



LEVEL MEASURING

OPERATION & INSTALLATION MANUAL

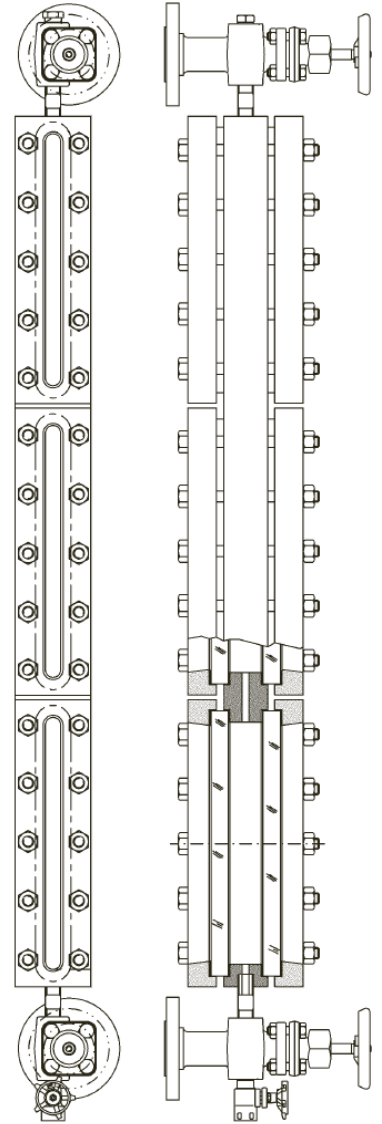




SAFETY INSTRUCTIONS

To ensure the safe operation of your level gauge the following must be complied with at all times.

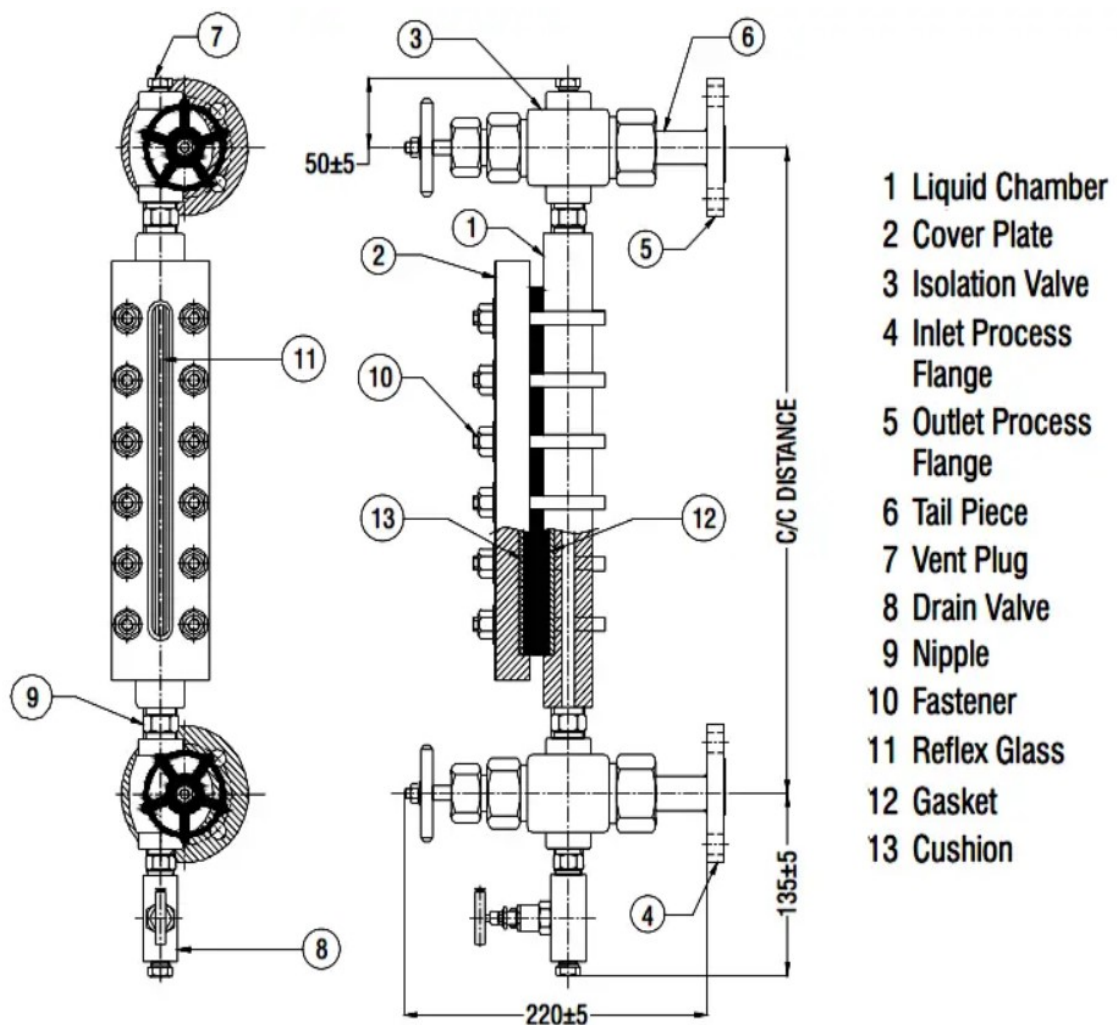
- Before installation, check to ensure that the operating conditions i.e. pressure and temperature, do not exceed the maximum operating pressure and temperature limits of the model of level gauge being installed. The rating of the level gauge will be stated on the type plate and must not be exceeded.
- The installation, operation and maintenance should only be carried out by qualified personnel.
- Ensure that all connecting pieces are tightened on assembly and after carrying out maintenance.
- When opening and closing drain cocks, media will be discharged from the level gauge chamber.
- Care should be taken to ensure that personnel working in the area will not come into contact with the media, as it may be under pressure and at elevated temperatures.
- Before conducting any maintenance activities on either the level gauge or the isolation valves/cocks, ensure that the level gauge has been isolated, the internal pressure has been completely removed and that the temperature of the gauge permits safe manual handling.
- When taking a reading or checking the operation of a Reflex level gauge, or any other type of glass gauge, it is mandatory that the operator does not approach the level gauge unless they are wearing suitable eye protection.





