

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
RESTRICTOR, ITEM 120A ----- SV785844-17 (1)	2/1R	120AFM03 External gas leakage. Seal failure.	END ITEM: Bladder gas leakage to ambient. GFE INTERFACE: Excessive consumption of the primary oxygen supply. The SOP is automatically activated during EVA if the suit pressure drops to 3.33 psia. MISSION: Terminate EVA. Loss of use of one EMU. CREW/VEHICLE: None for single failure. Possible loss of crewman with loss of SOP. TIME TO EFFECT /ACTIONS: Seconds. TIME AVAILABLE: Minutes. TIME REQUIRED: Immediate. REDUNDANCY SCREENS: A-PASS B-PASS C-PASS	A. Design - The item is sealed by an "O"-ring elastameric seal. This seal conforms to the surfaces to be sealed to provide sealing over the temperature range required (32 to 120 degrees F). B. Test - Component Acceptance Test - Two external leakage tests are performed per AT-E-120-1. In the first test the item is pressurized to 14.6 - 15.6 psig with N2 and then submerged in water for 10 minutes minimum. The maximum allowable leakage is 0.06 scc/min. In the second test the item is pressurized to 22.2 - 28.2 psig with N2 and then submerged in water for 10 minutes minimum. The leakage is not to exceed 0.1 scc/min. PDA Test - An external leakage test is performed per SEMU-60-010. The O2 feedwater circuit is pressurized to 14.6 - 15.7 psig with a mixture of 98% N2 and 2% He. A helium sniff test must reveal no evidence of leakage. Certification Test - Certified for a useful life of 25 years (ref EMUM-1418). C. Inspection - Seal failure. The interfacing surfaces between the diaphragm, valve seat, and piston spacer, along with the valve seat and housing are 100% inspected to meet dimensional and surface finish requirements. The "O"-seal is inspected dimensionally and for surface finish per 1.5% AQL sampling. An external leakage test is performed as an inprocess test allowing no more than 0.06 scc/min leakage in a 10 minute test period. D. Failure History - None. E. Ground Turnaround - Tested for non-EET processing per FEMU-R-001, Final SEMU Gas Structural and Leakage. None for EET processing. F. Operational Use - Crew Response - PreEVA: No response, single failure unlikely to be detected by crew or ground. PostEVA: N/A. EVA: When CWS data confirms an accelerated primary O2 use rate, terminate EVA. If CWS data confirms a loss of suit pressure integrity coupled with an accelerated primary O2 use rate, abort EVA. Training - Standard EMU training covers this failure mode. Operational Considerations - Flight rules define go/no go criteria related to EMU suit pressure regulation. Consider periodic vacuum O2 recharge to recover EMU operation. EVA checklist and FDF procedures verify hardware integrity and operational status prior to EVA. Real Time Data System allows ground monitoring of EMU

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120AFM03

systems.

EXTRAVEHICULAR MOBILITY UNIT
SYSTEMS SAFETY REVIEW PANEL REVIEW
FOR THE
I-120 DUAL MODE RELIEF VALVE
CRITICAL ITEM LIST (CIL)
EMU CONTRACT NO. NAS 9-97150

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