

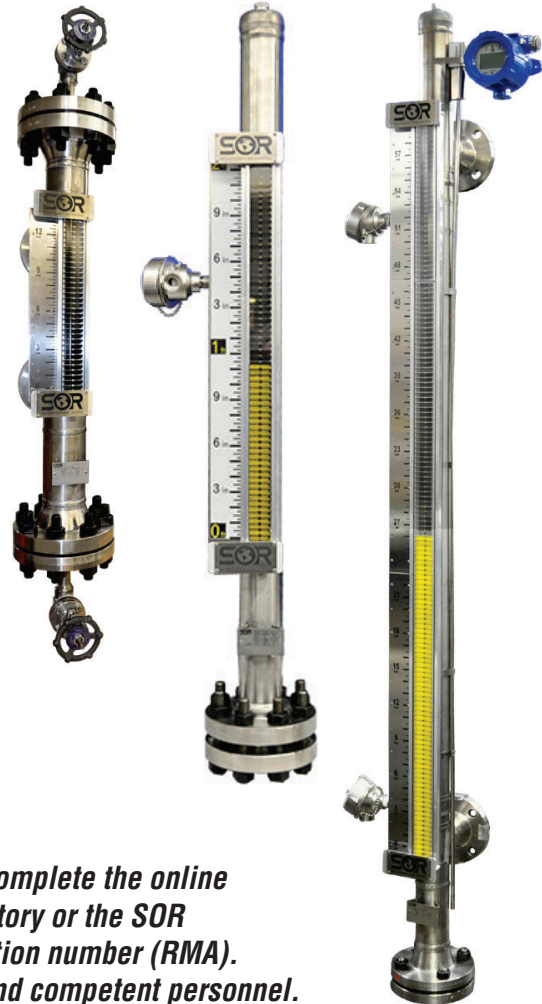


1100 Series Magnetic Level Indicator

General Instructions

The 1100 Series Magnetic Level Indicator (MLI) from SOR® represents best in class performance and value thanks to decades of experience and innovation. Each unit is custom engineered for your exact application and manufactured to our rigorous quality standards. SOR level indicators are an ideal replacement for existing sight glass systems and can easily become a functional bridge system with level switches, transmitters, temperature and pressure measurement.

Magnetic Level Indicators are suitable for process conditions that will not impede float travel inside the chamber. Please contact your representative or the factory for additional solutions for applications involving magnetic particles, viscous fluids, or material build up.



NOTE: If you suspect that a product is defective, complete the online [RMA Request Form](http://sorinc.com) at sorinc.com, contact the factory or the SOR Representative in your area for a return authorization number (RMA). This product should only be installed by trained and competent personnel.

Design and specifications are subject to change without notice.

For latest revision, go to sorinc.com

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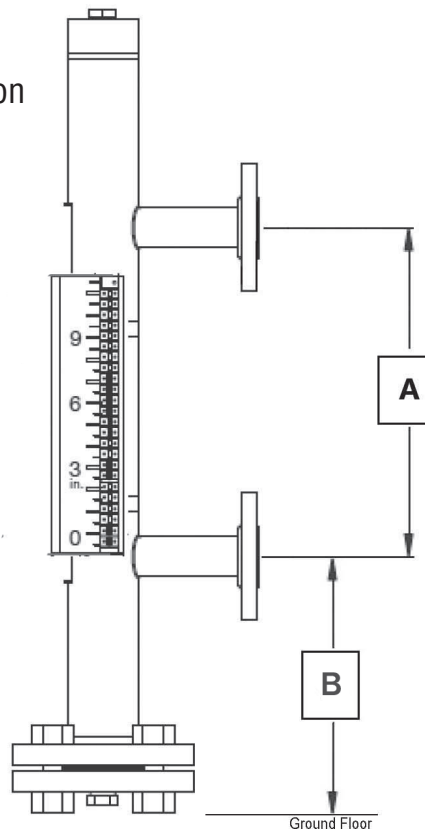
Before Installation

- 1 Prior to installation, carefully unpack the unit, inspecting for any signs of shipping damage.
- 2 Double check that the included pieces match the items on the packing slip, and do not dispose of packaging until all components have been inspected.
- 3 Carefully stand the unit upright. The correct orientation can be determined via the SOR logo located on the measurement assembly.
- 4 Manually run the float (typically shipped inside the chamber) from bottom to top and back down through the entire measurement range. This ensures that all auxiliary equipment is in the proper state prior to install.
- 5 If there are any flags turned incorrectly due to shipment, use a magnet (not included) to correct the orientation.

