

SAA09GS05-003
REV. B
B/L: 72.60
SYS: ECS/SLF/SLS

JUL 1 1996

Critical Item: Solenoid Valve

Find Number: A108018

Criticality Category: IS

SAA No: 09GS05-003

System/Area: ECS/SLF/SLS

NASA

PMN/ 570-0534/

Part No: N/A

Name: Portable Purge Unit

Mfg/ Dunham Bush/ Alco Controls/

Drawing/

Part No: VAL 650

AMG120VAC

Sheet No: 79K06061/1

Function: Passes liquid R-12 to seal oil cooler heat exchanger.

Critical Failure Mode: Fails closed. FM No. 09GS05-003.018

Failure Cause: Open/shorted coil.

Failure Effect: Seal oil temperature rises until seal oil temperature switch opens, causing compressor shutdown. Blower/compressor interlock causes blower shutdown, resulting in loss of air flow and purge to Orbiter compartments. Loss of ability to monitor purge air for leaks. Possible loss of life or vehicle during a hazardous condition such as leakage of hazardous fluids or gases.

Acceptance Rationale

Design:

- o Valve is rated at 300 psi operated at 130-160 psig 120V 50-60 Hz.
- o Valve is designed for use with liquid refrigerant-12.
- o Safe working pressure: 500 psig; burst pressure: 2500 psig.
- o Long-life molded coils provide water, shock and vibration protection to coil winding.
- o Certified by Canadian Standards Association (File No. LR3240).

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Solenoid Valve A108018 (Continued)

Test:

- o The OMRSD File VI requires that operation of the PPU is verified prior to each use.
- o The purge unit is powered up and verified operational approximately three hours prior to Orbiter landing per OMI S0028 and S0026.

Inspection:

- o The mechanical elements are inspected monthly per CMI No. V6C72.
 - loose or missing hardware
 - corrosion
 - no indication of fluid leaks

Failure History:

- o PRACA failure history identified two failures in the critical failure mode. Both failures were due to shorted solenoid coil. No failures have been reported since 5-14-81.
- o No GIDEP failure history identified.

Operational Use:

- o There is nothing that can be done immediately to mitigate the effect of the failure.
- o The purge unit is monitored for any indication of malfunction. If any anomalies are observed, appropriate steps are taken to repair or replace the item.