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Brief Operating Instructions
Liquiphant FTL31

Level switch for liquids

These Brief Operating Instructions are not a substitute for the Operating Instructions pertaining to the device. Detailed information can be found in the Operating Instructions and the additional documentation.

Available for all device versions via:
- Internet: www.endress.com/deviceviewer
- Smartphone/tablet: Endress+Hauser Operations app

Basic safety instructions

Requirements for the personnel

The personnel must fulfill the following requirements to carry out their tasks, e. g. commissioning and maintenance:
- ▶ Trained specialists must have a qualification that is relevant to the specific function and task.
- ▶ Must be authorized by the plant owner/operator.
- ▶ Must be familiar with national regulations.
- ▶ Must have read and understood the instructions in the manual and supplementary documentation.
- ▶ Personnel must follow instructions and comply with general policies.

Intended use

The device described in this manual may be used only as a level switch for liquids. Incorrect use of the device may pose a hazard.

To ensure that the device remains in proper condition for the operation time:
- Use the device only for media to which the wetted materials have an adequate level of resistance
- Comply with the limit values, see the "Technical data" section of the Operating Instructions

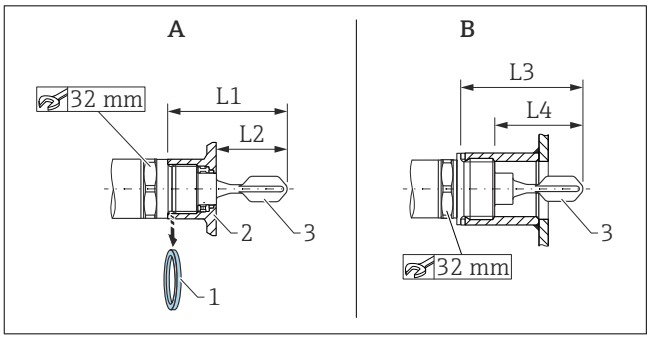
Operational safety

Risk of injury!
- ▶ Operate the device only if it is in proper technical condition, free from errors and faults.
- ▶ The operator is responsible for the interference-free operation of the device.

Mounting

The mounting process is illustrated in the following section on the basis of sample configurations. For detailed information, see the Operating Instructions.

Mounting requirements



A Device with weld-in adapter
B Device in customer socket
1 Flat seal
2 Weld-in adapter
3 Vibrating fork
L1 With G 1" thread: 66,4 mm (2,61 in) / With G ¾" thread: 63,9 mm (2,52 in)
L2 With G 1" thread: 48,0 mm (1,89 in) / With G ¾" thread: 38,0 mm (1,5 in)
L3 With G 1" thread:66,4 mm (2,61 in)
L4 With G 1" thread:47,9 mm (1,8 in)

Installation is possible in any position in a vessel, pipe or tank under the following conditions:
- When installed horizontally in a vessel, the vibrating fork may be located in an installation socket only if liquids with low viscosity (< 2 000 mPa·s) are used.
- Minimum diameter of installation socket: 50 mm (2.0 in)
- Select a maximum length for the installation socket that enables the vibrating fork to project freely into the vessel.
- Ensure that there is sufficient distance between the expected buildup on the tank wall and the vibrating fork. Recommended distance from wall ≥10 mm (0.39 in).

Important process conditions

Pressure and temperature (maximum):
- With weld-in adapter
  - +25 bar (+362 psi) at +150 °C (+302 °F)
  - +40 bar (+580 psi) at +100 °C (+212 °F)
- In customer socket
  +40 bar (+580 psi) at +150 °C (+302 °F)

Altitude:
Up to 2 000 m (6 600 ft) above sea level

In the case of seals used at the customer site, pay attention to the temperature and pressure specifications.

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People for Process Automation

Mounting the device

An open-ended wrench (AF 32) is required for mounting.

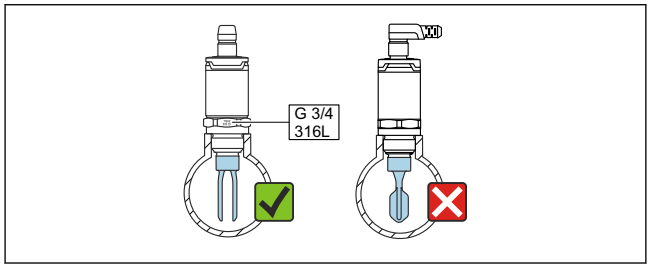
For the NTP thread (ANSI B 1.20.1): use sealing material (PTFE) if necessary.