NOTE: Do not use a "rare-earth" or neodymium magnet for this (unless the unit uses a frost extension) as it may demagnetize the flags.

- 6 Verify process limitations, located on the nameplate, are suitable for the application. See [SOR Catalog 1596](#) for model string breakdown.
- 7 Verify the following dimensions are suitable for installation

- A. Center to center
- B. Lower process connection to bottom of unit



Installation

In general, all 1100 Series Magnetic Level Indicators are completely assembled prior to shipment and ready for installation. If any auxiliary equipment requires installation on site, please review the additional installation notes on page 4.

Side-Side Installation (For chamber configurations F, B, T, S)

- ❶ Gather all required tools prior to beginning installation. Depending on unit configuration, you may need:
 - a. Gaskets
 - b. Studs/Nuts
 - c. Wrench/Torque Wrench
 - d. Thread Sealant
- ❷ Close all vent, drain, and isolation valves attached to the unit.
- ❸ Stand the unit upright, ensuring that no bowing is allowed on longer units, and line up process connections to the primary chamber connections.
- ❹ Connect the MLI process connections to primary chamber connections, ensuring all flanged connections are vertically level.
- ❺ Slowly increase system pressure, checking thoroughly for signs of misalignment or leaks. Verify that the indicator is properly representing the fluid level and all auxiliary equipment is operating properly.

NOTE: Do not open isolation valves quickly. A sudden change in pressure may cause damage to the float.

Top-Bottom Installation (For chamber configurations A, N)

- ❶ Gather all required tools prior to beginning installation. Depending on unit configuration, you may need:
 - a. Gaskets
 - b. Studs/Nuts
 - c. Wrench/Torque Wrench
- ❷ Close any isolation valves attached to the unit.
- ❸ Stand the unit upright, ensuring that no bowing is allowed on longer units, and line up process connections to the primary chamber connections.
- ❹ Connect the MLI process connections to primary chamber connections, ensuring all flanged connections are horizontally level.
- ❺ Slowly increase system pressure, checking thoroughly for signs of misalignment or leaks. Verify that the indicator is properly representing the fluid level and all auxiliary equipment is operating properly.

NOTE: Do not open isolation valves quickly. A sudden change in pressure may cause damage to the float.

Common Accessory Information

Auxiliary Level Switches

Auxiliary level switches allow for point level indication without the need for additional process connections. These units mount on the exterior of the chamber and are able to be moved in the field to suit customer requirements.

