

CRITICAL ITEMS LIST

REFERENCE DESIGNATOR:
 NAME/QUANTITY: *Exhalation Valve*
 DRAWING REFERENCE: *6020-1074-01 (-303), DW-D1832-5 or F1832-5 (-302, -305)*

PROJECT: *Emergency Oxygen Mask A11x*
 LRU NAME/QUANTITY: *EDMA*
 LRU PART NUMBER: *SPD11100275-301, -302, -305*

SUBSYSTEM
 EFFECTIVITY: *All Orbiters*

FAILURE MODE NUMBER EOMA-FM-004	CRITICALITY 1R/2	FAILURE EFFECT	RETENTION RATIONALE
FUNCTION Allows exhaled gases to pass from facial cavity to ambient.		END ITEM Unable to maintain positive mask pressure and excessive consumption of oxygen.	1. DESIGN FEATURES TO MINIMIZE FAILURE MODE (-301) A. Seal made of polyimide material B. The seating surface is teflon coated to prevent foreign particles from remaining on the surface. (-302, -305) A. The exhalation valve is in current by the Air Force. B. The valve is a mica disc. C. The case and seat is aluminum. D. The spring is phosphor bronze under calibrated compression. E. The valve opens at 1.65 ± 0.15 inches H ₂ O maximum input flow which shall not exceed 25cc/minute. F. Resistance at flows of 0 to 95 slpm, 3.0 inches H ₂ O maximum; 0 to 2 slpm 0.3 inch H ₂ O maximum above pressure setting 2. TEST OR ANALYSIS TO DETECT FAILURE MODE (-301) A. Acceptance Testing Exhalation valve resistance test. $1.5 \pm .25$ in./water at 200 SCC/min. not to exceed 3.0 in./water at a flow of 100 liters/min. B. Certification (1) Exhalation valve resistance test. $1.5 \pm .25$ in./water at 200 SCC/min. not to exceed 3.0 in. water at a flow of 100 liters/min. (2) This valve was previously certified due to its use in the launch entry helmet. C. Turnaround Testing (Per PDA/PIA JSC 22130) Exhalation valve resistance test per PIA JSC 22130 same as acceptance (-302, -305) A. Acceptance Testing (1) Flow of 25cc/minute, at 70 psig back pressure should read 1.65 ± 0.15 inches H ₂ O.
FAILURE MODE AND CAUSE Leakage/Fails Open Cause: 1. Defective valve material 2. Contamination		MISSION None	
REUNDANCY SCREENS A - P B - N/A C - P		CREW/VEHICLE Possible loss of crewmember due to premature depletion of oxygen.	
REMAINING PATHS Requires previous single point Orbiter failure		INTERFACE Excessive PPO ₂ in cabin.	
MISSION PHASE Orbiter Emergency	TIME TO EFFECT Seconds	TIME TO CORRECT N/A	

PREPARED BY:

REVISION:

SUPERSEDING DATE:

DATE:

CRITICAL ITEMS LIST

REFERENCE DESIGNATOR:
 NAME/QUANTITY: Exhalation Valve/1
 DRAWING REFERENCE: 6020 (074 01 (-301), DA-D1023-5 or F1033-5
(-303, -305)

PROJECT: Emergency Oxygen Mask Assy
 LRU NAME/QUANTITY: EOMA
 LRU PART NUMBER: 50033100275 - 301, -302 - 305

