



Series L4

**FLOTECT®** Float Switch**Specifications - Installation and Operating Instructions**

**Rugged and reliable** the Flotect® L4 Level switch operates automatically to indicate tank level. Perfect for starting or stopping pumps, opening or closing valves, or actuate level alarm signals. A unique magnetically actuated switching design gives superior performance. There are no bellows, springs, or seals to fail. Instead, the free-swinging float attracts a magnet within the solid metal switch body, actuating a snap switch by means of a simple lever arm. Float arm hinge design limits the arm angle to prevent vertical hangup.

**FEATURES**

- Leak proof body machined from bar stock
- Choice of floats dependent on maximum pressure and specific gravity
- Weatherproof, designed to meet NEMA 4
- Explosion-proof (listings included in specifications)
- Installs directly and easily into tank with a threidolet or flange (see application drawings on page 4)
- Electrical assembly can be easily replaced without removing the unit from the installation so that the process does not have to be shut down
- Horizontal installation or optional top mount vertical installation

**APPLICATIONS**

- Direct pump control for maintaining level
- Automatic tank dump operations
- Control levels or provide alarms in sumps, scrubber systems, hydro-pneumatic tanks, low pressure boilers, and various waste water/sewage treatment processes

**SPECIFICATIONS**

**Service:** Liquids compatible with wetted materials.

**Wetted Materials:**

Float and Rod: 316 SS;

Body: Brass or 316 SS standard;

Magnet Keeper: 430 SS standard, 316 SS or nickel optional.

**Temperature Limits:** 4 to 275°F (-20 to 135°C) standard, MT high temperature option 400°F (205°C) [MT option not UL, CSA, ATEX or IECEx]. ATEX, IECEx options: Ambient temperature -4 to 163°F (-20 to 73°C); Process temperature -4 to 163°F (-20 to 73°C).

**Pressure Limit:** Brass body 1000 psig (69 bar), 316 SS body 2000 psig (138 bar). Standard float rated 100 psig (6.9 bar). For other floats see model chart on next page.

**Enclosure Rating:** Weatherproof and Explosion-proof. Listed with UL and CSA for Class I, Groups C and D; Class II, Groups E, F, and G. ATEX  $\text{Ex } \text{IIC } \text{ II 2 G Ex d IIB T6 Gb } -20^\circ\text{C} \leq \text{Tamb} \leq 73^\circ\text{C}$ .

$-20^\circ\text{C} \leq \text{Process Temp} \leq 73^\circ\text{C}$ .

EC-Type Certificate No.: KEMA 03 ATEX 2383.

ATEX Standards: EN60079-0: 2009; EN60079-1: 2007.

IECEx Certified: For Ex d IIB T6 Gb  $-20^\circ\text{C} \leq \text{Tamb} \leq 73^\circ\text{C}$ .  $-20^\circ\text{C} \leq \text{Process Temp} \leq 73^\circ\text{C}$ .

IECEx Certificate of Conformity: IECEx DEK 11.0071.

IECEx Standards: IEC 60079-0: 2007; IEC 60079-1: 2007.

**Switch Type:** SPDT snap switch standard, DPDT snap switch optional.

**Electrical Rating:** UL, FM, ATEX or IECEx models: 10A @ 125/250 VAC (V~). CSA models: 5A @ 125/250 VAC (V~); 5A res., 3A ind. @ 30 VDC (V\_\_). MV option: 1A @ 125 VAC (V~); 1A res., .5A ind. @ 30 VDC (V\_\_). MT option: 5A @ 125/250 VAC (V~). [MT and MV option not UL, CSA, FM, ATEX or IECEx].

**Electrical Connections:** UL and CSA models: 16 AWG, 6" (152 mm) long. ATEX or IECEx unit: terminal block.

**Process Connection:** 1-1/2" male NPT standard, 2-1/2" male NPT standard optional floats.

**Mounting Orientation:** Horizontal installation standard, optional vertical top mount.

**Weight:** 4 lb 9 oz (2.07 kg).

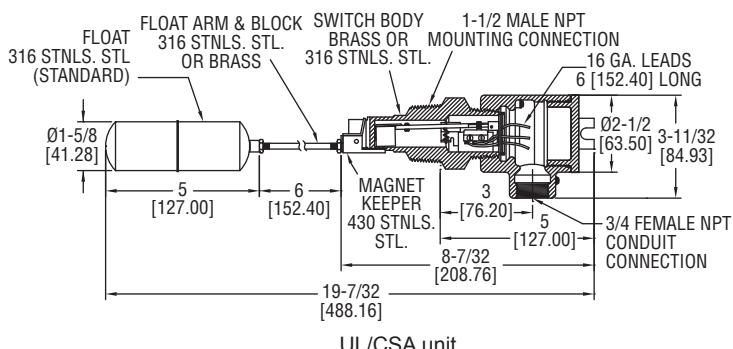
**Dead Band:** 3/4" (19 mm) for standard float.

