

## Reed Switch Protection (1)

### Point Level Switch

Our custom level switches operate on the principal of a magnet-equipped float, or floats, activating a reed switch (float station) at customer requested dimensions and state (N/O or N/C dry). The custom sizing combined with low activation energy reed switches sealed in their own hermetic environment allow our controls to handle huge jobs from small places - any job as long as the capacity is not exceeded. Make sure there is enough capacity - if not, simply use an accessory interface device, such as a relay, to handle the required load. In other words let the switch sense and the relay or electronics control. Only test with an Ohm meter not a light. Level switches are really for pilot duty devices and will work well with a control relay.

### The Reed Switch

The tiny switches are comprised of a sealed glass tube containing spring arms with rhodium contact material. The magnets close the contacts when they are within the required range. Like a computer chip –its small size does not limit it to small jobs. It can do big jobs from restricted spaces as long as the capacity is not exceeded.

### Possible Problems

Two common causes can destroy the switch. First - if the power rating of the switch is greatly exceeded, the contacts will weld immediately. Second - if the switch is induced to arc as it opens or closes the plated contact surface will fail. The greater the arc - the sooner the failure. The switch will weld in the closed position. Switches are rated with a resistive load - ARC suppression is important.

#### How to Suppress the Arc (RELAY)

For a DC circuit - a simple one-amp diode placed parallel with the load will suppress the arc. Select a diode with a voltage rating at least **three times** or more that of your circuit rating. Connect cathode to positive. Cathode usually has a dark ring, on the body, on the same side. e.g. 1N4004 For an AC circuit use a disk capacitor / resistor placed parallel with the switch. Select a 0.1 mfd 400 to 600 V capacitor. Place a 50 - 100 ohm 1/4 watt resistor in series with the capacitor. Place the pieces parallel to the switch. (A Varistor V130LA10A will also work in AC)

### Interface or Control Devices

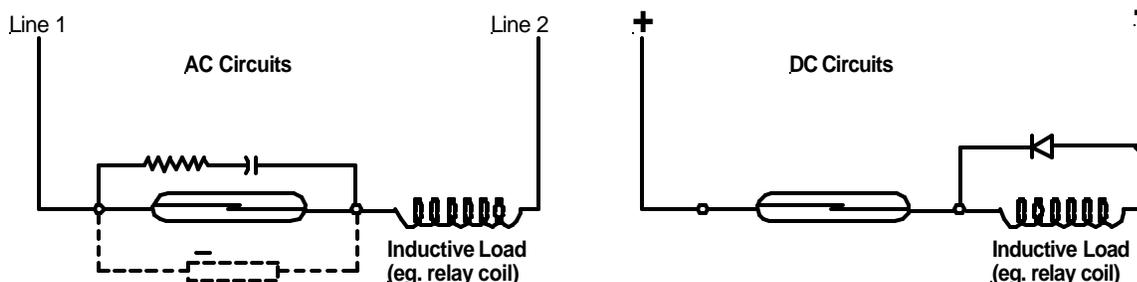
#### Solid State:

SCR's or Triacs are an effective off the shelf product for controlling alarm lights or latching or holding relays. Latching relays would be used for high/low level control. The switch only sees a milliamp resistive signal load from the solid state device. Most solid-state devices c/w arc suppression if needed. Solid state devices are readily available at most electronic outlets or from your level switch distributor.

#### Electro Mechanical Relays

A great simple device and can be wired in any conceivable logic. A suppression circuit as above should

be used with mechanical relays as the reed switch would see an inductive load.



## Reed Switch Protection (2)

### Other Devices

Thousands of control devices are available such as the 5-volt non-arcing computer brain. The new world is controlled by low voltage computer chips where power levels are low - an ideal situation for our level switches. Let the switches control for example LED's, computer outputs, solid-state devices and small indicator lamps. Use an interface to control motor starters, motors, lamps or heating devices, etc.

### Reed Switch

Maximum voltage SPST AC - 250 VAC

Maximum voltage SPST DC - 250 VDC

Maximum amps switching - 0.5 amps

Maximum amps carry current - 2 amps

Resistive ratings

Hermetically sealed

SPDT - 120 VAC @ 0.5 amps resistive

### Quality

Over twelve years' worth of our level switches are in use around the world. They can be found in a multitude of level applications. Many OEM's from our early days are still with us.

#### **IMPORTANT INFORMATION ON USE**

##### **Single Point Level Switch Including Side Mount**

Best used as a n alarm signal they have a narrow differential between off and on. Unless they are controlled by a time delay or other such logic they will cycle rapidly and cause premature failure. Wave action could have the same affect on the switch. A slosh control device would help.

##### **Multi Point Level Switches Including Bent Stem**

Can be used for level control with up to 6 stations for alarms and level control. Use an appropriate control device.

### Fail Safe Installation

Always design the system for fail-safe operation - an example would be - liquids should not overflow because of a power failure. Failure of a relay or pump should not allow the liquid to overflow. Also -failure of a level switch should not cause conditions to be unsafe. Level controls should be satisfied by intelligent fail-safe design. A back-up design or setup should be incorporated if a fail-safe design cannot be achieved by circuit and or component configuration. *It is important and the responsibility of the purchasing Engineer, who delegates control of a design to automate, to insure a means to sustain safe control when components or power fails.*

### Will it do Your Job?

The controls are built to customer requests. The company does not recommend products for any specific use. We will discuss design and details with user engineers. All components are assembled from part numbers described in the brochure. The company, as described in the warranty, does not authorize or warrant the products supplied by the company, for use in a system that may affect life or personal safety or for use as a critical component.