

SAA09HS01-001 CR 540204L
REV. C 47 OF 51
B/L: 16.00
SYS: SRB HYDRAULICS
MAY 12 1988

Critical Item: Valve, Check (6)

Find Number: A130997 and A130998

Criticality Category: IS

SAA No: 09HS01-001, Rev. C

System/Area: SRB Hydraulic Support/LOA,
MLP

NASA
Part No: None

PMN/ A77-1261/
Name: Disconnect Mechanism

Mfg/ James, Pond & Clark, Inc./
Part No: 224T-24TB

Drawing/
Sheet No: 79K06016/3

Function: Prevent backflow of SRB exhaust into GN2 purge system.

Critical Failure Mode: Fail Closed. FM No. 09HS01-001.002 for A130997 and
09HS01-001.003 for A130998.

Failure Cause: Valve jam

Failure Effect: Loss of SRB Aft Skirt purge. Potential fire or explosion in
the event of hydrogen accumulation in the aft skirt area or a hydrazine leak
from the thrust vector control HPU APU turbine subsystems which could result
in loss of life or vehicle.

Design:

Acceptance Rationale

	<u>Rated</u>	<u>Actual</u>
o Pressure (psig)	3000	150 Max.
o Temperature (°F)	-70 to 450	Ambient to 165
o Material:	Body - 303 Stainless Steel	
	Spring - 302 Stainless Steel	
	O-Ring - Silicone, AMS 3304	
o Burst pressure	- 2-1/2 to 4 times rated pressure	
o Proof pressure	- 1-1/2 times rated pressure	
o Zero leakage	from zero pressure to maximum operating pressure differential.	

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Valve, Check (A130997 & A130998) (Continued)

Test:

- o Manufacturer's Certification Tests
 - Proof
 - Leak
 - Functional
- o Validation Test
 - Verify no reverse flow or leaks annually and at component replacement.
- o Audible flow through valve is verified during OMI B1037. This is an OMRSD, File VI requirement for each flow.

Inspection:

- o None

Failure History:

- o No GIDEP data base failure reports were found for this in any failure mode. Two PRACA data base failure reports were found on this item. Neither PRACA report was for the "fail closed" failure mode of this item. Both PRACA reports were for valves damaged by SRB exhaust at vehicle liftoff.

Operational Use:

- o The failure would be detected by increased pressure indicated on pressure transducer A126583 and local pressure gage A126586.

SYSTEM DESCRIPTION

THE ORBITER AND SRB HYDRAULIC SUPPORT SYSTEM PROVIDES THE EQUIPMENT AND CAPABILITY TO SERVICE AND OPERATE THE VEHICLE HYDRAULIC SYSTEMS FOR TEST AND OPERATIONS WITHOUT RUNNING THE VEHICLE APU DRIVEN HYDRAULIC PUMPS TO SUPPLY HYDRAULIC POWER. THIS EQUIPMENT IS UTILIZED AT THE LOA, VAA, OMA, MLP, SLF, AND SLS.

SYSTEM CRITICALITY

THE ORBITER AND SOLID ROCKET BOOSTER HYDRAULIC SUPPORT SYSTEM IS ASSESSED AS CRITICAL BECAUSE FAILURE OF THE SYSTEM TO PROPERLY TEST AND CHECKOUT ORBITER AND SRB HYDRAULICS DUE TO OVER-PRESSURIZATION AND CONTAMINATION OR COMBAT A POTENTIAL HAZARDOUS CONDITION IN THE SRB AFT SKIRTS COULD CAUSE LOSS OF LIFE, VEHICLE AND/OR DAMAGE OF A VEHICLE SYSTEM.

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Critical Hardware List

Project Element: SRB HYDRAULIC SUPPORT SYSTEM, LOA

Subsystem: SRB AFT SKIRT PURGE

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
79K80312-2/A126575	VALVE, BALL, SOL, 2 WAY, 2 POS, 2" N.O.	1/MLP	1S
79K80312-8	09HS01-001.001	1	1S
224T-24TB	VALVE, CHECK	1/MLP	1S
A130997	09HS01-001.002	1	1S
224T-24TB	VALVE, CHECK	1/MLP	1S
A130998	09HS01-001.003	1	1S