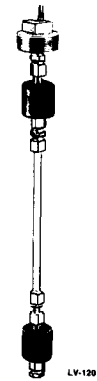




# LV-120 Series Custom Switch Kit Operator's Manual: M0469/1290



## GENERAL DESCRIPTION

Versatile OMEGA® LV-120 Series Custom Switch Kits can be assembled and installed vertically in your tank in minutes. Each kit contains all the components for complete assembly of a one or two station level switch for pipe-plug mounting. Additional level stations (up to six) may be added. Normally Open or Normally Closed operation of the single pole single throw switch is selectable when assembling, merely by inverting the float on its stem (see ASSEMBLY INSTRUCTIONS).

### Each Kit Contains:

- 2 Level Stations (Switch, Tube, Float)
- 1 Tube Connector (1/2" - 3/8" NPT)
- 1 Mounting Plug (2" NPT)
- 2 Extension Tubes (1/2" x 10" long)
- 1 Tube End Fitting (1/2")
- 3 Tube Unions (1/2")

## LV-120 SERIES SWITCH KITS

| Kit No. | Material                      | Mfg NPT | Primary Usage  |
|---------|-------------------------------|---------|--|
| LV-120  | Brass Fittings, Buna N Floats | 2"      | In fuels, water at temperatures below 180°F.                           |
| LV-121  | All 316 Stainless Steel       | 2"      | High temperature, 275°F, high pressure, 750 psi, in corrosive liquids. |

## OPERATING PRINCIPLE

The LV-120 Series detect high, low or intermediate liquid levels magnetically, with precise accuracy. A magnet-equipped float, moving with liquid level, actuates a dry hermetically sealed reed switch within the unit's central stem at each level station. Switches are wired to trigger a remote warning or indicating device or, using suitable relays, to provide automatic control of pumps and similar equipment.

## APPLICATION

LV-120 Series units are being applied in just about every area of industry where accurate detection and indication of liquid level is called for, including automatic control of pumping and other systems.

## CONSTRUCTION

All configurations are extremely rugged and are virtually unaffected by shock, vibration, pressure or vacuum. Stems and fittings can be brass with Buna N floats or fittings and floats can be all 316SS. No gaskets or seals are used, and the float is the only moving part, assuring long, trouble-free service. Corrosion resistance is excellent.

## MOUNTING

The Buna N Floats are 1 1/8 diameter; the 316 SS floats are 2 1/8" diameter

The LV-120 Series can be mounted from the top, bottom, or side of a tank. These units should be installed as vertically as possible; however, the LV-120 Series are reliable as much as 30° from vertical.

The 2" NPT mounting plug permits the entire unit to be inserted into the tank from outside. A 1/2" NPT-F provides direct electrical conduit connection.

## SPECIFICATIONS

|                          | Brass/Buna N             | All 316 SS   |
|--------------------------|--------------------------|--------------|
| Ambient Temp. (Oil)      | 0°F to 230°F             | 0°F to 275°F |
| (Water)                  | 33°F to 180°F            | 0°F to 275°F |
| Fluid Pressure (Max.)    | 150 psi                  | 750 psi      |
| Float Sp. Gr.            | .55                      | .65          |
| Fitting Ferrule Material | Nylon                    | 316 SS       |
| Mounting Thread          | 2" NPT-M                 |              |
| Conduit Thread           | 1/2" NPT-F               |              |
| Tube/Fitting Size        | 1/2" (12.7 mm) o.d. tube |              |
| Max. No. Levels per Stem | 6                        | 6            |
| Mounting Attitude        | Vertical ±30°            |              |

## ELECTRICAL DATA

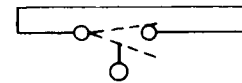
Standard snap-action switch is a 20VA, SPST, hermetically sealed, magnetically actuated, make and break type. Normally open or normally closed operation is selectable by inverting floats on unit stem.

## SWITCH RATINGS — MAX. RESISTIVE LOAD

| VA | Volts | Amps AC | Amps DC |
|----|-------|---------|---------|
| 20 | 0-30  | .4      | .3      |
|    | 120   | .17     | .13     |
|    | 240   | .08     | .06     |

**NOTE:** If inductive or capacitive loads are being switched (such as the coil of a magnetic relay), a voltage spike suppression kit is required, part number 1821-101. Without suppression, voltage spikes can cause the reed relay in the switch to fuse in the conducting ("ON") mode, regardless of liquid level. This kit is not required when switching external solid state relays, such as OMEGA's SSR series.

## TYPICAL WIRING DIAGRAM



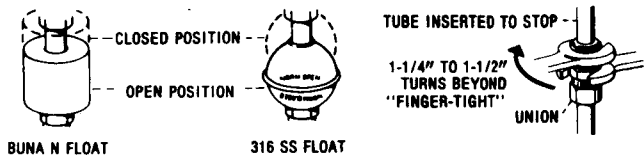
SPST SWITCH N.O. OR N.C. (DRY)  
SELECTABLE BY INVERTING FLOAT

All float stations are supplied with 60" of 22 AWG. Teflon-coated wire. Additional lengths of copper wire can be added on in the field.

