

INSTRUCTION & MAINTENANCE MANUAL

Techtrol Magnetic, Float Operated, Guided Level Switch "FGSO & FGSI"



Pre Installation Check :

- 1- Ensure that the stoppers are located firmly at their proper positions.
- 2- Ensure "Switch" function is 'OK' through following procedure.
 - a. Select continuity range on multimeter & connect its probes to C & 1 (preset level) of the switch.
 - b. Move the float manually over the guide tube to ensure that at required preset level 'NO' contact becomes 'NC' by observing continuity on the multimeter.
 - c. Repeat b by connecting probes to C & 2, 3 & 4 (Preset levels)
- 3- If the result of above are positive, then switch is functioning & ready for installation.

Wiring :

The level switch can be wired direct in series to operate electric loads like audio / alarm, annunciation, mimic indication, which match the low switching capacity of reed contacts. However, high resistive or inductive loads like motor starter, contactor, solenoid / motorized valve should be connected through a level controller (TLC) to prevent overloading by inrush current and to isolate reed contacts from power system.

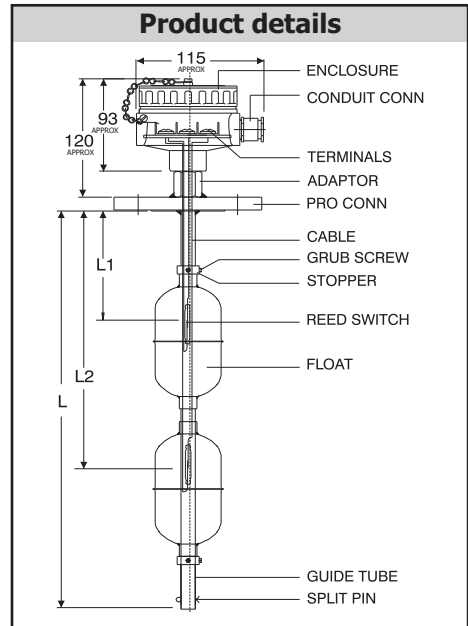
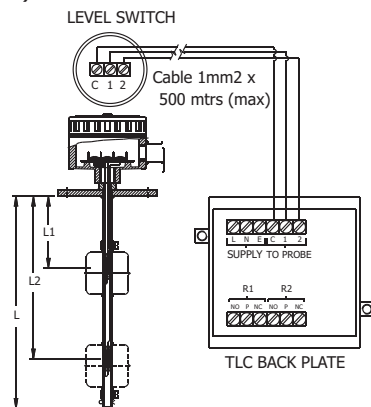


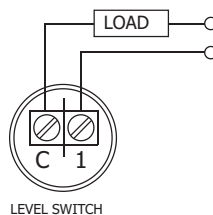
Fig : 1 Termination :

A) Level switch with level controller

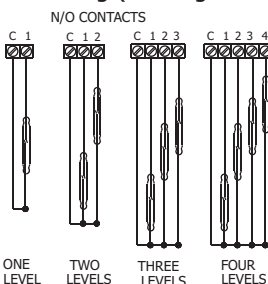


Before switching 'ON' the power supply ensure 'wiring' is done correctly
 L1, L2, L3 & L4 = preset levels,
 L = guide tube length

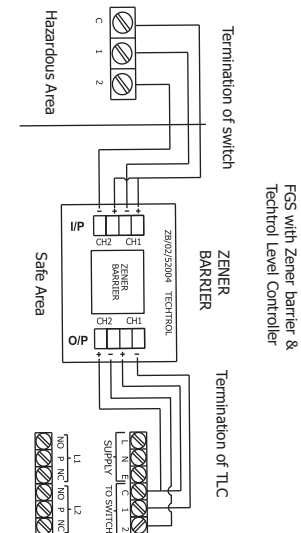
B) Level switch without level controller



Internal wiring (inside guide tube)



