

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
CAUTION AND WARNING SYSTEM SWITCH, ITEM 368 ----- 6V767792-2 (1)	2/2	368FM08: Loss of -14.2 volt input to switch. CAUSE: Switch arm fracture, severed common lead, or connector short to ground in common lead or connector.	END ITEM: Unable to request status display, acknowledge failure messages, or recall warning messages. GFE INTERFACE: Loss of status display capability, and unable to acknowledge fault message. MISSION: Loss of use of one EMP. Terminate EVA. 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 minimizes switching forces. Operating force is 4 ± 2 lbs. The switch is designed to withstand a toggle force of 25 lbs. without degradation. The lead wires (M22759/12) are soldered to the external switch terminals per RH85308.4 (3A-7). This area is then potted with styceast 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, and dielectric withstanding voltage tests. In-Process Test - Switch operation and continuity are verified during in-process tests during DCM item 350 assembly. PDA Test - Proper operation is verified during DCM PDA which includes continuity, functional tests, and operating torque. 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 requirements during 10/85. The item was cycle certified for 127,800 cycles during 8/85. No Class 1 Engineering changes have been issued since this configuration was certified. C. Inspection - The external lead wires are inspected for damage as part of source inspection for damage as part of source inspection for the part and again during assembly of the DCM. To preclude failure due to internal contamination, the switches

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ANALYSIS

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Z/2 368PM08;

are assembled by the vendor in a Class 100,000 clean room. The switches are flushed internally using chloroethane DR and Genesolve B to remove contaminants prior to case welding. After welding, the switches are vacuum baked and backfilled with GN2 to a pressure of 5-5 psig and sealed. Leak checks are performed during subsequent processing to verify seal integrity. 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 -
Tested per FEMU-A-001, EMU Performance Chamber Run, DCM Display verification.

F. Operational Use -
Crew Response - PreEVA; if detected during EMU checkout or programmed leak check, discontinue use of EMU. Use third EMU if available.
EVA; When detected during periodic status check, troubleshoot using RTDS. Terminate EVA.
Training - Standard EMU training covers this failure mode.
Operational Considerations - EVA checklist procedures verify hardware integrity and system operational status prior to EVA. Flight rules define go/no go criteria related to EMU CMS. Real Time Data System allows ground monitoring of EMU systems.