

E11  
 CRITICAL ITEMS LIST  
 FILE: C115/1

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
CONDENSATE PRESSURE REGULATOR ITEM 418 SV721717-7 (1)	2/2	<p>SYMPTOM: FAILS TO CLOSE, REGULATES LOW.</p> <p>CAUSE: SEAT CONTAMINATION, BINDING, SPRING RELAXES, PISTON OVERRIDE STICKS OPEN, HOUSING SEAL LEAKAGE, REFERENCE CHAMBER CON- TAMINATION.</p>	<p>END ITEM: OPEN FLOW PATH BETWEEN REGULATOR PERMITTING INCREASED FLOW.</p> <p>GFE INTERFACE: ONE PLSS BLANDERS AND ORBITER POTABLE WATER SHOULD BE EMPTYED INTO THE ORBITER WASTE MANAGEMENT SYSTEM.</p> <p>MISSION: LOSS OF WATER CHARGING ABILITY OF ONE SCU.</p> <p>CREW/VEHICLE: NONE.</p>	<p>A. DESIGN - THE 36 DIAMETER SOFT SILICONE SEAL MINIMIZES SEAT CONTAMINATION SENSITIVITY.</p> <p>THE VALVE PISTON IS TEFLON COATED TO REDUCE FRICTION. THE PISTON SPRING IS DESIGNED FOR 10MB FULL VALVE STROKE CYCLES.</p> <p>A TEFLON GLIDE RING IS INSTALLED IN A GROOVE ON THE PULL ROD WITH A SMALL AMOUNT OF RYTOX 290AC GREASE. THE RING IS A SLIDING FIT IN THE HOUSING BORE AND PREVENTS CONTAMINATION FROM REACHING THE SENSING AREA THROUGH THE FULL ROD CLEARANCE.</p> <p>A STROKE LIMIT ON THE PISTON LIMITS SEAL DEFLECTION TO 0.004 TO 0.016 WHICH MINIMIZES COMPRESSION SET IN THE SEAL. THE DIAPHRAGM BYPASS PERIPHERAL SEAL IS POSITIONED IN A TEFLON COATED GROOVE AND HAS 0.004 MIN SQUEEZE.</p> <p>THE PISTON CAVITY IS PROTECTED BY A 36 MICRON FILTER ON THE AMBIENT REFERENCE PORT AND THE PISTON CLEARANCE IS 0.003 TO 0.005.</p> <p>B. TEST - COMPONENT ACCEPTANCE: TO PREVENT CONTAMINATION FROM ENTERING THE REGULATOR, THE TEST ROD AND TEST FIXTURES ARE MAINTAINED AT AN ISSUED 100% CLEANLINESS LEVEL.</p> <p>DURING TESTING PER AT-E-418 AN INTERNAL LEAKAGE TEST IS RUN IN WHICH ONE REGULATOR INLET IS PRESSURIZED TO 16.4-16.6 PSID. THE MAXIMUM ALLOWABLE LEAKAGE IS 30 CC/10 H2O. TO VERIFY PROPER REGULATOR FUNCTION IN THE REGULATING MODE, CRACK, RESEAT, AND FIRM REGULATION TESTS ARE PERFORMED. THE REGULATOR MUST CRACK AND RESEAT AT 14.6-17.0 PSID.</p>
FC257-1 "				

CEL  
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 FILE: CELS/3

NAME P/W QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
CONDENSATE PRESSURE REGULATOR ITEM 410 SV771717-7 11	1/2	410FM01: FAILS TO CLOSE, REGULATES LOW.		<p>B. TEST - COMPONENT ACCEPTANCE (CONTINUED)          BOTH CRACK AND RESEAT ARE DEFINED AS A FLOW OF 25-20 CC/HR          REQD. THE FLOW REGULATION TEST VERIFIES THE REGULATOR WILL          FLOW 0.7 - 1.0 LBS/HR REQD AT 16.0 - 17.0 PSID. AT THE          COMPLETION OF THE FLOW TESTING THE INTERNAL LEAKAGE TEST          IS REPEATED.</p> <p>THE REGULATOR HANDLE UNDERGOES A TORQUE TEST TO VERIFY THE          MAXIMUM TORQUE REQUIRED TO OPERATE THE HANDLE IS 10          IN-LBS. A BINDING MANUAL OVERRIDE WOULD BE DETECTED BY          THIS TEST.</p> <p>PDR:          PERFORMANCE TESTING PER SEMI-40-003 INCLUDED CRACK,          RESEAT, FLOW AND INTERNAL LEAKAGE TESTS. THESE TESTS HAVE          THE SAME ACCEPTANCE CRITERIA AS AT THE COMPONENT LEVEL. A          REGULATOR HANDLE TORQUE TEST VERIFIES A MAXIMUM OPERATING          TORQUE OF 10 IN-LBS.</p> <p>CERTIFICATION:          THE ITEM COMPLETED 500 CYCLES DURING 11/65 WHICH FULFILLED          THE CYCLE CERTIFICATION REQUIREMENT OF 252. NO CLASS I          ENGINEERING CHANGES HAVE BEEN INCORPORATED SINCE THIS          CONFIGURATION WAS CERTIFIED.</p> <p>C. INSPECTION -          SEAT CONTAMINATION - A CLEANLINESS LEVEL OF H53150 IS          MAINTAINED DURING ASSEMBLY AND TESTING OF THE REGULATOR.          THIS CLEANLINESS LEVEL REQUIRES A MANDATORY INSPECTION FOR          VERIFICATION.</p>

