



# LVK-200 SERIES

## Level Controls



M2604/0415

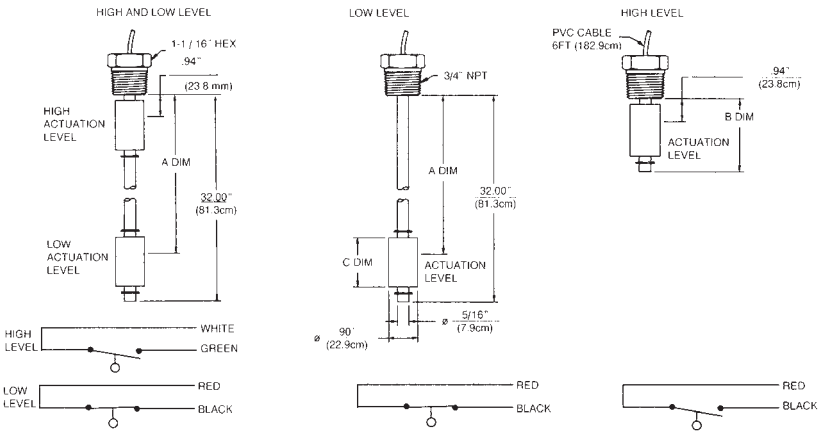
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### Level Controls for 55 Gallon Drums

Obtain valuable information from the unused 3/4" Bung fitting in your drum by installing an OMEGA High, Low or High and Low Level Switch

Easy to install, the OMEGA Level Switch will provide a signal for high level alarm to prevent spills, low level signal to warn operator it's time to refill, or high and low alarm combined for total control. High and low level signals can either provide input to alarms or can be combined with a relay or controller to operate valves or pumps.

Units are available in brass mounting and stem material, and Buna N float for use in hydrocarbons as well as all stainless steel construction for more aggressive media.



| DIM | BRASS/BUNA-N    | STAINLESS STEEL |
|-----|-----------------|-----------------|
| A   | 31.00" (78.7cm) | 30.38" (77.2cm) |
| B   | 2.00" (50.8mm)  | 2.63" (66.7mm)  |
| C   | 1.25" (31.8mm)  | 1.50" (38.1mm)  |

### Specifications:

|                       |  |
|-----------------------|--|
| Switch Rating         | SPST 20VA  |
| Operating Pressure    | 100 PSIG Max (6.9 bar)   |
| Operating Temperature | -40°F to 300°F (-40° to 149°C) - SS Version<br>-40°F to 225°F (-40° to 107°C) - Buna (oil)<br>-40°F to 180°F (-40° to 82°C) - Buna (water) |
| Minimum Media SP GR   | Buna N Floats .70<br>Stainless Steel .80   |

\* Other wetted materials: Brass/Buna unit - Beryllium Copper, Epoxy  
Stainless Steel Unit - ARMCO PH 15-7 MO Grip Rings

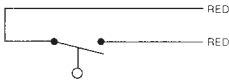
|         | Stem Material       | Float Material      | Switch Logic | Function             |
|---------|---------------------|---------------------|--------------|----------------------|
| LVK-200 | Brass               | Buna                | N.O. Dry     | High Level           |
| LVK-201 | Brass               | Buna                | N.C. Dry     | Low Level            |
| LVK-202 | Brass               | Buna                | N.O./N.C.    | High Level/Low Level |
| LVK-203 | 304 Stainless Steel | 304 Stainless Steel | N.O. Dry     | High Level           |
| LVK-204 | 304 Stainless Steel | 304 Stainless Steel | N.C. Dry     | Low Level            |
| LVK-205 | 304 Stainless Steel | 304 Stainless Steel | N.O./N.C.    | High Level/Low Level |

# Electrical Data

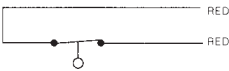
Standard Reed switches are SPST or SPDT. The diagrams below show the typical wiring

## Form A - Single Pole / Single Throw

Normally Open Dry

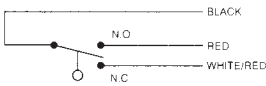


Normally Closed Dry



## Form C SPDT - Single Pole / Double Throw

SPDT Dry Condition



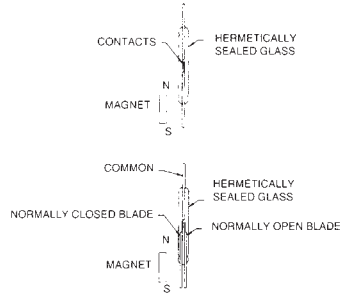
Each individual level switch varies in rating depending on the unit. See the chart below for electrical ratings.