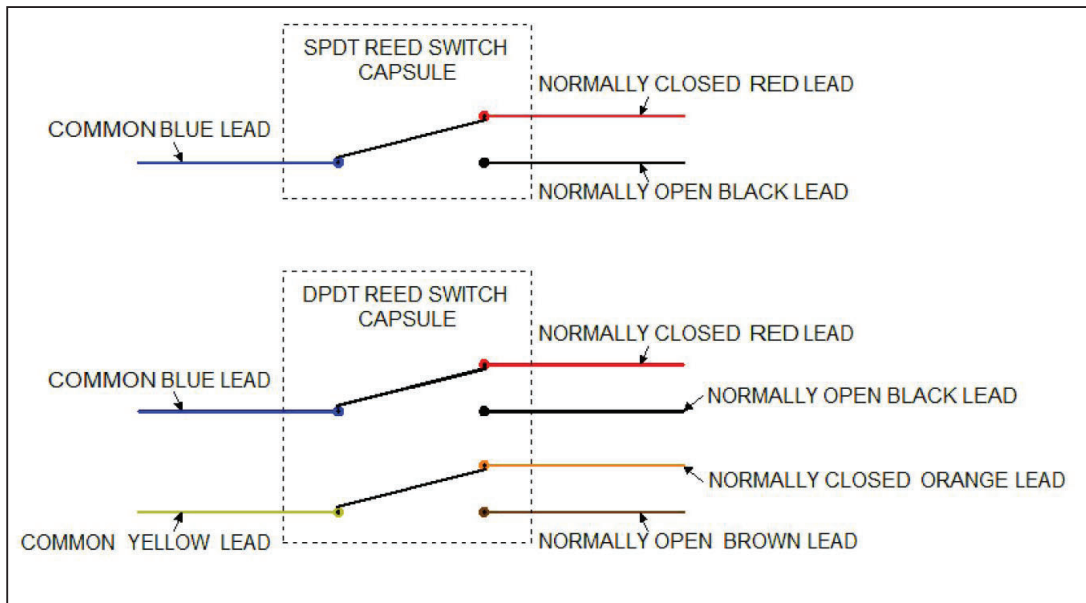
1 Mounting

Auxiliary or point level switches are available to be used in tandem with the 1100 Series Magnetic Level Indicator. Each switch will ship already mounted to the indicator chamber using hose clamps and set to the customers desired set point. To change the set point, simply loosen the hose clamps and raise or lower the switch assembly.

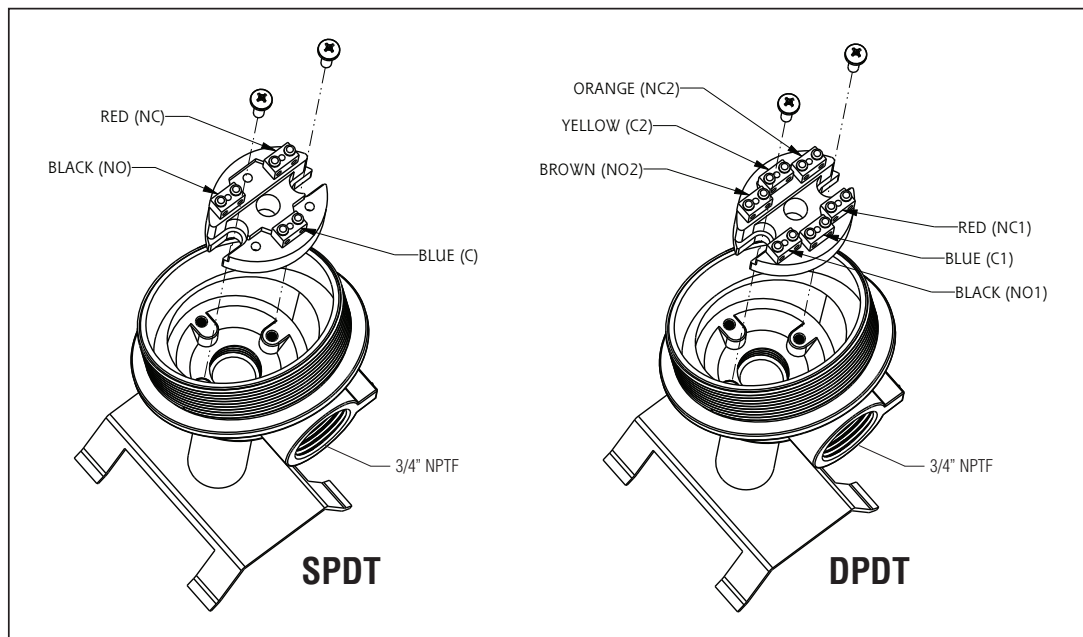
2 Electrical Connection/Specifications

ELECTRICAL RATING	
130 VAC	at 0.2A MAX
230 VAC	at 0.1A MAX
150 VDC	at 1A MAX

Standard Wiring



Optional Housing/Terminal Block Wiring



NOTE: Ensure that the wiring conforms to all applicable local and national electrical codes and install unit(s) according to relevant national and local safety codes.



