

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
EVA POSITION SWITCH, ITEM 116 ----- SV789111-4 (1)	3/1RB	116FM02A Fails closed.  Contact weld caused by arcing or a failure of the hermetic seal and exposure to vacuum, jamming, shorting due to contamination.	END ITEM: Continuous indication that the 02 actuator is in the EVA position.  GFE INTERFACE: CWS fails to detect if 02 actuator moves out of the EVA position.  MISSION: None.  CREW/VEHICLE: None for single failure. Possible loss of crewman for multiple failures resulting in required SOP operation and 02 actuator out of EVA position.  TIME TO EFFECT /ACTIONS: Post/Pre EVA: Minutes. EVA: Hours.. Discontinue use of affected EMU.  TIME AVAILABLE: Seconds.  TIME REQUIRED: Seconds.	A. Design - The switch is a standard hermetically sealed, welded construction Honeywell microswitch. Electrical leads are soldered to the switch terminals (glass bead pass through) and then potted to provide protection from external mechanical loads and contamination.  B. Test - Component Acceptance Test - The vendor submits a certified report for lot acceptance test. The switch position is set and verified during shear plate assembly.  PDA Test - Continuity (Harness Level) SV792577-1 OP Sheet #70. Calibration (Shear Plate Level) SV778540 OP Sheet #130.  Certification Test - Certified for a useful life of 20 years (ref EMUM1-0027).  C. Inspection - Any electrical failure is detected by vendor testing and inspection requirements (including cleanliness) of MIL-S-8005/8 for P/N MS 27216-6. The vendor submits a certified report for lot acceptance, including checks for contact resistance and hermetic seal.  D. Failure History - None.  E. Ground Turnaround - Tested for non-EET processing per FEMU-R-001, SOP Functional Test. FEMU-R-001 Para 8.2 EMU Preflight KSC Checkout for EET processing.  F. Operational Use - Crew Response - EVA: No response, single failure undetectable by crew or ground. Training - No training specifically covers this failure mode. Operational Considerations - EVA checklist procedures verify hardware integrity and systems operational status prior to EVA.

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116FM02A

REDUNDANCY  
SCREENS:  
A-PASS  
B-FAIL  
C-PASS

EXTRAVEHICULAR MOBILITY UNIT  
SYSTEMS SAFETY REVIEW PANEL REVIEW  
FOR THE  
I-116 EVA POSITION SWITCH  
CRITICAL ITEM LIST (CIL)

EMU CONTRACT NO. NAS 9-97150

Prepared by: *[Signature]* 3/27/02  
HS - Project Engineering

Approved by: *[Signature]*  
NASA - SSM  
CSS

*[Signature]*  
HS - Reliability

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NASA - SSM

*[Signature]* for RME  
HS - Engineering Manager

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NASA - SSM

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NASA - MOD

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NASA - Crew

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NASA - Program Manager