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Phone: 267-673-8117 - Fax: 267-673-8118 **Series NC**

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**Liquid Level Switches**

## Precautions

- **User's Responsibility for Safety:** KOBOLD manufactures a wide range of process sensors and technologies. While each of these technologies are designed to operate in a wide variety of applications, it is the user's responsibility to select a technology that is appropriate for the application, to install it properly, to perform tests of the installed system, and to maintain all components. The failure to do so could result in property damage or serious injury.
- **Proper Installation and Handling:** Use a proper sealant with all installations. Never overtighten the switch within its fittings. Always check for leaks prior to system start-up.
- **Wiring and Electrical:** This is an electrically operated device and only properly trained personnel should install and maintain this product. Be sure that the voltage and current supplied to the switch is within the recommended limits. Electrical wiring should be performed in accordance with all applicable national, state and local codes.
- **Temperature and Pressure:** The NC series float switch is available in several material combinations. Temperature and pressure maximums vary depending upon the material selected. Consult the technical specifications for limits on a particular model prior to installation. Operation outside these limitations will cause damage to the unit and possible injury to personnel.
- **Material Compatibility:** Make sure that the NC series float switch is chemically compatible with the application liquids. While the switch wiring is liquid resistant when installed properly, it is not designed to be immersed. The fitting should be mounted and sealed appropriately so that the wiring does not normally come into contact with fluid. Waterproof designs are possible on several models. Use of the NC series float switches with viscous, sticky or coating type liquids is not recommended as float movement will be impeded. Additionally, some solutions or mixtures may cause the float to become inoperative if allowed to dry.
- **Flammable, Explosive and Hazardous Applications:** The NC series switches (except for models NCS-1074EX and NCS-7203) are not an explosion-proof design. They should not be used in applications where an explosion-proof design is required.
- **Make a Fail-Safe System:** Design a fail-safe system that accommodates the possibility of switch or power failure. In critical applications, KOBOLD recommends the use of redundant backup systems and alarms in addition to the primary system.

### Mechanical Installation:

#### Vertically Mounted Models:

Install with the float positioned vertically or up to a 30° inclination, at top or bottom of the tank.

Switch logic is changed by removing the float retainer clip, reversing (inverting) the float, and reinstalling the retainer clip.

Float differential (actuating/deactuating point) is approx. 1/8".

#### Side-Mounted Models: NCS-5161 and NCB-5171:

Drill and deburr a 13/32" diameter hole for mounting.

Install with the float positioned vertically or up to a 30° inclination.

Switch logic is changed by: inverting the unit, or by removing the float retainer clip, reversing (inverting) the float, and reinstalling the retainer clip.

#### Side-Mounted Model: NCP-5094:

Drill and deburr a 1/2" diameter thru hole for mounting.

Install with the float positioned horizontally within 15° inclination.

Switch logic is changed by inverting the float switch assembly.

### Electrical Installation:

#### Switch Ratings Max Resistive Load

V.A.	Volts	Amps DC	Amps AC	Amps AC Max.
20	0-50	0.4	0.4	1.0
	120	0.15	0.16	
	240	0.06	0.08	
100	0-50	1.0	1.5	3.0
	120	0.4	0.8	
	240	0.2	0.4	

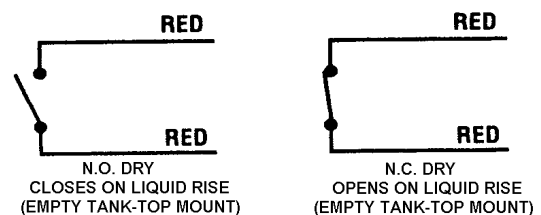
Switch Rating of UL Recognized Units: 20 VA

Plastic Stem: 50 - 240 VAC Pilot Duty

Metal Stem: 120 - 240 VAC Pilot Duty

### Wiring Diagram:

**CAUTION:** Contact protection is **REQUIRED** when switching inductive loads. Consult KOBOLD for additional information.



FM Rev. 1/2/03

NC\_manual\_01-02-03



**IF THE FOLLOWING INSTRUCTIONS ARE NOT FOLLOWED, THE REED SWITCHES IN THIS DEVICE WILL BURN OUT!**

This device incorporates reed switches which are used for sensing purposes and can only switch very small loads (pilot duty service). They are not designed to directly switch solenoid valves, motors and other high current devices.

When testing reed switches for operation only use an Ohmmeter and not a light.