Do not exceed catalog stated electrical ratings. Improper current input to switch will cause permanent damage to contacts.

Magnetostrictive Transmitters

Magnetostrictive transmitters are used to provide a constant level reading without the need for additional process connections. The transmitter mounts to the exterior of the magnetic level indicator chamber.

1 Mounting

Generally, a 1100 Series Magnetic Level Indicator ordered with a Magnetostrictive Transmitter will arrive already mounted and calibrated. If a unit needs to be mounted in the field, consult the following steps and the user manual.

- a. Mount the transmitter to the unit using stainless steel hose clamps, ensuring the probe is flush with the chamber and the top and bottom inactive zones are outside of the measuring range.

NOTE: The probe may require a slight bend in order to sit flush with the chamber.

Consult the factory for more information.

- b. Calibrate the zero and span per the transmitter instruction manual for the specific unit.
- c. If fault codes appear, please consult the transmitter instruction manual or contact the factory for troubleshooting information.

Insulation Blankets

SOR provides a variety of custom insulation blankets to suit specific process requirements. These are mounted at the factory, and the units arrive on site, ready for installation. High temperature insulation blankets may be removed or installed on site, if required, using the snaps, Velcro, and/or ties on the blanket. Cryogenic insulation must be mounted at the factory and cannot be removed. Consult factory for additional details.

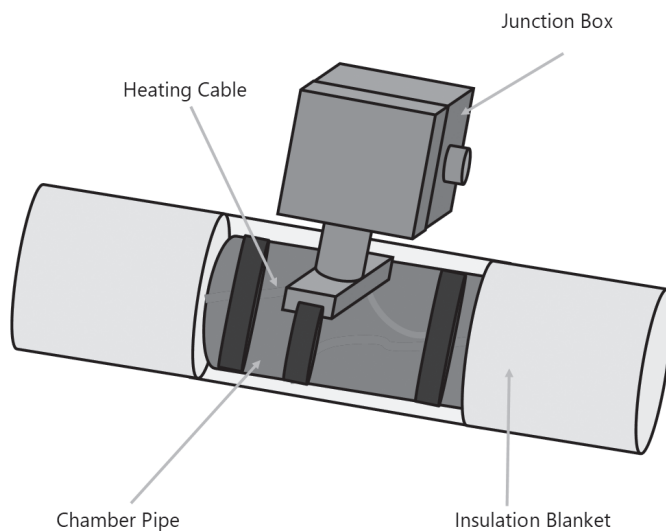
Heat Tracing

Electrical and steam heat tracing are available on all MLIs. These are installed at the factory and ready to be wired in the field. All units requiring heat tracing must include an insulation blanket.

