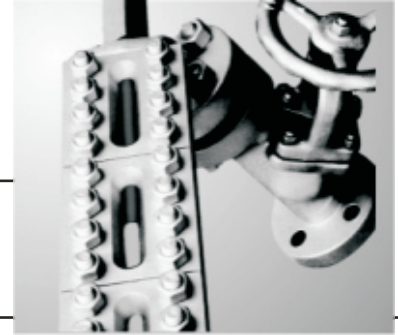


Uni Klinger Level Gauges



Liquid Level Gauge

INSTALLATION AND MAINTENANCE INSTRUCTIONS FOR UKL LEVEL GAUGES.

MODELS, OPERATING PRINCIPLES

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MODELS, OPERATING PRINCIPLES

1) REFLEX: - UR 40

Based on the difference in Refractive Index of Gas and Liquid.

The grooved glass in this assembly, reflects light striking the Gas /Steam part, back. thus the steam appears as silver white. Whereas the light striking the liquid is totally refracted and absorbed. The liquid therefore appears as dark.

APPLICATION-Steam 35Bar Saturated. Process - 160 Bar 400Deg.C

TRANSPARENT: - UP 40, UP 85, UP 120

A Center Piece with two transparent glasses, and cover plates form the gauge assembly.

In case of colorless liquids or water it becomes necessary to illuminate the level, the level appears in the form of an Illuminated Meniscus.

APPLICATION - . Steam up to 120Bar Saturated. Process340 Bar 400Deg.C.

BI COLOR: - UP- C 70, UP C 180

A transparent gauge, an illuminator with red-green filters lights up the liquid giving a distinct red [steam] and green [water] indication due to optical separation of red and green colors by the wedge shaped center piece.

APPLICATION - Used only for Steam up to 180 Bar Saturated



2). GAUGE DISMANTLING / ASSEMBLY, INSTALLATION, COMMISSIONING.

- 3-a] Any shut off valves / cocks between the gauge and the boiler / pressure vessel should be shut, the drain cock/valve opened and the gauge completely emptied of its contents. In case there are no shut off fittings then the vessel/boiler should be pressure relieved. Disconnect any electrical supply and remove the fixing screws and lift off the illuminator in case of a bi color level gauge.
- 3-b] Remove the complete gauge along with the shut off fittings and place on a level surface.
- 3-c] Remove the Hex nuts and dismantle the gauge, by removing the gaskets, glasses , micas etc.
- 3-d] Check center piece and cover plates with straight edge. There must be no unevenness caused by corrosion or distortion.
- 3-e] Absolute cleanliness is a must while assembling the gauge.
- 3-f] Ensure there are no traces of the previous gaskets on the centerpiece nor the cover plate, recesses. Please clean carefully and thoroughly.
- 3-g] Please clean the gaskets using a clean soft cloth and wipe off any impurities on the gaskets to be assembled. And place in correct sequence in the glass recess.
Do not use any Grease/Molykote on the gaskets.
- 3-h] Ensure gaskets of correct size and thickness and with even surface. The gaskets should not be too long as it tends to corrugate / become wavy, in which case it should be cut short. The gasket may be approx 1mm shorter than the glass length.
- 3-l] Insert the glasses in the recess and ensure that the glasses move freely in the recess, in all directions by a few tenths of a millimeter. The glass should under no circumstances project beyond the cover plate, but must be recessed by 0.1 to 0.4mm.
- 3-j] After installation of the new glasses and gaskets in the correct sequence the cover plate may be mounted and the body bolts inserted, the bolt threads duly lubricated by graphite / Molykote paste.
In case of Transparent gauges Mica protection of the glasses is a must for pressures beyond 35 bar / temperatures beyond 245 deg.
- C. The mica should be installed [on the sealing gasket] with the better side facing the media.
In case of transparent gauge the assembly may be turned over and the second cover plate be assembled as before.
- 3-k] The nuts may be screwed on the lubricated bolts and tightened in the correct sequence and to the proper requisite torques. The torque should on no account be exceeded.
- 3-l] Any shut off valves / cocks between the gauge and the boiler / pressure vessel should be shut, the drain cock/valve opened and the gauge completely emptied of its contents.
In case there are no shut off fittings then the vessel/boiler should be pressure relieved.
- 3-m] Insert gaskets and [CAF] and Bolt / Weld / screw the complete gauge assembly with the shut off fittings pressure tight on the boiler / vessel.
- 3-n] In case of shut off fittings C-400 and C-900 the connection of the gauge body to the cock may be loosened and the gauge turned to the desired position and re tightened.
- 3-o] In case of Transparent / Bi color gauges adjustment of Illuminators / mirrors may be done by minimum two fitters

3. OPERATING INSTRUCTIONS.

- A] After the gauge is first taken into service, [also after replacement of packing sleeves or glasses] the cover plate nuts should be tightened to the requisite torques. Using a torque wrench, and using the correct tightening sequence. So too the nuts on the Boiler flanges, holding the gauge to the boiler, need to be tightened. Keeping the shut off fitting / isolation cocks or valves open the nuts and all possible leakage points should be followed up lightly.



