

# FLOAT & BOARD TYPE LEVEL INDICATOR

**FDI - FBII - 401**



# INTRODUCTION

Float & Board type level gauge is a weighing liquid level measuring system applicable for non-pressurized storage tanks/vessels. It is basically a balanced counterweight system with an arrow shaped pointer which smoothen the indication process.

Float & board level gauge is a simple economic level measuring instrument. It consists of scale board, pointer, pulley, pulley housing, connection pipe, wire rope, float, guiding flanges, process flanges, anchor plate. Top mounting brackets & side mounting brackets are provided to mount the scale board on the outside of the tank. Connection pipe, pulley, guiding flanges are mounted on the top of the tank. Scale board is also mounted on the side of the tank. Anchor plate is fitted on the bottom of the tank. Float is set to float on the liquid level surface. Float is tied with wire rope passing through the pulleys connected to pointer which rolls on scale board. The level of liquid inside the tank is directly shown by the pointer rolling on the scale board.

Float and board level indicator is attached to a multi stand wire rope, which passes through Friction less specially designed pulleys. The pulleys in turn are connected to a pointer, which moves on a graduated scale by the side of the tank.

FIDICON is a pioneer in the field of manufacturing Level Indicator in India since 2002 years of designing, manufacturing, installation and service of the same. Float & Board Type Level Indicator manufactured by FIDICON are user friendly and easy to install. It comes in many ranges and can be tailor made as per the requirements of customers.

## WORKING PRINCIPLE

This type of float & Board type level gauge/indicator basically work on the principle of buoyancy and is linked as per balanced counter weight system. The float is well connected to the counter weight along with a pointer through flexible wire ropes. The pointer slides along the guide against a graduated scale to indicate corresponding levels inside the tank.

Float inside the tank and counter weight (scale pointer) connected by the rope wire which is moving freely on the pulley assembly. When the storage tank is empty position, the float located inside the bottom of the scale pointer located at zero level on external scale. If the liquid level rise in the tank, the float moves upper side and scale pointer move downward on the graduated scale to show liquid level inside the storage tank. If liquid level turbulence inside the tank use float guide rope wire assembly with anchor for stability of float.

Most often, the float & board type level indicator has dust proof pulley housing. It comes with a bush bearing for a smooth rotation of pulley. The pointer has a rollers and adjustable brackets for easy mounting. It has a non-corroding board with controlled cross section geometry and a wide painted scale with prominent multi colour marking. The indicator has a slack float with large diameter for higher accuracy. This level indicator is very easy to transport as well as install.



# INSTALLATION

## PRE-INSTALLATION

- ✦ Ensure that all the components of gauge are received in good condition.
- ✦ Ensure wire rope received is of required measuring range.

## PRECAUTIONS FOR INSTALLATION

- ✦ During installation, tank should be completely empty.
- ✦ Selection of Location...
  - a) There should be no objects which shall hinder the float.
  - b) Ensure that the float position inside the tank should be such that agitation on it will be minimum.
  - c) The position of mounting nozzle should be far away from the liquid fill pipe to protect the float from damage and faulty readings due to turbulence.
  - d) Ensure that tank structures / fittings do not come in the way of calibrated gauges boards.
- ✦ Instruments required- Welding machine, combination/crimping plier, spanner and adjustable.

## RECOMMENDED SERVICES/MAINTENANCE

- ✦ Periodic inspection is necessary to keep your gauge/Level Indicator in good working condition.
- ✦ Wipe the float to remove sediments particles and visually examine for any damages.
- ✦ After maintenance, ensure that switch (If applicable) enclosure cover is fitted with its gasket for 'Ip66' weather proofness.
- ✦ After detaching measuring rope from elbow pulley, check movement of pulley by removing pulley cover and ensure that it rotates smoothly around its shaft. Check for wear & tear and clean the pulleys if necessary.

## INSTALLATION FOR GROUND LEVEL TANK

### Welding Operations on Tank

- ✦ Locate position of the measuring nozzle at least 500 mm from the tank inner wall maintaining 650 mm distance from center of measuring nozzle to gauge board. Ensure that there is a clearance of min 100 mm between the float & other internal parts.
- ✦ Position of guide nozzles and distance between them is maintained according to float size.
- ✦ Bore appropriate holes at located positions and weld the nozzles on to the holes in an upright position.
- ✦ Weld 'conduit support' on tank top and ensure that it is parallel to the gauge.
- ✦ Gauge Bracket Supports are welded on side of the tank wall for mounting the gauge boards.
- ✦ In case of tank in service or plastic tanks, construct a support structure or a pole should be grouted along the side of the tank wall and weld these bracket support on it.
- ✦ Start welding the gauge support from the tank top.



# INSTALLATION

---

## Mounting of Gauge Board

- ✦ Gauge boards are supplied in 1 meter long with graduations on its front side.
- ✦ The number of gauge boards are supplied according to measuring range and they have to be assembled at site and mounted with graduations in descending order (i.e., 'Zero' graduation on board at the top).
- ✦ Slide the bracket on the gauge board from its rear side and fix it on the holes provided on it with nuts and bolts and connect all the gauge boards to each other.
- ✦ Now hold the gauge board assembly vertical so that zero graduation on the gauge board is at top and attach the gauge board to gauge support with nuts and bolts.
- ✦ In case the switches are provided, fix the switch bracket on the rear side of the respective gauge board where the switching is required.

