

PUNE TECHTROL PVT LTD

Instruction and Maintenance Manual for Float and Tape Gauge- FTG

**INSTALLATION, OPERATION AND MAINTENANCE MANUAL
FOR FLOAT AND TAPE GAUGE – ‘FTG’**

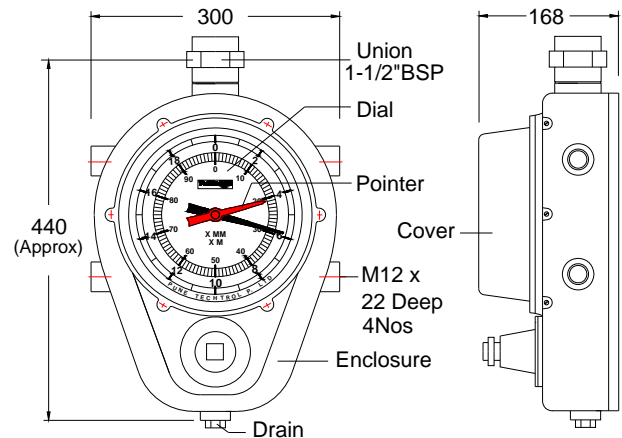


Introduction :

It is used to measure and indicate tank liquid level in oil refineries, oil depots, chemical and fertilizer plants.

Operating Principle It consists of float attached to perforated steel tape wound on storage wheel carrying constant torque spring to maintain tape under continuous tension and gear mechanism for moving pointer. The float accurately follows liquid level in vertical direction during rise in liquid. Precisely perforated tape engages pins on a sprocket pulley and tape is wound on storage drum. Rotation of sprocket pulley is transferred to pointer wound on storage drum. Rotation of sprocket pulley is transferred to pointer through gear mechanism to show accurate liquid level in tank. Gauge is provided with guide ropes firmly anchored to tank bottom to restrict horizontal float movement .

Fig 1



Dimensional drawing

2. Installation

Correct installation of all mounting accessories on the tank is very important for accurate indication of level.

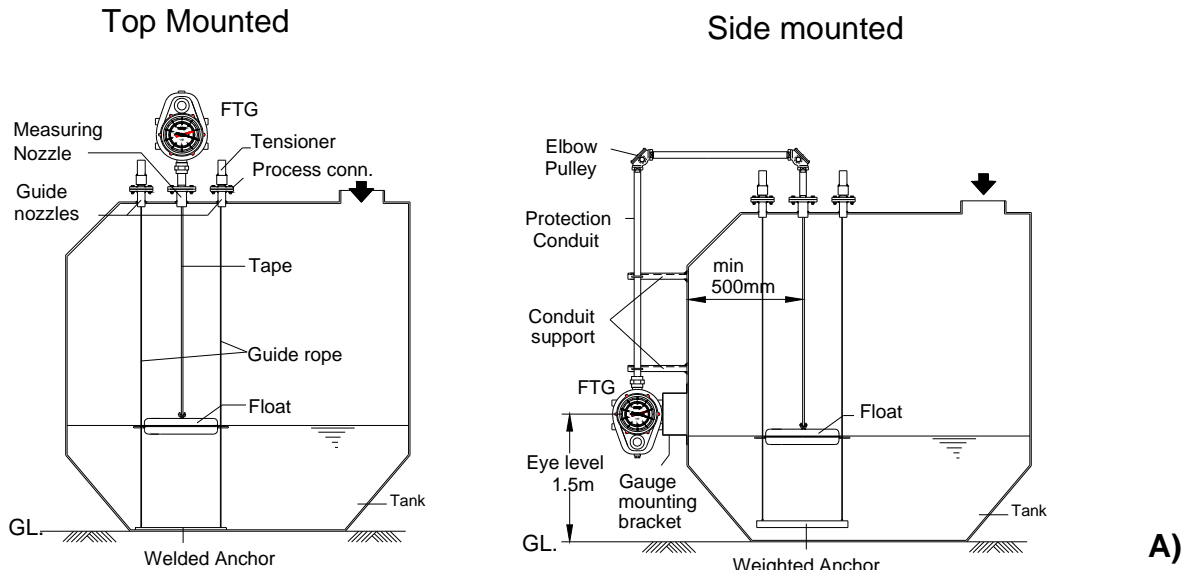
FTG is mounted either top of the tank or on the side tank as shown in fig 2



CAUTION

Please check and ensure that all accessories are mounted correctly as shown in the installation diagram, as no alteration will be possible once the tank is filled with liquid.

fig 2



A)

Installation on Tank (Cone roof tank)

