

**CIL  
EMU CRITICAL ITEMS LIST**

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DATE: 05/15/01**

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE																					
PRESSURE GAGE, ITEM 492 ----- SV792695-1 (1)	2/1RB	492FM02: Reads low.  Binding of display mechanism due to misalignment.	End Item: Numerical gage pressure indication is lower than the actual suit pressure.  GFE Interface: Numerical gage pressure indication is lower than the actual suit pressure.  Mission: O2 actuator will be continually cycled to try to maintain the 7.5 to 8.0 psig suit pressure. The excess pressure will vent through the 493 relief valve.  Crew/Vehicle: None for single failure. The 493 relief valve will open to vent the excess pressure. If this relief valve also fails closed, the excess pressure may rupture the suit. Possible loss of crewman from decompression sickness.	A. Design - Interfaces on the Bourdon Tube pivoting members within the gauge are machined to a 125 microinch surface finish. The gauge needle swinging members are positioned at least 0.035 inch away from adjacent parts. Binding due to contamination is prevented by cleanliness requirements both on the detail part and assembly levels.  B. Test - Component Acceptance Test - The item is accuracy tested per vendor test sheets for proper operation and freedom from stiction/hysteresis.  PDA Test - The item is accuracy tested per SEMU-60-016, Para. 7.0.  Certification Test - The BTA completed the following Certification Cycles in 9/90:  <table border="0" data-bbox="1094 824 1787 997"> <thead> <tr> <th data-bbox="1094 824 1304 867">Test</th> <th data-bbox="1304 824 1591 867">Actual Cycles</th> <th data-bbox="1591 824 1787 867">Spec. Cycles</th> </tr> <tr> <td data-bbox="1094 867 1304 889">----</td> <td data-bbox="1304 867 1591 889">-----</td> <td data-bbox="1591 867 1787 889">-----</td> </tr> </thead> <tbody> <tr> <td data-bbox="1094 889 1304 912">Proof Pres. (13.3 psi)</td> <td data-bbox="1304 889 1591 912">16</td> <td data-bbox="1591 889 1787 912">16</td> </tr> <tr> <td data-bbox="1094 912 1304 935">Crack/Max Flow</td> <td data-bbox="1304 912 1591 935">2100</td> <td data-bbox="1591 912 1787 935">2100</td> </tr> <tr> <td data-bbox="1094 935 1304 958">Mate/Demate</td> <td data-bbox="1304 935 1591 958">598 Latch Seal</td> <td data-bbox="1591 935 1787 958">500 Latch Seal</td> </tr> <tr> <td data-bbox="1094 958 1304 980">Poppet Keeper Retraction</td> <td data-bbox="1304 958 1591 980">312</td> <td data-bbox="1591 958 1787 980">312</td> </tr> <tr> <td data-bbox="1094 980 1304 1003">Burst Pres. (32.2 psi)</td> <td data-bbox="1304 980 1591 1003">1</td> <td data-bbox="1591 980 1787 1003">1</td> </tr> </tbody> </table> The BTA Assembly completed the 15-year random vibration (48 minutes per axis), sinusoidal vibration, design and bench shock testing in 9/89.	Test	Actual Cycles	Spec. Cycles	----	-----	-----	Proof Pres. (13.3 psi)	16	16	Crack/Max Flow	2100	2100	Mate/Demate	598 Latch Seal	500 Latch Seal	Poppet Keeper Retraction	312	312	Burst Pres. (32.2 psi)	1	1
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	2/1RB	492FM02		<p>C. Inspection - All detail parts, and the assembly, are 100% inspected for dimensional and surface finish requirements.</p> <p>D. Failure History - None.</p> <p>E. Ground Turnaround Checked per FEMU-R-001, BTA Gage Accuracy Check.</p> <p>F. Operational Use</p> <p>Post-Suit Doffing Bends Treatment: Crew Response - PostEVA: No response, single failure undetectable by crew or ground. Training - Standard EMU training covers this failure mode. Operational Considerations - No constraints for single failure.</p> <p>In-Suit Bends Treatment: Criticality is 2/1RB. Suit pressure can be determined via the Item 132A Feedwater Supply Pressure Transducer. Crew Response – Bends Treatment: IV crewmember will terminate the Bends Treatment procedure if the pressure on the BTA Gauge increases while the O2 Actuator is in the PRESS position. The IV crewmember has 10 seconds to detect and react in order to keep suit pressure below 11 psid. 11 psid is the max cert. vent loop burst pressure. Consider use of another suit to continue Bends Treatment procedure. Training – Standard EMU training covers this failure mode. Operational Considerations - Prior to EVA, EMU pressurization functions are verified. EMU function for nominal operation is also monitored during EVA. IV crewmember must monitor suit pressure to detect and respond to an increase in suit pressure. Inability to do so will result in suit overpressurization, suit failure, rapid suit depressurization, and loss of crewmember undergoing Bends Treatment.</p>

**CRITICAL ITEMS LIST (CIL)**  
**FOR THE**  
**EXTRAVEHICULAR MOBILITY UNIT (EMU)**

Updates Due To On Orbit Bends Treatment Procedure:

CIL  
113DFM01B  
113EFM01B  
492FM01  
492FM02

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