STORAGE INSTRUCTIONS

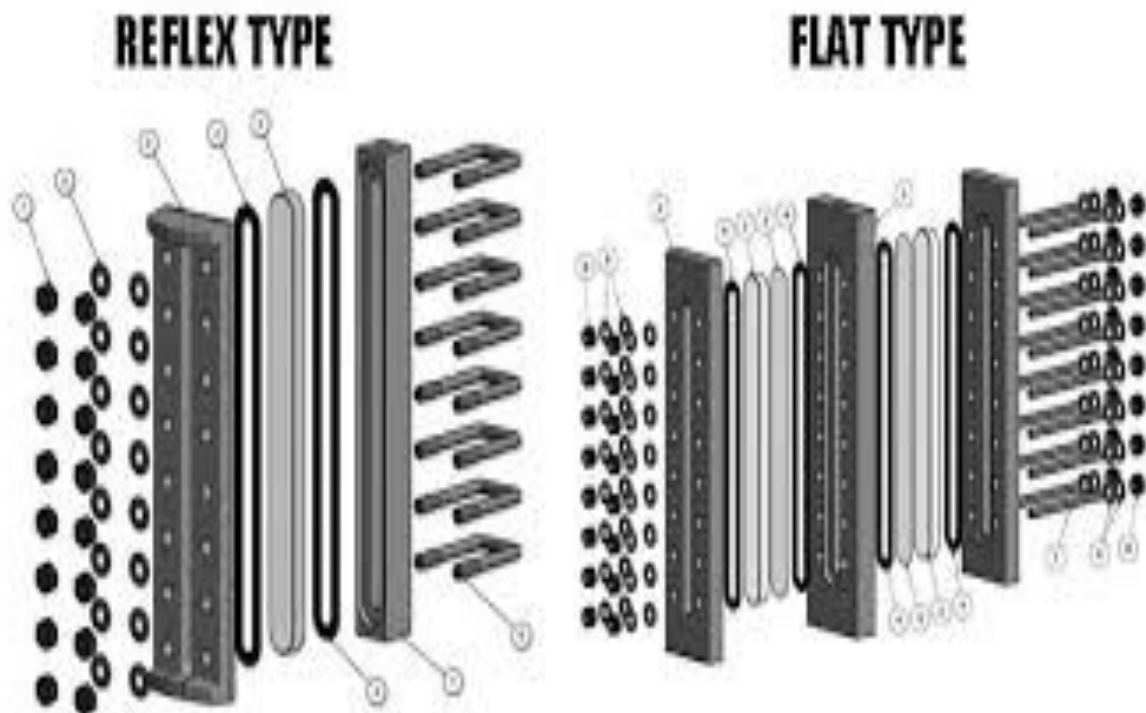
- Gauges and their respective spare parts must be stored in clean, dry, storage facilities.
- Fully Spare parts for the gauges should be handled with care and stored in their original packing.
- The ambient temperature in the storeroom must be between -20°C . and $+50^{\circ}\text{C}$. Sudden changes in temperature should be avoided (the danger of condensation / water).
- It is recommended to take protective measures if the parts are stored under dusty conditions.
- Any damage due to inappropriate storage will release Klinger from any obligation derived under warranty, guarantee and/or product liability.





INSTALLATION

- When installing the level gauge, special attention must be paid to the alignment of the connecting flanges, as this is extremely important to ensure the reliability and safe operation of the installed level gauge.
- The maximum dimensional tolerance between centres and transversal alignment must not exceed 1.5 mm. Flanges must also be in the same plane with a maximum misalignment of 1.5 mm. (This data should be checked prior to installation.)
- Use only suitable lifting and handling devices.
- Do not stress critical points when lifting e.g. valve hand wheel.
- Only competent workers should execute handling and lifting operations.





COMMISSIONING

Minimization of thermal shock to gauge glass. Thermal shock considerably affects the life and performance of the glasses.

