Landing Gear Pump Controller Service Bulletin 002 – 4/27/17

Date Released: 4/27/17

Subject: Pump Controller Damage due to Defective Pressure Switch Contacts

Applicability: All in-service LNC2/LEG2 Pump Controller boards installed with affected pressure switches

Required Action:

1. **Replace affected pressure switches (see Affected Switch section), or;**
2. **Replace pump controller with v2.0 or later**

Time of Compliance: Before further flight

Synopsis:
We have encountered an inoperative condition of the pump controller that was traced to the use of pressure switches with damaged contacts. This service bulletin identifies the faulted condition, its cause, and provides required immediate and long-term actions.

Affected Switches:

1. Any pressure switch ever used to drive solenoids without fly-back diode protection;
2. Any mechanical pressure switch that, over its life, has ever been used outside of its manufacturer recommended electrical ratings—particularly with respect to inductive load ratings.

Final Terminating Action:
Replace the board with v2.0 (or later) which has built-in protection against damaged switch contacts. When these become available, all existing boards will be replaced. Pressure switches previously subjected to arcing damage should still be replaced.

Condition Description:
Switch contacts subjected to inductive loads, particularly without fly-back diode protection, accumulate irreversible high voltage arcing damage—a 12V intermittent duty solenoid will generate over 300V at the contacts while opening. This damage includes pitting and the accumulation of deposits on the switch contacts (Figure 1).

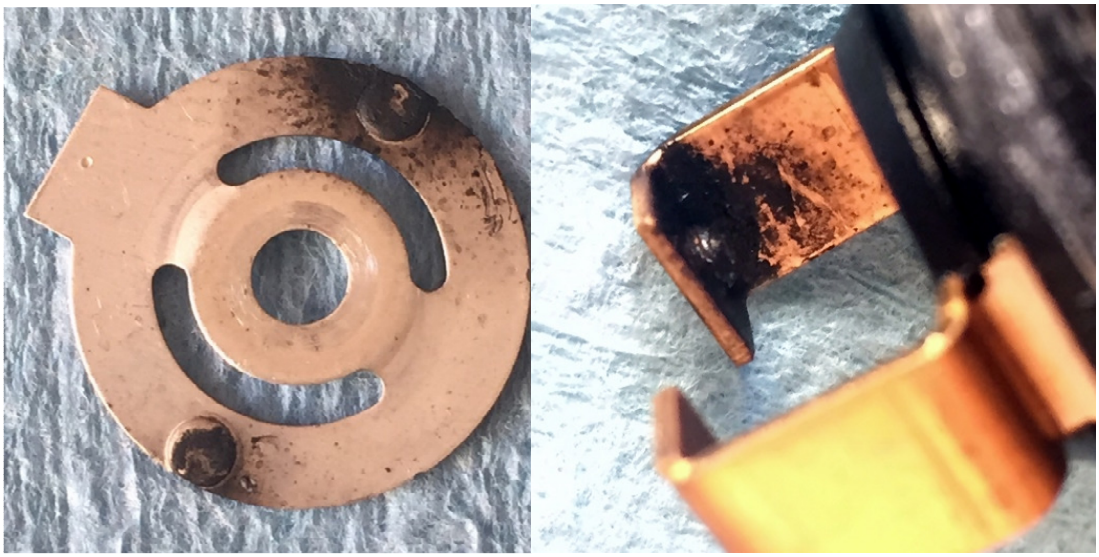

Figure 1: Arcing damage to a Lancair pressure switch due to inductive loads

Damaged switch contacts increase resistance across the switch. The controller requires a minimum of 7V on the signal line to operate safely. The added resistance from a contaminated switch contact may allow the controller to turn on, only to have the signal voltage sag below minimums. This can place the controller into a locked on state, similar to a stuck solenoid.

If this condition is encountered:

- The gear pump will continue to run in the last commanded direction
- As soon as practical, remove power from the hydraulic pump by pulling the hydraulic system circuit breaker.
- Replace the pump controller.

There is no simple field test to determine the condition of switch contacts. The electrical behavior across damaged contacts is unpredictable and random.

EXTREMELY IMPORTANT - any maintenance, troubleshooting, or adjustments to the landing gear system should only be performed with the aircraft SAFELY ON JACKS!