

SAA09FT01-006
B/L: 330.00
SYS: LINK-BELT
40-TON
MOBILE CRANE
HSP-8040

Critical Item: Reduction Unit Ass'y. (1 Item)

JAN 23 1995

Find Number: Model 10/Kit 420

Criticality Category: 1

SAA No: 09FT01-006

System/Area: Link-Belt 40-Ton Mobile
Crane/Multiple Station
Sets

NASA
Part No: N/A

PMN/ H72-1394/
Name: Link-Belt 40-Ton Mobile Crane

Mfg/
Part No: Auburn Gear
Model 10/Kit 420,
(FN: 4600102)

Drawing/
Sheet No: Link-Belt
PM 5-7-74.0

Function: Transfers torque from the winch drive hydraulic motor to the winch wire rope drum.

Critical Failure Mode: Gears Disengage. FM No. 09FT01-006.001.

Failure Cause: Structural failure of the gear assembly.

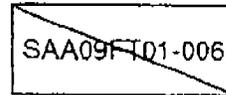
Failure Effect: Torque for holding load will be lost. Load suspended from hook may drop. Possible loss of life, vehicle or loss (damage) to a vehicle system could result if a load containing hazardous materials (e.g., the hydrazine cart at the launch pad) were dropped.

Acceptance Rationale

Design:

- o The Reduction Unit Assembly is an off-the-shelf item manufactured by Auburn Gear. Its design complies with AGMA and SAE standards.
- o The gears are splined to shafts or integrally machined and are retained in place by shoulders within the confines of the gearcase.
- o The manufacturer has factory tested a sample Reduction Unit Assembly for static ultimate strength and found the output torque to exceed 450,000 inch-pounds. The unit is rated at 90,000 inch-pounds for continuous operation. This results in a safety margin of 5 to 1.
- o Vendor load charts are provided with the mobile crane specifying load, boom angle, and boom extension to prevent overloading the Reduction Unit Assembly, which would lead to damage or failure.

*Attachment
605023A EN
sheet 2 of 8*



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Reduction Unit Ass'y. Model 10/Kit 420 (Continued)

Test:

- In accordance with NASA safety standard for lifting devices and equipment, NSS/GO-1740.9, mobile cranes shall be load tested and operationally tested within 12 months prior to performing a critical lift. The mobile crane will be load tested with a load equal to the rated load at the minimum radius in accordance with the manufacturer's load chart. Being a part of the hoisting system, the Reduction Unit Assembly is included in the load test.
- OMRSD File VI requires annual performance of a rated load test to verify system integrity.
- PMI No. HDO requires annual oil sample testing by ferrography.

Inspection:

- PMI No. HDO requires quarterly inspections to:
 - examine unit for weld cracks and structural damage
 - inspect and maintain gear oil level in the reduction unit assembly

Failure History:

- No failure history was found at the manufacturer, in the GIDEP data base, or the PRACA data base.

Operational Use:

- Correcting Action:
There is no action which can be taken to mitigate the failure effect.
- Timeframe:
Since no correcting action is available, timeframe does not apply.

*Attachment
505023AEN
sheet 3 of 8*