

# Installation and Maintenance



## Liquid Level Switches

English • Español

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1. Switches should be installed rigidly so the float or floats are free to move as the liquid level changes.
2. Switches should be mounted in a tank area free of severe turbulence or protected from such turbulence by appropriate and adequate slosh shields.
3. Vertical switch stems should be vertical for best results, but satisfactory operation is possible in most liquids with the stem at up to a 30° angle from vertical.
4. Side mount switch stems must be mounted with the arrow vertically either up or down depending on switch operation.
5. Care should be taken that switches are always operated within electrical ratings.
6. Orientation for standard Vertical switches can be changed from normally open to normally closed dry or vice versa by removing the float and reversing it in the stem, except with the LV21 Series.

Wire Table for Reed Switch		
Model	GA	Color
LV36-S501	22	Black
LV20-1501	22	White

Note: Temperature lead wires normally smaller gauge size

1. Los interruptores deben de ser instalados rígidamente de manera que el flotador o los flotadores tengan libertad de movimiento cuando cambie el nivel de líquido.
2. Los interruptores deben de ser montados en un área del tanque que esté libre de turbulencia severa o protegidos de tal turbulencia con protectores de chapoteo apropiados.
3. Los vástagos de interruptor vertical deben de estar verticales para obtener óptimos resultados, pero es posible lograr una operación satisfactoria en la mayoría de los líquidos si el vástago está a un ángulo de hasta 30° de la línea vertical.
4. Los vástagos de interruptor de montaje lateral deben ser montados con la flecha en posición vertical, ya sea hacia arriba o hacia abajo, dependiendo de la operación del interruptor.
5. Hay que tener cuidado para que los interruptores siempre sean operados a los niveles eléctricos correspondientes.
6. Se puede cambiar la orientación para interruptores verticales estándar de normalmente cerrada a normalmente abierta seca o viceversa, retirando el flotador y colocándolo en el sentido opuesto en el vástago, excepto con el LV21 Series.

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### Maintenance

Maintenance should consist of inspection to see that the float is free to move and not coated with any substance, which would change its weight or volume significantly. If this occurs, the float should be cleaned. This is easily accomplished without disturbing the installation. In addition, the stem may be wiped down to remove any build-up.

The only repair possible in the field is replacement of either the float or stem. Dents or nicks on the float are usually of no consequence to operation.

### Mantenimiento

El mantenimiento debe consistir en una inspección para verificar que el flotador tenga libertad de movimiento y que no esté cubierto de ninguna sustancia que podría cambiar significativamente su peso o volumen. Si esto ocurre, deberá limpiarse el flotador. Esto se logra fácilmente sin afectar la instalación. Además, el vástago puede limpiarse hacia abajo para quitar cualquier acumulación.

La única reparación de campo posible es el reemplazo del flotador o del vástago. Las abolladuras o melladuras en el flotador normalmente no tienen consecuencias para su operación.

### Cautions

1. The pressure, temperature and electrical limitations shown for the specified level switches must not be exceeded.
2. The pressures and temperatures must take into consideration possible surges in the temperature and pressure of the system.
3. The liquids used must be compatible with the materials of construction. Specifications of materials will be given upon request.
4. Life expectancy of the switch varies with applications. Contact the factory if life cycle testing is required.
5. Ambient temperature changes can affect switch set points, since specific gravities of liquids vary with temperature. Consult factory for assistance.
6. Level switches have been designed to be shock and vibration resistant. For maximum life, both shock and vibration should be minimized. Consult factory for assistance.
7. Excessive contaminants in fluid may inhibit float operation, and occasional wipe down may be necessary.
8. Level switches must not be field repaired
9. Physical damage to product may render product unserviceable.
10. Installation in a vessel made from magnetic materials may affect operation.

### Precauciones

1. Los límites de presión, temperatura y electricidad mostrados para los interruptores de nivel especificados no deben ser excedidos.
2. Las presiones y temperaturas deben tomar en consideración posibles fluctuaciones en la temperatura y la presión del sistema.
3. Los líquidos usados tienen que ser compatibles con los materiales de construcción. Las especificaciones de los materiales se brindarán a pedido.
4. La vida útil del interruptor varía según la aplicación. Comuníquese con la fábrica si se requieren pruebas cíclicas de la vida útil.
5. Los cambios en la temperatura ambiente pueden afectar los puntos fijos del interruptor, dado a que el peso específico de los líquidos varía con la temperatura. Consulte con la fábrica si requiere asistencia.
6. Los interruptores de nivel han sido diseñados para ser resistentes a golpes y vibraciones. Para una máxima vida útil, se debe minimizar la cantidad de golpes y vibraciones. Consulte con la fábrica si requiere asistencia.
7. El exceso de contaminantes en el líquido puede inhibir la operación del flotador, y puede ser necesaria una limpieza ocasional.
8. Los interruptores de nivel no deben ser reparados en el lugar de la instalación.
9. Los daños físicos al producto pueden dejarlo inservible.
10. La instalación en un recipiente hecho de materiales magnéticos puede afectar la operación.

