

NOV 20 1995

B/L: 287.00

SYS: Orbiter Main Access
Platforms, OPF-3

Critical Item: Worm Gear Assembly (4 Items Total)
Find Number: WNC0270MCHT, WNC0260MCHT, WNC0250MCHT, WNC0240MCHT
Criticality Category: 2

SAA No: 09FY093-012**System/Area:** Orbiter Main Access Platforms
/ OPF-3**NASA****PMN/** A70-0668-03**Part No:** None**Name:** Orbiter Main Access Platforms**Mfg/** Electra Motors (Dresser Industries)**Drawing/** 221-25-905**Part No:** 217P-350A**Sheet No:** EQ27 & 28

Function: Transfer the motor torque to drive torque to Raise and Lower elevator platforms [16-1], [16-2], [16-4], and [16-5].

Critical Failure Mode/Failure Mode No: Gears Disengage / 09FY093-012.006

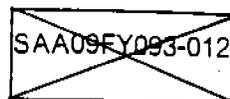
Failure Cause: Structural Failure

Failure Effect: The platform would fall under its own weight until contact is made with the lower hard stops. The hard stops could fail, allowing the platform to fall onto the Orbiter. The failure would be visually detected and the time to effect would be immediate.

ACCEPTANCE RATIONALE

Design:

- The worm gear motor is an off-the-shelf design manufactured by the Electra Motors division of Dresser Industries, and the gear design complies with the American Gear Manufacturers Association (AGMA) standards.
- The torque required to raise each platform is 2.7 times less than the continuous duty torque rating for the gear assembly.
- The manufactured safety factor is 5 : 1 minimum.
- These gear assemblies are rated for continuous duty and will only be used approximately 30 times per year, given 5 Orbiter flows through OPF-3 per year and 6 lifts per flow including maintenance.



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Test:

- OMRS File VI requires the annual performance of an operational test.
- An acceptance test at 125% rated load is required at initial installation.
- Preventive maintenance on the platforms and associated drive mechanisms will be performed per OMI V6H59.

Inspection:

- A visual and operational check of functional alignment and/or overall condition of worm gear assembly and platforms are performed annually to detect worn, cracked, or distorted parts.
- Inspections are performed in accordance with NSS/GO-1740.9 requirements.
- Inspections are performed per preventive maintenance OMI V6H59.

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