**Specific Gravity:** 0.7 minimum with standard float. For other floats see model chart.

Example	L4	SS	D	C	F	2	C	1	L4-SS-D-C-F2C1
Construction	L4 L4-TOP								Side Mount, Brass Body, SPDT Switch Top Mount, Brass Body, SPDT Switch (Specify rod length)
Wetted Material Options	SS 316 NI								316 SS Body with 430 SS Magnet Keeper 316 SS Body and Magnet Keeper (Order with SS option) Nickel 20 Magnet Keeper
Switch Options		D							DPDT Switch
Float Options		50 150 300							2-1/2" Spherical, 304 SS rated 50 psi (3.5 bar), > 0.5 s.g. 2-1/2" Spherical, 316 SS rated 150 psi (10.3 bar), > 0.7 s.g. 2-1/2" Spherical, 304 SS rated 300 psi (20.7 bar), > 0.7 s.g.
Other Options			AT IEC EPOXY MT MV NB NH TBC TRD TRI						ATEX IECEx Epoxy Coated Housing High Temperature* (See specifications for rating) Gold Contact Snap Switch* (See specifications for rating) Neoprene Boot* No Electrical Housing* Terminal Block Wire Connections* Time Delay Relay* (On flow decrease) Time Delay Relay* (On flow increase)
Flange*				F					Flange Process Connection
Flange Size					2 3 4				2" 3" 4"
Flange Material						C S			Carbon Steel 316 SS
Flange Rating							1 3 6 9		150 # 300 # 600 # 900 #
Bushing*				B					Bushing Process Connection
Bushing Size					1 2 4				2" 2-1/2" 4"
Bushing Type						H F			Hex Flush
Bushing Material							B C S 4		Brass Carbon Steel 316 SS 304 SS

\* Options that do not have ATEX or IECEx

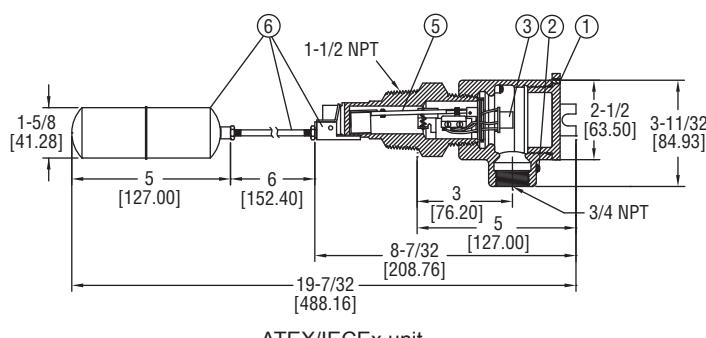
**Attention:** Units without the "AT" suffix are not Directive 94/9/EC (ATEX) compliant. These units are not intended for use in potentially hazardous atmospheres in the EU. These units may be CE marked for other Directives of the EU.



#### PARTS LIST

1. Cover lock. (ATEX/IECEx unit only).
2. External ground. (ATEX/IECEx unit only).
3. Enclosure housing and cover.
4. Terminal block. (ATEX/IECEx unit only, UL/CSA unit has 6" leads).
5. Internal ground.
- \*6. Magnet arm and switch assembly.
7. Switch body.
- \*8. Float, arm and block assembly.

\*Approved replacement parts



## INSTALLATION

### NOTES:

• Check all ratings given in the instructions and on the product to make sure that the product is suitable for your application. Do not exceed electrical ratings, pressure ratings, or temperature ratings of the product.

• Disconnect power supply before beginning installation to prevent possible equipment damage or electrical shock.

1. Remove packing material from switch body-cap and remove tape from magnet keeper. Install standard switch in threolet previously welded to tank. Install optional switch mountings per application drawings. Make sure locknuts on float are tight.