### Installation

Operation is stated in the tank dry position.

#### Vertical Switches:

NC Operation: SS Floats: Witness mark (round circle) down.

Plastic Floats: Magnets up.

NO Operation: SS Floats: Witness mark (round circle) up.

Plastic Floats: Magnets down.

\*Note: LV21-1101, LV21-1201, LV20-2101, and LV20-2201 are not reversible. The LV21-1101 and the LV20-2101 are Normally Closed. The LV21-1201 and the LV20-2201 are Normally Open.

#### Side Mounted Switches:

NC Operation: Arrow mounted vertically pointed down.

NO Operation: Arrow mounted vertically pointed up.

### Instalación

El funcionamiento se define en la posición de tanque seco.

#### Interruptores Verticales:

Normalmente Flotadores de acero inoxidable (SS): Marca

Cerrado: testigo (círculo) hacia abajo. Flotadores de plástico: Imanes hacia arriba.

Normalmente Flotadores de acero inoxidable (SS): Marca

Abierto: testigo (círculo) hacia arriba. Flotadores de plástico: Imanes hacia abajo.

\*Nota: Los modelos LV21-1101, LV21-1201, LV20-2101, y LV20-2201 no son reversibles. El LV21-1101 y LV20-2101 son Normalmente Cerrado. El LV21-1201 y LV20-2201 son normalmente abierto.

#### Interruptores de Montaje Lateral:

Normalmente Flecha montada vertical señalando hacia abajo.

Cerrado:

Normalmente Flecha montada vertical señalando hacia

Abierto: arriba

### Typical Current and Voltage Ratings

\* Note: The ratings at right are for resistive loads only. For inductive loads, maximum switch life will be achieved if appropriate arc suppression is used.

	Watts	Voltage	Current Amps
15		240 AC	-
		120 AC	0.12
		100 DC	0.10
		24 DC	0.30
30		240 AC	0.14
		120 AC	0.28
		120 DC	0.07
		24 DC	0.28
60		240 AC	0.40
		120 AC	0.50
		120 DC	0.20
		24 DC	0.50
100		240 AC	0.40
		120 AC	1.00
		120 DC	0.40
		24 DC	1.00

\* Nota: Las clasificaciones de la derecha son sólo para cargas resistivas. Para cargas inductivas, se logrará una vida útil máxima si se usa la supresión de arco apropiada.

#### Approvals

(See details for part number specific approvals on reverse.)

#### Aprobaciones

(Vea detalles de aprobaciones para número de partes específicas al reverso.)

1. ULc
2. CE



### Wiring

Flowline Part Number: \_\_\_\_\_

Número de Parte Flowline : \_\_\_\_\_

Switch Location (from bottom of fitting)	Colors	Watt Rating	Switch Type	Dry Position

Part Number	Materials (stem, float)	Max. Temp.	Mounting	Max. Pressure (PSIG)	Elec. Rating (Watts)	Approvals (see reverse for key)	Notes (see below for key)
<b>Standard Full-Size Vertical</b>							
LV36-S201	316 SS	200°C	1/4 NPT	500	100	2	
<b>Standard Miniature Vertical</b>							
LV35-S201	316 SS	200°C	1/8 NPT	300	30	2	
LV21-1101	Polypro.	105°C	3/8-16 BH	50	15	2	1
LV21-1201	Polypro.	105°C	3/8-16 BH	50	15	2	1
LV20-2101	Teflon	150°C	1/8 NPT	25	60		1
LV20-2201	Teflon	150°C	1/8 NPT	25	60		1
<b>Standard Horizontal</b>							
LH35-S201	316 SS	200°C	1/2 x 1/2 NPT	300	30	2	
LH25-1201	Polypro.	105°C	1/2 x 1/2 NPT	100	30	2	*
LH25-5201	Kynar	105°C	1/2 x 1/2 NPT	100	30	2	*
LH29-1001	Valox 420 / PP	105°C	X	50	30		
<b>Configured (Multi-Level)</b>							
AV16-S243	316 SS	200°C	X	200	60	1, 2	
AV26-S243	316 SS	200°C	X	200	60	1, 2	
AV36-S243	316 SS	200°C	X	200	60	1, 2	
AV46-S243	316 SS	200°C	X	200	60	1, 2	
AV56-S243	316 SS	200°C	X	200	60	1, 2	

