

TANK TYPE Diaphragm	MOUNT Pedestal	LOCATION Apex
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The Mars '98 Lander propellant tank is a re-design of the ECS propellant tank. Modification to the ECS tank is limited to the tank mounting feature, the propellant tube and the pressurant tube. The most significant change was to enlarge the outlet tube from 1/4" OD to 3/4" OD to accommodate the high propellant flow rate at final descent. The tank qualification was based on similarity to the ECS flight tank. Qualification testing was not performed. However a protoflight acceleration test was performed on one tank.

Part Number 80397-1

SIZE: 16.5-inch ID Sphere
SIZE: 419-MM

ISO 9001 & AS 9100 REGISTERED

APPLICABLE DOCUMENTS		TANK CHARACTERISTICS		ACCEPTANCE TESTS		
Acceptance Test Procedure	50-000496	Operating Pressure, psig	450	Total Volume, ci	2,300	
Protoflight Test Procedure	50-000501	Proof Pressure, psig	495	Prop Volume, ci	N/A	
Cleaning Procedure	CPP 3819	Cryo Proof, psig	N/A	Max Design Wt, lbs	10.0	
		Burst Pressure, psig	675	Minimum Wall, inch	0.020	
DIAPHRAGM INFORMATION		TANK CHARACTERISTICS (Metrics)		Preliminary Examination of Product Pre-Proof Volume Determination Proof Pressure Post-Proof Volume Determination Expulsion Efficiency Radiographic Inspection Penetrant Inspection Internal Leakage External Leakage Determination of Weight and Final Inspection Cleanliness Verification Final Examination		
Diaphragm P/N	80-271007-1	Operating Pressure, Bar	31.03		Total Volume, l	37.69
Diaphragm Mold Tool No	SK 666	Proof Pressure, Bar	34.13		Prop Volume, l	N/A
Diaphragm Gross Wt	0.88	Cryo Proof, Bar	N/A		Max Design Wt, Kg	4.54
Diaphragm Material Type	AF-E-332	Burst Pressure, Bar	46.54		Minimum Wall, MM	0.508
Diaphragm, Material	Note 2 90-000075					
Diaphragm Processing	Note 2 90-000087					
N-Ray Inspection Procedure	1002					
		FORGINGS				
		FORGINGS P/N	SUPPLIER		Die No	
		80011-63, Pressurant				
		80-276061-1, Propellant				
		RING FORGING	RING SIZE, (Rough Machined)			
		80-214065-1, Retainer	16.75 +.06 OD x 15.5 -.06 ID x 1.4 +/- .06 Lg			
		80-276065-1, Base	9.5 +.09 OD x 7.03 -.09 ID x 1.38 +.09 Lg			

Notes:

- 1: Tooling owned by Northrop Grumman
- 2: Proprietary Document
- 3: The original QTP for this design is 50-000221
- 4: The original QTR for this design is 56-000081
- 5: This is a redesign of PSI P/N 80276-1
- 6: For the Mars '98 Lander one tank was subjected to acceleration test per MSP-96-STRS-001
- 7: Lockheed Martin Technologies, Inc
- 8: The customer elected to perform the new analysis
- 9: Tube Protector are SK 1402 & SK 1403
- 10: Fracture Critical

QUALIFICATION TESTS
Qual was performed on tank 80276-1.

Mars Surveyor '98 uses two small spacecraft, an orbiter and a lander, to search for past or present evidence of life & to trace the evolution of the Martian climate. The orbiter performs global measurements of the Mars atmosphere & the lander performs on site measurements of the local environment near the South Pole. The orbiter & lander are the second set of spacecraft in NASA's decade-long program of Mars exploration. Both spacecraft will be launched from Cape Canaveral, Florida, during the 1998 Mars launch opportunity, which falls between Dec 1998 & Feb 1999.