2. When mounting switch in the side of a tank, the arrow on the side of the switch must point up.

3. Wiring: **UL and CSA units only:** Thread connecting wires through conduit and connect. Wire in accordance with local electrical codes.

Black - Common

Blue - N.O.

Red - N.C.

**NOTE:** Double pole, double throw switches have dual black, blue and red leads. These are connected in the same manner as single pole, double throw switches, as described above.

### ATEX and IECEx Installation Instructions:

#### Cable Connection

The cable entry device shall be certified in type of explosion protection flameproof enclosure "d", suitable for conditions of use and correctly installed. Cable entry may exceed 70°C. Conductors and cable gland rated ≥90°C shall be used.

#### Conduit Connection

An Ex d certified sealing device such as a conduit seal with setting compound shall be provided immediately to the entrance of the valve housing. Cable entry may exceed 70°C. Conductors and cable gland rated ≥90°C shall be used.

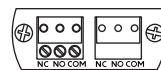
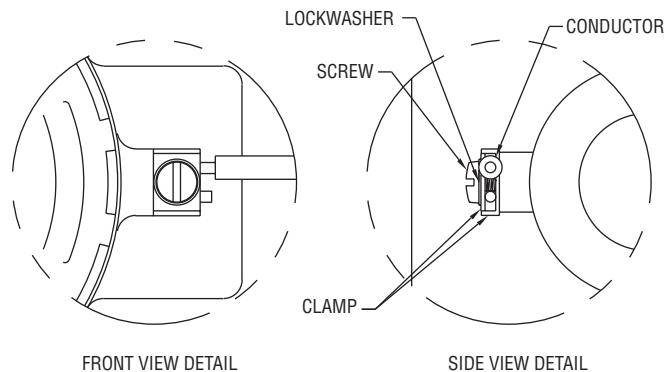
**NOTE:** The switch is deactivated and contacts are in normal condition when the liquid is below the float.

4. Make sure conduit or cable are properly sealed. Electrical components must be kept free of moisture, including condensation, at all times.

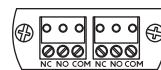
**CAUTION:** To prevent ignition of hazardous atmosphere, disconnect the device from the supply circuit before opening. Keep assembly tightly closed when in operation.

**NOTE: ATEX and IECEx units only:** The temperature class is determined by the maximum ambient and/or process temperature. Units are intended to be used in ambient of  $-20^{\circ}\text{C} \leq \text{Tamb} \leq 73^{\circ}\text{C}$ . Units may be used in process temperatures up to 133°C providing the enclosure and switch body temperature do not exceed 73°C. The standard Temperature Class is T6 Process Temp ≤73°C.

5. For units supplied with both internal ground and external bonding terminals, the ground screw inside the housing must be used to ground the control. The external bonding screw is for supplementary bonding when allowed or required by local code. When external bonding conductor is required, conductor must be wrapped a minimum of 180° about the external bonding screw. See below.



SPDT



DPDT

## TERMINAL CONNECTIONS

## MAINTENANCE

Inspect and clean wetted parts at regular intervals. The cover should be in place at all times to protect the internal components from dirt, dust, and weather, and to maintain hazardous location ratings. Disconnect device from the supply circuit before opening to prevent ignition of hazardous atmosphere. Repairs to be conducted by Dwyer Instruments, Inc. Units in need of repair should be returned to the factory prepaid.

**Limited Warranty:** The Seller warrants all Dwyer instruments and equipment to be free from defects in workmanship or material under normal use and service for a period of one year from date of shipment. Liability under this warranty is limited to repair or replacement F.O.B. factory of any parts which prove to be defective within that time or repayment of the purchase price at the Seller's option provided the instruments have been returned, transportation prepaid, within one year from the date of purchase. All technical advice, recommendations and services are based on technical data and information which the Seller believes to be reliable and are intended for use by persons having skill and knowledge of the business, at their own discretion. In no case is Seller liable beyond replacement of equipment F.O.B. factory or the full purchase price. This warranty does not apply if the maximum ratings label is removed or if the instrument or equipment is abused, altered, used at ratings above the maximum specified, or otherwise misused in any way.

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# APPLICATION DRAWINGS FOR FLOTECT® AUTOMATIC FLOAT SWITCHES

