NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
POROUS PLATE SUBLIMATOR, ITEM 140 SV705650-20 (1) OR 2 OR SVBD5279-3 (1)	2/1R	140FM03: Reduced air stream heat removal. CAUSE: Contamination of vent passageways, blockage.	END ITEM: Reduced vent loop heat removal. GFE INTERFACE: Excessive humidity in air stream, and reduced air cooling. MISSION: Terminate EVA due to helmet fogging. CREW/VEHICLE: None for single failure. Possible loss of crewman with loss of SOP.	A. Design - Particulate contamination in the vent loop is filtered out in the CCC. In the CCC, the air flow passes through three separate 125 micron Teflon screens. The air flow also passes through the LiOH and charcoal beds. Additionally there is a fine mesh felt pad in the CCC to filter contamination. The location of these upstream filtering elements insures that clean air passes through the sublimator and minimizes the possibility of contaminating the ventilation passageways. B. Test - Component Acceptance Test - Performance tests are run for both EVA and EVA conditions per AT-E-140-2. At EVA conditions, the sublimator must maintain a minimum heat transfer coefficient of 20 Btu/Hr/deg. F and maintain a vent outlet dewpoint of 55.6 deg. F maximum. Also at EVA conditions, the maximum allowable pressure drop in the ventilation circuit is 1.95 inches H20. At EVA conditions, the sublimator must maintain a minimum heat transfer coefficient of 120 Btu/Hr. deg. F and maintain a vent outlet dewpoint of 54.5 deg. F maximum. Also at EVA conditions, the maximum allowable pressure drop in the ventilation circuit is 0.89 inches H20. In addition the cleanliness of the rig vent loop line is verified before and after sublimator testing. For this verification a hydrophilic sample plate is placed in the rig vent loop and gas is flowed over it at 7.0 - 7.5 psig for 24 hours minimum. A water droplet is placed on the sample to determine hydrophilic coating wettability. After 120 +/- 60 seconds, the maximum wetted diameter must be greater than 0.5 inches. PDA Test - The cleanliness test noted above is repeated at PDA testing. In addition, a fan rise performance test on the ventilation circuit is performed at PLSS PDA. At EVA conditions, the fan pressure rise must be 3.56 inches of water minimum. At EVA conditions, the fan pressure rise must be 4.06 inches of water minimum. Blockage or contamination in the vent loop (including sublimator passageways) would be detected during test.

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	2/1R	140FM03:		

Certification Test -
Breakthrough testing was performed during 9/84. The item successfully operated at 9 psi inlet pressure which is approximately 6 psi above normal operating pressure. The following Engineering Changes have been incorporated and certified since this configuration was certified: 42803-555 (Incorporated Increased Capacity Sublimator), 42806-277 (Added Korapon/Polurethane to prevent corrosion), 42806-306 (Incorporated a revised Screw/Washer Configuration, 42806-361 (Modified Porous Plate Flow Requirement), 42806-801 (Provided Shim Positioning Criteria), 42886-801-1 (Replaced Mylar Shim with Kapton Shim).

C. Inspection -
N.S. inspects all passages, tubes, seals adapters and the plate surface for cleanliness per MS 3150 EM 150. All other details are inspected clean per MS15501.

D. Failure History -
EMU-140-0001 (1-3-79)
During Acceptance testing, the sublimator Pressure drop in the ventilation loop was .71 inches H20.
Spec Valve for Pressure Drop was .47 inches H20.
The discrepancy was attributed to Airfin damage during welding.
This is an old configuration sublimator.
R-EMU-140-0021 (11/3/88)
During IVA conditions acceptance testing insufficient heat was transferred from vent air to coolant water due to improper location of rig temperature sensor. Relocation of rig sensor and a repeat of tests with established sublimators verify accuracy with new temperature location.

E. Ground Turnaround -
Tested per FEMU-R-001, EMU Vacuum Performance, Sublimator Performance.

F. Operational Use -
Crew Response -

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
	2/1R	140FN03:		Pre EVA: No response, single failure undetectable by crew or ground. EVA: If cooling is insufficient or helmet fogging occurs terminate EVA. Open helmet purge vlv to anti-fog helmet as required. Training - Standard EMU training covers this mode. Operational Considerations - Flight rules define go/no go criteria related to EMU thermal control. EVA checklist and FDF procedures verify hardware integrity and systems operational status prior to EVA. Real Time Data System allows ground monitoring of EMU system.