

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
INLET VALVE ASSEMBLY, ITEM 110 (GFE) ----- 528-20696 (1)	3/1RA	110FM07 Water leakage across septum lip seal. Defective or damaged septum. Contamination or foreign matter in septum.	END ITEM: Leakage through septum seal to threaded cap. GFE INTERFACE: Drink bag water leakage through septum lip seal to threaded cap/seal. MISSION: None for single failure. For double failure (loss of septum lip seal and threaded cap seal) partial depletion of potable water and water flowing into vent system. CREW/VEHICLE: None with single or double failure. Loss of crewman with subsequent loss of SOP. TIME TO EFFECT /ACTIONS: Minutes. Activate purge valve and return to airlock. TIME AVAILABLE: Minutes.	A. Design - The inlet valve (GFE furnished) is flushed with alcohol to remove contamination and foreign material from the septum. The septum is located within a housing which protects it from damage and contamination or foreign matter. A screw-on cap with a flat viton seal attaches to the housing to preclude leakage of the Inlet Valve Assembly if the septum becomes damaged during use. The cap is secured to the housing by a Kevlar lanyard. B. Test - Acceptance: Component - See Inspection. PDA: The following tests are conducted at the IDB Assembly level in accordance with ILC Document 0111-70028J: Proof pressure leakage tested in restraining fixture to 2.0 (+0.1 - 0.0) psig. Leak tested to verify no leakage through valve and hose assemblies. Certification: The IDB was successfully tested (manned) during SSA certification to duplicate six years operational usage (Ref. Cert Test Report for the SSA, ILC Document 0111-70027). The assembly was successfully tested to the S/AD ultimate pressure of 2.7 + 0.1 psid for 5 minutes with the IDB restrained to a maximum thickness of one inch. C. Inspection - Components and material manufactured to ILC requirements at an approved supplier are documented from procurement through shipping by the supplier. ILC incoming receiving inspection verifies that the materials received are as identified in the procurement documents, that no damage has occurred during shipment and that supplier certifications have been received which provide traceability information. The following MIPs are performed during the IDB manufacturing process to assure that the failure causes are precluded from the fabricated item: 1. Verify cleanliness to VC level. 2. Verify threads are securely wrapped, tied and coated. During PDA, the following MIPs are performed at the IDB assembly level in accordance with ILC Document 0111-70028J: 1. Visual inspection for material degradation or damage. 2. Verify cleanliness to VC level. 3. Verification of successful leakage test completion. D. Failure History - B-EMU-110-A008 (9/10/91) - A visual inspection of the IDB revealed two black fibers and an elastomeric particle from an improperly punched drink tube hole. Per RDR B-EMU-110-A009, a 15 micron filter will be incorporated into the fill tool to preclude foreign particles like the black fibers from entering the IDB. ECO 922-0085 changes the manufacturing procedures to include a 10X inspection of the drink tube holes to verify they are smooth and clean of particles.

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			TIME REQUIRED: Seconds.	The IDB inlet valve was found to be leaking due to valve septum material fatigue caused by excessive cycling (1 cycle = one insertion/removal) by the IDB tool. Per E.C. 921-0340, the LLL has been revised to require septum replacement prior to each flight (and limit use to one flight only) or manned use. In addition, all fill tools will undergo visual inspection for burrs or sharp edges prior to insertion into an IDB.
			REDUNDANCY SCREENS: A-FAIL B-N/A C-PASS	B-EMU-110-F001 (12/09/93) - IDB inlet valve leakage during STS-61 due to cracked and damaged septum sealing surfaces caused by insertion and removal of the IDB fill tool. Per ECO 941-0174, IDB septums will now have a threaded nylon cap with an integral viton seal to contain leakage. B-EMU-110-F002 (12/09/93) - IDB leakage from fill port. Corrective action was tracked by B-EMU-110-F001. E. Ground Turnaround - During ground turnaround, in accordance with FEMU-R-001 paragraph 7.1.8.6.2.2, pre-flight processing, the IDB is subjected to leakage and structural tests and complete visual inspection for material damage/degradation. F. Operational Use - Operational Use Crew Response - Pre/post-EVA : Troubleshoot problem, if no success, continue EVA operations without IDB. EVA : If significant amounts of water detected, deactivate fan, open purge valve, terminate EVA. Special Training - Standard EMU training covers this failure mode. Operational Considerations - Flight rule A15.1.2-2 of "Space Shuttle Operational Flight Rules", NSTS-12820 defines go/no go criteria related to EMU ventilation flow. Generic EVA Checklist, JSC-48023, procedures Section 3 (EMU Checkout) and 4 (EVA prep) verify hardware integrity and systems operational status prior to EVA. Real Time Data System allows ground monitoring of EMU systems.

EXTRAVEHICULAR MOBILITY UNIT
SYSTEMS SAFETY REVIEW PANEL REVIEW
FOR THE
I-110 IN-SUIT DRINK BAG (IDB)
CRITICAL ITEM LIST (CIL)
EMU CONTRACT NO. NAS 9-97150

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 SYSTEMS SAFETY REVIEW PANEL REVIEW
 FOR THE
 I-110 IN-SUIT DRINK BAG (IDB)
 CRITICAL ITEM LIST (CIL)

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