INSTRUCTION & MAINTENANCE MANUAL

Techtrol Mini Vibrating Fork Switch for Liquids – 'MVFSL'

Every Techtrol product should be installed properly, maintained regularly and used within its specified limits to ensure accurate & trouble free performance with extended working life.

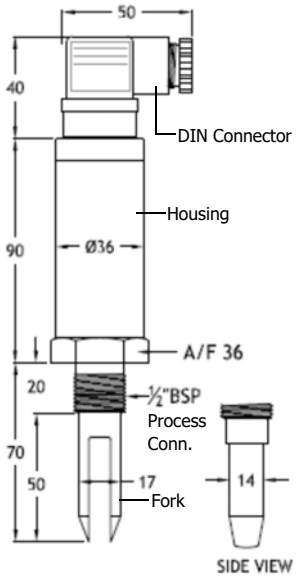


Fig 1. Schematic Diagram

1. Pre-installation Check

Fig 2

- Ensure that forks are not bent and electronics is not damaged in transit.
- Do not hold the switch by its fork. Hold it by its housing. (Fig 2)
- Handle the fork carefully. Do not bang the forks on ground or wall.
- Connect appropriate power supply to respective terminals of connector.

  Refer figure 5.
- Hold the fork switch in hand by its enclosure and switch on the supply
- Now take water in a pot/small vessel and dip the fork in it. Observe touch red LED is on.

CAUTION

The fork blades should not be bent and not altered its dimensions. Deforming the shape of the fork blades may affect the fork's operating frequency and its functioning.

2. Installation

2.1 Precaution for installation

During installation, please ensure that –

1. Mounting location should be away inlet of the material feed.
2. The switch can be side mounted to vessel or top mounted in pipe in such a way that surface of the fork is parallel to liquid flow. Hence liquid flow will not be resisted and it can flow freely through them. (fig 4)
3. It is recommended to mount the switch on side wall slightly inclined such that knife edges of the fork should face the downward
4. Ensure forks extend enough into the vessel so that they are free to vibrate in spite of the build-up on the vessel wall.
5. To achieve precise switching point, switch can be mounted exact in horizontal position fulfilling point no. 2
6. Cable gland of the plug connector of switch housing should point downward to prevent ingress of water/ moisture inside the enclosure.

Fig 3

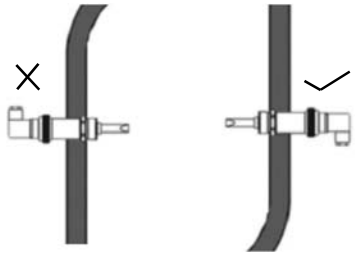
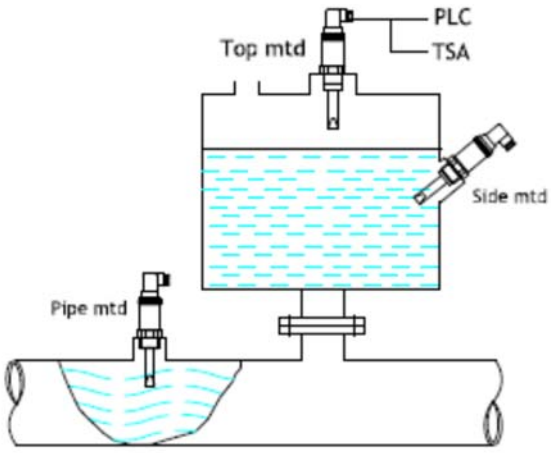


Fig 4



2.2 Mounting of Switch

Switch can be top mounted or side mounted on vessel with screwed connection with appropriate thread sealant between threads before tightening. While screwing, rotate the hexagonal mounting nut of the probe and not the housing.

3. Termination and Wiring

While wiring, supply should be kept off.

- Connect power supply 24 VDC between 1 & 3 terminals and load between 1 & 2 as shown in figure 5.
- The output of switch is PNP (NO). Output is sourcing type and max load is 20 mA.
- Wiring should run away from high voltage cables, contactors and inductive loads.
- In top mounting installation, wires/cables from cable gland are routed down to avoid seepage of water inside the enclosure. Fig 6.