Where a complete Plant is being commissioned, the gauge cocks/isolating valves are left in the

open position to minimize thermal shock.

Where the gauge has been isolated for maintenance while the rest of the plant is operating

under temperature and pressure, the following procedure is recommended to bring the gauge back into service.

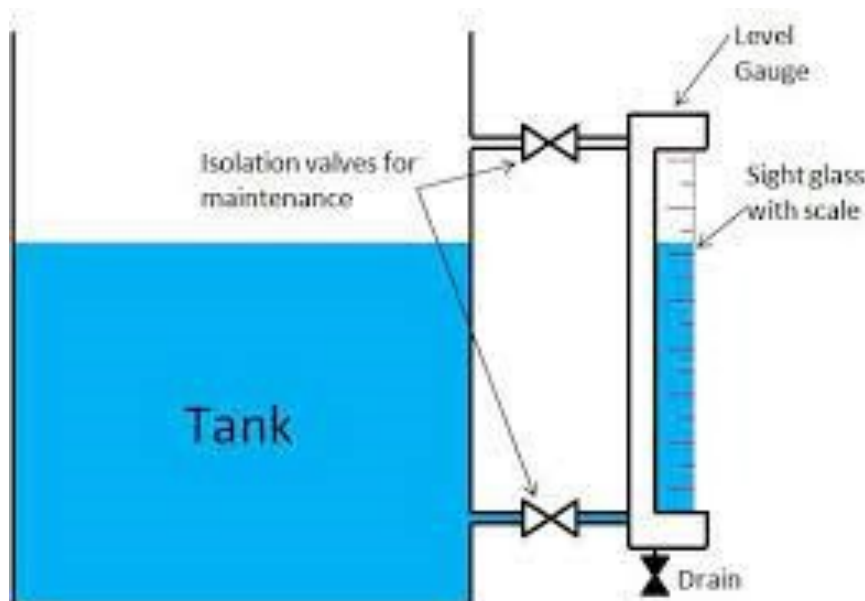
1.1 With the top and bottom cocks/valves shut, open the drain cock and then crack the top cock/valve to allow a small flow of vapour to pass through the gauge chamber, until working temperature is attained.

1.2 Close the drain cock.

1.3 Open the top gauge cock/valve fully and allow the gauge to fill with liquid.

1.4 Open the bottom gauge cock/valve fully.

1.5 During the commissioning period, the covers and the joints could settle and it is essential therefore to follow up all clamping nuts to maintain the required torque values. Additionally, the joints and glands should be tightened on the gauge cocks/valves.





MAINTENANCE

Any leaks which appear during service should be stopped immediately by following up at the Changing Glasses

1. Dismantling

1.1 Isolate the gauge from the source of pressure.

1.2 Relieve the gauge of internal pressure.

1.3 Isolate and remove ancillary equipment (see appropriate maintenance sheet).

1.4 Loosen the tightening bolts in the correct sequence, as shown in the release procedure.

1.5 Remove tightening plate from the gauge (supporting covers and internals).

1.6 Remove the cover plate, glasses and joints from the center piece.

1.7 Clean joint faces of the center piece and cover plate, making sure that they are free of any remnants of the joints. Take care not to damage the joint face of the center piece.

1.8 Inspect joint faces of the center piece. Check and ensure that surface is clean and straight with no signs of damage to the sealing face.

2. Assembly

2.1 Fit a new Reflex glass with new joints, (never re-use joints which have already been in service!)

2.2 Reassemble all the components in the correct sequence.

2.2.1 Sealing joint between center piece and reflex glass.

2.2.2 Reflex glass must be installed with grooves towards the center piece

2.2.3 Cushion joint between cover plate and

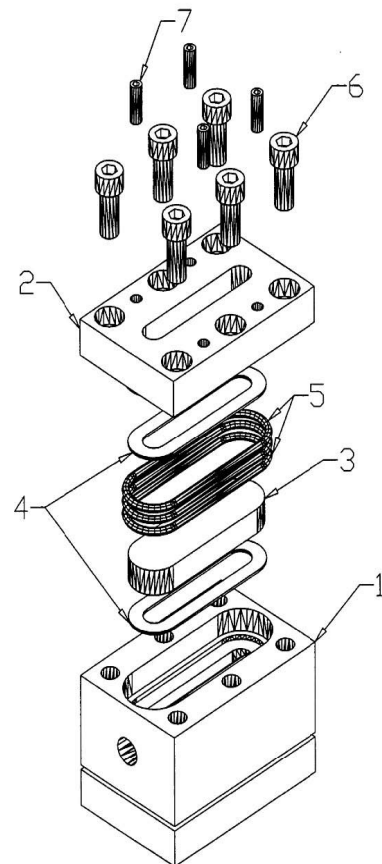
reflex glass.

2.3 Tighten the tightening bolts to the prescribed torque following the tightening procedure. Lubricate threads of the tightening bolts with Molykote thread grease 1000.

2.4 Never grip the level gauge body in a vice during the assembly process, assembly on a flat clean surface.

3. Refurbishing.

3.1 No refurbishing should be necessary other than the replacement of glasses and joints.





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