1. Welding operation on tank

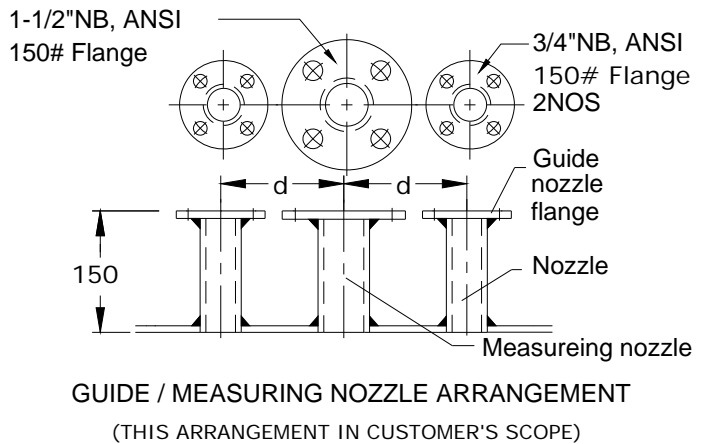
a. Nozzle welding

Locate the mounting position for measuring nozzle on the tank. In case of guided float, addition to measuring nozzle, locate mtg. position for guide nozzles ensuring distance 'd1' between them is maintained 225mm (Refer fig 3) Bore appropriate holes at located positions & weld nozzles in upright position.

b. Anchor welding

Locate the position of anchor by lowering a plumb line thru guide nozzles and weld anchor to tank bottom in metal tanks.

Fig 3



2. Welding of Conduit Supports and Gauge mounting support

1. For side mounted installation, weld conduit supports along the tank length at suitable intervals for conduit pipes (fig. 2, 4).

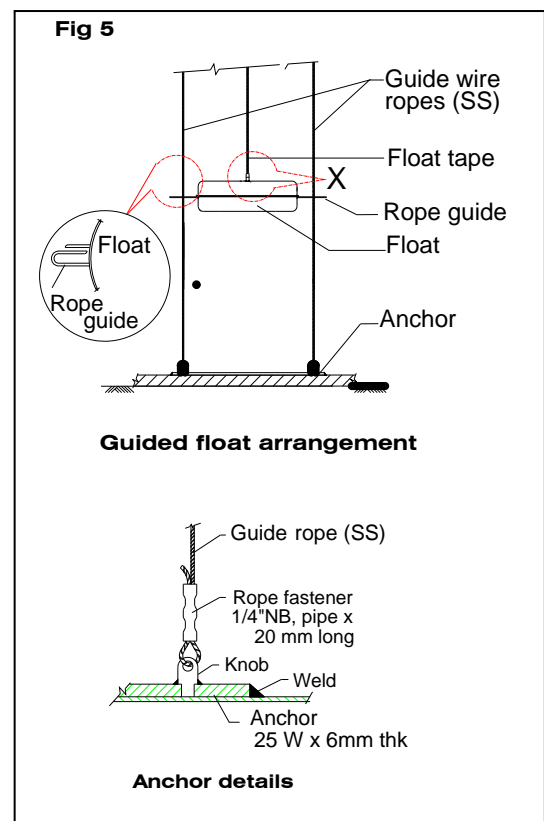
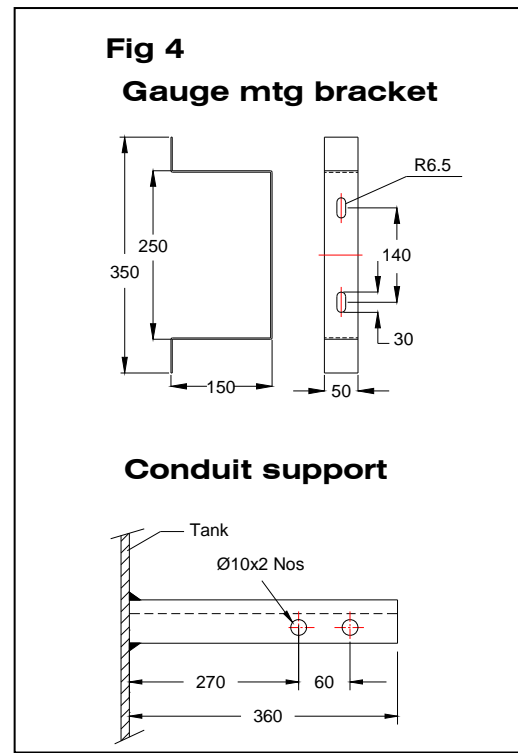
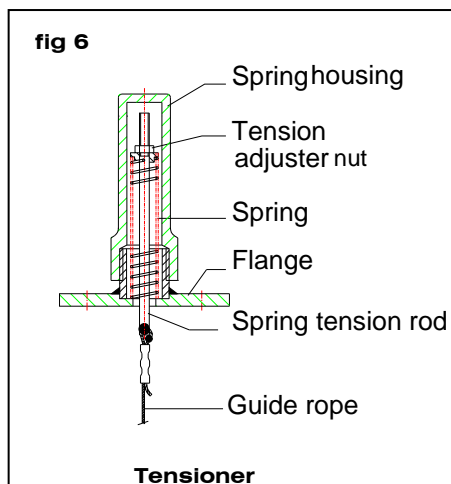
2. Weld gauge mounting support to tank at 'eye level'.