IC237-2

CIL  
 CRITICAL ITEMS LIST  
 FILE: CIL5/3

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
CONDENSATE PRESSURE REGULATOR ITEM 416 SVT71717-7 111	2/2	416FN01: FAILS TO CLOSE, REGULATES LOW.		<p>C. INSPECTION - (CONTINUED)          BINDING BETWEEN THE PISTON AND THE SPACER - THE PISTON AND SPACER ARE 100% INSPECTED TO MEET DIMENSIONAL AND SURFACE FINISH REQUIREMENTS ALONG WITH THE INTERFACING SURFACES BEING PROPERLY COATED WITH TEFLON.</p> <p>SPRING RELAXES - THE SPRING IS 100% INSPECTED FOR MEETING DIMENSIONAL AND FORCE-DISPLACEMENT REQUIREMENTS.</p> <p>MINIMAL OVERRIDE STICKS OPEN - THE DAMP HANDLE AND PIN ARE 100% INSPECTED TO MEET DIMENSIONAL AND SURFACE FINISH REQUIREMENTS.</p> <p>THE PULL ROD AND SPLIT TEFLON RING ARE 100% INSPECTED FOR BEING PROPERLY COATED WITH ELECTROFILM.</p> <p>THE SURFACES OF THE DAMP HANDLE AND PULL ROD THAT INTERFACE WITH THE END CAP PINS ARE 100% INSPECTED FOR BEING PROPERLY COATED WITH ELECTROFILM.</p> <p>HOUSING SEAL LEAKAGE - THE INTERFACING SURFACES BETWEEN THE REGULATOR AND THE BACTERIA FILTER HOUSING ARE 100% INSPECTED TO MEET DIMENSIONAL AND SURFACE FINISH REQUIREMENTS.</p> <p>AN EXTERNAL LEAKAGE TEST IS PERFORMED AS AN IN PROCESS TEST AT THE NEXT ASSEMBLY LEVEL ITEM 4161 WHERE THIS AND OTHER INTERFACES ARE TESTED FOR A SIXTY MINUTE HOLDING PERIOD, ALLOWING NO LEAKAGE.</p> <p>ALL O-SEALS ARE 100% INSPECTED TO MEET DIMENSIONAL AND SURFACE FINISH REQUIREMENTS.</p> <p>REFERENCE CHAMBER CONTAMINATION - A CLEANLINES LEVEL OF 85350 EMISO IS MAINTAINED DURING ASSEMBLY AND TESTING OF THE REGULATOR. THIS CLEANLINES LEVEL REQUIRES A MANDATORY INSPECTION FOR VERIFICATION.</p>
PC157-3 *				

CEL  
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NAME P/N QTY	CRET	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
CONDENSATE PRESSURE REGULATOR ITEM 638 SV771117-P 111	2/2	4867M01 FAILS TO CLOSE, REGULATES LOW.		<p>D. FAILURE HISTORY -            H-EMU-400-ANDZ (8/6/80) - LOW RESIAT PRESSURE DURING PDA,            GAGE TO CALIBRATE VALVE AT COMPONENT LEVEL WAS FOUND TO BE            IN ERROR. GAGE CORRECTED AND VALVE RECALIBRATED.</p> <p>H-EMU-418-JOB1 (11/14/81) - INTERNAL LEAKAGE OF VALVE DUE            TO CONTAMINATION BETWEEN PISTON AND PISTON GUIDE HOLDING            DIAPHRAGM PARTLY OFF SEAT. A TEFLON RING TYPE SEAL WAS            ADDED PER 4-2805-397 TO THE VALVE PULL ROD TO PREVENT            CONTAMINATION FROM ENTERING THE VALVE AMBIENT SENSE            CHAMBER.</p> <p>J-EMU-400-002 (6/8/81) - EXCESSIVE AMOUNT OF WATER DUMPED            INTO SCU DRAIN TANK DURING WARMED (89J-E19) THERMAL VACUUM            TEST. PROBLEM WAS CAUSED BY MOUNTING THE SCU BACTERIA            FILTER ASSEMBLY FOUR FEET LOWER THAN PLS WATER Meters.            THIS RESULTED IN A WATER HEAD EQUAL TO 3.7 PSI, THIS            CAUSING THE VALVE TO CRACK OPEN AT A NORMAL PRESSURE, THE            TEST SETUP MOUNTING WAS CORRECTED.</p> <p>J-EMU-418-DC1 (11/14/81) AND J-EMU-418-002 (11/13/81) - LOW            CRACK AND RESIAT PRESSURES DUE TO CREEP OF VALVE            DIAPHRAGM. CORRECTIVE ACTION WAS TO REDESIGN VALVE PER EC            4203-161 TO REDUCE SPRING RATE AND THUS DECREASE            SENSITIVITY TO DIAPHRAGM CREEP.</p> <p>E. GROUND TUMBLING -            TESTED PER FEMU-N-061, ORBITER SCU CHECKOUT.</p> <p>F. OPERATIONAL USE -            CREW RESPONSE -            PRE/POSTEVA: TROUBLESHOOT PROBLEM. IF NO SUCCESS, DURING IV            IN-SUIT OPERATIONS, MONITOR EMU WATER TANK PRESSURES AND            PERIODICALLY RELIEVE EMU WATER PRESSURE BY USING OTHER            SCU. USE OTHER SCU TO PERFORM EMU WATER DUMP AND CHARGE.            SPECIAL TRAINING - NO TRAINING SPECIFICALLY COVERS THIS            FAILURE MODE.</p> <p>OPERATIONAL CONSIDERATIONS - ONE POUND OF WATER IS DUMPED            AFTER EMU WATER RECHARGE TO MAKE ROOM IN THE EMU WATER            TANKS FOR IV GENERATED CONDENSATE WATER. EVA CHECKLIST            PROCEDURES VERIFY HARDWARE INTEGRITY AND SYSTEMS            OPERATIONAL STATUS PRIOR TO EVA.</p>
EC237-4				