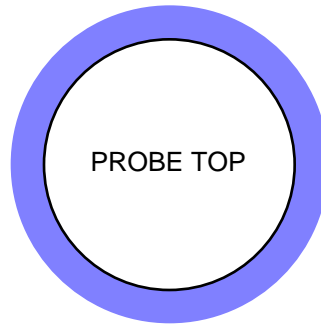


PARTS SHEET 5 The Huygens Probe

Cassini carries another spacecraft along for the ride to the Saturnian system. The Huygens Probe, built by the European Space Agency, will separate from Cassini once in orbit at Saturn, and will descend into the atmosphere of Titan, Saturn's largest moon. Huygens will radio images and other scientific data from Titan back to Cassini, which will then relay them back to Earth.

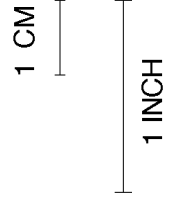


PROBE SUPPORT RING

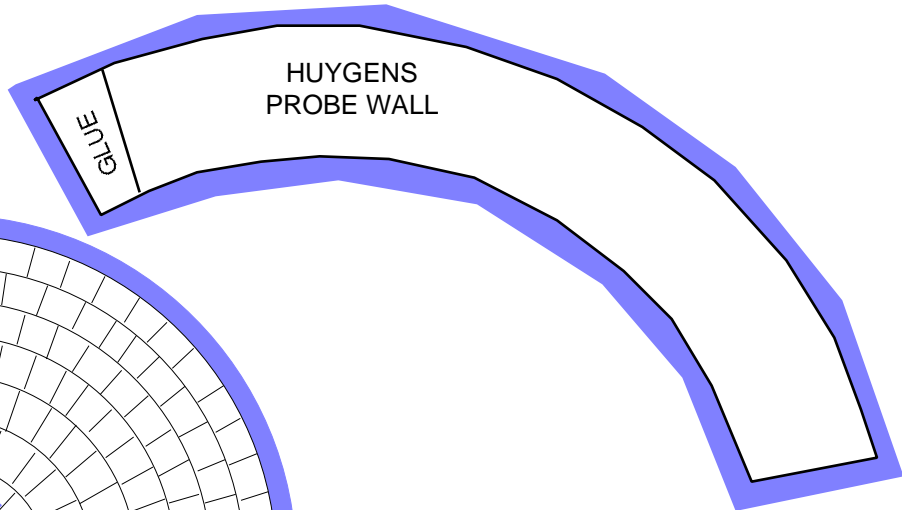
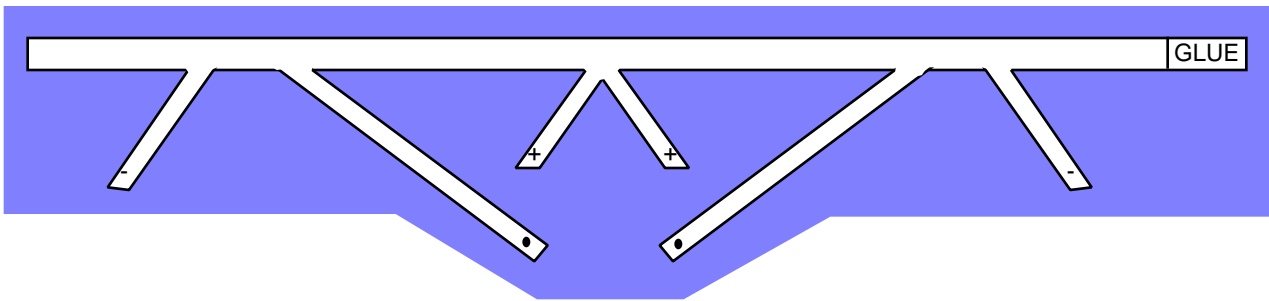


PROBE TOP

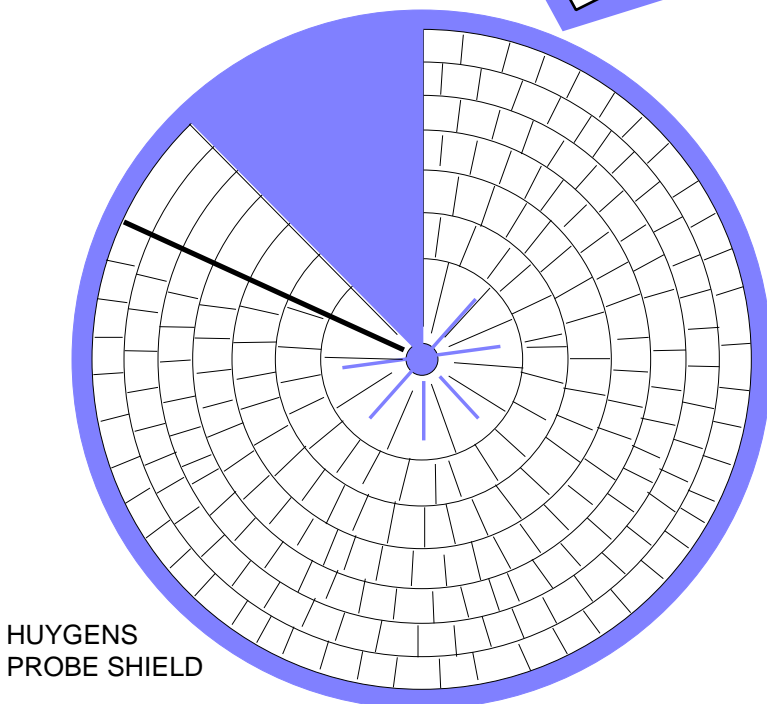
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PROBE SUPPORT RING BASE