Fig 5

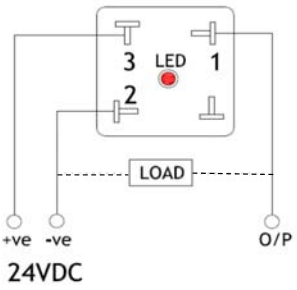
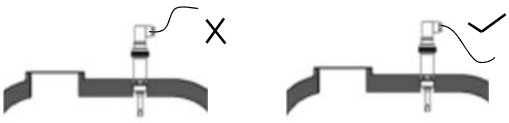


Fig 6



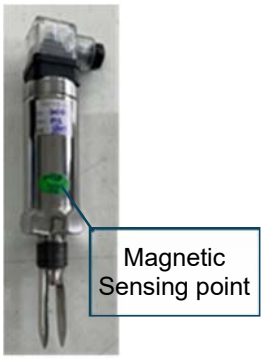
4. Operation

- In normal condition, fork vibrates in air and output will be near to 0 V. When fork gets dipped in liquid, its damped vibration gets sensed and its output changes to 23 VDC approx and red LED is On.
- Ensure that operating temperature and pressure are with in limit.

5. Calibration of Switch

As such MVFSL switches are factory calibrated and does not need calibration at site. However, if required follow the steps below.

1. Before starting calibration, check all the connections are proper and power supply is On.
2. Dip the fork blades upto 30% in liquid in which it has to be calibrated. Hold instrument stable. Then touch the magnet at position marked as (+) (Green sticker) on fork housing. See that LED blinking starts. Count blinking of LED for five times.
3. Now remove instrument from liquid and check the instrument by dipping its fork in liquid. Check red LED is on and output has changed. Now instrument is properly calibrated.



6. Specifications

- Terminal : DIN connector
- Mounting : Top or Side mounted
- Process Connection : ½" BSP (M)
- Housing : SS304
- Fork MOC : SS316
- Insertion Length : 68 mm (standard)
- Resonant frequency : 1.8 KHz
- Supply : 24 VDC ±10%
- Output : PNP (20 mA max, NO Type)
- Power Consumption : 0.5W
- Switching Indication : Red LED; OFF – Normal, ON- Alarm
- Max Viscosity : < 10000 CPS
- Ambient Temp : 0 to 55 °C
- Max Temperature : 70 °C
- Max Pressure : 10 kg/cm^2

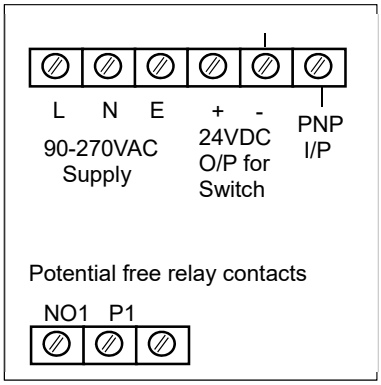
6.1. Switch is optionally provided with Techtrol Switch Amplifier – TSA.

It accepts PNP input from the MVFSL switch and provides potential free 1 SPDT or 2 SDPT relay output.

Specifications –

Input	: 1 no. x PNP O/P from switch
Power Supply	: 90 to 270 VAC, 24 VDC ±10%
Relay Output	: 1 x SPDT or DPDT, 5A, 250 VAC
Enclosure	: ABS x IP41, panel mounted; Size: 72 x 72 x 120 mm

Terminations



7. Maintenance

- Ensure that all terminal screws are properly tightened and not loose.
- If the liquid has built up tendency, forks should be cleaned periodically as required.
- Ensure terminal plug socket is screwed with its gasket after maintenance.
- Cable should be full tight in cable gland ensuring no gap.

8. Troubleshooting

Problem	Cause	Solution
Switch not working/ malfunction	1. Power Supply OFF 2. Wrong/loose Connection 3. Load is out of limit	1. Ensure power supply is 24 VDC +/- 10 % 2. Check and correct connections 3. Ensure load is upto 20 mA max
Switch continuous on	1. Check the buildup of material on forks. 2. Side mounted forks remain in buildup area on wall side	1. Clean the probe intermittently 2. Ensure that mounting location is free from buildup and fork are extended enough inside the vessel so as to vibrate freely