

NAME P/N QTY	CRIT	FAILURE MODE & CAUSE	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
SWT PRESSURE GAGE, EVEN 371 0270700-3 001	2/M	<p>ITEMS: External gas leakage.</p> <p>CAUSE: Seal failure, leakage in the bourdon tube.</p>	<p>END ITEM: Suit gas leakage to ambient.</p> <p>OFF INTERFACE: Excessive consumption of the primary oxygen supply. The IOP is automatically activated during EVA if the suit pressure drops to 3.32 psid.</p> <p>MISSION: Terminate EVA, loss of use of one EVA.</p> <p>ENVIRONMENT: None for single failure. Possible loss of crewman with loss of SOP.</p>	<p>A. Design - The unit has two leakage paths, one through an inlet face type O/Seal and the other through bourdon tube soldered joints. The seal is elastomeric material.</p> <p>A non-acid base flux is used on the bourdon tube inlet joint, and the tube end is sealed closed without using flux. The bourdon tube is not highly stressed at proof pressure and the oxygen/temperature environment is not severe.</p> <p>B. Test - Acceptance Test (Gross, Inc.): A leakage test is performed by pressurizing the item to 3.5 psid with helium. A leak detector "sniffer" is used to determine that the unit leakage does exceed 200-3 cc/yr.</p> <p>POB: An external leakage test is performed per SEMI-68-015. The pressure gage is pressurized to 4.2-4.5 psid with oxygen. Leakage is measured for a 30 minute minimum test period and must not exceed 20 cc/yr.</p> <p>Certification: The item completed the 15 year structural vibration and shock certification testing during 10/85. The item completed 4,300 cycles during 3/85 which fulfill the cyclic certification requirement of 4,192. Engineering changes 4284-140 (revised Pressure Gage Calibration Requirements) & 4284-144 (revised Test Gage Accuracy) have been incorporated & verified by analysis/similarity check this configuration was tested.</p> <p>C. Inspection - Seal failure. O-ring grooves are 100% inspected per drawing dimensions and surface finish.</p> <p>O-rings are inspected for surface characteristics per SWS 3432, 100% for class I & II, and at least 1.5 ADI for class III.</p> <p>Leakage in the bourdon tube. The vendor acceptance test for leakage will detect a failure of this nature.</p>

NAME	DATE	REVISION	DESCRIPTION
P/M	2/10	001	INITIAL
QTC			

H. Failure History -
 H-EMU-311-001 (8/10/81) - Fracture in boarder tube due to corrosion resulting from the contamination. Incorporated improved post-welding cleaning procedure and eliminated film from the end closure jacket.

H-EMU-301-001 (3/25/81) - The O-ring between the base plate and fitting missing. Drawing was revised to show O-ring location and added detailed cross-section of the gaps.

I. Ground Surrogate -
 Tested per EMU 3-001, See Structure and Tagging.

F. Operational Use -
 Crew Response -
 Problem: Troubleshoot problem. If no success, disconnection was of EMU, consider third EMU is available.
 EVA: When EMU data confirms an accelerated drop in primary O2 tank pressure, terminate EVA.
 Special Training - Standard EMU training covers this failure mode.

Operational Considerations - EVA checkout procedures verify hardware integrity and system operational status prior to EVA. Flight rules define go/no-go criteria related to EMU pressure integrity and regulation. Best Film Data System allows ground monitoring of EMU systems.

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