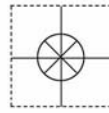
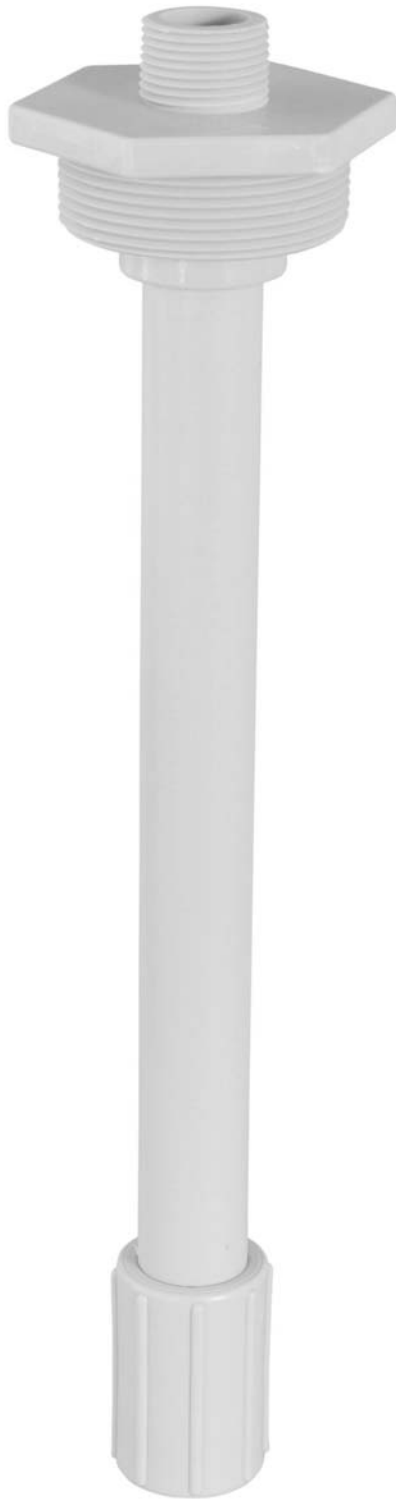


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LVM-50/-51/-52 Series Single-Switch Fitting Assembly



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It is the policy of OMEGA Engineering, Inc. to comply with all worldwide safety and EMC/EMI regulations that apply. OMEGA is constantly pursuing certification of its products to the European New Approach Directives. OMEGA will add the CE mark to every appropriate device upon certification.

The information contained in this document is believed to be correct, but OMEGA accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

WARNING: These products are not designed for use in, and should not be used for, human applications.

About Omega Engineering’s Single-Switch Fitting Assembly: Omega Engineering’s Single-Switch Fitting Assembly is an industrial mounting system for installing a liquid level sensor vertically within a tank. Omega Engineering’s LVCN-11 or LVCN-12 electrical housing, and LVCN-100, LVCN-110 or LVCN-20 compact relay controllers are designed to be mounted directly to the 3/4" NPT fitting at the top of the assembly. Single-Switch Fitting Assembly mounts vertically through a standard 2" NPT tank adapter or on a side mount bracket (such as the VM-30).

Single-Switch Fitting Assembly: The Single-Switch Fitting Assembly consists of the following:

Pipe: The Single-Switch Fitting Assembly features a standard 3/4" pipe as the extension for the sensor. When assembling a Single-Switch Fitting Assembly, use a thermal weld for the LVM-51 series (PP version) and LVM-52 series (PVDF version) and a solvent weld for the LVM-50 series (PVC version). Welds must be made for the Fitting [2"] and for the Coupling (3/4").

Fitting [2"]: The pipe slides into the slip connection of a large fitting which has a 3/4" threads on the top and a 2" standard threads on the bottom. The slip connection is located on the same side as the 2" threads. The 3/4" thread is available for attaching a junction box or conduit.

Coupling (3/4"): The coupling has a slip end and a 3/4" threaded end. The other end of the pipe attaches to the slip end of the coupling. The 3/4" thread on the other end attaches the level sensor to the Single-Switch Fitting Assembly.

