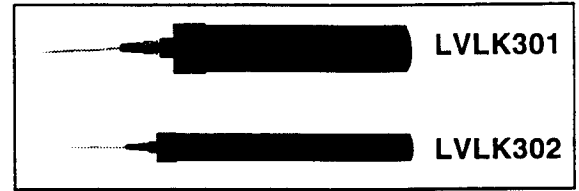




LVLK300 Series Discriminating Containment Sump Sensor Instruction Sheet

M1935/1194



Read all instructions before beginning - Follow all safety precautions

Unpacking

Remove the Packing List and verify that you have received all equipment. If you have any questions about the shipment, please call the OMEGA Customer Service Department.

When you receive the shipment, inspect the container and equipment for any signs of damage. Note any evidence of rough handling in transit. Immediately report any damage to the shipping agent.

NOTE

The carrier will not honor any claims unless all shipping material is saved for their examination. After examining and removing contents, save packing material and carton in the event reshipment is necessary.

Description

The LVLK300 Series discriminating sensors provide reliable and accurate monitoring of containment sumps, dispenser pans, and other critical liquid collection sumps. They combine magnetic float and reed switch liquid level switches with an innovative polymer strip that reacts to hydrocarbons. Within a system, they trigger independent alarms or annunciators for water or fuel accumulation. Their rugged construction makes them ideal for harsh environments.

The high level switch is actuated at the 8 inch or 11 inch mark, depending on the model selected. Hydrocarbons are sensed anywhere along the length of the sensor, even if floating on top of the water.

The sensors are reusable after exposure to heavy concentrations of hydrocarbons. Detection and recovery times vary depending on the type of fuel. A quick disconnect cable enables operators to make quick sensor exchange in the event of a hydrocarbon alarm condition.

LVLK300 Sensor Operating Principle: To detect liquid hydrocarbons, sensors incorporate an innovative polymer strip that continuously conducts electricity when voltage is applied. The polymer strip physically swells on contact with liquid hydrocarbons anywhere along its length. The swelling causes a dramatic increase in the electrical resistance of the polymer and may be used as a switch when incorporated with the proper intrinsic safety relay. When allowed to recover outside the sump, the polymer strip reverts to its normal conductive state for reuse.

The sensor has three possible alarm conditions, depending on the specific part number:

- (1) Fuel Alarm: Indicates fuel at any height on the sensor
- (2) High Liquid Alarm: At 8" (LVLK301) or 11" (LVLK302)

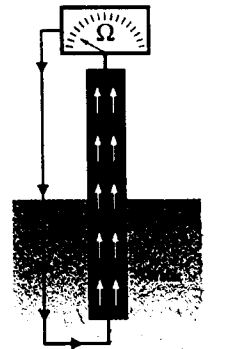
Installation

Note:

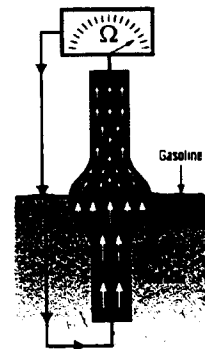
These sensors may not be compatible with indicating and alarm equipment supplied by other manufacturers.

When installed in accordance with this instruction sheet, the LVLK300 is suitable for use in Class I, Division 1, Group D locations.

| | |
|--|---|
| | Barricade the area |
| | Do not allow vehicles or unauthorized people in the work area |
| | Do not smoke or allow open flames in the work area |



Electrical resistance is unaffected by non-hydrocarbon liquid.



Hydrocarbon based liquids swell strip and increase electrical resistance.



Dangerous environment.
 Failure to install this equipment in accordance with NFPA 30A and NFPA 70 could result in severe injury or death.
 Read, understand and follow NFPA 30A and NFPA 70.

Warnings

Read the instructions and warnings carefully before installing the sensor. This unit must be installed in accordance with National Electrical Code ANSI/NFPA-70, 1990; as well as Federal, State and local codes and any other applicable safety codes.