- B] Any leak which arises during start up and service should be put right immediately by re tightening at the appropriate points.
- C] The service life of Micas and Glasses is greatly affected by adopting the correct blow down procedure.
 - c-1] Shut upper gauge cock and open drain cock/valve, to allow brief blow through of the lower gauge cock.
 - c-2] The water in the gauge is thereby drawn out without the water chamber being completely pressure relieved.
 - c-3] On shutting the drain cock the water in the gauge is again forced upwards through the gauge.
 - c-4] Repeat this opening and closing of the drain cock several times, each time forcing the water upwards and downwards, and thus cleans the Mica[Transparent] and glasses[Reflex] of any impurities and deposits.
 - c-5] Close both the upper and lower gauge cocks/valves and open the drain cock to completely drain the gauge of the water.
 - c-6] To clean the bore of the upper gauge cock, empty the gauge as described above and then open the upper gauge cock and close the Drain cock.
This procedure ensures the maximum protection of the glasses and Mica shields which are highly stressed by the boiler pressure and blow down.
 - c-7] To further protect the mica the period between Blow downs should be as long as possible, depending on the quality of the boiler water.
 - c-8] If the boiler is shut for a long period the gauge should be emptied by closing the lower gauge cock and opening the drain cock. Before putting into service the lower gauge cock should be opened and the drain cock closed.

4. GLASS BREAKAGE AND CAUSES: -

- A] Strong air-drafts windows, Lift doors etc in the vicinity of the gauge, in which case the gauge should be screened from the draft.
- B] Distorted or corroded cover plates and/ or centerpiece, which may be corrected by milling the surfaces.
- C] Cushion Gasket is too thick thereby forcing the glass to project beyond the cover plate, and hence is exposed to full bolt load, causing breakage. The glass surface must in all cases be recessed by 0.15 0.35mm.
- D] Thermal shock caused by incorrect blow down, or by being taken into service too rapidly.
- E] Cyclic service conditions, or pulsating conditions or for e.g. sudden start up of the Boiler.
- F] Glass is clamped, or has too little or no clearance, in the glass recess, and hence breaks on start up. The glass must be free to move slightly in all directions, preferably by a few tenths of a millimeter.
- G] Cushion Gasket is too long causing corrugations / waviness. In this condition the gasket should be cut shorter by scissors, it may be shorter than the glass by approx.1mm.
- H] Distortion of the entire gauge assembly through badly aligned boiler connections.
- I] Uneven and / or excessive tightening of the cover bolts.
- J] Application of grease or graphite etc to prevent sticking of gasket to the body. The coating is uneven and causes uneven thickening of gasket.

5. GLASS EROSION AND CAUSES: -

- A] In Reflex glasses Corrosion is generally caused by, Steam Temperatures above 245deg.C.and /or Pressure above 35bar, or pH value exceeding 10 or quality of boiler water.
- B] In Transparent Glasses too, usage of un protected glasses beyond the above stated conditions.



- C] Corrosion may also be caused by breakage of Mica shield, which could be due to: -
 - c-1] Mica improperly installed, with out saying the better side of the mica should always face the media.
 - c-2] Improper blow down, wherein the mica is exposed to the full force of the steam jet.
 - c-3] Excessive torque on bolts leading to the gasket being stressed beyond its load bearing capacity. Leading to the gasket flowing outward and inward tearing the mica.
 - c-4] Mica shield is too thin. [Minimum requirement 0.3mm]
 - c-5] Mica being damaged by the edges of the cover plate, which can be prevented by use of protective gasket.
 - c-6] Quality of mica poor. Thin hairline crack in mica which gets noticed only when the gauge is operational.

6. FITTING AND HANDLING OF GAUGE COCK UNITS. FOR LEVEL GAUGES WITH KLINGER GAUGE COCKS

UKL Gauge cocks consist of a cylindrical cock plug sealed by means of an elastic and replaceable packing sleeve. The top and bottom stuffing box heads are provided with a safety ball.

Re tightening: If a leak develops during the operation the pressure on the sleeve can be increased using the tightening nut.

The elastic packing sleeve is thus firmly pressed on the plug and the cock is leak tight again. However the cock should only be re tightened in the open position.

A groove and a tongue ensure that the packing sleeve does not twist in the housing. In the area in the line of the passage the sleeve is reinforced with SS eyelets which guarantee full passage and protect the sleeve against erosion.

Indication of position: When open the handles of the cock always point downward. i.e. they are positioned at right angles to the direction of the flow. When closed the handle of the drain cock points downward i.e. its position corresponds to the flow direction. In this position the weight of the handle prevents any accidental change of the handles position.