Table of Contents

Specifications: 4
 Dimensions:..... 4
 Safety Precautions: 5
 Make a Fail-Safe System: 5
 Assembly of a Single-Switch Assembly: 6
 Components: 6
 Installation 7
 Mounting to a Sensor: 8
 Selecting a Location: 8

Single-Switch Fitting Assembly Fitting:

Fitting lengths: 6" to 6' (150mm to 1.82m)
 Fitting tolerance: 1/8" (3mm) typical
 Temperature range.: F: -40 to 176°
 C: -40 to 80°
 Pressure range: 150 psi (10 bar) @ 25 °C., derated @
 1.667 psi (0.113 bar) per °C above 25 °C.
 Track material: Polypropylene (PP),
 Polyvinylidene Fluoride (PVDF) or
 Polyvinylchloride (PVC)
 Mounting thread: 2" NPT

Junction Box:

Enclosure rating: NEMA 4X (IP65)
 Enclosure material: Polypropylene (U.L. 94 VO)
 Enclosure rotation: 300 ° swivel base
 Conduit connection: 1/2" NPT
 Termination: 6 pole socket terminal strip
 Temperature range.: F: -40 to 158°
 C: -40 to 70°

Side Mount Bracket:

Bracket Material: Polypropylene
 Mounting thread: 2" NPT
 Tank installation: Bolt or plastic weld

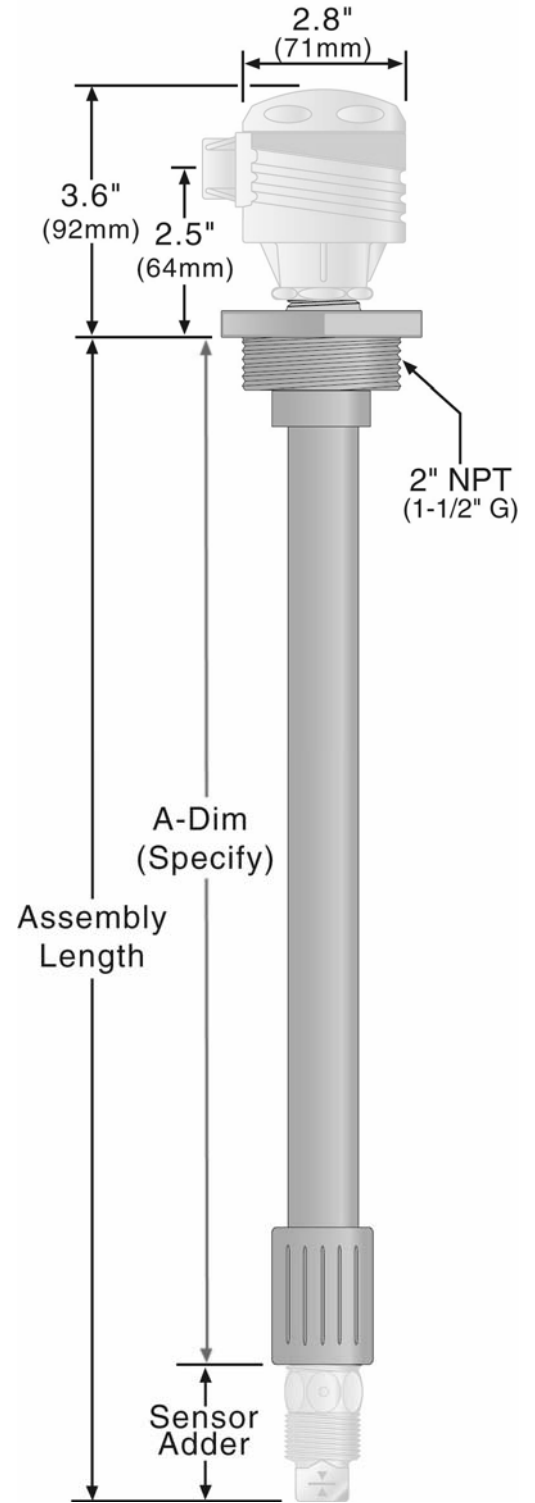
Switch Adders for Omega Engineering Level Sensors:

| Nominal Sensor Adders | |
|--|--------------|
| Technology | Length adder |
| LVU-150 series | *2.0" (51mm) |
| LVC-152 series | 4.0" (102mm) |
| LVF-212 Series | *2.0" (51mm) |
| LVV-110 Series | 4.3" (109mm) |
| <i>*Based upon the short switch length</i> | |

User Supplied Pipe Sizes:

