INSTRUCTION & MAINTENANCE MANUAL

Transparent Flat Glass Level Gauge -"TFG"

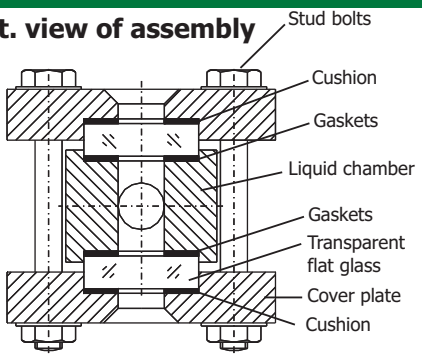
Techtrol

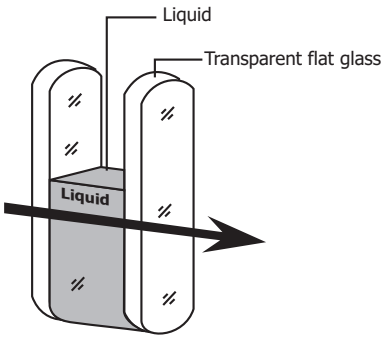
Innovating Level Controls since 1984

Introduction & Working :

This gauge is used for safe and positive indication of liquid levels in vessels under high temperatures and pressures. The gauge consists of thick transparent glasses plates at front and rear side of a liquid chamber, gaskets and cover plates held together with nut and bolts. Gauge glasses are sandwiched between recesses provided in the body and cover plate.

Sect. view of assembly



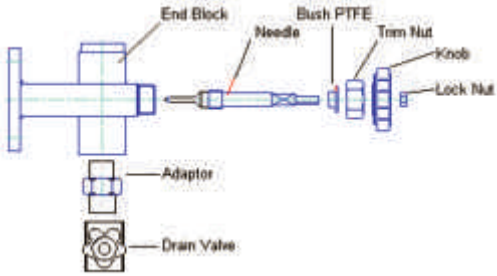


Unpacking & Checking :

We are glad to know that you are using a reliable ' Techtrol ' product. This product contains fragile parts like glass plates and hence we suggest that you go through this manual carefully before installation.

- Unpack carefully & ensure that the product has not been damaged in transit.
- Ensure that the fasteners/screws have not loosened in transit. Tighten them adequately, if found loose.
- Identify that the product received is in line with approved Drawing.
- If the material is found damaged in transit, take further action as per transit insurance clause.

Details of Valve Assembly :



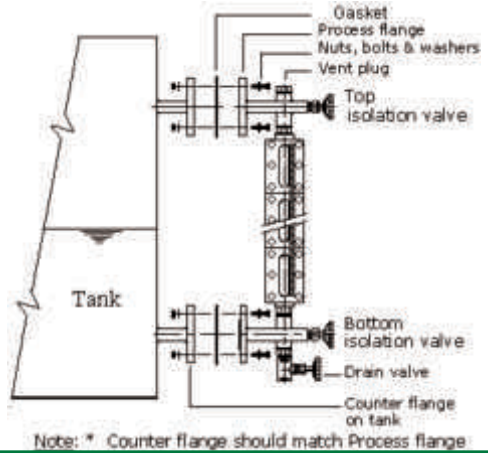
Installation :

Please ensure that operating conditions are within limits as per TECHTROL Test Report.

- Select a suitable location on tank, where vibrations if any, are minimal.
- Ensure that the Process connections of the level gauge, match the counter connections provided on tank. Flanged -- Flanges on the level gauge should match the counter flanges on the tank & their PCD orientation should be identical. Screwed / SMS Union -- The threads and type should match.
- The level gauge is installed vertically, parallel to the tank side. Ensure its vertical positioning through a 'plumb line'. Also ensure 'Vent' at the top and 'Drain' at the bottom.
- Provide suitable gaskets between the flanges or appropriate thread sealant between threads before bolting, to ensure zero leakage through the joint.
- Ensure that vent / drain, plug / valve are closed properly.