- 1] Any shut off valves / cocks between the gauge and the boiler / pressure vessel should be shut, the drain cock/valve opened and the gauge completely emptied of its contents.
In case there are no shut off fittings then the vessel/boiler should be pressure relieved.
- 2] Mount the gauge cock on the end tube / nipple of the gauge body [C400]
 - 2-a] Tighten the union nut lightly and mount the gauge on the vessel so that it is pressure tight.
 - 2-b] Turn the gauge to the desired position and tighten the union nut.
- 3] For C900 Cock: Insert gaskets and screw the C900 cock onto the boiler so that the connection is pressure tight.
 - 3-a] Loosen the hex nut and screws sufficiently till there is space to insert the connecting piece between the pressure plate and the gasket.
 - 3-b] Install the gauge body by with the connecting piece on to the gauge cocks.
 - 3-c] Care is to be taken when installing the connecting piece on the sealing set. These items are cemented and must fit exactly in the recess of the connecting piece.
 - 3-d] Tighten the pressure plate, turn the gauge to the desired position and retighten the connecting nut.



7. REPLACEMENT OF GLAND RINGS, PACKING SLEEVES.

- 7-a] C400 Any shut off valves / cocks between the gauge and the boiler / pressure vessel should be shut, the drain cock/valve opened and the gauge completely emptied of its contents. In case there are no shut off fittings then the vessel/boiler should be pressure relieved.
- 7-b] Open the drain cock and empty the gauge completely.
- 7-c] Loosen the union nut and screw off the hex head cap screws. and pull off the gauge with the stuffing box heads off the stud bolts.
- 7-d] Remove the gasket between the stuffing box head and the c400 cock, and replace with new one ensuring the complete removal of the earlier gasket.
- 7-e] Place the gauge on an even level surface and separate the cock from the gauge body by removing the union nut.
- 7-f] Remove the thrust ring and gland ring and replace with new one.
- 7-g] Screw on the union nut and slide the stuffing box head on to the gauge nipple / tube.
- 7-h] Slide the gauge body on to the stud bolt and tighten the head cap screws.C900
- 7-I] Any shut off valves / cocks between the gauge and the boiler / pressure vessel should be shut, the drain cock/valve opened and the gauge completely emptied of its contents. In case there are no shut off fittings then the vessel/boiler should be pressure relieved
- 7-J] Open the drain cock and empty the gauge completely.
- 7-k] Loosen the union nut and screw off the hex head cap screws until there is sufficient space to remove the connecting piece.
- 7-l] Remove the gauge body with connecting pieces from the gauge cocks.
- 7-m] Remove sealing set, clean and check all sealing surfaces.
- 7-n] Cement new sealing set into the gauge cock ensuring the set fits into the recess of the connecting piece exactly.
- 7-o] Install the gauge body with connecting piece in the gauge cocks.
Replacing the packing sleeve in C400, C900, and Drain cock D12 and SP18.
Repeat steps 7-a] to 7-f]
- 7-p] Remove the threaded plug and remove the Head cap screw, the washer and handle.
- 7-q] Tap out the plug the split ring, and the sleeve from the body.
- 7-r] Remove the sleeve from the plug after removing the split ring.
- 7-s] Clean all the sealing surfaces and replace the plug too if it is damaged due to corrosion etc.
- 7-t] Insert split ring into the groove of the plug, slide new packing sleeve onto the plug and insert the plug into the bore of the body.
- 7-u] The spring of the packing sleeve must be located in the groove of the body bore.
- 7-v] The eyelets of the sleeve must not jut out nor should they be skewed.
- 7-w] Apply grease / Molykote on the threaded plug and tighten the plug.

Reassemble by reversing the steps 7-a] to 7-f].



8. STORAGE:

Gauges and the respective spare parts should only be stored in enclosed dry rooms in a non-aggressive atmosphere. Fully assembled gauges have to be stored as supplied. Spare parts of gauges should be handled with care and should be stored in their original packing. It is recommended to take protective measures if the parts are stored in dusty conditions.

The ambient temperature in the storeroom must be between 20 Deg.C. and +50Deg.C.
Sudden changes in temperatures should be avoided.

Any damage due to inappropriate storage shall release Uni Klinger of any obligations derived from warranty, guarantee and product liability.

UNIKLINGER NOW SUPPLIES LEVEL GAUGES IN WELDED CONSTRUCTIONS WITH ISOLATION VALVES GLOBE TYPE . THE GLOBE VALVES ARE WELDED TO THE CENTER PIECE THROUGH SAFETY BALL ARRANGEMENT WHICH ALSO HOUSES THE VENT PLUG & OR DRAIN VALVE

MODEL	COLD TORQUE [NM]	TORQUE UNDER NORMAL WORKING CONDITIONS [NM]
UR40	60	50
UP40	40	36
UP85	100	92
UP120	300	270
UP-C 70	80	72
UP C 180	150	120

Also available :



Products- Piston Valves Strainers - ' T ' Type, ' Y ' Type

**UKL Products- Steam Traps - Thermodynamic, Thermostatic, IBT, / Manual & Actuated Ball & Butterfly Valves / Ball Float Traps
Cryogenic Piston Valves, Bellow Sealed Valve, Forged Steel Valves / Level Gauges - Reflex, Transparent, Bicolor.**

In view of technical progress designs and dimensions are subject to change without notice.

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FLUID CONTROL DIVISION



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