INSTRUCTION & MAINTENANCE MANUAL

CHAMBER AND FLOAT SWITCH - "CFS"

Techtrol

Innovating Level Controls since 1984

Construction and Operation :

A Dipstick float carrying a magnet coupler at its top end, is housed in a Chamber. It rises & falls with changing liquid level and the corresponding movement of our unique magnetic system, within the seal pipe makes or breaks the switch contacts, mounted inside the enclosure to provide 'snap action' latch-on switching (bistable).

Application :

To maintain the accuracy of the instrument it must be used for operating conditions like Sp. Gr., Operating Temp. and Operating Pressure, Fluid having Sp. Gr. of 0.8 to 1.5 for which it is specified. The instrument is calibrated to operating conditions mentioned in our Test Report which is sent along with the instrument.

Typical services :

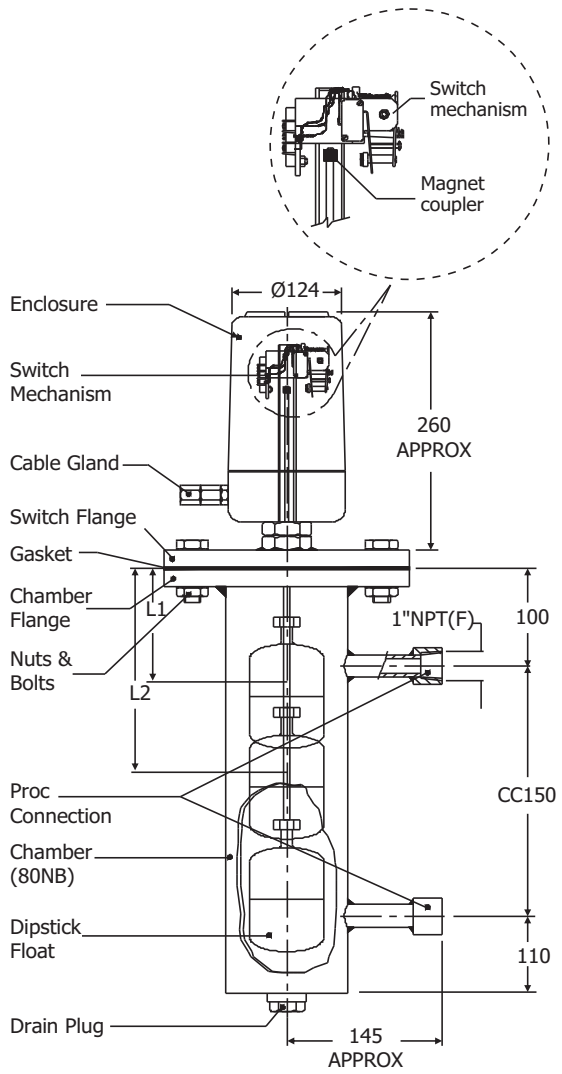
- Level detection / Alarms / Pump control for storage Sumps / Tanks of liquid and slurries.
- Drum level switching in Non IBR boilers.

Pre installation Procedure :

Before installation of instrument check following parts by opening enclosure cap.

1. Ensure nuts and screws of follower magnet assembly are not loose.
2. Ensure proper functioning of micro switch assembly by moving coupler rod manually up and down.
3. If micro switch is not operating, reset the position of switch carriage by moving slightly up or down.
4. Ensure the free movement of follower magnet lever.
5. Ensure that operating conditions are within limit. (Pressure, Temperature, Specific Gravity)
6. Ensure that any system generating vibrations are away from installation site. (Pump, Generator)
7. Ensure that the location of installation is not in the line of flow and away from any suction.
8. Ensure that the nozzle and flange sizes suit the installation.

