

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
WATER PRESSURE REGULATOR ITEM 136 ----- SV792528-5 (1)	2/1R	136FM03 Fails closed, regulates low. Plunger rod or piston sticks, piston return spring relaxes.	END ITEM: Reduction or loss of water flow to sublimator porous plate. GFE INTERFACE: Unable to supply feedwater to the sublimator. Loss of cooling capability, sublimator breakthrough. Possible helmet fogging. MISSION: Terminate EVA. CREW/VEHICLE: None for single failure. Possible loss of crewman with loss of SOP. TIME TO EFFECT /ACTIONS: Minutes. Open purge valve to provide cooling and activate the SOP. TIME AVAILABLE: Minutes.	A. Design - The plunger rod, poppet, and the plate retainer are protected from contamination and jamming by a 38 micron inlet filter. All details have clearances in excess of the possible 38 micron contaminant. The ambient reference piston is protected by a 140 micron filter and has local guide lands to minimize close clearance areas. The piston and housing are teflon coated to minimize friction. The redesign of the plunger rod and regulator poppet has maximized the L/D ratio of the local guides to minimize friction and to keep the parts from cocking and jamming. The outer diameter of the plunger plate has been increased for better guidance and the material has been changed to Rulon J to minimize friction and help reduce hysteresis. The piston return spring is designed for infinite life. Infinite life (minimum of 10E+8 cycles) springs will operate within their designed working range without being life limited. B. Test - Component Acceptance Test - A performance test is performed per AT-E-136-2. For the performance test the flow thru the valve is measured over the inlet pressure range of 8.8-15.9 psig and the outlet pressure range of 2.55-3.95 psig. The flow is monitored in both the increasing and decreasing directions. PDA TEST - A feedwater pressure regulation test is performed per SEMU-60-010. The regulator is required to flow 36.25-37.75 cc/min. water at an inlet pressure of 15.7-15.9 psig. Certification Test - Certified for a useful life of 15 years (ref. SEMU-46-004). C. Inspection - Springs are 100% inspected for visual and dimensional requirements, they are also physically tested for load and displacement to insure correct load and spring rate can be obtained at assembly. Plunger rod or piston sticking open due to contamination is prevented by maintaining precision cleaning of detail parts per SVHS3150 EM50 during assembly and testing. The detail housings are inspected for 32 microinch finish before coating with Teflon coating to further reduce friction. D. Failure History - The following RDR's are against obsolete configurations and are no longer valid for consideration for this failure mode: J-EMU-136-A003 EMU-136-C004 EMU-136-C006 H-EMU-136-D008 H-EMU-136-D013 E. Ground Turnaround - Tested for non-EET processing per FEMU-R-001, Item 136 Regulation and Leakage Screen. None for EET processing.

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		136FM03		
		REDUNDANCY		F. Operational Use - Crew Response -
		SCREENS:		EVA: When CWS data confirms loss of sublimator pressure trouble shoot problem by using feedwater switch. If cooling is insufficient or helmet fogging, terminate
		A-PASS		EVA. Open helmet purge valve to anti-fog helmet if required.
		B-PASS		Training - Standard EMU training covers this failure mode. Crewman are trained for one man EVA scenario.
		C-PASS		Operational Considerations - Flight rules define go/no go criteria related to EMU thermal control. Flight rules define EMU as go to remain on SCU (available for rescue if required). Flight rules require termination of EVA upon activation of SOP. Real Time Data System allows ground monitoring for EMU systems.

EXTRAVEHICULAR MOBILITY UNIT
SYSTEMS SAFETY REVIEW PANEL REVIEW
FOR THE
I-136 FEEDWATER PRESSURE REGULATOR
CRITICAL ITEM LIST (CIL)

EMU CONTRACT NO. NAS 9-97150

Prepared by: *J. Amey* 3/2/02
HS - Project Engineering

Approved by: *RMB*
NASA/SSM
ISS

M. Snyder
HS - Reliability

V. Blanes
NASA/SSM

Ala Payne for RCM
HS - Engineering Manager

[Signature]
NASA/SSM

Mike H...
NASA-MOD

[Signature]
NASA-Crew

[Signature]
NASA Program Manager