For the weld-in adapter with a flush-mount seal: remove the supplied flat seal (1) from the thread.

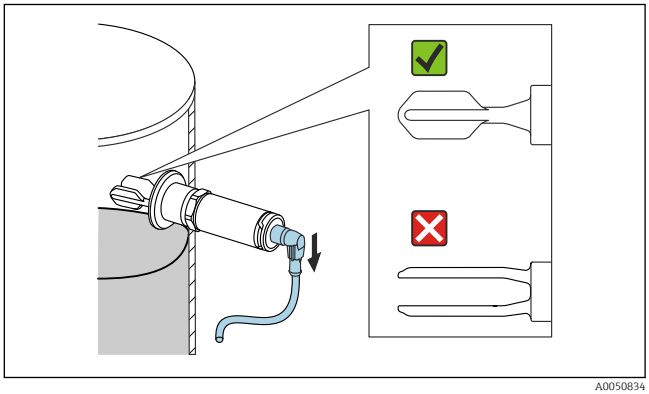
For the weld-in adapter with leakage hole: make sure the leakage hole points downwards.

Aligning the vibrating fork

The material specification (e.g. 316L) or the thread designation (e.g. G 3/4) on the device are positioned in line with the opening of the vibrating fork and are therefore used for orientation.



1 *In the pipe: align the opening of the vibrating fork parallel to the flow direction in such a way that the liquid can flow unhindered between the two vibrating fork elements.*



2 *For horizontal installation in a vessel: align the vibrating fork in such a way that both vibrating fork elements are simultaneously covered with liquid.*

- Fix the device with a maximum torque of 30 Nm (22 lbf ft). Also pay attention to the alignment of the vibrating fork when doing so.

Electrical connection

The connection with the M12 plug is presented in the following section. For other connection options, see the Operating Instructions.

A suitable circuit breaker must be provided for the device in accordance with IEC/EN 61010.

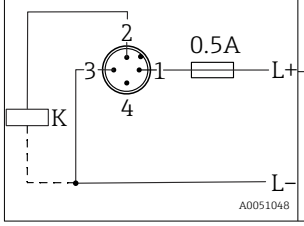
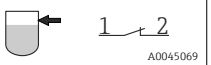
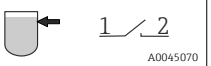
Power supply

Electronic version	Supply voltage	Power consumption	Current consumption
3-wire DC-PNP	10 to 30 V DC	< 975 mW	< 15 mA
2-wire AC/DC	20 to 253 V	< 850 mW	< 3.8 mA

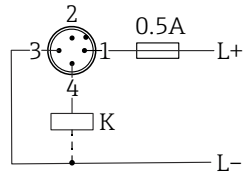
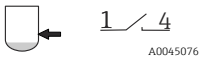
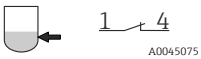
Reverse polarity protection	**2-wire AC/DC** ▪ AC mode: the device has reverse polarity protection. ▪ DC mode: in the event of reverse polarity the maximum safety mode is always detected. Check the wiring and perform a function check before commissioning. The device is not damaged in the event of reverse polarity. **3-wire DC-PNP** Integrated. In the event of reverse polarity, the device is deactivated automatically.

Connection with M12 plug

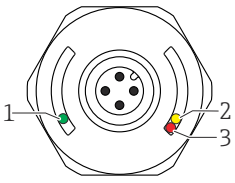
Maximum safety

Terminal assignment	MAX output	Yellow LED
	 	 

Minimum safety

Terminal assignment	MIN output	Yellow LED
	 	 

LED indicator



1 *LED is green: the device is operational*
2 *LED is yellow: vibrating fork is covered by liquid*
3 *LED is red: warning/maintenance required (LED flashing) or fault/device failure (LED is lit)*

On the metal housing cover (IP69), there is no external signaling via LEDs.