

AUG 11 1988

Critical Item: Circuit Breaker

Find Number: 108

Criticality Category: 15

SAA No: 09G505-003

System/Area: ECS/SLF/SL5

NASA
Part No: N/A

PMN/ 570-0534/
Name: Portable Purge Unit

Mfg/ Airpax/
Part No: NPN

Drawing/
Sheet No: 79X06061/1

Function: Protects compressor control circuit and oil sump heaters from electrical overload.

Critical Failure Mode: Premature trip. FM No. 09G505-003.027

Failure Cause: Structural failure of internal piece part.

Failure Effect: Compressor shutdown and blower interlock stop blower, resulting in loss of purge to Orbiter compartments. Loss of refrigerant flow causes shutdown of compressor and interlock causes loss of blower, resulting in loss of purge to Orbiter compartments. Loss of ability to monitor purge air for leaks. Possible loss of life or vehicle during a hazardous condition such as leakage of hazardous fluids or gases.

Acceptance Rationale

Design:

- o Meets or exceeds the design requirements of KSC-SPEC-E-0026A.
 - manually operated
 - trip free
 - inverse time actuated
 - rated load - 9 A
 - estimated operating load - 6 A

Test:

- o The OMRSD, File VI will require overcurrent trip test after a fault.
- o The purge unit is powered up and verified operational approximately three hours prior to Orbiter landing per OMI S0028 and S0026.

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Circuit Breaker ICB (Continued)

Inspection:

- o The OMRSD, File VI will require inspection for indication of arcing or overheating annually.

Failure History:

- o No PRACA failure history identified.
- o No SIDEP failure history identified.

Operational Use:

- o There is nothing that can be done immediately to mitigate the effect of the failure.
- o The purge unit is monitored for any indication of malfunction. If any anomalies are observed, appropriate steps are taken to repair or replace the item.

SYSTEM DESCRIPTION

THE ORBITER POST-LANDING ENVIRONMENTAL CONTROL SYSTEM (ECS) PROVIDES A PURGE OF CONDITIONED AIR FOR MAINTAINING REQUIRED TEMPERATURE, PRESSURE, AND HUMIDITY LEVELS WITHIN VARIOUS COMPARTMENTS OF THE ORBITER DURING POST-LANDING OPERATIONS AND TOW CONVOY OPERATIONS. IN DOING SO, IT PROVIDES A MEANS FOR EVACUATING ANY HAZARDOUS VAPORS WHICH MAY BE PRESENT IN THE VEHICLE'S COMPARTMENTS. THESE HAZARDOUS VAPORS ARE MONITORED TO WARN PERSONNEL OF A HAZARDOUS CONDITION.

SYSTEM CRITICALITY

THE ORBITER POST-LANDING ECS AT THE SHUTTLE LANDING FACILITY (SLF) AND SECONDARY LANDING SITE IS ASSESSED AS CRITICAL. LOSS OF CONDITIONED AIR FLOW TO ORBITER COMPARTMENTS CAUSES LOSS OF A HAZARDOUS PURGE AND THE ABILITY TO DETECT A HAZARDOUS CONDITION. THIS COULD RESULT IN LOSS OF LIFE OR VEHICLE DURING A HAZARDOUS CONDITION.

