

Landing Gear Pump Controller Service Bulletin 001 – 10/22/16

Date Released: 10/21/16

Subject: Transient Voltage Suppression Diode Installation

Applicable to: All in-service LNC2/LEG2 Pump Controller boards (prior to 14v1.3 and 28v1.3)

Required Action: Install Gabriel Enterprises-supplied TVS diode assembly

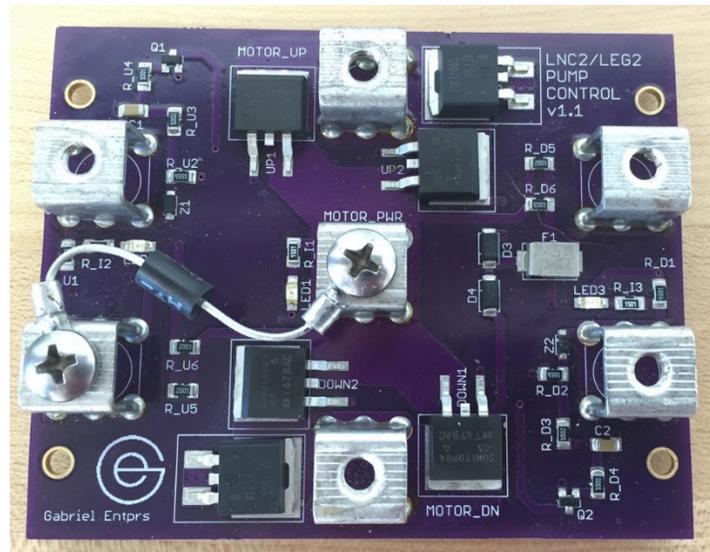
Time of Compliance: Before further flight

Synopsis:

We are recommending the supplied Transient Voltage Suppression (TVS) Diode be installed between the Power-In and Ground terminals of the gear controller. In the event of excessive voltage surges (above 20V on 14V aircraft and 40V on 24V aircraft), the TVS diode will protect the circuitry on the board. These surges can be caused by sluggish, failing, or overloaded alternator voltage regulators.

Required Action:

Install the supplied TVS diode between the MOTOR_PWR and GND terminals, as depicted here:

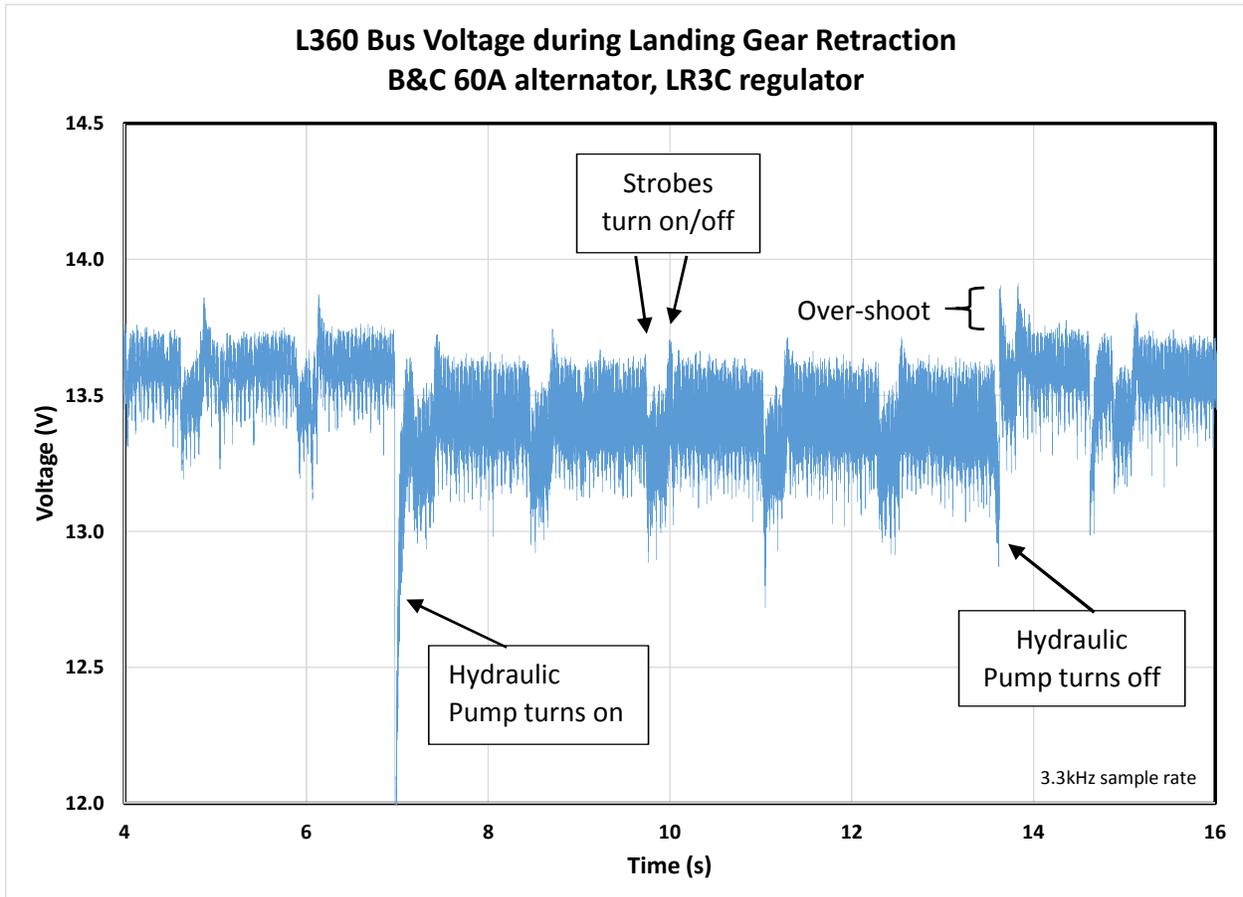


The diode is bidirectional, so orientation is not important.

Additional Technical Background:

Alternators by their very nature do not produce clean electrical power. There is a constant ripple on the bus which is quite normal. When loads are turned on and off, the voltage regulator takes time to catch up. During load shedding voltage can overshoot while the regulator compensates. The figure below shows good regulator control with very little overshoot (~0.2V) even when a very heavy load is shut down. Of concern is a regulator doing a poor job and allowing a voltage transient of several volts. Overvoltage protection found in many alternator systems will shut down the alternator if voltage levels rise excessively over a long period of time. The response is slow and this protection is geared toward

catching a steady state increases rather than a short duration transient. Alternators which are “maxed out” are especially at risk of an overshoot when a large load is suddenly turned off.



Terminating Action:

Proper installation of the supplied TVS diode prevents voltage overshoots from damaging components on the gear controller board. TVS protection will be included on versions 14v1.3/28v1.3 and beyond.