



TANK TYPE Diaphragm	MOUNT Pedestal	LOCATION Apex
-------------------------------	--------------------------	-------------------------

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.

ATK Part Number 80397-1

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

ISO 9001 & AS 9100 REGISTERED

APPLICABLE DOCUMENTS		TANK CHARACTERISTICS	
Acceptance Test Procedure	50-000496	Operating Pressure, psig	450
Protoflight Test Procedure	50-000501	Proof Pressure, psig	495
Cleaning Procedure	CPP 3819	Cryo Proof, psig	N/A
		Burst Pressure, psig	675
		Total Volume, ci	2,300
		Prop Volume, ci	N/A
		Max Design Wt, lbs	10.0
		Minimum Wall, inch	0.020

ACCEPTANCE TESTS
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 INFORMATION	
Diaphragm P/N	80-271007-1
Diaphragm Mold Tool No	SK 666
Diaphragm Gross Wt	0.88
Diaphragm Material Type	AF-E-332
Diaphragm, Material Note 2	90-000075
Diaphragm Processing Note 2	90-000087
N-Ray Inspection Procedure	1002

TANK CHARACTERISTICS (Metrics)			
Operating Pressure, Bar	31.03	Total Volume, l	37.69
Proof Pressure, Bar	34.13	Prop Volume, l	N/A
Cryo Proof, Bar	N/A	Max Design Wt, Kg	4.54
Burst Pressure, Bar	46.54	Minimum Wall, MM	0.508

Notes:

- 1: Tooling owned by ATK
- 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

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	

QUALIFICATION TESTS
Qual was performed on tank 80276-1.

TUBE TYPE AND SIZE
TITANIUM, 3AL-2.5V

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.