## Switch Ratings Max - Resistive Loads

| Contact Rating | Volts | Amps AC | Amps DC |
|----------------|-------|---------|---------|
| 10VA           | 0-50  | .20     | .13     |
|                | 120   | .08     | .05     |
|                | 240   | .04     | NA      |
| 20VA           | 0-50  | .40     | .30     |
|                | 120   | .17     | .13     |
|                | 240   | .08     | .06     |
| 50VA           | 0-50  | .50     | .50     |
|                | 120   | .41     | .41     |
|                | 240   | .20     | .20     |
| 100VA          | 120   | .83     | NA      |
|                | 240   | .41     | NA      |

NOTE: Above ratings are for resistive loads only

The reed switch is designed for reliability to millions of cycles. To ensure long life and repeatability, see the contact protection information below.



## Contact Protection

In order to take advantage of the long life, highly reliable characteristics of a reed switch, it is essential to provide protection when switching inductive loads.

When current is interrupted, the inductance of the load generates a high frequency voltage, which appears across the switch contacts. If the voltage is large enough, it can cause arcing. Arcing can cause contacts to weld to each other, resulting in unreliable switching performance. It is essential to protect the circuit, by suppressing the voltage to prevent arcing.

This can be accomplished through the use of a diode for DC circuits (figure 1) and a resistor - capacitor network for AC circuits (figure 2).

Figure 1  
DC Contact Protection

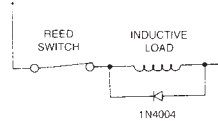
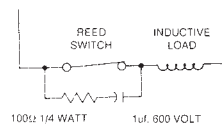


Figure 2  
AC Contact Protection

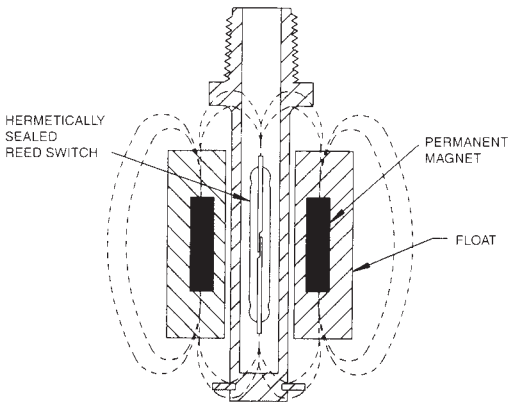


Often there is a requirement to control significant loads such as pumps and motors, or to perform a control function as simple as the automatic refilling of a tank. These operations can be performed reliably with the selection of one of the following supplemental relays.

| PART NUMBER | DESCRIPTION                  | FUNCTION                        | TIME DELAY        |
|-------------|------------------------------|---------------------------------|-------------------|
| LVCN -130   | PUMP UP PUMP DOWN CONTROLLER | LATCHED 12 AMP SPDT RELAY       | .15 TO 60 SECONDS |
| LVCN -140   | SINGLE SENSOR CONTROLLER     | 12 AMP SPDT RELAY               | .15 TO 60 SECONDS |
| LVCN -120   | THREE SENSOR CONTROLLER      | TWO 12 AMP SPDT OUTPUT RELAY    | .15 TO 60 SECONDS |
| SSR24OAC10  | SOLID STATE RELAY            | 10 AMP, AC CONTROL SIGNAL RELAY | NO                |

## Design Considerations

- **Pressure**
- **Temperature**
- **Mounting**
- **Termination**
- **Media Characteristics, such as**
  - Specific gravity
  - Corrosive characteristics
  - Viscosity
- **Actuation Point(s)**
- **Materials of Construction**
- **Switch life / Switch load**



## General Information

- Please refer to the current carrying limitations of the reed switches and provide protection when needed.
- Do not exceed pressure and temperature limitations listed at any time.
- Please take into consideration material of construction and chemical / media compatibility when selecting a level switch.
- Temperature changes that affect specific gravity of media may vary actuation points.
- Media that contains debris may cause float to hang up and require more frequent maintenance.
- Care should be taken to provide moisture protection and media isolation at threaded mounting areas and wire termination points.

## Principle of Operation

The hermetically sealed reed switch located inside the stem is actuated by a magnetic field created by a magnet equipped float. As the float rises and falls with the liquid level, the magnetic field passing the switch causes the switch to either open or close.

Omega switches can be mounted from tank top, tank bottom or can be easily adapted for side mounting. Switches will operate normally with up to a 30 degree tilt from vertical.

## Switch Configuration

Most single point switches with a SPST (single pole, single throw) switch operate in either a Normally Open (NO) or Normally Closed (NC) mode in the dry condition. All switches are shipped in the Normally Open dry mode. To change from the Normally Open to the Normally Closed mode, carefully remove the clip at the end of the stem, remove the float, reverse the float, then reinstall the float. After replacing the float and end clip, the operation will be Normally Closed. All Teflon switches are non-reversible and must be ordered in either the NC or NO mode.

Single Pole, Double Throw (SPDT), switches offer both NO and NC mode. Selection is made simply by choosing the black and red wire for NO operation or the black and white/red wire for NC operation.

## Maintenance

Maintenance of the OMEGA level switches is minimal. Floats and stems should be inspected periodically for buildup on the stem which could cause float hangup and or significant buildup on the float that could change specific gravity of the float.



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If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

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The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY RETURNS**, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY REPAIRS**, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

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