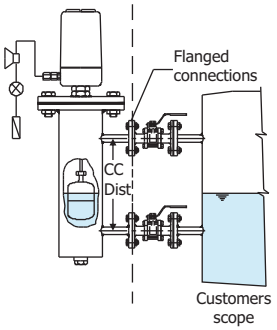
Construction : Fig. 1



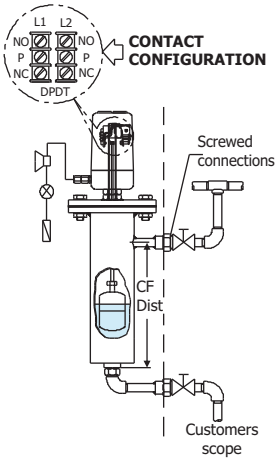
Installation :

- Select a suitable location on the tank, where vibrations if any, are minimum -
- Ensure that the Process connections & C:C distance of the level gauge match with those on tank.
  Flange connection : Flanges on the level gauge should match the counter flanges on the tank and their PCD orientation should be identical.
  Screwed / SMS Union : Threads and Type should match.
- Ensure counter connections provided on tank are vertical and in plumb line.
- Provide suitable gaskets between the flanges and appropriate thread sealant between threads before bolting, to ensure zero leakage from the joint.
- Please do not connect any pump suction or - outlet for process at drain point of the gauge.
- Provide separate isolating valves on the tank for safety & removal of the gauge for repair / maintenance.

External (side-side)



Inline (side-bottom)



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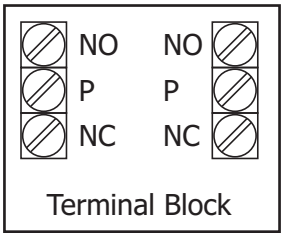
Termination :

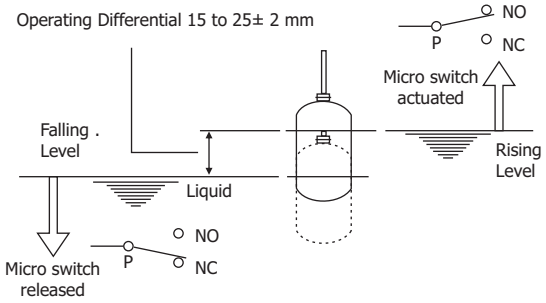
Before actually turning ON the power supply, make sure that all the wiring is done correctly.



Terminal Block

Operating Differential :

Differential is actual distance that the liquid level must rise and fall to open or close a switch. This operating differential is 15 to 25 ± 2mm.



Precautions :

- Ensure that supply voltage and current rating is as per its rated capacity. Excessive voltage / current will permanently damage the switch contacts.
- Ensure that the switch is duly earthed.
- Ensure use of proper cable for wiring, which should match the current rating of connected load.
- Ensure terminal contacts are not loose.
- Ensure that Enclosure is always covered with its terminal along with gasket provided for it, to protect it from dust and weather.

Maintenance :

In case of liquids with dirt or suspended particles, periodic cleaning of float and chamber is essential.

1) Switches must be cleaned frequently if the Liquid has high viscosity or contains floating material.
2) Ensure that terminal connections are not loose.
3) Ensure that contacts of the switch mechanism are not pitted / oxidised due to sparking.
4) Be sure that enclosure cover is always in place on the enclosure.
5) Disconnect device from the supply socket before opening to prevent ignition at hazardous atmosphere.

Trouble Shooting :

Fault / Defect	Cause	Solution
Micro switch operating erratically.	Excessive deposition on Float surface due to dirt in liquid.	Clean the surface where deposition has taken place. Ensure Pre installation Procedure as-per Page - 1.
Micro switch operating before desired set point.	Turbulence in liquid.	Use Still pipe / Cage for assembly to avoid turbulence.
Micro switch not operating.	a) Wiring may be loose or improper. b) Setting of micro switch assly. to switch carriage is not proper. c) Vibration may cause damage to wiring connections. d) Switch burnt due to load more than its rating. e) Micro Switch contacts oxidised / pitted due to sparking. f) Float may be damaged /punctured. g) Wiring connections may be loose. h) Liquid Sp. Gravity is less than that specified while ordering.	a) Resolder the wire at terminals or Connect the wire properly to respective terminals. b) Rearrange position of micro switch assembly to switch carriage. c) Avoid vibrations by providing dampers. d) Change switch. e) Clean contacts. f) Change float. g) Wire Properly as specified. h) Replace float to match Sp. Gr.-

All dimensions in mm, except specified.

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