SAA09FY121-002
B/L: 389.00
SYS: 10-TON
BRIDGE CRANES
VAB

Critical Item: Push Button Switch (2 Items)

Find Number: S5

JAN 2 3 1995

Criticality Category: 2

SAA No: 09FY121-002

System/Area: 10-Ton Bridge Crane/
VAB - Low Bay Cells 2 & 4

NASA
Part No: N/A

PHN/ K60-0531/10-Ton Bridge
Name: Cranes

Mfg/
Part No: Duct-o-wire/P8-5

Drawing/
Sheet No: 79K16767/1-9

Function: Energizes control relays for hoist down function.

Critical Failure Mode/Failure Mode No: Fails Closed/09FY121-002.005

Failure Cause: Switch sticks, welded contacts (2 to 6), broken spring

Failure Effect: Hoist will not cease operation in the last commanded direction unless commanded by the stop, remote stop, disconnect switches or a limit switch. Possible loss (damage) to a vehicle system (SSME or EDO cryo pallet) if close proximity to an obstruction does not allow sufficient time for the operator to take correcting action. Failure is detectable when motion fails to stop when commanded. Time to effect: seconds.

Acceptance Rationale

Design:

Two push button switches per module, two blades per switch, six contact balls per switch.

Contacts:	Rated (NEMA 4)	Actual
Voltage:	125V AC	120V AC
Current:	6 amps continuous 8 amps intermittent	.25 amps continuous 1.9 amps intermittent

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Push Button Switch (Continued)

Test:

- Pre-operational set up (attaching and positioning sling over the load) to support lifting operations in OMI V5087 verifies proper operation of crane components and all functions.
- A full operational check of the hoist is performed monthly (no load) in accordance with OMI Q6166.
- An operational check of the crane is performed under full rated load as part of the annual load test in accordance with OMI Q6166.
- OMRSD File VI requires annual performance of an operational test at rated load.
- Reliability testing was performed by the manufacturer. This type switch was subjected to over 500,000 cycles without failure.

Inspection:

- The pendant control is visually inspected monthly for missing nomenclature and physical damage such as loose screws, torn dust covers or damage pushbuttons in accordance with OMI Q6166.

Failure History:

- The PRACA database was queried 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:

  Use of stop button or E-stop is effective in mitigating these failures only if there is sufficient time/distance for the operator to react.

- Timeframe: Seconds