3. Guide wire fixing

a. Pass the guide rope through guide nozzles and tie its upper end of the guide rope to spring tension rod by a fastener as shown in figure 6. and bolt tensioner on guide nozzle.

b. Pass the lower open end of the ropes through the rope guide provided on the float to prevent horizontal movement. Tie the lower end of guide rope to the anchor welded to the tank bottom fig 5

c. Now remove both spring housings (fig 6) from tensioner & tighten the tension adjuster nut to provide the guide rope, adequate tension & refit spring housing.





CAUTION

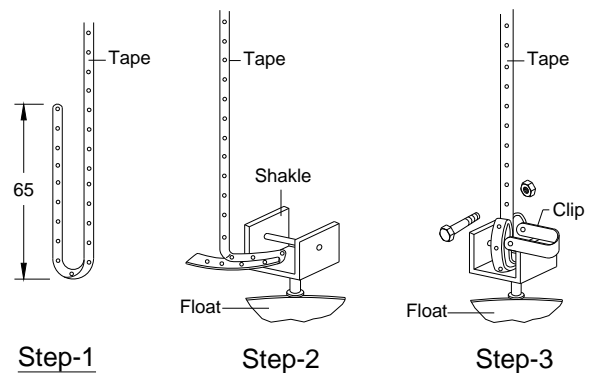
1. Take care not to fold or kink the guide wires.
2. Both the guide ropes must be stretched vertically parallel each other.
3. Ensure proper fastening of guide ropes with bottom anchor. It can not be easily re-fastened in a filled tank.

Note : In case of floating roof tank, guide wire fixing is not required

4. Measuring tape fixing –

- a. Remove elbow pulley covers
- b. Pass one end of the measuring tape through the conduit pipes and over the elbow pulleys and then through the measuring nozzle inside the tank.
- c. Pull the measuring tape inside the tank to the bottom and then for fastening tape to the float follow step as shown in fig 6

fig 7



Caution : During assembly and commissioning of gauge, float tape should be handled carefully so that it does not get bent .

B) Retrofit on existing tank (cone roof) - fig 8

- a. Locate position for measuring & guide nozzles on manhole of tank or near to manhole. Carry out welding operation of nozzles and conduit support. When fluid is present in the tank and welding is not possible so weighted anchor is used.
- b. Pass the guide rope through guide nozzle and tie one end of its spring tension rod by fastener fig 5. Fasten other end of guide rope to the anchor weight by passing it through rope guide provided on float.
- c . Open end of measuring tape is passed through the measuring nozzle and is tied to float as shown in figure 7

Operation :

Once the FTG has been installed and indicator is set, put it into operation till the float travels up and down for few cycles. Check gauge reading and ensure that it corresponds to actual liquid level and adjust the pointer accordingly. Now the gauge is ready to set into operation.

Maintenance Guidelines :

Periodic inspection is necessary to keep your gauge in good working condition

1. Wipe the float to remove sediment particles and visually examine for any damages.
2. After maintenance, ensure 'IP66' weather proofness by closing enclosure cover with its gasket.
3. After detaching measuring tape from sheave elbow pulley, check movement of pulley by removing pulley cover and ensure that its rotates smoothly around its shaft. Check for wear & tear and clean the pulleys if necessary.
4. Check for accumulation of liquid inside the gauge head by opening drain plug and allowing to drain out completely and replace plug.

Trouble shooting :

Fault	Probable cause	Remedy
Indicator showing constant reading	<ol style="list-style-type: none"> 1. Measuring tape broken 2. Transmission gear for indicator worn out. 3. Disengagement of tape from sprocket pulley. 4. Float punctured. 	<ol style="list-style-type: none"> 1. Open tank & replace tape. 2. Replace worn out gear (consult factory) 3. Open rear cover and set tape On sprocket pulley thru guide. 4. Open tank and replace float
Indicator reading deviates from actual	<ol style="list-style-type: none"> 1. Setting disturbed 2. Sludge accumulation on float 	<ol style="list-style-type: none"> 1. Set the pointer correctly 2. Remove sludge and clean the float.
Variation in readings	<ol style="list-style-type: none"> 1. Guide wire loose 2. Indicator pointer loosened 3. Measuring tape is twisted or warped 	<ol style="list-style-type: none"> 1. Adjust tension on guide rope through tensioner. 2. Retighten the pointer. 3. Can be straightened , if not replace it .