## ASSEMBLY INSTRUCTIONS

1. Determine type of assembly required from data on these pages.
  2. Assemble unit, observing the following sketches and information.
- Extension Tubes when required: Cut to proper length as illustrated. Any 1/2" (12.7mm) tubing of suitable non-magnetic material may be used.

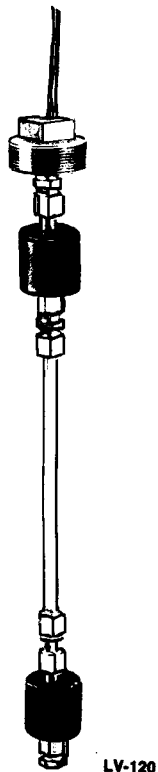
Level Stations: Assemble floats on switch tubes for desired switch operation as shown. Feed level station wires through switch tubes of each level station toward mounting plug.



Note: Floats shown in normally open (dry) position. to reverse operation, invert floats.

Coupling Components Together: Insert tubes to limit in fittings and tighten "finger-tight." After checking entire unit, wrench-tighten as illustrated.

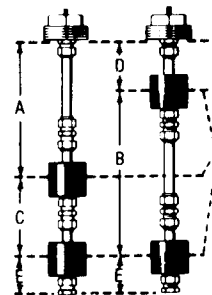
**IMPORTANT:** Always assemble entire unit "finger-tight" first, then check level locations and switch operation (N.O. or N.C.) before final tightening.



LV-120

3. Install unit in tank through a boss or tapped hole from outside of tank.
4. Electrical Leads: Leads are readily identified for connection, (i.e., switch leads nearest mounting end of unit project the farthest, etc.) CAUTION: See "Switch Ratings" before connecting power to unit.

### ACTUATION LEVEL DIMENSIONAL DATA



SWITCH ACTUATION LEVELS

NOTE: Buna N floats shown. When two or more extension tubes are coupled together for greater length, assemble coupling unions before cutting to length per "A" or "B" (below).

| Dim. | Description                           | SPST Switches                                  |   |
|------|---------------------------------------|--|---|
|      |                                       | with Buna N Floats                             | With S.S. Floats                              |
| A    | Min. with tube extension              | 4 <sup>3</sup> / <sub>4</sub> "<br>(120.7mm)   | 4 <sup>1</sup> / <sub>2</sub> "<br>(114.3mm)  |
|      | Cut tube to desired length "A", minus | 2 <sup>7</sup> / <sub>8</sub> "<br>(73mm)      | 2 <sup>5</sup> / <sub>8</sub> "<br>(66.7mm)   |
| B    | Min. with tube extension              | 6 <sup>5</sup> / <sub>16</sub> "<br>(160.3mm)  | 6 <sup>5</sup> / <sub>8</sub> "<br>(168.3mm)  |
|      | Cut tube to desired length "B", minus | 4 <sup>15</sup> / <sub>16</sub> "<br>(125.4mm) | 4 <sup>1</sup> / <sub>16</sub> "<br>(119.1mm) |
| C    | Closest that levels can be            | 4 <sup>1</sup> / <sub>4</sub> "<br>(108mm)     | 4 <sup>1</sup> / <sub>2</sub> "<br>(114.3mm)  |
| D    | Highest possible level                | 2 <sup>5</sup> / <sub>8</sub> "<br>(66.7mm)    | 2 <sup>3</sup> / <sub>8</sub> "<br>(60.3mm)   |
| E    | Lowest possible level                 | 2 <sup>1</sup> / <sub>8</sub> "<br>(54.1mm)    | 2 <sup>5</sup> / <sub>8</sub> "<br>(66.7mm)   |

MADE IN USA

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OMEGA warrants this unit to be free of defects in materials and workmanship and to give satisfactory service for a period of **13 months** from date of purchase. OMEGA Warranty adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product. If the unit should malfunction, 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. However, this WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of being 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 which wear or which are damaged by misuse are not warranted. These include contact points, fuses, and triacs.

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### Servicing USA and Canada: Call OMEGA Toll Free

**USA**  
One Omega Drive, Box 4047  
Stamford, CT 06907-0047  
Telephone: (203) 359-1660  
FAX: (203) 359-7700

**Canada**  
976 Bergar  
Laval (Quebec) H7L 5A1  
Telephone: (514) 856-6928  
FAX: (514) 856-6886

Sales Service: 1-800-826-6342 / 1-800-TC-OMEGA™  
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### Servicing Europe: United Kingdom Sales and Distribution Center

25 Swannington Road, Broughton Astley, Leicestershire  
LE19 6TU, England  
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