## Fitting of Protection Conduit

- ✦ Mount protection conduit and pulley assembly on measuring nozzle.
- ✦ Fix process connection on measuring nozzle of the tank.
- ✦ Attach vertical limb of pulley assembly to conduit support with 'U' bolt.
- ✦ Ensure that the center of vertical protection conduit and pointer are in line, so that float wire remains in plumb and does not brush with gauge board surface.

## Fitment of Measuring /Guide Ropes/Float and Anchor

- ✦ For guided construction, 3 no of wire ropes are supplied according to measuring range. Take measuring wire rope, open both the pulley enclosure covers and insert measuring wire rope through the pulley enclosure on process connection side. Unfold the measuring rope carefully to avoid any loops / kinks. Insert it through a vertical limb of protection conduit and it is then tied to the float bush inside the tank.
- ✦ Pass the other end of float wire rope through horizontal protection conduit over the second pulley and vertical protection conduit.
- ✦ Now check for smooth movement of the wire rope on both the pulleys by moving it in & out.
- ✦ This end of wire rope is to be connected to pointer, the excess rope should be coiled and kept well clear of gauge board and should not obstruct the movement of pointer.
- ✦ Slide the pointer on gauge board.
- ✦ Take guide wire, tie one end of it to the spring tension rod.
- ✦ Unfold the rope carefully to avoid kinks or loops and pass the end of guide rope inside the tank through guide nozzle.
- ✦ Tie one end of the guide rope to the spring tension rod.
- ✦ Bolt the tensioner flange on guide nozzle flange.
- ✦ Repeat this procedure for other guide rope.
- ✦ Go inside the tank from the manhole, remove the twist in the wires.
- ✦ Now insert the guide rope through the rope guides on the float.
- ✦ Fix this free end of guide wire ropes to a knob on the weld able anchor plate or weighted anchor pipe with fastener.
- ✦ Also fix the measuring rope to float knob.

# INSTALLATION

## Fitment of Measuring /Guide Ropes/Float and Anchor

- ✦ Hold the anchor on a support below it. (Take a brick wooden log of 50 mm height as support). Locate the position of bottom anchor plate by lowering a plumb line through the guide nozzles.
- ✦ Check all three wires are parallel. Remove spring housing and tighten the tension adjuster nut to provide adequate tension to guide ropes and refit the spring housing.
- ✦ Remove the support and weld anchor plate to tank bottom in metal tanks. However, for nonmetal tanks or tanks in service, the guide ropes can be weighed down by the anchor pipe filled with sand.
- ✦ Ensure that pointer is at top and reads 'Zero', when float is resting on bottom anchor.

### NOTE:

CORRECT INSTALLATION OF ALL MOUNTING ACCESSORIES ON THE TANK IS VERY IMPORTANT FOR ACCURATE INDICATION OF LEVEL.

## APPLICATION

- ✦ Even with large changes in liquid density, the immersion of a large diameter float will change very little, thus density has little effect on accuracy.
- ✦ Float systems are simple and easily understood.
- ✦ Even if the primary requirement is the transmitted signal, local indicators can continue to operate, even on loss of power.

## INDUSTRY USE

- ✦ Chemical, petrochemical industry, Refineries
- ✦ Pressure vessels, Storage tanks
- ✦ Pharmaceutical industry
- ✦ Marine industry
- ✦ Water & waste water treatment plants
- ✦ Others

## FEATURES

- ✦ Simple
- ✦ Low Maintenance
- ✦ Economical Measurement Solution
- ✦ Easy Mounting
- ✦ Assured Level Indication without power supply

## GENERAL SPECIFICATION

- ✦ Size : up to 100nb (4")
- ✦ Range : up to 30 meter
- ✦ Materials : ASTM A216 GR. WCB (CS), SS 316, SS 304 , FORGED STEEL ASTM A105 etc.

Note: Other specifications are followed as per request.

## RECOMMENDED DISPOSAL

- ✦ Give it back to us & we will take care of recycling & possible disposal.
- ✦ User can dis-assemble the product in multiple stage
- ✦ The above may be handed over (state pollution board), authorized re-cycler item-wise.

*Dedicated to People & Environment Protection*



## ENQUIRY SPECIFICATIONS:

- [1] Service Media Details.
- [2] Size/Connection
- [3] System Operating and Design Pressure.
- [4] System Operating and Design Temperature.
- [5] Material Specifications ( Body, Internal )

## RECOMMENDED SPARES

- [1] Wire/Guide Rope
- [2] Float
- [3] Pulley
- [4] Pointer

## OTHER RANGE OF PRODUCTS

- [1] Flame Arrester
- [2] Breather Valve
- [3] Level Indicators
- [4] Rotameters
- [5] Emergency Relief Valve
- [6] Gauge Hatch
- [7] Strainers
- [8] Pressure Reducing Valve
- [9] Safety Relief Valve
- [10] Flowmeters
- [11] Level Switches
- [12] Pressure Reducing Station
- [13] Level Gauge, etc.



### Any Query?

Contact us to Discuss,

Phone No: +91-2646-222238/223412

Mobile No: +91-9824418777

[sales@fidicondevices.com](mailto:sales@fidicondevices.com)

[info@fidicondevices.com](mailto:info@fidicondevices.com)

Address: Plot No. 1706/12, GIDC Ankleshwar,  
Dist.: Bharuch, Gujarat, India 393002.