

84024K - 48 = 52

SAA09PP03-001  
REV. E  
B/L 8/30  
MPS LH2, LOA SYSTEM

Critical Item: Regulator, Dome Loaded

Find Number: A105951

Criticality Category: 2

SAA No: 09PP03-001

System/Area: LH2 MPS/LOA

NASA  
Part No: 79K80279-6

PMN/ S72-0685-5 Orbiter Helium  
Name: Anti-Ice Panel

Mfg/ Grove/  
Part No: T1741-6

Drawing/ 79K06063/79K40023  
Sheet No: 2

Function: Regulates GHe provided to the LH2 and LOX prepress line anti-icing purges.

Critical Failure Mode: Regulates low. FM. No. 09PP03-001.019

Failure Effect: Loss of heated helium for de-icing the LH2 and LOX prepress lines. Possible damage to the Orbiter TPS from falling ice. Failure is detectable by pressure transducer A105955.

Acceptance Rationale

Design:

- o This regulator is operated within all design specifications.
- o This component is only Criticality Category 2 when the ambient temperature is 36°F or below because the unheated backup helium supply is not effective at these temperatures.

o Component Specifications:

	<u>Rated</u>	<u>Actual</u>
Pressure (psig)	6000	750/200
Flow (scfm)	.695 max.	250
Temperature (°F)	-20 to +250	Ambient on the MLP

- o The burst pressure is 4 times rated pressure (24,000 psig).
- o The pressure regulator body is constructed of 18/8 Cres, the valve is 17/4 PH Cres, the seat is KEL-F-81, seals are made to MIL, AMS, or NAS standards and the diaphragm is Nitrile rubber.

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SAAO9PP03-001  
REV. E  
B/L 8/30  
MPS LH2, LOA SYSTEM

Regulator, Dome Loaded, A105951 (Continued)

Test/Inspection:

- o File VI verifies the following:
  - Functional operation of the primary purge prior to each launch and at component replacement. The purge is verified via pressure switch indication and must satisfy a temperature specification after heater activation.
  - Functional operation of the redundant purge prior to each launch and at component replacement. The purge must satisfy a purge pressure specification.
- o The manufacturer's certification test requirements included the following tests:
  - Proof
  - Leak
  - Functional
- o Drawing 79K12402 Requirements:

The regulator will be functionally tested by LPS with each use.
- o The component will be tested annually and at component replacement. Test to be a pressure creepage test.

Failure History:

- o PRACA - There were 5 Problem Reports for this type component found in the PRACA Data Base.

No failures in the critical failure mode.
- o GIDEP - The GIDEP Failure Data Interchange System has been researched, and no data on this component was found.