

EO 1-SAA09FT07-003
SHEET 2 OF 3

~~SAA09FT07-003~~
REV. B

S040244D
ATTACHMENT -
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B/L: 264.01
SYS: ET Portable
Hoist

NOV 15 1980

Critical Item: Boom Cylinder Assembly (4 each)

Find Number: None

Criticality Category: 2

SAA No: 09FT07-003

System/Area: ET-Portable Hoist - VAB

NASA

Part No: None

PMN/ H78-0839-01, -02

Name:

Mfg/ Air Technical Industries
Part No: Model TMF 2000

Drawing/ 79K09480/
Sheet No: Sh. 5 or M-4

Function: Provides means of raising and lowering the hoist boom.

Critical Failure Mode: Loss of cylinder pressure. FM No. 09FT07-003.001

Failure Cause: Damaged or broken piston seals.

Failure Effect: Boom and load will drop. Uncontrolled descent of flight hardware. Possible loss (damage) to vehicle systems.

Acceptance Rationale

Design Parameters:

- o Manufacturer's rated design working pressure (1500 psi) versus maximum operating pressure (300 psi) is 5 to 1.
- o Standard component used since 1974 in industrial shops.
- o Loss of cylinder pressure would more likely be due to seal degradation evidenced by hydraulic fluid seepage. The result is the cylinder's inability to remain extended and drifting of the boom and load. Catastrophic failure (bursting) of the seals is a less likely occurrence due to seal design and its being subject to wear and slow degradation.

Test Requirements:

- o Hoists load tested to 100 percent of rated load annually.
- o The manufacturer tests the boom cylinder assembly to 1,500 psi. The maximum load on either of the two hoists, which is the safe working load of 400 lbs. on Portable Hoist Model H78-0839-01 when the boom is retracted, results in a working pressure of 300 psi.

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Boom Cylinder Assembly (Continued)

Inspection Requirements:

- o OMRSD, File VI requires that hydraulic fluid level in reservoir be visibly checked annually.
- o OMRSD, File VI requires pre-operations inspection and checkout of hoist by raising and lowering boom with the boom cylinder assembly.

Failure History:

- o Air Technical Industries were contacted and they do not have a failure history record of Model TMF-2000, Portable Hoist.
- o The GIDEP data base was researched, and there was no failure history record of model TMF-2000, Portable Hoist.
- o The PRACA data base was researched, and four problem reports were found that called out leakage of hydraulic oil from the boom cylinder assembly. In each case, the seal kits were replaced, and the unit placed back in service.

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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