Common accepted practice is to use an interface relay rated to handle the required electrical load. In this way, the low current signal from the reed switch energizes the relay coil, which in turn switches the larger load current.

**PLEASE READ CAREFULLY!!**

**How to avoid damaging the reed switch:**

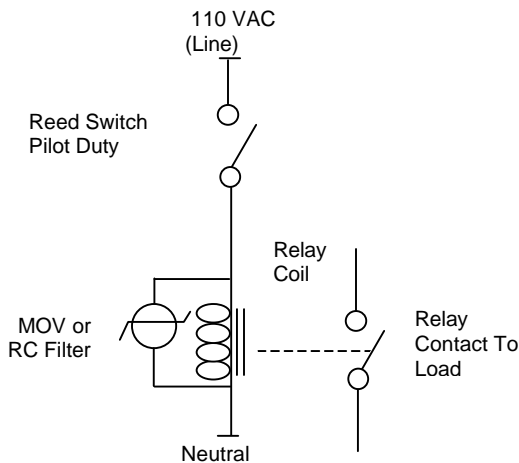
➡ **TO PROTECT THE REED SWITCH AGAINST INDUCTIVE KICKBACK, EVEN IF THE RELAY COIL CURRENT RATING IS WELL BELOW THE REED SWITCH RATING:**

➡ **When a reed switch is used to drive external relays, voltage spikes can be generated at coil activation.**

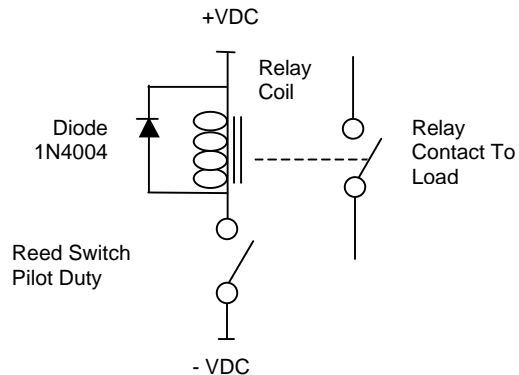
**If the source is an AC operated device, install a varistor (MOV), or Resistor/Capacitor Filter across the relay coil.**

**If the source is a DC operated device, a general purpose diode ( IN 4004 ) placed across the relay coil prevents electrical spikes. Connect the cathode (banded side) to the more positive side of the coil.**

**AC Circuit Example**

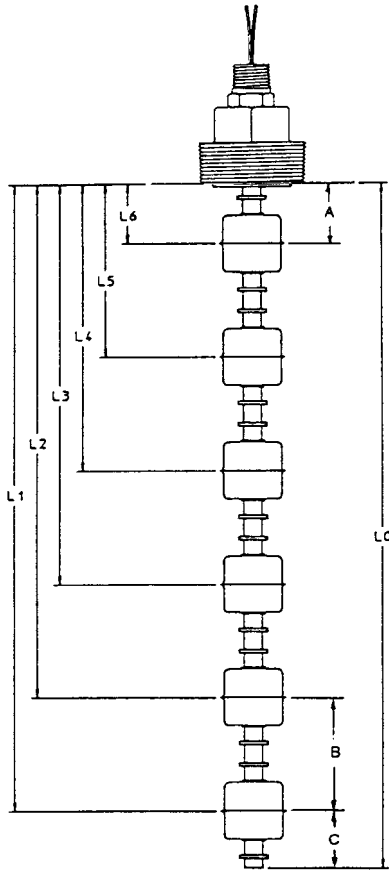


**DC Circuit Example**



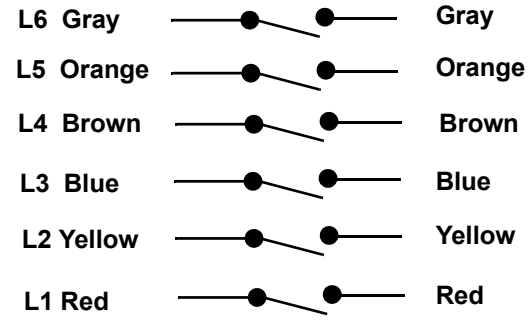
MOV Type: GE # V130 LA1  
RC Filter Type: Paktron # 0.2uF/220 Ohm @400 V

# KOBOLD Series NCG/NCM Multipoint Level Switches Wiring Diagram



A = 3/4" minimum distance to highest level  
 B = 1 1/2" minimum distance between levels  
 C = 1" minimum distance from end of unit to lowest level

## SPST Switch Wiring



## SPDT Switch Wiring

