

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

DEC 14 1993

Critical Item: Platform Rotary Actuator Gear Assembly (2 Items)

Find Number: SDW 207045-4

Criticality Category: 2

SAA No: 09FY02-013

System/Area: Simon Aerial Work
 Platform/VAB

NASA
 Part No: None

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

Mfg/
 Part No: Helac Corporation
 RH-Series

Drawing/
 Sheet No: Simon D1/A5.2
 024.2

Function: Transfers torque from the hydraulic component of the actuator to rotate the platform clockwise or counterclockwise.

Critical Failure Mode/Failure Mode No: Gears disengage. FM No.
 09FY02-013.002

Failure Causes: Structural failure of the gear assembly.

Failure Effect: Torque for controlling horizontal rotation of the platform will be lost. The platform may impact flight hardware and/or GSE resulting in loss (damage) of a vehicle system.

Acceptance Rationale

Design:

- o The platform rotary actuator is an off-the-shelf item manufactured by the Helac Corporation, Enumclaw, Washington.
- o The Rotary Actuator Gear Assembly is in accordance with the American Gear Manufacturer's Association Standard AGMA 420.04 - "Practice for Enclosed Speed Reducers or Increasers Using Spur, Helical, Herringbone and Spiral Bevel Gears."
- o Rack and pinion gears are constructed of 4140 carbon steel - ASTM A193.
- o The Hydraulic Rotary Actuator Gear Assembly was proof loaded by the manufacturer to 150% of the rated hydraulic pressure.

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- The gears are splined to the shafts or integrally machined and are retained in place by shoulders within the confines of the gearcase.
- The Platform Rotary Actuator Gear Assembly is in accordance with ANSI A92.5 - "American National Standard for boom-supported elevating work platforms."

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 Rotary Actuator Gear Assembly.
- PMI No. L30 requires an annual load test of the platform to 100% of the rated capacity (750 lb.) of the platform. The load test will include operation of the platform rotation function.
- OMRSD File VI requires annual verification of the load rated test.

Inspection:

- Pre-operational visual inspection, per OMI Q3512, of the hydraulic system verifies proper operation of the Rotary Actuator Gear Assembly.
- PMI No. HBC requires quarterly inspection to:
 - examine unit for structural damage
 - examine unit for damaged, deteriorated, or missing hardware

Note: Inspection is limited to the actuator housing and the pinion flange.

Failure History:

- The PRACA data base was queried and no failure data was retrieved against this component failure mode.
- The QIDEP failure data interchange system has been researched and no failures of this component were found.

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Operational Use:

o Correcting Action:

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

o Timeframe:

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

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WORKSHEET 5122-012
901220csM3-906

Attachment
5050234CB
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