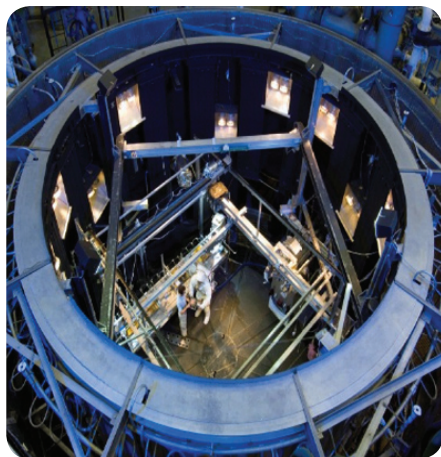


## NASA JOHNSON SPACE CENTER: THE THERMAL VACUUM CHAMBER B

A Part of NASA's Strategic Capabilities Assets Program



Thermal Vacuum Chamber B, with roughly one-tenth of the internal volume of Chamber A, can handle a variety of smaller-scale tests more economically and with faster response. It is a human-rated chamber equipped with a traversing monorail that provides weight relief to one suited crewmember at a time. The traversing monorail allows two degrees of freedom inside the chamber and 200 square feet (18.6 square meters) of working space.

Major structural elements of the chamber are the removable top head, the fixed chamber floor, dual crewlocks at the floor level, and a load bearing floor area of 20 feet (6.1 meters) in diameter that will support a concentric load of 75,000 pounds (34,000 kilograms). The dual crewlocks provide easy access to the test articles and function as a means of transporting test crewmembers back and forth to the test environment during tests. The crewlocks can also be used as an altitude chamber for independent tests. One crewlock is equipped with a water deluge system and other features that permit its use for crew operations with oxygen-rich residual atmospheres.

## SPECIFICATIONS

Outside dimensions:	35 feet (10.7 meters) in diameter x 43 feet (13.1 meters) high
Working dimension:	25 feet (7.6 meters) in diameter x 26 feet (7.9 meters) high
Test article weight:	75,000 pounds (34,000 kilograms) concentric load maximum
Access:	35 feet (10.7 meters) in diameter removable top head Dual Crewlocks with doors at floor level. Locks measure 8 feet x 11 feet x 12.8 feet (2.4 meters x 3.4 meters x 3.9 meters)
Types of pumps:	Staged roughing pumps, valved cryo-absorption pumps, valved turbomolecular pumps, 20 K (-424 F) cryopump panels
Environment:	90 K liquid nitrogen heat sink shrouds at $1 \times 10^{-6}$ Torr, 130,000 watts total heat absorption capacity, 150 W/Feet <sup>2</sup> (1615 W/meter <sup>2</sup> ) maximum heat flux
Pumpdown time:	5 hours to test conditions
Pumping capacity:	$1 \times 10^{-7}$ liters/second condensibles and $2 \times 10^5$ liters/second non-condensibles at $1 \times 10^{-6}$ Torr pressure
Top Sun simulator:	One to 37 xexon lamp modules producing a 20-feet (6.1 meters) diameter beam maximum Modules can be located anywhere within a 20 feet (6.1 meters) circle 90 minute half angle decollimation; intensity of 58 to 126 W/ft <sup>2</sup> (622 to 1353 W/m <sup>2</sup> ) $\pm 5\%$ uniformity
Man-rated capability:	Water deluge system for fire protection of suited operations at high oxygen concentrations Emergency repress capability to site pressure within 90 seconds Crew ingress and weight relief systems to offload the weight of the extravehicular activity (EVA) suit and portable life support system from the crewmember

## CONTACT INFORMATION

Reagan Redman  
 NASA Johnson Space Center  
 Phone: (281) 483-9213  
 E-mail: [reagan.s.redman@nasa.gov](mailto:reagan.s.redman@nasa.gov)