

SAA09FTP3-024

S050234HD
Attachment
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JUN 10 1997

Critical Item: Chain Hoist
Total Quantity: 3
Find Number: None
Criticality Category: 2

SAA No: 09FTP3-024

System/Area: Thompson Rail Translation
System/OPF1,2,3

NASA
Part No: None

PMN/
Name: K61-4106/
Chain Fall Hoist

Mfg/ Jet/
Part No: L-80

Drawing/ None/
Sheet No: NA

Function: Provide mechanical advantage to raise, lower, and hold the load.

Critical Failure Mode/Failure Mode No:

Gearbox Failure/09FTP3-024.001

Mechanical load brake failure/09FTP3-024.002

Failure Cause:

- .001 Worn or damaged gear teeth.
- .002 Worn or damaged brake lining, holding pawl, or brake plate.

Failure Effect: Load will drop without means of control resulting in possible loss (damage) of a vehicle system. The gearbox failure is detectable by abnormal noises and movements. Detection method: Audible Time to effect: Immediate.

ACCEPTANCE RATIONALE

Design:

- The hoist is an off-the-shelf item manufactured by Jet and is designed to handle a one-ton working load. The minimum safety factor is 5:1 (ultimate) and is in accordance with NSS/GO-1740-9.
- The Jet hoist design is in accordance with Hoist Manufacturers Institute standards (HMI 200 Class II Hoist) and the American Gear Manufacturers Association (AGMA) Standards.
- The gears are splined to shafts or integrally machined and are retained in place by shoulders within the confines of the gearbox.
- These hoists are subjected to a low number of cycles compared to commercial use. This diminished usage should provide for better long term reliability.

- The gears are permanently lubricated at the factory.

Test:

- OMRSD File VI requires verification, prior to critical lifts, that a rated load test has been performed within the preceding 12 months.
- Braking mechanisms are tested for evidence of slippage during the rated load test.
- Acceptance test at 125% of the rated load was performed by the factory.

Inspection:

- The hoist is inspected for an active or current load test validation tag which will be legible along with any warning plates prior to operation.
- Visual inspections are completed before use.
 - a. An inspection of the load bearing parts (suspension bolts, shafts, bearings, support structure) for wear, cracks, and distortions without disassembly of the hoist.
 - b. Inspection for lubrication leakage.
 - c. Inspections of chain wear (twists, damage links, foreign matters) hook deformations, corrosion, and damage inspections.

Failure History:

- Current data on test failures, unexplained anomalies, and other failures experienced during ground processing activities can be found in the PRACA database. The PRACA database was researched and no failure data was found on this component in the critical failure mode.
- The GIDEP failure data interchange was researched and no failure data was found on this component in the critical failure mode.

Operational Use:

- Correcting Action:

- .001 There is no action which can be taken to mitigate this effect.
- .002 The operator may mitigate the failure effects by stopping hand chain movement.

- Timeframe:

- .001 Since no correcting action is available, timeframe does not apply.
- .002 Seconds