ORBITER CONVOY, SLF

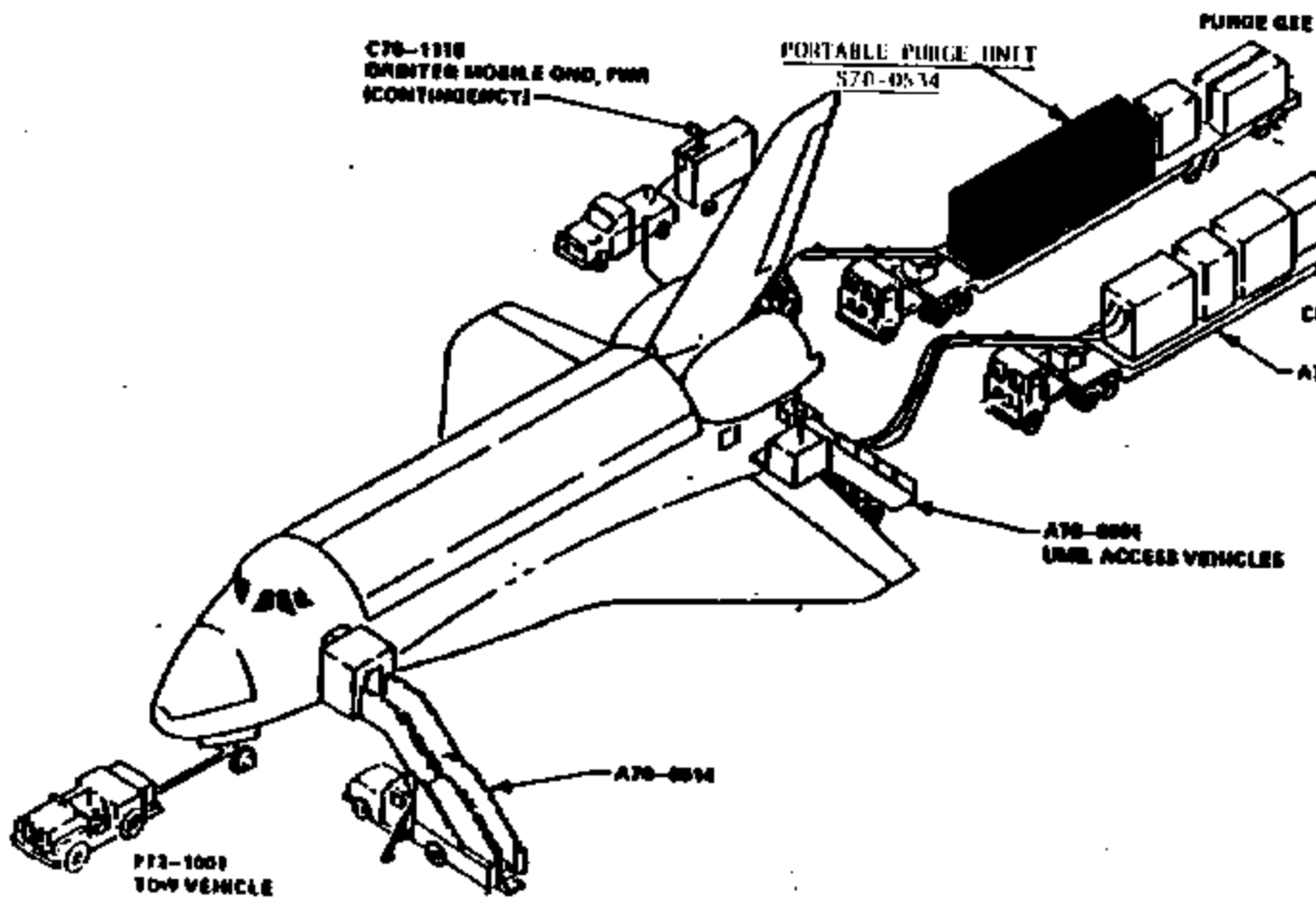


FIGURE J. Orbiter Convoy, SLF



SAAD96305-003
 REV. B
 B/L: 72.60
 SYS: ECS/SLF/SLS

Critical Hardware List

Project Element: SLF-SYSTEM, ORBITER POST LANDING ECS

Subsystem: PORTABLE PURGE UNIT

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LRU PART NUMBER/ REFERENCE DESIGNATOR	LRU PART NAME	QTY (per subsystem)	LRU CRITICALITY
P/EA P/N	P/EA PART NAME/FM NO.	(QTY per LRU)	FM CRIT
40200H00/A107050 A107050	BLOWER BLOWER FM NO. 09GS05-003.001	1 1	1S 1S
VAL140/A103007 A103007	CHECK VALVE CHECK VALVE FM NO. 09GS05-003.002	1 1	1S 1S
P70-W-30/A107944 A107944	PRESSURE SWITCH PRESSURE SWITCH FM NO. 09GS05-003.003 FM NO. 09GS05-003.004	1 1	1S 1S
P70-W-30/A107946 A107946	PRESSURE SWITCH PRESSURE SWITCH FM NO. 09GS05-003.004	1 1	1S 1S
DBX250X2013/A107993 A107993	COMPRESSOR COMPRESSOR FM NO. 09GS05-003.005	1 1	1S 1S
ANG120VAC-W/A109018 A109018	SOLENOID VALVE SOLENOID VALVE FM NO. 09GS05-003.018	1 1	1S 1S
LCLE68/A109019 A109019	EXPANSION VALVE EXPANSION VALVE FM NO. 09GS05-003.017	1 1	1S 1S
DUNHAM BUSH/A109021 A103C21	CHECK VALVE CHECK VALVE FM NO. 09GS05-003.019	1 1	1S 1S

