

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
FAN SWITCH, ITEM 366 SV771007-3 (1)	2/2	366FN03A: Electrical short, CLIV power input to case. CAUSE: contamination, faulty wiring.	END ITEM: A continuous short across the CLIV current limiter. OPE INTERFACE: CLIV current limiter would trip (open). Would not be able to switch CLIV position. MISSION: Loss of use of one ENJ, if failed with CLIV closed at power up, could prevent ENJ use due to inability to remove gas from pump circuit. CREW/VEHICLE: None.	A. Design - The stationary contacts are part of the external terminal lugs. No interconnecting wiring to fail. Each switch position has dual contacts for redundancy. Switching mechanism and contacts are encased in a hermetically sealed case backfilled with dry nitrogen. Contact is accomplished through a roller type contact. This keeps switching forces to a minimum. The lead wires (M22759/12) are soldered to the external switch terminals per NBS300.4(3A-1). This area is then potted with stycaat to provide strain relief for the leads. The wire bundle is designed to withstand a pull force of 8 lbs. without damage or degradation. B. Test - Component Acceptance Test - Vendor acceptance tests include 500 actuation cycles, contact resistance, insulation resistance, and dielectric withstanding voltage tests. In-Process Test - Switch operation and continuity are verified during four separate in-process tests during ODN Item 350 assembly. PDA Test - Proper operation is verified during ODN PDA which includes continuity, functional tests, and operating force. The switch is vibrated and exposed to thermal cycles during PDA as part of the BCM. Certification Test - The item completed the 15 year structural vibration and shock cert. requirement during 10/83. The item is cycle certified by similarity to the Item 368 switch. The Item 368 switch has completed 127,000 cycles during 8/85 which is 31 times the cycle cert. requirement of 4,100 cycles. EC42886-599-7 added a lead to the Fan switch for the redesigned ODN. This created the -2 switch configuration. Switch certification was not effected. C. Inspection - The external lead wires are inspected for damage as part of source inspection for the part and again during assembly of the BCM.

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ANALYST:

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To preclude failure due to internal contamination, the switches are assembled by the vendor in a Class 100,000 clean room. The switches are flushed internally using chloroform BB and Genealva D to remove contaminants prior to case welding. After welding the switches are vacuum baked and back filled with GM2 to a pressure of 3-5 psig and sealed. Leak checks are performed several times during subsequent processing to verify seal integrity. Two X-ray inspections are performed, prior to run-in cycling and after vibration, to verify absence of weld splatter and loose pieces, and to verify contact alignment.

D. Failure History -
None.

E. Ground Turnaround -
Switch operation is verified per FEMU-R-001, EMU Preflight KSC Checkout.

F. Operational Use -
Crew Response - PreIVA: If pump startup does not supply adequate cooling, troubleshoot problem. If no success, consider third EMU if available. Otherwise, EMU go for SCU standby using prep without fan procedures.
Training - Standard training covers this failure mode.
Operational Considerations - EVA checklist procedures verify hardware integrity and systems operational status prior to EVA. Flight rules define go/no go criteria related to thermal control.