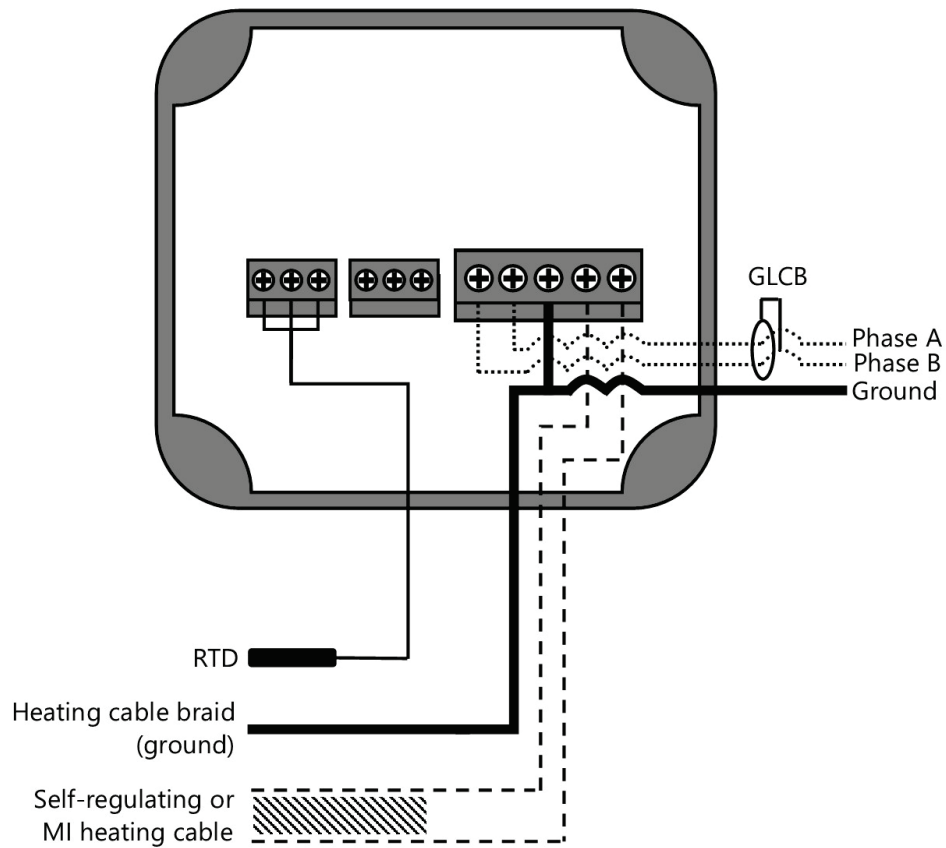
① Electrical Heat Tracing

Electrical heat tracing is factory installed under the insulation blanket with the junction box and end seal easily accessible. An example of the standard configuration and wiring diagrams are below. Consult the factory for additional details.

Standard Junction Box/Cable Configuration



Standard Electrical Heat Trace Junction Box Wiring Diagram

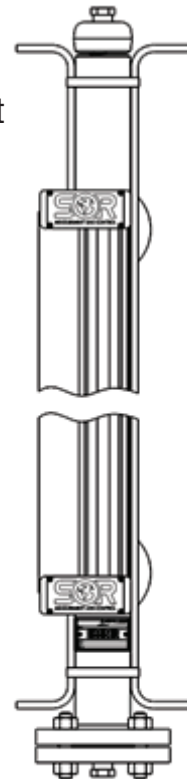


② Steam Heat Tracing

Steam heat tracing is factory installed under the insulation blanket using 3/8" OD plain end pipe.

- Prior to installation, inspect tubing ends for damage.
- Apply steam pressure to the unit and inspect for any leaks.
- Compression fittings may be used for connections, with either top or bottom connection being inlet/outlet.

NOTE: Do not exceed the standard pressure rating for the supplied tubing. Consult factory for more details.



Spare Parts

A variety of spare parts are available for 1100 Series Magnetic Level Indicators and accessories. Please consult the factory regarding your specific unit for availability, parts and pricing.

Troubleshooting

Symptom	Possible Cause	Corrective Action
No visual change on indicator with a change in level	Float is stuck or damaged	Remove, inspect, and clean float. Contact factory for replacement float if damaged.
	Incorrect float specific gravity rating	Verify unit rating is suitable for process application. Contact factory for new float if necessary.
There is an offset between the actual level and the indicated level	The float has been installed upside down	Remove float and install in the correct orientation with the etching on top.
	Incorrect float specific gravity rating	Verify unit rating is suitable for process application. Consult factory for new float if necessary.
Sections of flags are misaligned prior to install	Flags shift during shipping	Move the float from bottom to top and return to bottom. If problem persists, consult factory.
One or two flags misaligned	Flags shifted due to shipping, fast level change, or vibration	Run a small magnet along the front of the indicator until flags are correctly aligned.
Level is above auxiliary switch position with no output signal	Switch not reset prior to install	Move the float from bottom to top and return to bottom. If problem persists, consult factory.
	Switch is damaged	Contact factory for replacement switch.
Level is below switch position with output signal	Switch not reset prior to install	Move the float from bottom to top and return to bottom. If problem persists, consult factory.
	Switch is damaged	Contact factory for replacement switch.
Process level is at zero, but the indicator shows above zero	The scale is offset from the zero	Loosen indicator clamps and reposition the indicator to match the current process level.



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