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Critical Hardware List

Project Element: SLF-SYSTEM, ORBITER POST LANDING ECS

Subsystem: PORTABLE PURGE UNIT

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LRU PART NUMBER/ REFERENCE DESIGNATOR	LRU PART NAME	QTY (per subsystem)	LRU CRITICALITY
FMEA P/N	FMEA PART NAME/FM NO.	(QTY per LRU)	FM CRT
AMG120VAC/A108010 A108010	SOLENOID VALVE SOLENOID VALVE FM NO. 09GS05-003.006	1 1	1S 1S
LCLE68/A108012 A108012	EXPANSION VALVE EXPANSION VALVE FM NO. 09GS05-003.007	1 1	1S 1S
DUNHAM BUSH/A108013 A108013	CHECK VALVE CHECK VALVE FM NO. 09GS05-003.008	1 1	1S 1S
93AT3/A125572 A125572	PUMP PUMP FM NO. 09GS05-003.009	1 1	1S 1S
A19AAF-150°/A125580 A125580	TEMPERATURE SWITCH TEMPERATURE SWITCH FM NO. 09GS05-003.010	1 1	1S 1S
A19AAF-210°/A125581 A125581	TEMPERATURE SWITCH TEMPERATURE SWITCH FM NO. 09GS05-003.020	1 1	1S 1S
A19AAF-145°/A125591 A125591	TEMPERATURE SWITCH TEMPERATURE SWITCH FM NO. 09GS05-003.021	1 1	1S 1S
A19AAF-90°/A125592 A125592	TEMPERATURE SWITCH TEMPERATURE SWITCH FM NO. 09GS05-003.022	1 1	1S 1S

SAA09GS05-003
 REV. 8
 B/L: 72.60
 SYS: ECS/SLF/SLS

Critical Hardware List

Project Element: SLF-SYSTEM, ORBITER POST LANDING ECS

Subsystem: PORTABLE PURGE UNIT

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LRU PART NUMBER/ REFERENCE DESIGNATOR	LRU PART NAME	QTY (per subsystem)	LRU CRITICALITY
FMEA P/N	FMEA PART NAME/FM NO.	(QTY per LRU)	FM CRIT
CK-44-S/A107996 A107996	CHECK VALVE CHECK VALVE FM NO. 09GS05-003.011	1 1	15 15
OCT1115/T1 T1	TRANSFORMER TRANSFORMER FM NO. 09GS05-003.012	1 1	15 15
CR232G-0T/K1 K1	BLOWER STARTER ASSEMBLY BLOWER STARTER ASSEMBLY FM NO. 09GS05-003.013	1 1	15 15
CR232G-0T/K2 K2	COMPRESSOR STARTER ASSEMBLY COMPRESSOR STARTER ASSEMBLY FM NO. 09GS05-003.014	1 1	15 15
ALLEN BRADLEY/1CR, 3CR, 10CR, 11, 4TR, 5CR, 2CR 1CR, 3CR, 10CR, 11, 4TR, 5CR, 2CR	REFRIGERATION CONTROL RELAYS REFRIGERATION CONTROL RELAYS FM NO. 09GS05-003.015 FM NO. 09GS05-003.028 FM NO. 09GS05-003.029 FM NO. 09GS05-003.030 FM NO. 09GS05-003.031 FM NO. 09GS05-003.032 FM NO. 09GS05-003.033	7 1	15 15
TJK634500WL/C31, C34, C313 C31, C34, C313	CIRCUIT BREAKER CIRCUIT BREAKER FM NO. 09GS05-003.016 FM NO. 09GS05-003.023 FM NO. 09GS05-003.024	3 1	15 15

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SAA09GS05-003
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Critical Hardware List