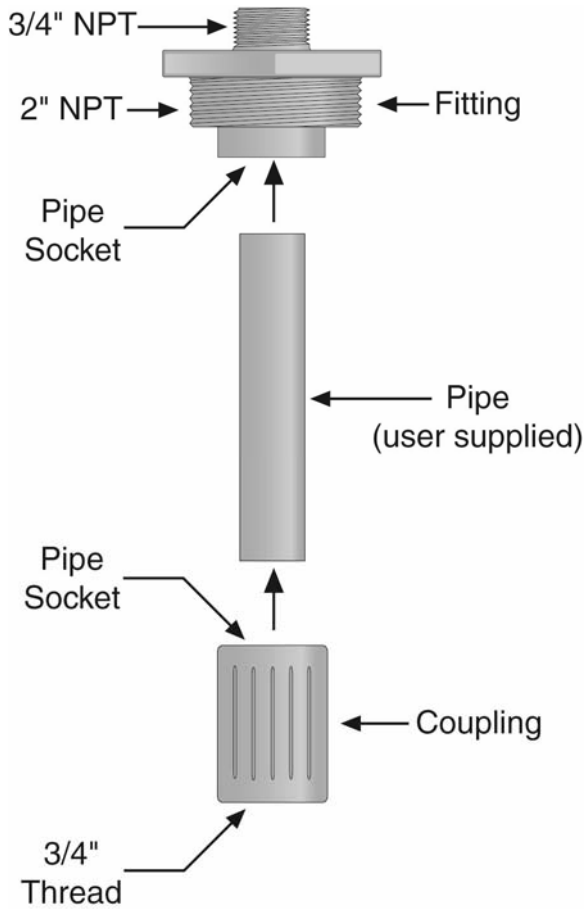
| Part Number | Material | Pipe Size |
|-------------|----------|--------------------|
| LVM-50-* | PVC | 3/4" (schedule 40) |
| LVM-51-* | PP | 25mm (metric) |
| LVM-52-* | PVDF | 25mm (metric) |