Número de Parte	Materiales (vástago, flotador)	Temp. Máx.	Montaje	Presión Máx. (PSIG)	Clasificación Eléct. (Wattios)	Aprobaciones (ver clave en el reverso)	Notas (ver clave está abajo)
<b>Vertical Estándar Tamaño Total</b>							
LV36-S201	316 SS	200°C	1/4 NPT	500	100	2	
<b>Vertical Estándar Miniatura</b>							
LV35-S201	316 SS	200°C	1/8 NPT	300	30	2	
LV21-1101	Polipro.	105°C	3/8-16 BH	50	15	2	1
LV21-1201	Polipro.	105°C	3/8-16 BH	50	15	2	1
LV20-2101	Teflon	150°C	1/8 NPT	25	60		1
LV20-2201	Teflon	150°C	1/8 NPT	25	60		1
<b>Horizontal Estándar</b>							
LH35-S201	316 SS	200°C	1/2 x 1/2 NPT	300	30	2	
LH25-1201	Polipro.	105°C	1/2 x 1/2 NPT	100	30	2	*
LH25-5201	Kynar	105°C	1/2 x 1/2 NPT	100	30	2	*
LH29-1001	Valox 420 / PP	105°C	X	50	30		
<b>Configurado (Multinivel)</b>							
AV16-S243	316 SS	200°C	X	200	60	1, 2	
AV26-S243	316 SS	200°C	X	200	60	1, 2	
AV36-S243	316 SS	200°C	X	200	60	1, 2	
AV46-S243	316 SS	200°C	X	200	60	1, 2	
AV56-S243	316 SS	200°C	X	200	60	1, 2	

**Notes:**

- \* Also applies to models with slosh shields
- 1. The LV21-1101 and the LV20-2101 are Normally Closed.  
The LV21-1201 and the LV20-2201 are Normally Open.

Temperature Switches					
Model No.	Materials (stem, float)	Mounting	Max Pressure (PSIG)	Electrical Rating (Watts)	Temp. Type
LV36-S501	316 SS	1/4 NPT	200	60	RTD
LV20-1501	Polypro.	1/8 NPT	100	30	RTD

For full instructions, please download the full manual at [www.flowline.com](http://www.flowline.com).

## **Technical Support**

Tel: 562.598.3015

8:00 am and 5:00 pm PST Mon-Fri

Please make sure you have the Part & Serial number available

## **Warranty**

To register your product with Flowline, go to [www.flowline.com](http://www.flowline.com). On-line warranty registration can be found under contact Flowline on the navigation bar along the side of the home page.

Flowline warrants to the original purchaser of its products that such products will be free from defects in material and workmanship under normal use and service for a period which is equal to the shorter of one year from the date of purchase of such products or two years from the date of manufacture of such products.

This warranty covers only those components of the products which are non-moving and not subject to normal wear. Moreover, products which are modified or altered, and electrical cables which are cut to length during installation are not covered by this warranty.

Flowline's obligation under this warranty is solely and exclusively limited to the repair or replacement, at Flowline's option, of the products (or components thereof) which FLOWLINE SHALL HAVE NO OBLIGATION FOR CONSEQUENTIAL DAMAGES TO PERSONAL OR REAL PROPERTY, OR FOR INJURY TO ANY PERSON.

This warranty does not apply to products which have been subject to electrical or chemical damage due to improper use, accident, negligence, abuse, or misuse. Abuse shall be assumed then indicated by electrical damage to relays, reed switches or other components. The warranty does not apply to products which are damaged during shipment back to Flowline's factory or designated service center or are returned without the original casing on the products. Moreover, this warranty becomes immediately null and void if anyone other than service personnel authorized by Flowline attempts to repair the defective products.

Products which are thought to be defective must be shipped prepaid and insured to Flowline's factory or designated service center (the identity and address of which will be provided upon request) within 30 days of the discovery of the defect. Such defective products must be accompanied by proof of the date of purchase.

Flowline further reserves the right to unilaterally waive this warranty and to dispose of any product returned to Flowline where:

- a. There is evidence of a potentially hazardous material present with product
- b. The product has remained unclaimed at Flowline for longer than 30 days after dutifully requesting disposition of the product.

THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE OF THIS WARRANTY. This warranty and the obligations and liabilities of Flowline under it are exclusive and instead of, and the original purchaser hereby waives all other remedies, warranties, guarantees or liabilities, express or implied. EXCLUDED FROM THIS WARRANTY IS THE IMPLIED WARRANTY OF FITNESS OF THE PRODUCTS FOR A PARTICULAR PURPOSE OR USE AND THE IMPLIED WARRANTY OF MERCHANT ABILITY OF THE PRODUCTS.

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