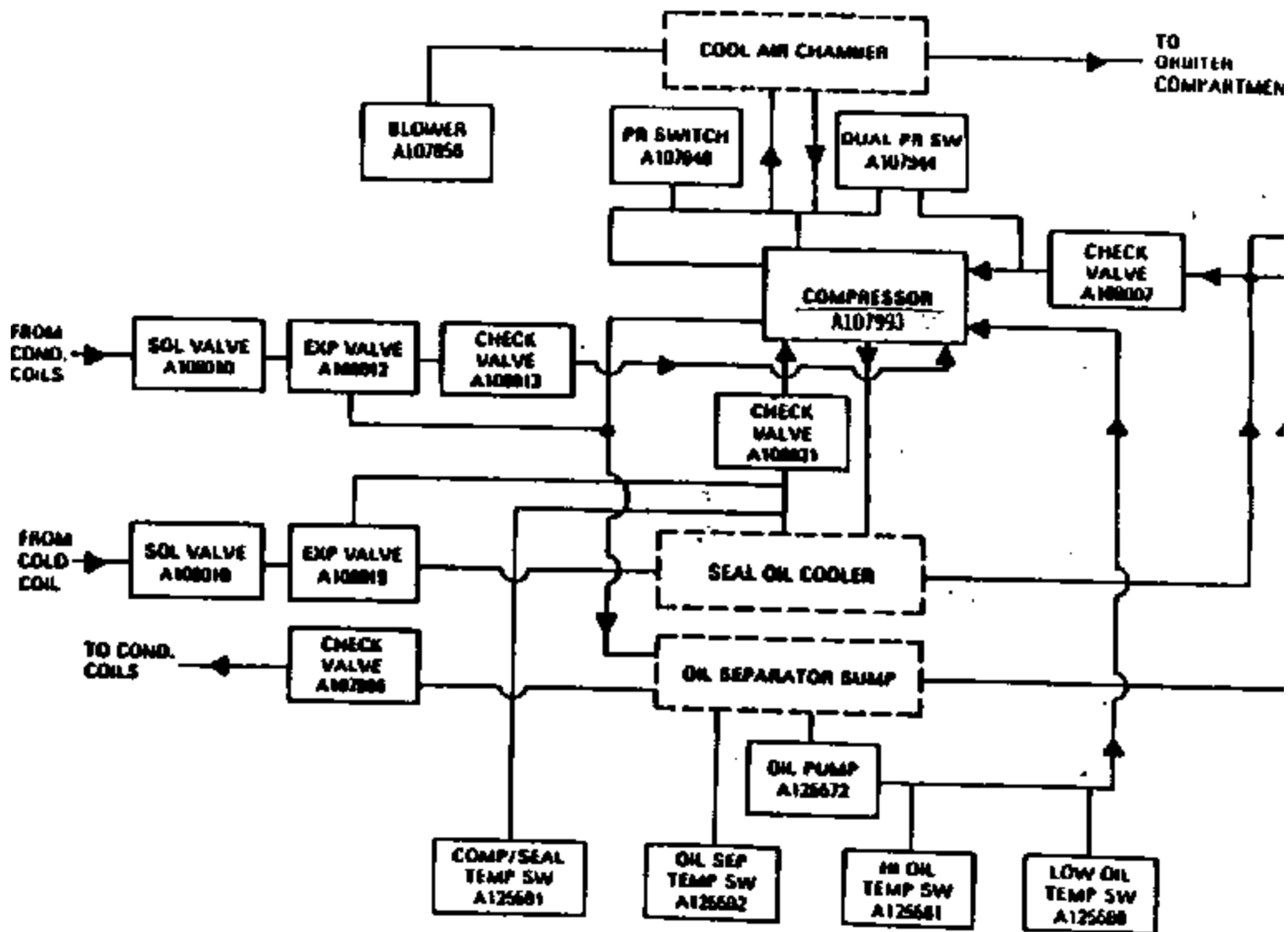
Project Element: SLF-SYSTEM, ORBITER POST LANDING ECS

Subsystem: PORTABLE PURGE UNIT

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LRU PART NUMBER/ REFERENCE DESIGNATOR	LRU PART NAME	QTY (per subsystem)	LRU CRITICALITY
FMEA P/N	FMEA PART NAME/FM NO.	(QTY per LRU)	FM CRIT
TJK436300NL/CB3 CB3	CIRCUIT BREAKER CIRCUIT BREAKER FM NO. 09GS05-003.025	1 1	1S 1S
TED 480V/CB2 CB2	CIRCUIT BREAKER CIRCUIT BREAKER FM NO. 09GS05-003.026	2 1	1S 1S
AIRPAX/1CB 1CB	CIRCUIT BREAKER CIRCUIT BREAKER FM NO. 09GS05-003.027	1 1	1S 1S

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PORTABLE PURGE UNIT CRITICAL MECHANICAL ITEMS