# INSTRUCTION & MAINTENANCE MANUAL Techtrol Float Operated Tilt Level Switch for Liquids – FTS

Techtrol

Tilt type float switches are suspended from a 3 core cable in plumb and supplied in different lengths. The switches are also supplied with flange connection and terminal enclosure for easy installation. They are used for liquid level detection in tanks under atmospheric pressure.

# **Pre Installation Check**

- Ensure that the 'FTS' has not been physically damaged in transit and received with appropriate assembly i.e. adjustable stopper/ support pipe/ extended pipe or suspended ballast as per model number.
- Identify 3 different colored wires of the cable termination. Their functions and colors are shown in termination & wiring diagram. (fig h, I & j)
- In case of flanged process connection with terminal enclosure, you will find terminal strip with connector labeled according to switching level (fig k)
- To check the operation of switch, connect continuity tester between P & NO terminals. Now tilt the float manually by hand and observe contact change over i.e. open to close contact (continuity) when float is tilted. In same manner, observe contact change over between P & NC terminals.

## Installation

The float switching system can be Top or Side Mounted.

**Top mounted systems** are configured with float and adjustable Stopper (S) or Support pipe (P) or Ballast (B).

### S- Adjustable Stopper (fig a)

The cable is suspended through a top clamp /flange with adjustable stopper on the cable. The position of stopper can be adjusted at 150 to 300 mm from top end of the float by moving 'o' ring. The stopper acts as a pivot point and float tilts around it during rising level.





#### B – Suspended Ballast (fig b)

The cable is suspended from top flange alongwith a rope holding a ballast. The upper end of the cable terminates into IP66 enclosure and cable is tied to a rope with cable tie at appropriate position.

#### P- Support Pipe (fig c)

The cable is suspended from a top flange along with a support pipe. The upper end of the cable terminates into IP66 enclosure and the cable is tied with rope/cable tie to the support pipe at appropriate position.

**Side mounted systems** are configured and installed on side of the small tanks through cable gland (b) or through an extension pipe (P)

#### G - Cable Gland (fig e)

The cable is passed through a gland at desired location on tank.

#### E- Extension Pipe (fig f)

The cable is passed through a support pipe at desired location on tank side. Upper cable terminates into an IP66 enclosure. Install the switch on the nozzle.









#### Please ensure

- Location on the tank, should be with minimum vibrations
- Installation of switch should be away from inlet and outlet to avoid problem of turbulence & suction of float.
- ID of nozzle is greater than the float OD.
- In case of flanged connection, ensure that it matches with the counter connection on the tank.
- Sufficient distance (**min 500 mm**) should be kept between installation point and side wall to allow for unobstructed float movement.
- Use of suspended ballast / support rod is recommended in case liquid is turbulent in nature.
- Process liquid is chemically suitable with float & cable material.
- In case of **outdoor location**, especially on the top of the tank, run cable through conduit and terminate it in suitable junction box to prevent cable from damage. (crack)

**Level setting -** Level can be set by positioning of adjustable stopper or ' tie ' position on the support pipe/ suspended ballast; (150 to 300 mm from top end of the float) slightly above the required level.

## **Termination & Wiring**

- During wiring, power supply should be strictly 'Off'
- Identify terminals (P, NO & NC) of FTS cable before wiring. After completion of wiring, cable termination should be routed downward before cable gland to prevent water seepage in enclosure fig. I







1 Level

2 Levels

L2

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### Precaution

- Before turning on the power supply, ensure all the wiring is correct and completed.
- Ensure process connection of the switch matches with counter connections provided on tank.
- Ensure weather proofness (IP66) by closing the enclosure with its gasket and cable should be full tight in cable gland ensuring no gap.
- In case of cable termination, run cable through conduit and terminate it in suitable junction box to prevent cable from damage. (crack)

## Maintenance

- Switch off power supply during maintenance.
- 'FTS' is completely sealed and requires no maintenance. It should be replaced in case of malfunctioning.
- Ensure that temperature and pressure does not exceed the limits. The float switch with flange connection is suitable upto 1 kg/cm<sup>2</sup> due to sealing between flange & cable
- Visually examine the float for puncture and cable for any damage.
- After maintenance, ensure weather proofness (IP66) by closing the enclosure with its gasket and cable should be full tight in cable gland ensuring no gap.

SL	Faults	Problem	Solution
1.	Switch not working or switch not operate at appropriate level	a. Loose Connections	a. Check & tighten loose connections if any
		<ul> <li>Float movement may get obstructed by tank wall or other object</li> </ul>	<ul> <li>b. Install switch at suitable (500 mm) distance from tank wall or remove obstructing objects</li> </ul>
		c. Position of cable tie or adjustable stopper is not at proper position	c. Set position of cable tie / stopper at required position.
		d. Load current is more than switch ratings or switch faulty	d. Check and maintain load current within switch rating or consult factory

## Trouble Shooting

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