

# CRITICAL ITEMS LIST

Reference Designator:  
Name/Quantity: Demand Breath. Regulator  
Drawing Reference: RMC 1051

Project: Quick Don Mask Assy.  
LRU Name/Quantity: ODMA  
LRU Part Number: SED33104528-303

Subsystem: CEE  
Effectively: ALL ORBITERS

Failure Mode Number ODMA-FM-002	Criticality 1 R/2	Failure Effect	Retention Rationale
<b>Function</b>  Supplies oxygen on demand to the face cavity.		<u>End Item</u>  No oxygen flow to facial cavity.	<b>1. DESIGN FEATURES TO MINIMIZE FAILURE MODE</b>  A. Regulator designed to preclude no flow condition. B. The diaphragm and packing are fabricated of elastic silicone rubber with a minimum age life of 6 years. C. Demand spring fabricated of corrosion resistant stainless steel. D. A screen inlet filter (20 micron) fabricated of corrosion resistant stainless steel is incorporated into the inlet port to prevent internal contamination. E. Regulator designed to withstand a minimum of 250,000 cycles with a peak use rate of 30 l/min. for 200,000 cycles and 70 l/min. for 50,000 cycles.  <b>2. TEST OR ANALYSIS TO DETECT FAILURE MODE</b>  A. Acceptance Test  (1) Safety pressure test at 60, 70, and 110 psig inlet pressure and 70 slpm flow. Specification: 0.1 to 1.0 in H <sub>2</sub> O. (2) Normal outward leakage test. Specification: Less than 0.1 l/min. (3) Emergency outward leakage test. Specification: Less than 1.0 l/min (4) Mask regulator inward leakage test with 4.0 in H <sub>2</sub> O suction and inlet plugged. Specification: Less than 0.2 l/min.  B. Certification  (1) Certification in accordance with 150-C89, Federal Aviation Administration, Technical Standard Order, Protective Breathing Equipment. (2) Subjected to temperatures of 160°F for 12 hours and -67°F for 2 hours after which a complete functional test is performed (3) Cycle tested 250,000 cycles with a peak breathing rate of 30 l/min for 200,000 cycles and 70 l/min for 50,000 cycles. Complete functional test performed after cycling.
<b>Failure Mode and Cause</b>  Falls Closed  Cause:  1. Defective demand valve 2. Defective demand spring 3. Contamination		<u>Mission</u>  None	
		<u>Crew/Vehicle</u>  Possible loss of crewmember due to loss of oxygen.	
<b>Redundancy Screens</b>  A - P B - N/A C - P	<b>Remaining Paths</b>  Required previous single point Orbiter failure.	<u>Interface</u>  None	
<b>Mission Phase</b>  Orbiter Emergency	<b>Time to Effect</b>  Seconds	<b>Time to Correct</b>  N/A	

DATE: 4/92 REVISION: BASIC

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# CRITICAL ITEMS LIST

Reference Designator:  
 Name/Quantity: Demand Breath. Regulator  
 Drawing Reference: RMC 1051

Project: Quick Don Mask Assy.  
 LRU Name/Quantity: QDMA  
 LRU Part Number: SED33104520-303

Subsystem: CEE  
 Effectivity: ALL ORBITERS

Failure Mode Number QDMA-FM-002	Criticallly 1R/2	Failure Effect	Retention Rationale
<b>Function</b>  Supplies oxygen on demand to the face cavity.		<b>End Item</b>  No oxygen flow to facial cavity.	(4) Proof pressure test at 165 psig for 2 minutes (110 psig max. operating pressure). Complete functional test performed after proof pressure test.  C. Turnaround Testing (per PDA/PIA procedure)  (1) Complete PDA testing performed every 24 months or before every flight. Testing includes positive pressure flow, inward and outward leakage tests (2) Replacement of regulator softgoods and overhaul every 6 years. Complete PDA testing after overhaul.  3. INSPECTION  A. Manufacturing (1) Verify all materials, parts and assembly processes meet requirements. (2) Visual inspection of parts for defects (3) Verify all internal parts cleaned for oxygen service per JSCM 5322, Level 100C.  B. Turnaround Inspection (per PDA/PIA procedure) (1) Visual inspection of parts for defects. (2) Visual inspection during regulator assembly/overhaul. (3) Verify regulator operates within leakage specifications (4) Verify regulator operates within positive pressure specifications (5) Replacement of regulator softgoods and overhaul every 6 years. (6) Verify parts and regulator cleaned for oxygen service per JSCM 5322, Level 100C. (7) Verify external cleanliness to Level GC per JSCM 5322.
<b>Failure Mode and Cause</b>  Falls Closed  Cause:  1. Defective demand valve 2. Defective demand spring 3. Contamination		<b>Mission</b>  None	
<b>Redundancy Screens</b>  A-P B-N/A C-P		<b>Crew/Vehicle</b>  Possible loss of crewmember due to loss of oxygen.	
<b>Remaining Paths</b>  Required previous single point Orbiter failure.		<b>Interface</b>  None	
<b>Mission Phase</b>  Orbiter Emergency	<b>Time to Effect</b>  Seconds	<b>Time to Correct</b>  N/A	

# CRITICAL ITEMS LIST

Reference Designator:  
 Name/Quantity: Demand Breath, Regulator  
 Drawing Reference: RMC 1051

Project: Quick Don Mask Assy.  
 LRU Name/Quantity: QDMA  
 LRU Part Number: SED331D4528-303

Subsystem: CEE  
 Effectivity: ALL ORBITERS

Failure Mode Number QDMA-FM-002	Criticality 1R/2	Failure Effect	Retention Rationale	
<b>Function</b>  Supplies oxygen on demand to the face cavity.		<u>End Item</u>  No oxygen flow to facial cavity.	<b>4. FAILURE HISTORY</b>  This regulator is used in commercial applications (Gulfstream, Boeing 747-400) and military applications (C-130). No service failures reported.	
<b>Failure Mode and Cause</b>  Falls Closed  Cause:  1. Defective demand valve 2. Defective demand spring 3. Contamination		<u>Mission</u>  None		<b>5. OPERATIONAL USE</b>  <b>A. Operational Effect of Failure:</b> Potential loss of crewmember due to loss of oxygen supply. No protection from contaminated atmosphere.  <b>B. Crew Action:</b> No work around if this failure occurs.  <b>C. Crew Training:</b> Crewmembers are trained in the correct function and use of the QDMA.  <b>D. Mission constraint:</b> None.  <b>E. In flight checkout:</b> None.
<b>Redundancy Screens</b>  A-P B-N/A C-P	<b>Remaining Paths</b>  Required previous single point Orbiter failure.	<u>Interface</u>  None		
<b>Mission Phase</b>	<b>Time to Effect</b>	<b>Time to Correct</b>		
<b>Orbiter Emergency</b>	Seconds	N/A		

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