BLUE GUARD™ INNOVATIONS

Extend Bilge Pump Life with Blue Guard Switches

OVERVIEW

The figures below illustrate how harmful instant high voltages are generated when using a float switch.

A mechanical float switch has the potential to generate voltage spikes many times greater than the operating voltage. They are produced as the electrical contacts in a mechanical float switch are physically opened and closed. These spikes are not only harmful to the switch itself, but also to the bilge pump.

Blue Guard switches use solid-state technology with no moving parts. By controlling the pump digitally, Blue Guard switches eliminate dangerous voltage spikes.

A typical 3700 GPH bilge pump is tested with an off-the-shelf float switch. The pump requires a 12 Vdc supply and the current is 15 amps under load (pumping water).

FIGURES 1 & 2 — FLOAT SWITCH

As displayed in **Figure 1**, there is more than 30V (out of screen) overshoot and more than 12V undershoot (negative voltage) when turning the pump ON. Also when turning the pump OFF, according to the measurement in **Figure 2**, there is a 20V overshoot and 13V undershoot. These spikes, in addition to damaging the float switch, can also damage other electronic components on the same system supply line.

FIGURES 3 & 4 — BLUE GUARD SWITCHES

As displayed in **Figure 3** and **Figure 4,** the voltage variation is from 0V to the pump's nominal 12V and there are no spikes outside of this range. By eliminating the spikes, in addition to keeping the switch and the system supply voltage safe, will also reduce the sparks in the DC motor brushes and extend the life of the pump.

Figure 1. Turning the pump ON using a float switch

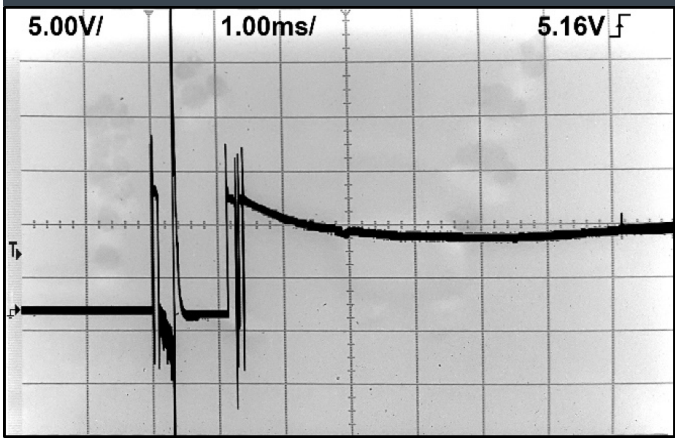

Figure 3. Turning the pump ON using BG Switches

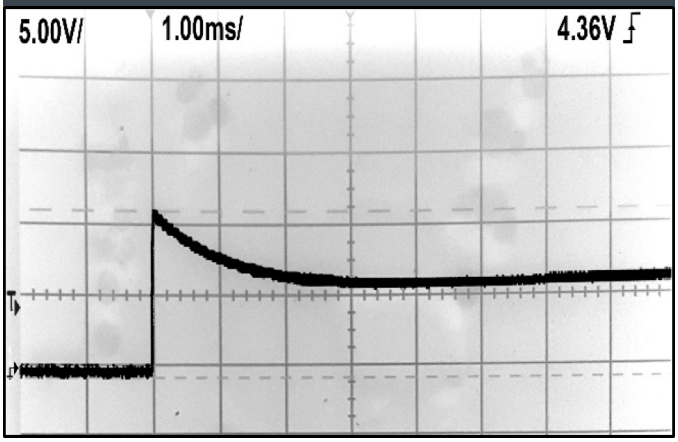

Figure 2. Turning the pump OFF using a float switch

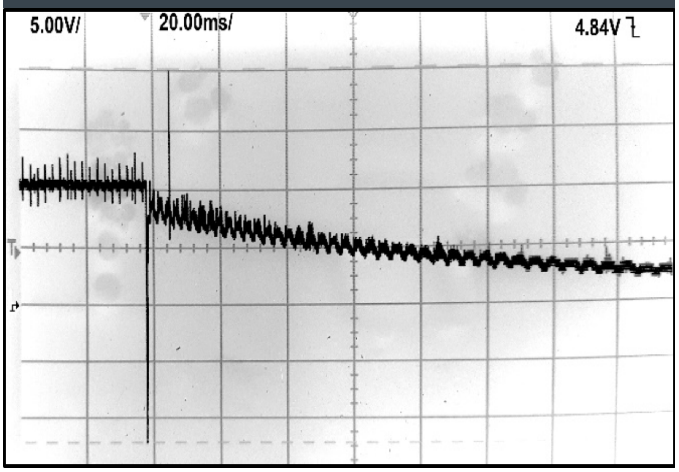

Figure 4. Turning the pump OFF using BG Switches