Single-Switch Fitting Assembly Side View

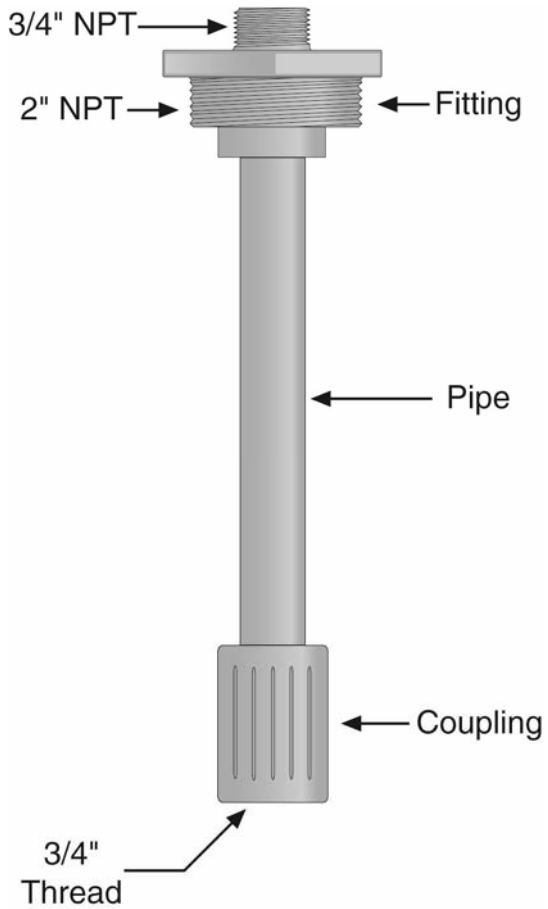


- ⚠ **About This Manual:** PLEASE READ THE ENTIRE MANUAL PRIOR TO INSTALLING OR USING THIS PRODUCT. This manual includes information on the Single-Switch Fitting Assembly installation fitting from Omega Engineering: LVM-50/-51/-52 series. Please refer to the part number located on the label to verify the exact model which you have purchased. Many aspects of installation and use are similar between models.
- ⚠ **User's Responsibility for Safety:** OMEGA ENGINEERING manufactures several models of liquid level sensors, controller and mounting systems. It is the user's responsibility to select components that are appropriate for the application, install it properly, perform tests of the installed system, and 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 over tighten the components. Always check for leaks prior to system start-up.
- ⚠ **Material Compatibility:** The pipe, fitting and coupling for all the LVM-50/-51/-52 series are made of one of three materials, Polypropylene (PP), Polyvinylidene Fluoride (PVDF) or Polyvinylchloride (PVC). Make sure that the application liquids are compatible with the materials that will be wetted. To determine the chemical compatibility between the components and its application liquids, refer to the Compass Corrosion Guide.
- ⚠ **Temperature and Pressure:** Single-Switch Fitting Assembly is designed for use in application temperatures up to 80° C (176° F). It is designed for use in application pressures up to 150 psi (10 bar).
- ⚠ **Wiring and Electrical:** Electrical wiring of any liquid level control system should be performed in accordance with all applicable national, state, and local codes. Take care not to cut or break the outer insulation jacket of wiring that may be immersed while routing cables in the Smart Trak system. Such breaks of the liquid seal of the sensor system may lead to component failure.
- ⚠ **Flammable or Explosive Applications:** *Single-Switch Fitting Assembly may be used within flammable or explosive applications **only if the associated components are rated intrinsically safe for such use.** Refer to the National electric Code (NEC) for all applicable installation requirements in hazardous locations. In hazardous applications, use redundant measurement and control points, each having a different sensing technology.*
- ⚠ **Make a Fail-Safe System:** Design a fail-safe system that accommodates the possibility of sensor or power failure. In critical applications, Omega Engineering recommends the use of redundant backup systems and alarms in addition to the primary system.

Single-Switch Fitting Unassembled Drawing (side view)



Single-Switch Fitting Assembly Drawing (side view)



Components: One Single-Switch Fitting Assembly (LVM-50-*, LVM-51-*, LVM-52-* series) includes the following parts:

- 1 Fitting (one of the following)
 - LVM-50-*
 - LVM-51-*
 - LVM-52-*
 - * = Fittings only, no pipe supplied
- 1 Coupling
- Owner’s Manual

⚠ **Pipe is user supplied.**

| Part Number | Material | Pipe Size |
|-------------|----------|------------------|
| LVM-50-* | PVC | ¾" (schedule 40) |
| LVM-51-* | PP | 25mm (metric) |
| LVM-52-* | PVDF | 25mm (metric) |

Components: One Single-Switch Fitting Assembly (LVM-51-1.0, LVM-51-1.5, LVM-51-2.0, LVM-51-2.5, LVM-51-3.0, LVM-51-3.5, LVM-51-4.0, LVM-51-4.5, LVM-51-5.0, LVM-51-5.5 & LVM-51-6.0 series) includes the following parts:

- 1 Fitting (one of the following)
 - LVM-51-1.0’
 - LVM-51-1.5’
 - LVM-51-2.0’
 - LVM-51-2.5’
 - LVM-51-3.0’
 - LVM-51-3.5’
 - LVM-51-4.0’
 - LVM-51-4.5’
 - LVM-51-5.0’
 - LVM-51-5.5’
 - LVM-51-6.0’
- 1 Coupling
- 1 Customer Specified Pipe
- Owner’s Manual

Single-Switch Fitting Assembly can be shipped in one of two methods, Assembled and Unassembled. With the assembled version, the LVM-50/-51/-52 series has been shipped a one complete fitting and the first step below can be shipped. With the unassembled version, Single-Switch Fitting Assembly is shipped with just the fitting and coupling and the user supplied pipe will need to be added. When assembling a Single-Switch Fitting Assembly, use a solvent weld for the LVM-50-* (PVC version) and a thermal weld for the LVM-51-* (PP version) and LVM-52-* (PVDF version).

1. Assembling an unassembled Single-Switch Fitting Assembly:

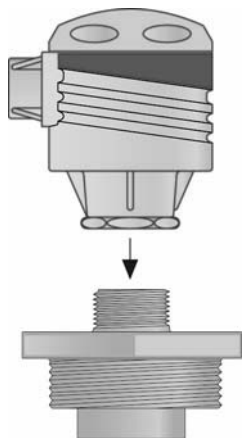
- a. Make sure the pipe being used is the same material of construction as the fitting and coupling received.
 - i. LVM-50-* is made of ¾" (schedule 40) Polyvinylchloride (PVC)
 - ii. LVM-51-* is made of 25mm (metric) Polypropylene (PP)
 - iii. LVM-52-* is made of 25mm (metric) Polyvinylidene Fluoride (PVDF)
- b. Cut the pipe to the correct length taking into account the total height of the fitting and coupling and the depth the pipe will extend into the pipe sockets.
- c. Prepare the pipe as well as the pipe sockets on the fitting and coupling for assembly making sure they are clean for either the thermal weld (PP or PVDF versions) or solvent weld (PVC version).
- d. Weld the pipe to the fitting and to the coupling using a thermal weld for the PP and PVDF fittings and a solvent weld for the PVC fittings.

