

SAA09FY02-013
 B/L: 323.60
 SYS: SIMON AERIAL
 WORK
 PLATFORM
 MPL-60

Critical Item: Hoist Cylinder Holding Valve (2 Items)

DEC 14 1993

Find Number: 04-021402

Criticality Category: 2

SAA No: 09FY02-013

System/Area: Simon Aerial Work
 Platform/VAB

NASA
 Part No: None

PHN/
 Name: K60-1037
 Platform, Aerial Work,
 Simon, 907-283, 285

Mfg/
 Part No: Aurelius Mfg. Co.
 NA

Drawing/
 Sheet No: S05-208994-2
 1

Function: Prevents unintentional boom down movement.

Critical Failure Mode/Failure Mode No: Falls Open. FM No. 09FY02-013.003

Failure Causes: Mechanical failure or contamination of check valve or relief valve.

Failure Effect: Boom will bleed down. The platform may impact flight hardware and/or GSE resulting in loss (damage) of a vehicle system.

Acceptance Rationale

Design:

- o The holding valve assembly is supplied with the hoist cylinder from Aurelius Mfg. Co., Braham, Minnesota.
- o The Hoist Cylinder Holding Valve is in accordance with ANSI A92.5 - "American National Standard for boom-supported elevating work platforms."
- o The Hoist Cylinder Holding Valve has a margin of safety of 5.45:1 with respect to the ratio of burst pressure to operating pressure.
- o Valve Features:
 - single check valve/ relief valve
 - relief valve is pressure actuated, pilot operated, and adjustable

Attachment
 5050234CB
 Sheet 8 of 13

EO1-SAA09FY02-013
4 of 5

SAA09FY02-013

B/L: 323.60
SYS: SIMON AERIAL
WORK PLAT-
FORM MPL-60

DEC 14 1993

Hoist Cylinder Holding Valve 04-021402 (Continued)

- The hydraulic system is a closed system with one filter installed in the main supply line.

Test:

- Pre-operational positioning, per OMI Q3512 (i.e., Platform entry and boom extension positioning for 5 minute static creepage test), verifies operation of the Hoist Cylinder Holding Valve.
- PMI No. L30 requires an annual load test to 100% of the rated capacity (750 lb.) of the platform.
- OMRSD File VI requires annual verification of the rated load test.

Inspection:

- Pre-operational visual inspection of the hydraulic system, per OMI Q3512, verifies proper operation of the Hoist Cylinder Holding Valve.
- PMI No. HBC requires:
 - Quarterly inspection of unit for hydraulic leaks
 - Semi-annual replacement of the hydraulic oil filter and add fluid as required

Failure History:

- The GIDEP failure data interchange system has been researched and no failures of this component were found.
- The PRACA data base was searched and a failure reported on Problem Report PV-6-129875 concerning the hoist cylinder holding valve was found. The incident occurred on 18 May 1989 and was attributed to holding valve leakage resulting in platform drift and damage to the insulation on an STS External Tank. During a load test after the incident, the Hoist Cylinder Holding Valve rapidly leaked. The valve was replaced and the load test was repeated. An eighth of an inch of leakage occurred in 5 minutes which is well within the acceptable tolerance. A proofload was then completed and the Simon MPL 60 was returned to service.

5AA09FY02-013
S/L: 323.60
SYS: SIMON AERIAL
WORK
PLATFORM
MPL-60

Hoist Cylinder Holding Valve 04-021402 (Continued)

DEC 14 1993

Operational Use:

a Correcting Action:

There is no action which can be taken to mitigate the failure effect.

a Timeframe:

Since no correcting action is available, timeframe does not apply.

IX - 155

WORKSHEET 5122-012
901220csM3-906

Attachment
S050234CB
Sheet 10 of 13