



<b>TANK TYPE</b> DIAPHRAGM	<b>MOUNT</b> BOSSES	<b>LOCATION</b> POLAR
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This is a 21-inch spherical pressure vessel constructed of 6Al-4V titanium. Positive fuel expulsion is provided by a reversible ethylene propylene terpolymer (AF-E-332) rubber diaphragm retained (welded in) at the sphere mid-plane. Mounting is accomplished on polar bosses.

**ATK Part Number 80273-3**

**SIZE: 20.83-inch ID Sphere**  
**SIZE: 529-MM**

**ISO 9001 & AS 9100 REGISTERED**

APPLICABLE DOCUMENTS	
Acceptance Test Procedure	50-000210
Qualification Test Procedure	50-000213
Reliability Prediction, Failure	54-000040
Material & Processes List	54-000108
Forging Qualification Rpt, Note 5	55-000087
Qualification Test Report	56-000076
Cleaning	CPP 3002, 3003

TANK CHARACTERISTICS			
Operating Pressure, psig	430	Total Volume, ci	4,570
Proof Pressure, psig, Note 3	1,183	Prop Volume, ci	3,370
Cryo Proof, psig	NA	Max Design Wt, lbs	27.0
Burst Pressure, psig	1,720	Minimum Wall, inch	0.059

ACCEPTANCE ENVIRONMENTAL TESTS
Random Vibration

DIAPHRAGM INFORMATION	
Diaphragm P/N	80-273007-1
Diaphragm Mold Tool Number	T-1976
Diaphragm Gross Weight	2.06 (.93 Kg)
Diaphragm Material Type	AF-E-332
Diaphragm, Material, Note 2	90-000100
Diaphragm Processing, Note 2	90-000099
N-Ray Inspection Procedure	1002

TANK CHARACTERISTICS (Metrics)			
Operating Pressure, Bar	29.65	Total Volume, l	74.89
Proof Pressure, Bar, Note 3	81.56	Prop Volume, l	55.23
Cryo Proof	NA	Max Design Wt, Kg	12.25
Burst Pressure, Bar	118.59	Minimum Wall, MM	1.499

ACCEPTANCE TESTS
Examination of Product
Weight Determination
Pre-Proof Volume
Volume Determination
Internal Leakage
External Leakage
Expulsion Efficiency
Random Vibration
Internal Leakage
External Leakage
Cleanliness Verification

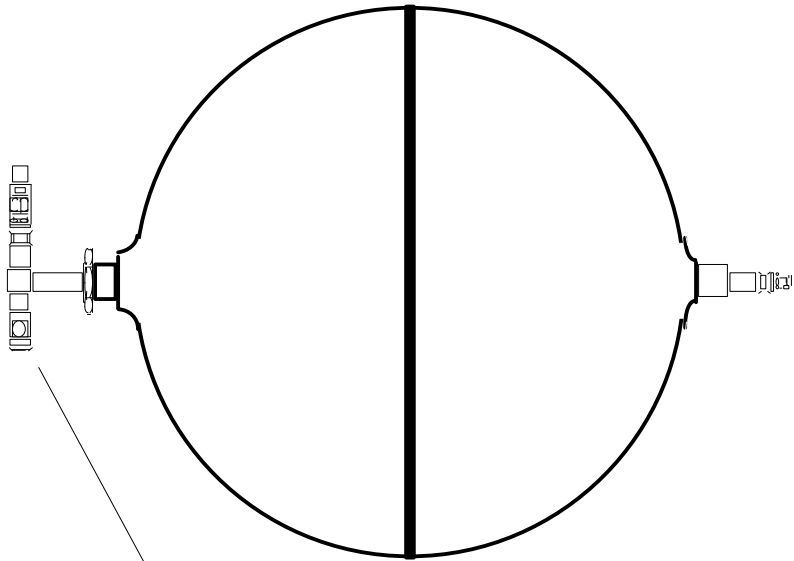
**Notes:**

- 1: Tooling owned by Boeing
- 2: Proprietary Document
- 3: Fracture Mechanics proof pressure
- 4: System proof is 860 psia (59.29 Bar) @ 129 degrees
- 5: Each new heat of material requires a forging qual
- 6: Fracture Critical

FORGINGS		
FORGINGS P/N	SUPPLIER	Die No
80-273063-1 (2)		
RING FORGING		RING SIZE, (Rough machined)
80-273063-1, Retainer	20.62 +.06 OD x 19.31 -.06 ID x 1.4 +.06 Lg	

QUALIFICATION TESTS
Acceptance Test
Vibration
Cleanliness
Internal Leakage
External Leakage
Isolation Valve Functional
External Leakage
Hydrazine Compatibility
Temperature
Internal Leakage
Acceleration
Internal Leakage
External Leakage
Shock
Internal Leakage
External Leakage
Slosh
Internal Leakage
Internal Vacuum
Differential Pressure
Internal Leakage
Expulsion Cycling
Expulsion Efficiency
Internal Leakage
Tank Shell Cycling
Proof Pressure
External Leakage
Drop Test
Burst Test

TUBE TYPE AND SIZE	
TRANSITION	SIZE
80-273009-1	.625 OD x .065 Wall (15.87 x 1.65 MM)



**Fill & Drain Valves**