

AUG 11 1988

Critical Item: Solenoid Valve

Find Number: A108010

Criticality Category: 15

SAA No: 09GS05-003

System/Area: ECS/SLF/SLS

NASA

PMN/ S70-0534/

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 compressor for cooling of discharge gas when oil temperature rises above thermostat setting.

Critical Failure Mode: Fails closed. FM No. 09GS05-003.006

Failure Cause: Open/shorted coil.

Failure Effect: Loss of ability to cool discharge gas, which trips temperature switch, disabling compressor. Blower/compressor interlock stops blower, causing loss of 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 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 is 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).

AUG 11 1988

Solenoid Valve A108010 (Continued)

Test:

- o OMRSD, File VI will require that operation of the purge unit 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 50028 and 50026.

Inspection:

- o The mechanical elements are inspected monthly per OMI No. V6C72 for:
 - 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 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.