

EWL  
BMW CRITICAL ITEM LIST

08/24/90 SUPERSEDES 01/02/90

AW1751

Page: 1  
Date: 08/20/90

NAME P/N REV	CONF	FAILURE MODE & CAUSE	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE												
DISTAN AND CONTROL 2/8 ROMAN, ITEM 100 0V76296-03 (1)		<p>ROOTS: OFF position switch fails OFF (depend).</p> <p>CAUSE: Broken connection, fractured switch mechanism fractured brass joint.</p>	<p>EWL FIRM: Improper indication of O2 actuator position if actuator is in IV position.</p> <p>O2 INTERFACE: DMM displays actuator position as PRESS, when actually in IV position.</p> <p>MISSION: If IV, cannot complete this test check. Loss of one EWL.</p> <p>CREW/VEHICLE: None.</p>	<p>A. Design - The 2 microswitches are hermetically sealed units which meet the requirements of MIL-E-8805/8 (M62724-4). The internal contacts are gold plated to prevent corrosion. The external wiring to the switches is yellow insulated M22739/17. Soldering to the switch terminals is per MIL 3100.4 (3A-1). The switch is mounted to a stop plate, and actuation is via a slide arm on the stopplate which together prevents switch damage due to inadvertent or excessive mechanical force. The switches are rated at 0.5 amperes. Actual current is 0.3 milliamperes.</p> <p>B. Test - Component Acceptance Test: The unit is tested per MIL-E-8805 by the vendor.</p> <p>In-Process Test - Proper operation of the switches is verified at the completion of assembly of the O2 Actuator Switch Assembly (CIN 0V26796-02)</p> <p>Certification Test - The microswitches are qualified to MIL-E-8805/8 (Vendor is an OPL) which has a life requirement of 25,000 cycles minimum.</p> <p>The switches completed the 15 year structural vibration and shock certification during 80/88 and four hour thermal vacuum certification during 7/88, both as part of the DCM. The O2 Actuator switch assembly (CIN 0V26796-02) completed 15 year structural vibration and shock and thermal vacuum certification for the redesigned DCM during 7/88 and 8/88 as part of the DCM/100.</p> <p>In addition, the switch/stop arm assembly (DCM/Shearplate) was cycled for the following operations during 7/84:</p> <table border="1"> <thead> <tr> <th>Position</th> <th>Actual</th> <th>Spec</th> </tr> </thead> <tbody> <tr> <td>IV</td> <td>1,323</td> <td>5,500</td> </tr> <tr> <td>OFF</td> <td>1,849</td> <td>10,000</td> </tr> <tr> <td>PRESS</td> <td>2,644</td> <td>6,000</td> </tr> </tbody> </table> <p>Checkout Test - Operation of the switches is verified during PMA per FEM-E-006 Para. 6.24, IPS/Vent Flow Sensor Performance and</p>	Position	Actual	Spec	IV	1,323	5,500	OFF	1,849	10,000	PRESS	2,644	6,000
Position	Actual	Spec														
IV	1,323	5,500														
OFF	1,849	10,000														
PRESS	2,644	6,000														

CEL  
CRITICAL ITEMS LIST  
FILE: CILS/I

NAME P/N QTY	CNLT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
DISPLAY AND CONTROLS MODULE ITEM 500 SV792294- 02 111	2/1	300FMS; DO "OFF" POSITION SWITCH FAILS OFF (OPEN).		<p>B. TEST (CONTINUED) CHECKOUT TEST - OPERATION OF THE SWITCHES IS VERIFIED DURING PEA PER FEMU-N-001 PARA. 4.26, FPS/VENT FLOW SENSOR PERFORMANCE AND PARA. 4.27, TRANSDUCER AND DCN GAUGE CALIBRATION CHECK.</p> <p>C. INSPECTION - AT SWITCH AND STOP (SV774113-1) ASSEMBLY LEVEL AN INSPECTION IS DONE WHICH CYCLES THE SWITCH WHILE CHECKING THE DISTANCE FOR ACTUATION. A BURNED SWITCH WOULD BE DETECTED AT THIS POINT. SOLDERING OF LEAD WIRES IS INSPECTED FOR COMPLIANCE TO MSSBDD.4 134-13 AND THE WIRES THEMSELVES ARE INSPECTED FOR DAMAGE.</p> <p>D. FAILURE HISTORY - N-EMU-300-C010 (3-4-81) DURING VIBRATION PEA TESTING, THE VOLTAGE TO THE DO ACTUATOR SWITCHES WAS LOST. THE FAILURE WAS DUE TO A FAILED SOLDER JOINT ON A LEAD WIRE. ADDITIONAL INSPECTION EQUIPMENT WAS PURCHASED TO IMPROVE SOLDER INSPECTION IN THIS NIGHT AREA OF THE DCN.</p> <p>N-EMU-300-A008 (4-23-83) DURING PEA TESTING, THE IV MICROSWITCH FAILED TO ACTUATE. THE FAILURE WAS CAUSED BY A FANLTY BRAZE AT THE ACTUATION LEVEL ATTACH POINT. EC 42094-319 WAS ISSUED TO ADD INSPECTION OF THIS JOINT AS PART OF RECEIVING INSPECTION. THIS CREATED THE SV789114 SWITCH CONFIGURATION.</p>

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FILE  
CRITICAL ITEMS LIST  
FILE: CILS/1

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
DISPLAY AND CONTROL MODULE EVEN 308 SV792294- 02 111	2/2	100PMS: 02 "OFF" POSITION SWITCH FAILS OFF TO OPEN.		<p>D. FAILURE HISTORY - (CONTINUED) J-EMU-300-AB02 (18-02-01) DURING PIA TESTING AT JSC, THE PRESS MICROSWITCH FAILED TO ACTUATE. CAUSE OF FAILURE AND CORRECTIVE ACTION ARE THE SAME AS FOR II-EMU-300-AB06 (ABOVE).</p> <p>J-EMU-300-R07 (15-16-05) J-EMU-300-000 (1-05-05) DURING CREW TRAINING AT JSC, THE PRESS AND IV MICROSWITCHES FAILED TO ACTUATE. INVESTIGATION FOUND THAT THE ACTUATION POINT OF THE MICROSWITCH CAN SHIFT .003 INCHES OVER THE LIFE OF THE SWITCH. EC-62004-014 WAS ISSUED TO REPOSITION THE STOP POINT ON THE MOUNTING PLATE TO COMPENSATE FOR THIS DRIFT.</p> <p>E. GROUND TURNAROUND - TESTED PER FEMU-R-001, PARA. 7.5.5.2.4.0, OF ACTUATOR POSITION SWITCH CHECK.</p> <p>F. OPERATIONAL USE - CREW RESPONSE - PREVA; CONTINUE EVA OPERATIONS. PERFORM ALL LEAK CHECKS MANUALLY. EVA: NO RESPONSE, SINGLE FAILURE UNDETECTABLE BY CREW ON GROUND. TRAINING - STANDARD EPU TRAINING COVERS THIS FAILURE MODE. OPERATIONAL CONSIDERATIONS - FOR SINGLE FAILURE, NO CONSTRAINTS.</p>
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