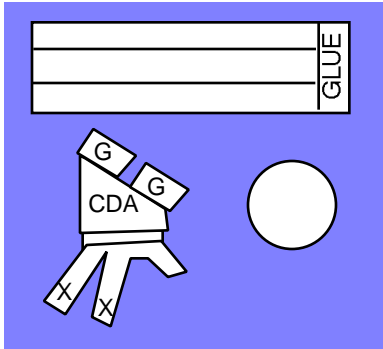
HUYGENS PROBE WALL



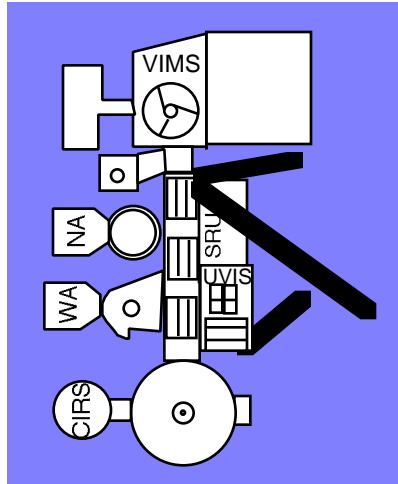
HUYGENS PROBE SHIELD

PARTS SHEET 6 The Science Instruments

Cassini's scientific instruments are the reason for having a spacecraft at all. Remote sensing instruments, such as cameras and spectrometers capture light reflected from Saturn or other targets. Direct sensing instruments, such as the dust detector and magnetometers measure phenomena which they encounter in the spacecraft's immediate environment. Measurements taken by the instruments are sent back to Earth by the spacecraft either right away, or after being stored aboard for a convenient time for transmission. Note: the stellar reference units, mounted with the remote sensing instruments, are not scientific instruments, but part of the spacecraft's attitude control system.

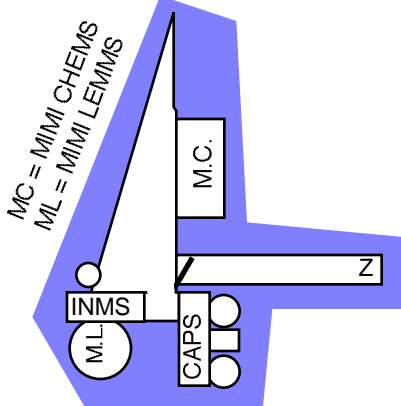
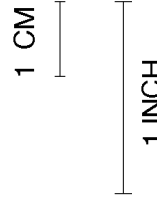


COSMIC DUST ANALYZER

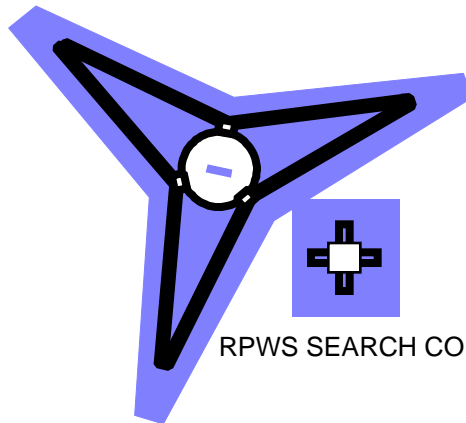


REMOTE SENSING PALLET

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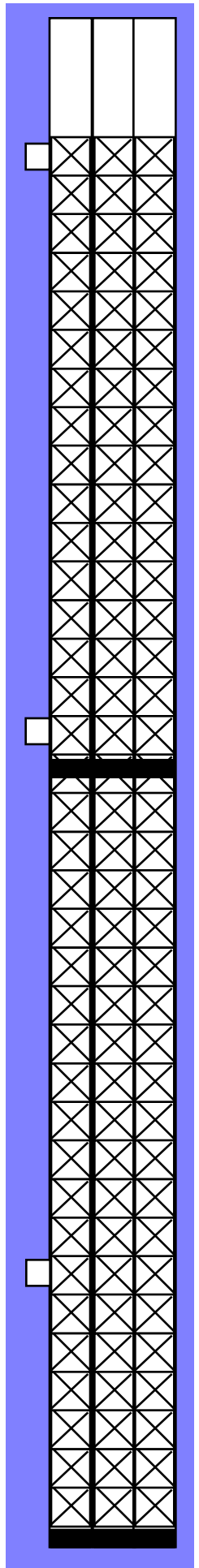


FIELDS & PARTICLES PALLET



RPWS SEARCH COIL

MAGNETOMETER BOOM



Cassini's Scientific Experiments

Optical Remote Sensing:

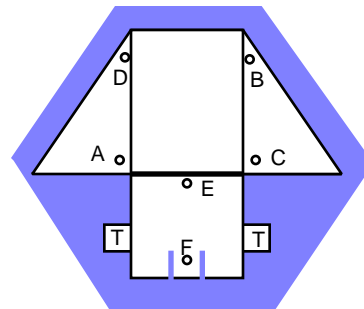
- CIRS Composite Infrared Spectrometer
- ISS Imaging Science Subsystem
 - NA Narrow Angle camera
 - WA Wide angle camera
- UVIS Ultraviolet Imaging Spectrograph
- VIMS Visual & infrared mapping spectrometer

Fields, Particles, and Waves:

- CAPS Cassini Plasma Spectrometer
- CDA Cosmic Dust Analyzer
- INMS Ion and Neutral Mass Spectrometer
- MAG Dual Technique Magnetometer
- RPWS Radio & Plasma Wave Science
- MIMI Magnetospheric Imaging Instrument:
 - LEMMS Low energy magnetospheric measurement system
 - CHEMS Charge energy mass spectrometer
 - INCA Ion and neutral camera

Microwave Remote Sensing

- RADAR Cassini Radar (uses HGA)
- RSS Radio Science Subsystem (uses communications system)



RPWS