⚠ Allow time for the welds to cure before continuing on to the next step.

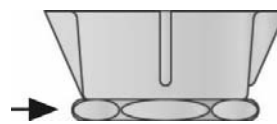
2. Attach sensor to the coupling:

- a. Thread the sensor's wire through the threaded part of the coupling and all the way through the LVM-50/-51/-52 series until it extends out the other end.
 - i. Make sure the end of the wire is sufficient for connections on the other end. If not, you may be required to extend the wire within the LVM-50/-51/-52 series to achieve the correct wire length.
- b. Apply a sealant, such as Teflon tape to the threads of the sensor.
- c. Thread the sensor into the coupling making sure it is hand tight.

3. **Attach the termination hardware:** At this point, a junction box housing (LVCN-11/-12 series) or Compact Relay Controller (LVCN-20/-100/-110 series) may be screwed onto the top of the assembly, and wiring attachments made following the instructions in its manual. Assuming that each sensor is already mounted in position, cut the sensor wires to the length approximately 1-1/2" above the top of the housing. However, be sure to make allowances when cutting the sensor leads for future adjustments to the sensor position.



Note: Always tighten the controller from the wrench flat located on the swivel base. Never tighten from the body of the controller.

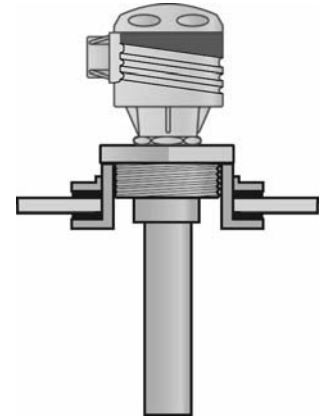


Selecting a Location: The Single-Switch Fitting Assembly system should be mounted vertically at a point in the tank where it will not be exposed to excessive stress. When mounting in a tank with a mixer, mount the LVM-50/-51/-52 series close to the tank wall where velocities are lowest. Choose a mounting location where the sensors will function correctly (away from inlet pipes that may spray on the sensors causing false readings) and where the sensor technologies function best.

It is the user's responsibility to identify the proper placement and method of installation for the specific application.

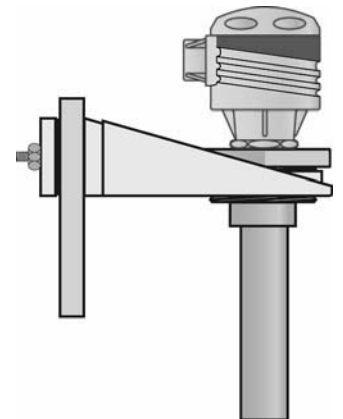
Tank Top Mounting:

1. Install a standard 2" NPT tank adapter through the top of the tank at the desired location. If the tank top is not flat, use a 2" NPT self-aligning tank adapter. Make sure the threads of the adapter are not damaged or worn. If damaged, use a new adapter.
2. Insert the assembled Single-Switch Fitting Assembly system through the tank adapter. If several sensors are too close together to fit through the tank adapter, slide them to a different locations so that only one sensor is going through the adapter at a time.
3. To ensure a proper seal, apply an appropriate sealant to the threads of the Single-Switch Fitting Assembly system. Screw the LVM-50/-51/-52 series assembly into the tank adapter.
4. Make adjustments as required to the sensor position.
5. Connect the external wiring and conduit to the terminal strip or controller, following the instructions in that manual.



Side Mount Bracket Mounting:

1. Install the side mount bracket (LVM-30 series) at the desired location. Make sure the threads of the bracket are not damaged or worn. If damaged, use a new bracket.
2. Insert the assembled Single-Switch Fitting Assembly system into the bracket
3. Screw the LVM-50/-51/-52 series assembly into the bracket.
4. Make adjustments as required to the sensor position, and to the bracket tilting arm.
5. Connect the external wiring and conduit to the terminal strip or controller, following the instructions in that manual.





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OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's 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.

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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.

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