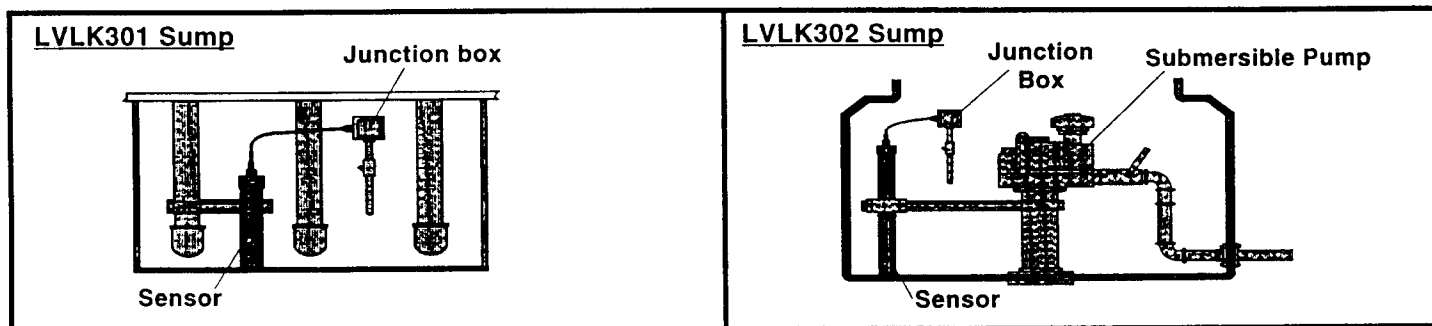
To avoid electrical shock, which could kill you, be sure ac power to monitor is off during installation. The nature of the sensor is that it is a non-voltage producing device, containing limited energy-storing components. However, since its primary use is in a hazardous location, an appropriate intrinsically safe interface device must be used. **Note!** Failure to observe these warnings could result in serious injury and death, as well as undetected potential environmental and health hazards.

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NOTE

Failure to observe these warnings could result in serious injury and death, as well as undetected potential environmental and health hazards.

Typical Installations



Installing the Sensor

1. For best results, sensor should be bottomed in tank or sump and mounted vertically.
2. Do not introduce any sharp objects into sensor housing.
3. Remove any liquid hydrocarbon present in sump prior to installing. (Sensor will alarm if exposed to liquid hydrocarbon.)

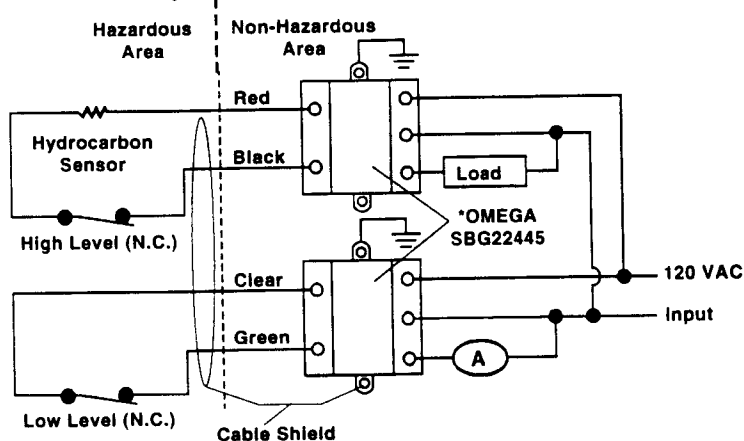
Important

This instruction sheet assumes all preliminary site preparation is completed and that field wiring from the monitor to the sensor junction box is in place.