SUBSYSTEM:
 EFFECTIVITY: All Orbiters

FAILURE MODE NUMBER EOMA-FM-004	CRITICALITY 1R/2	FAILURE EFFECT	RETENTION RATIONALE
FUNCTION Allows exhaled gases to pass from facial cavity to ambient.		END ITEM Unable to maintain positive mask pressure and excessive consumption of oxygen.	2. TEST OR ANALYSIS TO DETECT FAILURE MODE (Continued) (-301, -305) (2) Flow of 2 slpm at 70 psig - back pressure should not increase more than 0.3 inch H ₂ O. (3) Flow of 95 slpm, at 70 psig - back pressure should be less than 3.0 inches H ₂ O. B. Certification (1) This exhalation valve was certified by its use in the Air Force S1030, S1031 and NASA launch/entry pressure suit systems. The exhalation valve has been in use for over 25 years. (2) Exhalation Valve Resistance Tests: 1.65 ± .15 in of H ₂ O at 25 SCCM, 1.95 ± .15 in of H ₂ O at 200 SCCM, and less than 3.4 in H ₂ O at 95 slpm. C. Turnaround Test (1) Flow of 25 lcc/minute, at 70 psig - back pressure should read 1.65 ± 0.15 inches H ₂ O. (2) Flow of 2 slpm, at 70 psig - back pressure should not increase more than 0.3 inch H ₂ O. (3) Flow of 95 slpm, at 70 psig - back pressure should be less than 3.0 inches H ₂ O. 3. INSPECTION (-301) A. Manufacturing (1) 100% inspection of material defects and fabrication requirements. (2) Visual inspection for cleanliness. B. Turnaround Inspection (Per PDA/PIA ISC 22130) (1) Functional test per PIA ISC 22130 (2) Visual cleanliness inspection per ISCM 5323, Level GC
FAILURE MODE AND CAUSE Leakage/Fails Open Cause: 1. Defective valve material 2. Contamination		MISSION None	
		CREW/VEHICLE Possible loss of crewmember due to premature depletion of oxygen.	
REUNDANCY SCREENS A - P B - N/A C - P	REMAINING PATHS Requires previous single point Orbiter failure.	INTERFACE Excessive PPO ₂ in cabin.	
MISSION PHASE Orbiter Emergency	TIME TO EFFECT Seconds	TIME TO CORRECT N/A	

PREPARED BY:

REVISION:

SUPERSEDING DATE:

DATE:

CRITICAL ITEMS LIST

REFERENCE DESIGNATOR:
 NAME/QUANTITY: Exhalation Valve/1
 DRAWING REFERENCE: 6020-N074-D1 (-301), DN-D1833-5 or F1833-5
(-303, -305)

PROJECT: Emergency Oxygen Mask Assy
 LRU NAME/QUANTITY: EOMA
 LRU PART NUMBER: SDD11100375-301, -303, -305

SUBSYSTEM
 EFFECTIVITY: All Orbiters

FAILURE MODE NUMBER EOMA-FM-004	CRITICALITY 1R/2	FAILURE EFFECT	RETENTION RATIONALE
FUNCTION Allows exhaled gases to pass from facial cavity to ambient.		END ITEM Unable to maintain positive mask pressure and excessive consumption of oxygen.	3. INSPECTION (Continued) (-303, -305) Turnaround Inspection (-303, -305) A. Visual inspection of parts for defects. B. One hundred percent visual inspection during assembly. C. Visual inspection on glyptal seal for defect. D. Visual inspection for contamination. E. Verify flows are within specifications of the acceptance test. F. Verify exhalation valve is cleaned (level 300) in accordance with FSCM 5322. 4. FAILURE HISTORY (-301) This exhalation valve has been on use by NASA (launch and entry helmet) for approximately 10 years. No known failures in this or similar programs. (-303, -305) JSC-EC-0422 and JSC-EC-0425 Problem: Valve failed initial resistance test. Spec: 1.1 to 1.8 in. H ₂ O, Actual 1.3 in H ₂ O. Cause: Crack mica seat in valve which was caused by improper handling. Fix: Seat was replaced and technicians have been reminded to be careful handling this hardware.
FAILURE MODE AND CAUSE Leakage/Fails Open Cause: 1. Defective valve material 2. Contamination		MISSION None	
REUNDANCY SCREENS A - P B - N/A C - P		CREW/VEHICLE Possible loss of crewmember due to premature depletion of oxygen.	
REMAINING PATHS Requires previous single point Orbiter failure		INTERFACE Excessive PPO ₂ in cabin.	
MISSION PHASE Orbiter Emergency		TIME TO EFFECT Seconds	
		TIME TO CORRECT N/A	

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