C) Intrinsically safe model

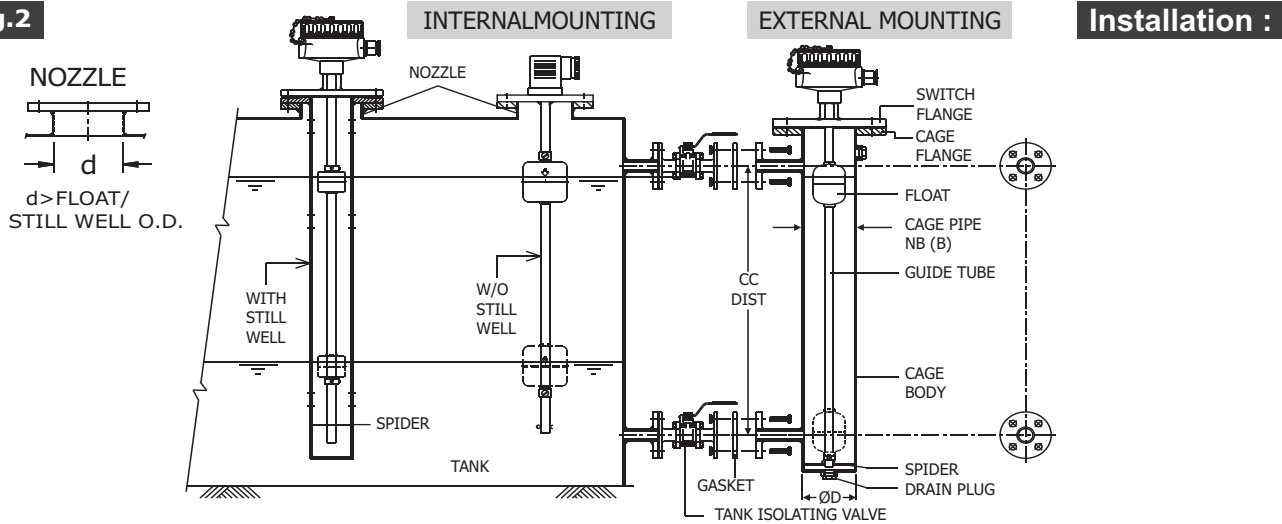


Installation Procedure : (Fig. 2)

The switch is installed vertically from top & can be mounted internally or externally. Internal mounting is most common, however, external mounting is adopted to overcome limited space within the tank or where mechanical devices like stirrers operate or where isolation tank is required for regular servicing. Besides take note of following before installation.

- Select suitable location on tank where vibrations are minimum.
- Ensure that the liquid does not have excessive contaminants, which may inhibit float operation.
- Ensure that ID of mounting nozzle is greater than float diameter. In case, float diameter is greater than nominal bore, remove float from guide tube & reinsert the float from bottom of guide tube, after installation.
- Ensure that process connection of level switch match those on tank.
- Ensure in case of externally mounted version CC distance of external cage match with those on tank.
- Ensure in case of externally mounted version, provide, separate Isolation valve on tank for safety & removal of Level switch for repairs / maintenance.
- Ensure that 'ID' of tank mounting nozzle permits its insertion without float removal and its length allows switch operation at desired preset level.
- Provide suitable gasket between the flanges and appropriate thread sealant between threads before bolting / tightening, to ensure zero leakage through joints.

Fig.2



Precautions : (please ensure the following)

- The switch is properly **earthed**.
- Supply current & voltage should not be in excess of rated **"SWITCH CAPACITY"**, to prevent permanent damage to reed switch contacts.
- Enclosure is closed with its protective cover & gasket and there is **"NO GAP"** between **"Cable OD"** and **"Cable Gland ID"** for weather proofness (IP 66).
- The position of stoppers are not disturbed, as factory preset levels depend on position of Reed Switch within the guide tube.
- Level switch should not be used in liquids containing **"iron particles / burrs and magnetic material"**.
- Use **"Techtrol Controller TLC"** / **"Relay with coil resistance > 9K"** in conjunction with inductive loads, such as **"motors / solenoid valves"** to prevent permanent damage to reed switches due to inrush / surge current during switching.
- In hazardous locations do not remove the enclosure cover before disconnecting switch from supply and carry out maintenance then after to prevent ignition / explosion.
- Do wiring as per standard electrical code.
- The combination of supply voltage & current should not exceed switch rating, subject to supply voltage & current are corresponds to their maximum rating.

Periodic Maintenance :

- Wipe the float / guide tube to remove deposits of scaling formed on it. In case, the liquid is highly viscous / contains floating material, cleaning is done frequently.
- Tighten terminal / stopper screws, if loose.
- Visually examine float for puncture / guide tube bent or any other damage.
- After maintenance, close enclosure with its protective cover & gasket for weather proofness (IP 66).

Trouble Shooting :

Problem	Cause	Solution
No signal from level switch.	a) Switch damage due to load in excess of its rating. b) Terminal contacts oxidized / pitted due to sparking. c) Float punctured d) Stopper position disturbed e) Loose wiring at terminals contacts. f) Improper wiring g) Switch / Controller damage	a) Replace Switch. b) Clean contacts. c) Replace float. d) Relocate stopper position / consult factory. e) Tighten terminal contacts. f) Rewire correctly as per wiring diagram. g) Check switch & controller separately.
Float does not rise or fall with liquid level.	a) Sediment particles present on guide tube. b) Float punctured. c) Float stuck in stilling well.	a) Wipe float & guide tube. b) Replace float. c) Use spider to bring guide tube in plumb.
Switch chattering.	a) Loose wiring cable terminals. b) Waves & turbulence.	a) Tighten wiring terminals. b) Use still well to reduce their effects.

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