

MAR 11 1994

B/L: 389.00

SYS: 250-TON

BRIDGE

CRANE, VAB

**Critical Item:** Relay, Hook Swivel Control (4 Total, 2/Crane)**Find Number:** CW, CCW (1 ea/Crane)**Criticality Category:** 2

<b>SAA No:</b>	09FY12-005	<b>System/Area:</b>	250-Ton Bridge Crane (#1 & #2)/VAB
<b>NASA Part No:</b>	NA	<b>PMN/ Name:</b>	K60-0533, K60-0534/ 250-Ton Bridge Crane (#1 & #2)/VAB
<b>Mfg/ Part No:</b>	General Electric/ CR109C000-BA	<b>Drawing/ Sheet No:</b>	69-K-L-11388/ 14

**Function:** Provides AC connection to run hook swivel motor clockwise (CW) or counterclockwise (CCW).

**Critical Failure Mode/Failure Mode No:**

Falls activated (contacts remain in the energized position)/

- 09FY12-005.070 (CW)
- 09FY12-005.071 (CCW)

**Failure Cause:** Welded contact, binding mechanism

**Failure Effect:** The critical load (Orbiter or ET) will continue to swivel when commanded to stop, possibly contacting the work platforms or the shuttle stack causing possible damage to a vehicle system. Time to effect: seconds.

**ACCEPTANCE RATIONALE****Design:**

<u>Contact Ratings</u>	<u>Actual</u>
600 volts	120 volts
30 amps	Testing required

- Contact Material: Silver Cadmium Oxide.
- This relay was off-the-shelf hardware selected by the crane manufacturer for this application.

Attachment

S050234CK

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**Test:**

- OMRSD file VI requires verification of proper performance of hoist operational test annually.
- OMI Q3008, Operating Instructions, requires all crane systems be operated briefly in all speeds to verify satisfactory operation before lifting operations.

**Inspection:**

- OMI Q5003 requires annual check of contacts and contact members for burning, pitting proper alignment and discoloration caused by overheating.

**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:
  - 1) When the failure indication is noticed, the operator can stop all crane operations by pressing the E-Stop button.
  - 2) Operators are trained and certified to operate these cranes and know and understand what to do if a failure indication is present.
  - 3) During all critical lifts, there is at least one remote Emergency Stop (E-Stop) operator observing the load lift, and can stop the crane if a failure indication is noticed.
- Timeframe:
  - Estimated operator reaction time is 3 to 10 seconds.