

<b>TANK TYPE</b>	<b>MOUNT</b>	<b>LOCATION</b>
<b>PMD PROPELLANT</b>	<b>MOUNTING SKIRT</b>	<b>CIRCUMFERENTIAL</b>

The GEOSTAR 3 Hydrazine Tank is designed to store high purity grade dinitrogen tetroxide (NTO) oxidizer (N2O4) and gaseous helium pressurant (Ghe) for use in a dual mode propulsion system. The tank will provide oxidizer to bipropellant thrusters via a manifold. Each spacecraft will have one NTO tank, whose design shall consist of a composite overwrapped cylinder section with elliptical dome ends. The tank shall incorporate an internal surface tension propellant management device (PMD) to ensure predictable, gas-free expulsion of propellant under the performance and environmental requirements. Each tank shall include pressurant inlet port, propellant outlet port, and mounting ports.

**Part Number 80564-1**

**SIZE: 50.55" OD x 65.02" boss-to-boss**  
**SIZE: 1284 mm OD x 958 mm boss-to-boss**

**ISO 9001 & AS 9100 REGISTERED**

**APPLICABLE DOCUMENTS**

Acceptance Test Procedure	50-000821
Qual Test Procedure	50-000824
Qualification Test Report	56-000325
Stress and Dynamics Report	54-000398
FMECA	
Cleaning	CPP 4072

**TANK CHARACTERISTICS**

Operating Pressure, psig	300 psig @ 81°F	Total Volume, in <sup>3</sup>	101,951 in <sup>3</sup>
Proof Pressure, psig	375 psig @ 122°F	Propellant Mass, lb <sub>m</sub>	3620 lb <sub>m</sub>
Cryo Proof, psig	N/A	Max Design Mass, lb <sub>m</sub>	141.5 lb <sub>m</sub>
Burst Pressure, psig	450 psig @ 122°F	Qual Tank Mass, lb <sub>m</sub>	129.75 lb <sub>m</sub>
Actual Burst, psig	542 psig	Minimum Wall, inch	0.032 in

**ACCEPTANCE TESTS**

- Pre-Assembly Inspection & Test
- Post-Assembly Inspection & Test
- Mass Measurement
- Bubble Point Test
- Volumetric Capacity Measurement, Pre-Proof
- Proof Pressure Test
- Volumetric Capacity Measurement, Post-Proof
- Differential Pressure, Mass Flow Rate, & Expulsion Efficiency Test
- External Leakage
- Bubble Point Test
- Weld Inspection
- Final Visual and Dimensional Inspection
- Final Cleanliness Verification and Dry

**TANK CHARACTERISTICS (Metrics)**

Operating Pressure, bar	20.68 bar @ 27°C	Total Volume, l	1670.68
Proof Pressure, bar	25.86 bar @ 50°C	Propellant Mass, kg	1642 kg
Cryo Proof, bar	N/A	Max Design Mass, kg	64.18 kg
Burst Pressure, bar	31.03 bar @ 50°C	Qual Tank Mass, kg	58.85 kg
Actual Burst, bar	37.37 bar	Minimum Wall, mm	0.813 mm

**HEMISPHERE FORGINGS**

HEMI P/N	QTY
80-519061-1	2

**RING FORGINGS**

P/N	QTY	SIZE
80-519065-1	1	50.03" ID x 52" OD x 3.00" LONG
		1270.622mm ID x 1320.8mm OD x 76.2mm LONG
80-380065-1	2	6.62" ID x 13.42" OD x 1.25" LONG
		168.148mm ID x 340.868mm OD x 31.75mm LONG

**TUBE TYPE AND SIZE**

6Al-4V Ti Bar	QTY	SIZE
80-563007-5	1	0.375" OD x 0.020" Wall x 7.00" LONG
		9.525mm OD x 0.508mm Wall x 177.8mm LONG

**QUALIFICATION TESTS**

- Pre-Assembly Inspection & Test
- Post-Assembly Inspection & Test
- Mass Measurement
- Bubble Point Test
- Volumetric Capacity Measurement, Pre-Proof
- Proof Pressure Test
- Volumetric Capacity Measurement, Post-Proof
- External Leakage
- Bubble Point Test
- Proof Pressure Cycling Test
- MEOP Pressure Cycling Test
- Differential Pressure, Mass Flow Rate, & Expulsion Efficiency Test
- External Leakage
- Bubble Point Test
- Weld Quality Inspection
- Visual and Dimensional Inspection
- Vibration Test
- Bubble Point Test
- Volumetric Capacity Measurement, Pre-Proof, Post Vibe Test
- Post-Vibe Proof Pressure Test
- Volumetric Capacity Measurement, Post-Proof, Post-Vibe Test
- Post-Vibe Test Differential Pressure, Mass Flow Rate
- Expulsion Efficiency Test
- External Leakage
- Weld Quality Inspection
- Final Examination & Mass Measurement
- Burst Test

