

USA Ground Operations CIL Sheet

ADD 9-2000

Critical Item: Jackscrew
 NASA Part No: None
 Mfg/Part No: Duff-Norton / LCM-1835-24-B
 System: ET.Sling Set

Criticality Category: 2
 Total Quantity: 4

Find No.	Qty	Area	PMN	Baseline	Drawing / Sheet
60-1	4	VAB	H78-3006	710.15	80K55321 / All

Function:

Provides mechanical force to raise, lower and hold main beam bellcrank, which will adjust or maintain Y-axis alignment of the ET.

Failure Mode No. Failure Mode	Failure Cause Failure Effect	Detection Method Time to Effect	Crit Cat
09FT07-006.002 Lift screw disengagement from worm gear	Mechanical wear of drive sleeve beyond operational limits, structural failure, improper maintenance Jackscrew failure would cause side load on main beam bellcrank which could cause bellcrank to fail in torsion causing ET to drop 2 to 3 inches. If failure occurs during initial leveling operations in the checkout cell the ET could impact another structure. Possible (loss) damage of a vehicle system.	Visual Immediate	2

ACCEPTANCE RATIONALE

Design:

- Each machine type jackscrew is rated at 35 tons. The maximum calculated load is 30,250 lbs, yielding a 2.3:1 operational factor of safety.
- The manufacturer states that the jackscrew is serviceable until the backlash reaches 50% of the screw thread thickness.

Test:

- OMRSD File VI requires performance of an annual backlash test of the jackscrews to determine wear on the mechanism in accordance with KSC-5600-4610, Jackscrew Wear Inspection.

Inspection:

- OMI T6005 requires a annual inspection of the jackscrew for any damage that would render it unsuitable for use.

Failure History:

- Current data on test failures, unexplained anomalies, and other failures experienced during ground processing activities can be found in the PRACA database. The PRACA database was researched and no Problem Reports associated with this component were found in the critical failure mode.
- A failure of another jackscrew did occur in the ET Gox vent arm hood on 4/6/98 (PR PV-6-336823). The NASA KSC Malfunction Lab inspected the failed unit (Report #MSL-0422-1998) and attributed its failure to worn out threads on the drive sleeve unit.

Operational Use:

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