

12/24/93 SUPERSEDES 12/24/91

ANALYST:

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
EVC MODE SELECTOR SWITCH, ITEM 362 ----- SV767786-2 (1)	3/288	362FM07: Electrical open in position 4 (backup). CAUSE: Failed electrical component or wiring.	END ITEM: Loss of one of two power supplies for backup mode switch position. GFE INTERFACE: None for single failure. Loss of one of two redundant power supplies. MISSION: None for single failure. Terminate EVA with loss of Modes A and B. CREW/VEHICLE: None.	A. Design - The lead wires (M22759/12) for the switch are soldered to the external switch terminals per MHE5300, 4 (3A-1). This area is then potted with styceat to provide strain relief for the leads. The wire bundle is designed to withstand a pull force of 8 lbs. without damage or degradation. The switching mechanism, belt bearing, and contacts are encased in a hermetically sealed housing backfilled with dry nitrogen to prevent failure due to contamination or corrosion. B. Test - Component Acceptance: Continuity test through switch and leads & contact resistance test are performed as part of the vendor acceptance tests for the item. DCM In-Process Switch continuity and output voltage are checked during in-process test performed during DCM Assembly. PBA: Switch continuity and output voltage are checked after completion of vibration acceptance testing (VAT) (6.2 grms) and again upon completion of Thermal Vacuum Acceptance testing (70 to 130 F). These tests verify the integrity of the switch wiring and connection. PBA is per SEMU-60-015. Certification: The item is cycle certified by similarity to the McGraw Edison switch which was certified during the Skylab program. The McGraw Edison switch completed 10,000 cycles which is about 3 times the cycle certification requirement of 3,637 for this item. Engineering changes 42806-83, 42806-367, and 42886-367-1 have been incorporated and certified by analysis/similarity since this configuration was tested. All three EC's were to revise the external switch handle. B. Test - The item 362 completed th 15 year structural vibration and shock certification requirements during 10/82 as part of the DCM. The item completed the four hour thermal vacuum certification requirement as part of the DCM during 2/82.

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3/2ND 362PKD7:

C. Inspection -
Switches are 100% leak checked as part of vendor in process testing.

The lead wires are inspected during source inspection for the part and again during DCM assembly for damage and wear inspection. An open circuit is also precluded via inspection of soldering at the switch (prior to potting per HRB3380, 4 (3A-1)).

All switch lead wires are pull tested after insertion into connectors during DCM assembly to insure proper locking of their crimp contacts.

D. Failure History -
None.

E. Ground Turnaround -
None. Invasive test. DCM PDA will detect this failure.

F. Operational Use -
Crew Response -
Pre-EVA/EVA : No response, single failure undetectable by crew or ground.
Special Training -
No training specifically covers this failure mode.
Operational Considerations -
For single failure, no constraints.