Critical Item: Boom Hoist Cylinder Holding Valve

Total Quantity: 2 Items Total

Find Number: V9

Criticality Category: 2

SAA No:	09FY02-009	**System/Area:**	Condor 68 OPF, VAB, RPSF
NASA Part No:	None	**PMN/ Name:**	A77-1322 Condor 68
Mfg/ Part No:	Calavar 32585	**Drawing/ Sheet No:**	68250 1

Function: Prevents the boom hoist cylinder from retracting by not allowing hydraulic fluid out of the cylinder.

Critical Failure Mode/Failure Mode No: Fails open/09FY02-009.002.

Failure Cause: Mechanical Failure, Contamination on the Valve Seat

Failure Effect: Hydraulic fluid is allowed to leave the cylinder causing the boom and platform to descend. The platform may impact flight hardware causing loss (damage) to a vehicle system. Detection Method: Visual. Time to Effect: Seconds

ACCEPTANCE RATIONALE

Design:

- Designed to 4000 psi. per the manufacturer. System operating pressure is 2150 psi
- Body material is aluminum for better corrosion resistance.
- Seals are Buna-N.
- Expansion of hydraulic fluid due to temperature and high internal pressures caused by spikes can open the valves to release the pressure and prevent ruptures in the lines or valve.
- Contamination is reduced by the use of a 25 micron high pressure inline filter installed directly after the pump, and a 10 micron filter at the inlet of the solenoid valves.
- New oil introduced into the system is passed through a 10 micron filter installed at the nozzle of the pump.

Test:

- Operational check of the boom functions are performed before use per "Pre-Operations Maintenance Mobile Equipment Checklist" KSC Form 28-528 or "S artup Procedures" as outlined in the Vendors Operator's Manual.

- OMRS File VI requires annual performance of rated load test per PM! L-30.

Inspection:

- Inspection of the hydraulic system and controls for leaks and integrity are before use per "Pre-Operations Maintenance Mobile Equipment Checklist" KSC Form 28-528 or "Startup Procedures" as outlined in the Vendors Operator's Manual.

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 failure data was found on this component in the critical failure mode.
- The GIDEP failure data interchange was researched and no failure data was found on this component in the critical failure mode.

Operational Use:

- Correcting Action:

  The operator may mitigate the failure by raising the basket with the controller.

- Timeframe:

  Seconds