

SAA09FY12H-003 JUL 30 1991
B/L: 390.00
SYS: 2T CHAIN HOIST
AND TROLLEY ASSEMBLY
AT THE VAB HB 1 & 3
LVL E MAIN

Critical Item: Hoist Assembly (2 Items)

Find Number: None

Criticality Category: 1

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SAA No: 09FY12H-003

System/Area: 2T Chain Hoist and
Trolley Assy at the
VAB HB 3 North and South

NASA
Part No: None

PMN/ H77-1500
Name: Hoist, 2 Ton Monorail

Mfg/ ACCO/WRIGHT
Part No: 1510120

Drawing/
Sheet No: 79K21141/31

Function: Provides mechanical advantage to raise, lower and hold loads with a small manual applied force.

Critical Failure Mode/Failure Mode No: A. Gear Disengages/09FY12H-003.001
B. Brake Failure/09FY12H-003.002

Failure Causes: A. Structural failure of gears, shafts, and gearbox housing.
B. Ratchet pawl failure, worn disc or foreign matter on disc.

Failure Effect: Load suspended from hoist could drop possibly resulting in ignition of SRB igniter. Failure could cause possible loss of life or vehicle. Failure is detectable by:
A. Abnormal noises and movement
B. Load drops when operator releases hand chain.
Time to effect: seconds.

Acceptance Rationale

Design: The gear box is off-the-shelf item manufactured by ACCO Babcock Inc. Its design complies with the Hoist Manufacturers Institute (HMI) and American Gear Manufacturers Association (AGMA) standards.

- o All gears and pinions are splined to shafts or integrally machined and are mounted on antifriction bearings and bushings which are prelubricated.

Hoist, Assembly (Continued)

- o The load gears are fine-blanked in steel and the pinions are extruded steel. All gears are heat-treated and surface-hardened for wear resistance, higher impact toughness, and better machining qualities.
- o The load bearing members, such as the gear case and shafts, have been designed so that the calculated static stress, based upon the rated load, does not exceed 25% of the average ultimate strength of the material.
- o The load brake is cam actuated and can support a capacity load stationary at any position or lift. The brake discs are of uniform composition and require no adjustment.
- o The hoist is rated at 4000 lbs., and the igniter assembly weighs 580 lbs. providing an operational safety factor of 27.6 to 1.

Test:

- o The OMRSD File VI Volume I will require verification of current load test prior to critical lifts.
- o An acceptance load test at 125% of the rated load was performed. (5000 lbs.)
- o A load test at 100% of rated load is performed annually by OMI Q6099.
- o The OMRSD File VI Volume I will require the annual performance of a mechanical load brake test.
- o A monthly operational check of the hoist is scheduled in accordance with OMI Q6099.
- o A pre-operational check is performed prior to use in accordance with OMI 85140.
- o Tests are performed in accordance with NSS/GD-1740.9 requirements.

Inspection:

- o An external visual inspection of the hoist assembly is scheduled monthly per OMI Q6099 for the following:
 - a. Corrosion, warping, and loose or damaged hardware
 - b. Yielding of fasteners

Hoist, Assembly (Continued)

- c. Load and hand chains are checked for wear, stretch, bending or damaged links
- o Inspections are performed in accordance with NSS/GO-1740.9 requirements.

Failure History:

- o The PRACA database was queried and no failure data was retrieved against this component in the critical failure mode.
- o The GIDEP failure data interchange system has been researched and no failures of this component were found.

Operational Use:

- o Correcting Action: A. There is no action which can be taken to mitigate the failure effect.
B. Operator may mitigate failure effect by stopping hand chain movement.
- o Timeframe: A. Since no correcting action is available, timeframe does not apply.
B. Seconds.