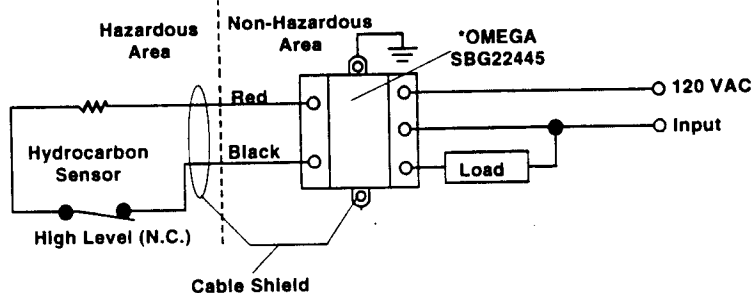
Installing the Field Wire

- A. The conductors of the intrinsically safe circuit should be sealed in a rigid metal conduit at the point where the wiring enters the hazardous area. The conduit must be properly sealed in accordance with the National Electrical Code (NFPA 70) and the Automotive and Marine Service Station Code (NFPA 30A).
- B. Hazardous area field wiring will store energy due to distributed capacitance and inductance in proportion to its length. The maximum run of cable has been defined at 750 feet between the SBG22445 and sensor.
- C. Shielded cable is recommended and when used in the application, the shield must be returned to ground terminal of the SBG22445.
- D. Non-intrinsically safe wiring cannot be run in conduit or open raceways together with intrinsically safe wiring.
- E. Tighten the cable bushing nut on the junction box to ensure a watertight seal at the sensor cable entry.

Wiring Diagram (Dual Level)



Wiring Diagram (Single Level)



*Note:

A SBG22445 Intrinsic Safety Relay must be installed in accordance with OMEGA's Operator's Manual number M1773. Solid-state relays must not use or generate more than 120Vac.

Maintenance

Note: Consult your state E.P.A. office or appropriate regulatory agency regarding periodic inspection of the sensor.

What Causes Fuel Alarms?

The sensor detects the presence of liquid hydrocarbons in a dispenser pan or STP sump; however, it is not affected by background vapors where no liquid hydrocarbon is present. Liquid hydrocarbons need not be in contact with the sensor to alarm and, in some cases, a quantity of liquid hydrocarbons in a sealed STP sump may turn into a saturated vapor and cause the sensor to alarm.

Since the sensor is not affected by background vapors, there must be some type of leak or spill for an alarm to occur. If the sensor is in the fuel alarm condition, check for any leaks from pipe fittings, valves or the meters. Sometimes a leak may occur in piping or fittings beyond the solenoid valve. In this case, the leak would only be recognized when product is being pumped through the hose and the entire line is pressurized.

If liquid hydrocarbons are present in the sump, clean the sump thoroughly with an absorbent pad. (Dispose of properly in accordance with regulations.) If a combination of water/gasoline exists, pump the sump completely dry.

What About Recovery?

After the sump has been cleaned, an alarmed sensor may be replaced with a "new" or "recovered" sensor. Remember, do not dispose of the alarmed sensor. It is reusable and will regenerate in a short period of time. If the sensor remains in a "sump environment" without being replaced, it will take 12-48 hours for the alarm condition to reset; depending on how long it has been in the presence of liquid hydrocarbons and environmental conditions. Note: If the sensor has not come in contact with liquid hydrocarbons, allow the sensor to "dry out" or "recover" in air at room temperature. However, if the sensor has come in contact with significant quantities of liquid hydrocarbon, simply rinse with warm water and allow it to "dry out" at room temperature.

Recovery can be adversely affected by the following conditions:

Prolonged exposure to liquid hydrocarbon; re-exposure to liquid hydrocarbon; exposure to diesel; recovery at less than room temperature; high humidity during recovery

