

SAA09PP02-001  
REV. H  
B/L: 9 and 32  
SYS: LOX MPS

JUN 27 1989

Critical Item: Solenoid Valve (3)  
Find Number: A105987  
Criticality Category: 1S

SAA No: 09PP02-001

System/Area: LOX MPS/LOA

NASA  
Part No: 79K80223-9

PMN/ S72-0685-5  
Name: Orbiter/ET He-Anti-Ice Pneu. Pnl

Mfg/ Marotta/  
Part No: 8060957-0002

Drawing/ 79K06064/2  
Sheet No: 79K40027/2

Function: Controls the flow of GN2 to the orb/ET LOX disconnect carrier plate purge. Normally open.

Critical Failure Mode: Fail closed. FM No. 09PP02-001.005 (MLP).

Failure Cause: Structural.

Failure Effect: Loss of GN2 purge for orb/ET LOX disconnect carrier plate. This creates a possible fire hazard, if coupled with a LOX leak.

#### Acceptance Rationale

##### Design:

- o This component was designed in accordance with NASA Specification 79K80223-9.
- o Component Specifications:

	<u>Rated</u>	<u>Actual</u>
Pressure (psig)	6000	550 max.
Flow (scfm)	260	69
Temperature (°F)	0-250	Ambient

- o The burst pressure is 24,000 psig which is 4 times rated pressure.
- o The solenoid valve body and poppet are constructed of 300 series stainless steel, the O-rings are made of Buna-N, and the backup rings are Teflon.

JUN 27 1989

Solenoid Valve A105987 (Continued)

Test:

- o Qualification and acceptance testing was in accordance with the requirements of NASA Component Specification 79K80223-9. Acceptance testing included the following:
  - Proof
  - Leak
  - Functional
  - Continuity, Insulation Resistance and Voltage Drop

Inspection:

- o The system shall be functionally tested per OMRSD prior to each launch.
- o Verification of solenoid valve operation is defined by OMRSD File VI. The OMRSD requires that a leak and functional check be performed prior to each mission and after component replacement.
- o Preventive maintenance will be in accordance with the requirements NASA component drawing 79K90223.
- o Manufacturing/assembly (source) inspection was in accordance with the requirements of NASA Component Specification 79K80223-9.

Failure History:

- o The GIDEP failure data interchange system was researched and no failure data on this component was found.
- o The PRACA data base was queried and no failure history on this component was found.

Operational Use:

- o Valve A105987 is a normally open valve and is not likely to fail close (critical mode) unless the valve is commanded closed, which could increase the possibility of valve failure. This valve is commanded closed after launch.
- o Loss of GN2 purge for Orb/ET LOX disconnect carrier plate is not a constraint to LOX load.
- o Corrective Action: None
- o Time Frame: N/A