

U.S. Gov't

SAA09FY12H-004

B/L: 300.00

SYS: Mobile Gantry
Monorail Hoist

MAR 24 1993

Critical Item: Manual 1-Ton Chain Hoist (Two Items Total)

Find Number: None

Criticality Category: 2

SAA No: 09FY12H-004

System/Area: Flight Crew Systems/VAB and
DPRF

NASA None

PMN/ 270-0024

Part No:

Name: Mobile Gantry Monorail Hoist

Mfg/ Harrington

Drawing/ Harrington Catalog, Operating
Part No: CF010 Sheet No: Instructions and Specifications

Function: Lifts, lowers and holds the EMU flight suit containers, which contain an EMU flight suit.

Critical Failure Mode/Failure Mode No:

- a. Gear disengagement/09FY12H-004.001
- b. Brake failure/09FY12H-004.002

Failure Cause:

- a. Structural failure of gears and shaft.
- b. Structural failure of ratchet pawl or spring, excessive wear/glazing friction plates.

Failure Effect: Load will drop and cause possible loss (damage) to a vehicle system. Failure may be detectable by unusual noise or "feel" on the hand chain during operation and visual observation of the load dropping. Time to effect: Immediate.

ACCEPTANCE RATIONALE

Design:

- The hoist is an off the shelf item manufactured by Harrington Hoist Inc. Its design meets or exceeds the requirements of ASME/ANSI B30.18 "Overhead Hoists (underhung)" and complies with the Hoist Manufacturers Institute (HMI) 200-74 "Standard Specifications for Hand Operated Chain Hoists."
- All gearing design is based on ANSI/AGMA 6010-E-80 Standard for Spur, Helical, Herringbone, and Bevel Enclosed Drives.
- The gears are splined to shafts or integrally machined and are retained in place by shoulders within the confines of the hoist body.

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- Load bearing members, such as the hoist body and shafts, have been designed so that the calculated static stress, based upon the rated load, does not exceed 20% of the average ultimate strength of the material, i.e., safety factor of 5:1.
- The hoist is rated for loads up to 2000 lbs. The maximum applied load during operation is 300 lbs, yielding an operational safety factor of 0.7:1.
- The brake is a self adjusting Weston screw type common to commercial chain hoists.

Test:

- An annual 100% load test (2000 lbs) will be performed as per OMI V6H54.
- OMRSD File VI requires verification of current load test prior to a critical lift.
- Pre-operational set up to support lifting operations verifies proper operation of the hoist.

Inspection:

- The hoist will be inspected per operational OMI V5096 (or V5017.002 at DFRF) for a current load test validation tag prior to use for a critical lift.
- An annual inspection of the hoist is performed per OMI V6H54. Visual inspections include loose or missing hardware, evidence of corrosion, damage, cracks or deformation of chain or hook assemblies, scratches/gouges/excessive wear indications and I.D. and safety markings.
- Inspections are performed in accordance with NSS/QO-1740.9 requirements.

Failure History:

- The PRACA database was researched and no failure data was found on this component in the critical failure mode.
- The GIDEP failure data interchange system was researched and no failure data was found on this component in the critical failure mode.

Operational Use:

- Correcting Action:
 - a. There is no action which can be taken to mitigate the failure effect.
 - b. An operator maintaining a grip on the hand chain can stop and hold the load.
- Timeframe:
 - a. Since no correcting action is available, timeframe does not apply.
 - b. Immediate to seconds, if the hoist operator maintains a grip on the hand chain.

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Attachment
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