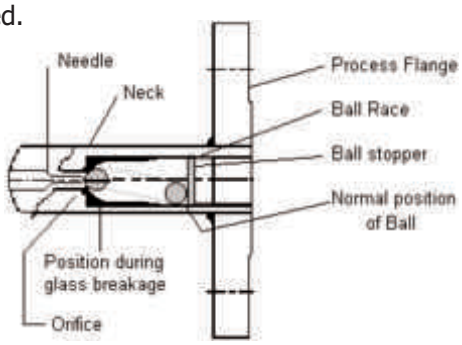
Operation :

a) Open top isolation valve gradually to equalise pressure in the Tank and Gauge.
b) Now, open bottom isolation valve gradually and allow tank liquid to enter the gauge and seek its level.
c) Allow liquid level in gauge to stabilize. This visual indication will be the liquid level in tank.



Function of Safety Auto Ball Check :

Auto ball check facility is provided to prevent "Liquid loss" from the vessel and safety during breakage of gauge glass. It consists of a capsule located along the 'Neck' of the gauge and contains a Ball which moves freely along its inner race, between the stopper and orifice During breakage, the pressure on the ball from gauge side will be atmospheric, where as higher pressure from the vessel side (Operating Pressure + Liquid Column) will cause the ball to move and block the orifice where by liquid loss will be minimized.



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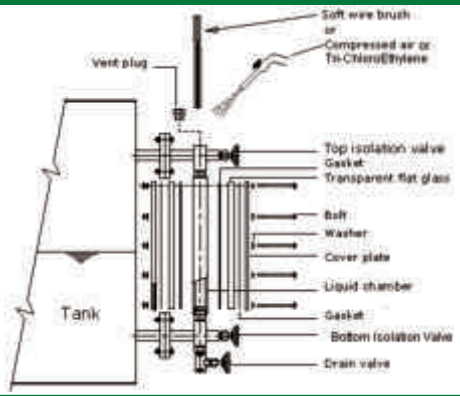
Maintenance :

Normally 'Transparent Level Gauge' requires no maintenance, how ever, gauge glass may become dirty and require an occasional cleaning with soft brush, Trichloroethylene or compressed air. It is advisable to replace the gaskets at least once in a year.

Cleaning of Gauge Glass :

The gauge glass can be cleaned without its removal as under,

Close both Isolation valves.
Open the Drain Plug / Valve and drain the liquid from the Liquid Chamber.
Open Vent Plug / Valve.
Clean the gauge glass with a soft wire brush or by passing compressed air or water from top (vent). If dirt still persists, then employ Trichloroethylene for cleaning.



Gauge glass removal :

a) Close bottom isolation valve.
b) Open the Drain Plug / Valve and drain the liquid from the Liquid Chamber.
c) Open Vent Plug / Valve.
d) Close Bottom Isolation Valve.
e) Unscrew the nuts on bolts over the cover plate uniformly.
f) Remove mid section bolts initially and there after remove the bolts at the ends of each cover plate.
g) Remove cover plates, gauge glass, gasket & cushion carefully.
h) Clean the gauge glasses and Liquid Chamber.

Gauge glass refitting :

a) Replace old gaskets with new.
b) Locate the gaskets in the recesses.
c) Place the gauge glasses over gaskets and hold properly.
d) Fit the bolts & nuts on each cover plate and tighten the nuts on each of the cover plate starting with upper and lower ends so that the gauge glasses are sandwiched between gasket and cushion.
e) Ensure that the bolts & nuts are tightened uniformly and with appropriate torque.

Trouble Shooting :

Fault / Defect	Cause	Solution
Leakage through gasket.	a) Bolts not tightened uniformly. b) Gaskets damaged / Hardened.	a) Tighten uniformly. b) Replace gaskets.
Shows correct reading initially and faulty readings after some period.	a) Gases entrapped with in the liquid. b) Scaling / deposition of dirt / foreign particles inside the liquid chamber and on gauge glass and orifice of Auto Ball check if provided.	a) Effect venting. b) Clean gauge glass, Orifice and Liquid chamber.
Autoball check is not working.	a) Scaling / deposition of foreign particles on autoball and its seat. b) Autoball damaged.	a) Remove & clean autoball and its seat. b) Replace Autoball.
Leakage through Isolation valve.	a) Wear out of packing bush in Isolation valve assembly due to frequent operations.	a) Replace packing bush (teflon).
Breakage of glass.	a) High operating pressure / Temp. b) Excessive tightening of bolts.	a) Maintain rated Pressure /Temp. b) Tighten bolts uniformly with appropriate torque.

All dimensions in mm, except specified.

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