

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
JUMPER HARNESS, ITEM 392 ----- SV821756-2 (1)	2/1RB	392FM02 Electrical open, +5V, - 14.2V or +14.2V lines.  Cable chafing against connector shell or shield. Improper connector strain relief. Faulty connection between the connector and the lead wires, conductor severed, contact resistance.	END ITEM: Loss of continuity in +5V, +14.2V or -14.2V lines.  GFE INTERFACE: Loss of CWS function.  MISSION: Terminate EVA. Loss of use of one EMU  CREW/VEHICLE: None for single failure. Possible loss of crewman with loss of CCC, oxygen or low vent flow.  TIME TO EFFECT /ACTIONS: Minutes.  TIME AVAILABLE: Minutes.  TIME REQUIRED: Minutes.  REDUNDANCY SCREENS: A-PASS B-FAIL C-PASS	A. Design - Open circuits are minimized by the following: Each connector/adaptor ring interface is locked in place to prevent rotation by a mechanical lock. #22 Teflon insulated wires and connector provide electrical conduction and insulation properties to prevent wire breakage and to help prevent shorting. Connector pins are operating at 56.7% of derated temperature and wire at 14% of derated current. The woven Halar sheath is assembled over the internal conductors to provide protection from abrasion and impact. Strain relief is provided by a combination of convolute tubing, metal EMI braid, and 0.5" extra cable length. The braided items are secured by a band strap at each connector/cable interface. The convolute tubing is threaded into the connectors. Wire crimping is performed per SVHS4909 (based on MSFC Spec-Q-1A).  B. Test - Component Acceptance Test - The 392 harness is subjected to acceptance testing per AT-E-392 prior to final acceptance to ensure there are no workmanship problems that could cause an open or short circuit. Each connector/harness interface is subjected to a 9-lb. pull test. The insulation resistance between each conductor and the ground circuit is measured during this test to ensure there are no intermittent shorts and to verify the integrity of the harness conductors. A strain relief is provided to ensure the integrity of the harness conductors. A continuity test is performed to measure the resistance of the circuit to ensure there are no open circuits or high resistance paths. The insulation resistance and dielectric strength between each conductor and the shield ground is measured to ensure there are no shorts.  PDA Test - The +5V, -14.2V, and +14.2V lines are checked during DCM PDA testing per SI 015 para. 4.0 (Electrical Testing).  Certification Test - Certified for a useful life of 15 years (ref. EMU1-13-046).  C. Inspection - To ensure that there are no workmanship problems which could cause an open circuit in the harness conductors, the following inspections are made: Contact crimp samples are made prior to start of crimping and at the conclusion of crimping and pull tested to ensure the crimp tooling is operating properly. Crimp terminations are inspected for defects. Harness cables and conductors are visually inspected prior to assembly to ensure there are no defects which could cause an open due to workmanship. Electrical bond test is performed to verify ground path through various points on the harness. In-process and final electrical checkout of the harness (conductor continuity, dielectric strength and insulation resistance tests) are performed to ensure there are no open circuits.  D. Failure History - None.  E. Ground Turnaround - Tested per FEMU-R-001, Transducer and DCM Gage Calibration Check.  F. Operational Use - Crew Response - PreEVA: Trouble shoot, if no success, consider third EMU if

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		392FM02		<p>available. Otherwise, EMU is no go for EVA. EVA: Terminate EVA when detect ground or during crewmember's status check.</p> <p>Training - Standard EMU training covers this failure mode.</p> <p>Operational Considerations - Flight rule A15.1.2-2 of "Space Shuttle Operational Flight Rules", NSTS-12820 defines go/no go criteria related to CWS. Define EMU as lost if crew and ground determine insufficient CWS data available. Generic EVA Checklist, JSC-48023, procedures Section 3 (EMU Check) and 4 (EVA prep) verify hardware integrity and systems operational status prior to EVA. EMU CWS provides readout on status. Real Time Data System allows ground monitoring of EMU systems.</p>

EXTRAVEHICULAR MOBILITY UNIT  
SYSTEMS SAFETY REVIEW PANEL REVIEW  
FOR THE  
I-392 JUMPER SIGNAL HARNESS  
CRITICAL ITEM LIST (CIL)  
EMU CONTRACT NO. NAS 9-97150

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