

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE

		424FM03		
FILL (SINGLE CARTRIDGE) PARTICULATE FILTER, ITEM 424 ----- SV784959-1 (1)	2/1R	Internal water leakage through fill line filter.	END ITEM: Contaminants released to downstream components during water tank recharging.	A. Design - SV803695/SV803691: 1) The radial flow filter design employs two coaxial cylindrical filters. Each cylindrical filter element is welded to an Inconel 625 housing or sleeve. Pressure across the filters is normally small (0.15 psid). 2) The sintered stainless steel filter elements can handle a 844 psi delta P. This results in a safety factor of 34 over the maximum 25 psi that could be applied across the fill filter. 3) The housing O-seal is 100% inspected viton material. 4) The filter is changed out every 36 EVA's.
OR FILL (DUAL CARTRIDGE) PARTICULATE FILTER, ITEM 424 INNER CARTRIDGE/OUTER CARTRIDGE ----- SV803695- 1/SV803691-1 (1)		Housing seal failure; filter breakthrough, defective attachment of the filter(s) to the housing.	GFE INTERFACE: Particles migrate to the water tanks and subsequently clog Item 135, 136, 137, 171, 172, or 127 filters during EVA. Possible loss of sublimator or pump.	B. Test - SV803695/SV803691: Component Acceptance Test: A bubble point test is performed on both the inner and outer filters to check for gaps larger than the 2 micron filter material. (16 inches of water for first bubble per ARP901). PDA Test: SV784959 and SV803695/SV803691: None.
			MISSION: Terminate EVA with loss of humidity control.	Certification: SV784959: Certified for a useful life of 10 EVA's max.
			CREW/VEHICLE: None for single failure. Possible loss of crewmember with subsequent loss of SOP.	SV803695/SV803691: Certified for a useful life of 36 EVA's max.
			TIME TO EFFECT /ACTIONS: Minutes.	C. Inspection - SV784959 and SV803695/SV803691: Cause: Housing Seal Failure. The O-seal sealing surfaces are 100% inspected to meet dimensional and surface finish requirements. Cause: Defective welding of the filter element(s) to the housing.
			TIME AVAILABLE: Minutes.	One screen weld sample is destructively evaluated for penetration and weld defects to establish proper weld schedule. In addition, a weld sample is processed with each production lot for destructive testing.
			TIME REQUIRED: Seconds.	D. Failure History - SV784959 and SV803695/SV803691: None.
			REDUNDANCY SCREENS:	E. Ground Turnaround - SV784959: The filter is changed out every 10 EVA's.

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		424FM03	A-PASS B-N/A C-PASS	SV803695/SV803691: The filter is changed out every 36 EVA's. F. Operational Use - SV784959 and SV803695/SV803691: Crew Response - Post/PreEVA: Use working SCU to drain and fill EMU water tanks. Special Training - Standard EMU training covers this failure mode. Operational Considerations - EVA checklist procedures verify hardware integrity and systems operational status prior to EVA.

EXTRAVEHICULAR MOBILITY UNIT
SYSTEMS SAFETY REVIEW PANEL REVIEW
FOR THE
I-424 POTABLE WATER FILTER
CRITICAL ITEM LIST (CIL)
EMU CONTRACT NO. NAS 9-97150

Prepared by: *J. Cannon, Jr.*
HS - Project Engineering

Approved by: *RWB* *6/25/02*
~~NASA - SSA/SSM~~
455

M. Snyder
HS - Reliability

JH Baxley
~~NASA - SSA/SSM~~

R. Mumford 4/24/02
HS - Engineering Manager

Ch. Lynn 6/26/02
~~NASA - S&MA~~

Frank Gms 6/27/02
~~NASA - MOB~~

[Signature] 7/1/02
~~NASA - Crew~~

Jonathan S. Miller 7-1-02
~~NASA - Program Manager~~