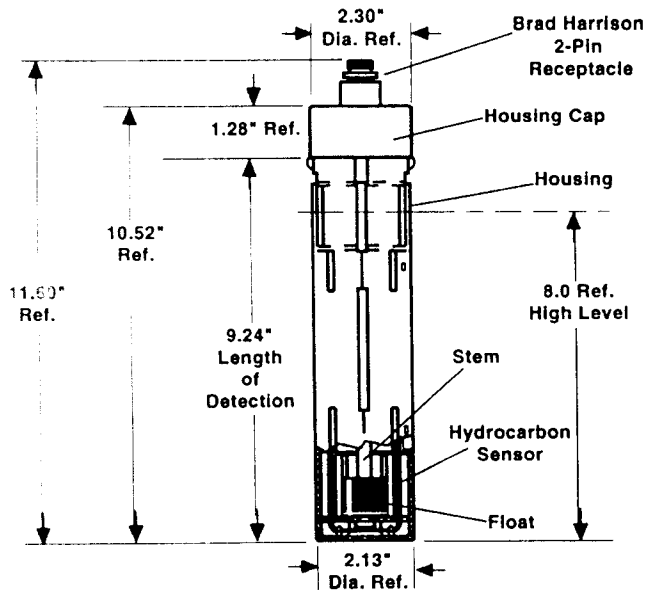
There are no user serviceable parts. Consult OMEGA for assistance regarding recovery of alarmed sensor.

Keep in mind that reasonable care must be taken when changing fuel filters and any spills should be cleaned using absorbent pads.

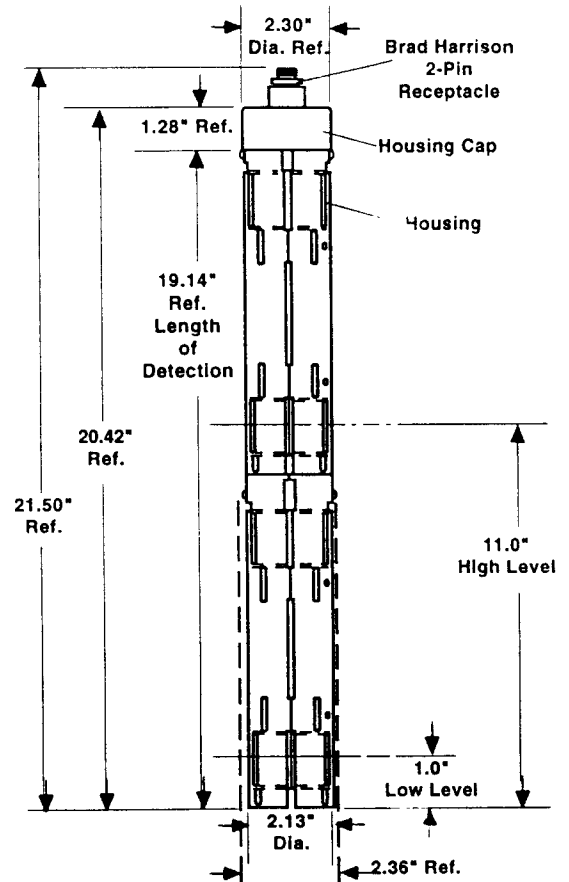
Specifications

Switch Rating: 20VA, 120-240Vac pilot duty; 20W, 50-240Vdc resistive
 Wetted Materials: Polyester, nitrile, epoxy
 Operating Temperature: -40°F to 150°F (-40°C to 65.5°C)
 Polymer Base Resistance: 0.8 to 3.0kΩ/ft.
 Cable: Quick Disconnect, PVC Jacketed (4 ft. extended)
 Approvals: UL Classified for Class I, Group D hazardous locations when powered by a proper OMEGA intrinsically safe relay.
 Dimensions: See Below

Dispenser Sump Sensor (LVLK301)



Turbine Sump Sensor (LVLK302)



WARRANTY

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.

OMEGA is glad to offer suggestions on the use of its various products. Nevertheless, OMEGA only warrants that the parts manufactured by it will be as specified and free of defects.

OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

Every precaution for accuracy has been taken in the preparation of this manual, however, OMEGA ENGINEERING, INC. neither assumes responsibility for any omissions or errors that may appear nor assumes liability for any damages that result from the use of the products in accordance with the information contained in the manual.

SPECIAL CONDITION: Should this equipment be used in or with any nuclear installation or activity, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the equipment in such a manner.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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RETURN REQUESTS / INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA ENGINEERING Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

Please have the following information available BEFORE contacting OMEGA:

1. P.O. number under which the product was purchased,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.