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These instructions are to be fully examined and understood, prior to installation and/or using the tubular level gauges. Non compliance of the instructions can cause damage to the property and possible result in serious injury.

1. ERIKS operating companies

ECON tubular level gauges are being delivered by several ERIKS operating companies on a worldwide basis. In this manual these will be referred to as 'ERIKS', the individual terms of delivery of the ERIKS operating company having executed the order are applicable.

2. Product description

The ECON tubular level gauges are designed according the information on our website, www.eriks.com and should be used in accordance with the applicable pressure-temperature rating as stated on this website. Tubular Level gauges can be delivered in different materials and types. The tubular level gauges are marked with ECON and for example with "D" (down) for bottom part or with "U" for upper part.

3. Requirements for maintenance staff

The staff assigned to assembly, operating and maintenance tasks should be qualified to carry out such jobs and in any circumstance, ensure personal safety.

4. Transport and storage

During transport and storage the tubular level gauges should be protected against external forces, influence and damage. The level indicators should be stored in an unpolluted space and should also be protected against all atmospheric circumstances. There should be taken care of the temperature and humidity in the room, in order to prevent condensate formation.

5. Function

ECON tubular level gauges are designed to indicate the liquid level of a tank. ECON tubular level gauges can be delivered in the materials brass or stainless steel depending on the application, medium and temperature, in flanged DN20 or threaded ½" BSPP

Brass models:

- Figure 569 D Tubular 90° level gauge bottom part
- Figure 569 U Tubular 90° level gauge upper part
- Figure 571 D Tubular level gauge bottom part with hand wheel
- Figure 571 U Tubular level gauge upper part with hand wheel
- Figure 571 Tubular level gauge intermediate part
- Figure 572 Tubular fast operated, self-closing level gauge bottom part,
- Figure 575 Tubular fast operated, self-closing level gauge bottom part with flange
- Figure 586 D Tubular hand wheel operated level gauge bottom part with flange

- Figure 586 U Tubular hand wheel operated level gauge upper part with flange
- Figure 586 Tubular level gauge intermediate part with flange



Fig.569 DO and 569 U



Fig.571 D - 571 and 571 U

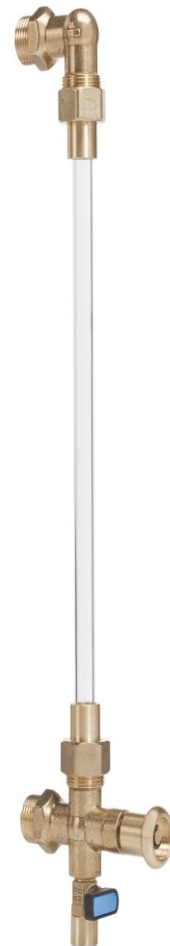


Fig.572 and 569 U



Fig.586 D - 586 and 586 U

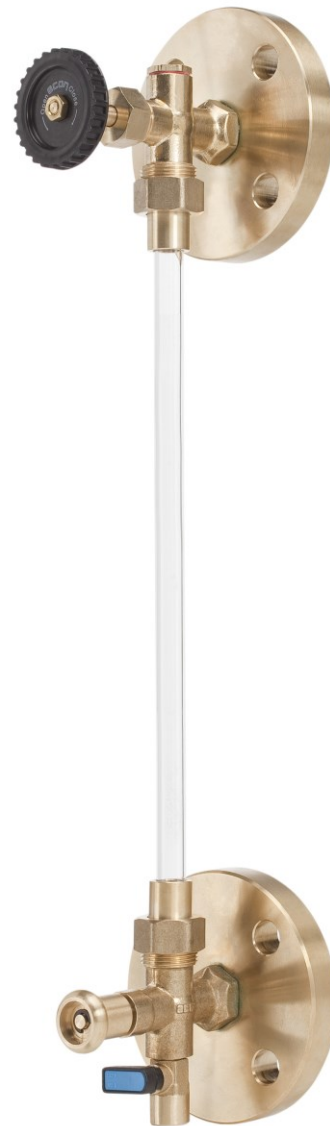


Fig.575 - and 586 U

Stainless steel models:

- Figure 576 D Tubular level gauge bottom part with hand wheel
- Figure 576 U Tubular level gauge upper part with hand wheel
- Figure 576 Tubular level gauge intermediate part
- Figure 577 D Tubular 90° level gauge bottom part
- Figure 577 U Tubular 90° level gauge upper part
- Figure 578 D Tubular hand wheel operated level gauge bottom part with flange
- Figure 578 U Tubular hand wheel operated level gauge upper part with flange
- Figure 578 Tubular level gauge intermediate part with flange.



Fig.577 D and 577 U



Fig.576 D – 576 and 576 U



Fig. 578 D – 578 and 578 U

All models can be fitted with Glass or Plastic level gauge tube and provided with a Perspex sight glass protector, combined with support brackets.

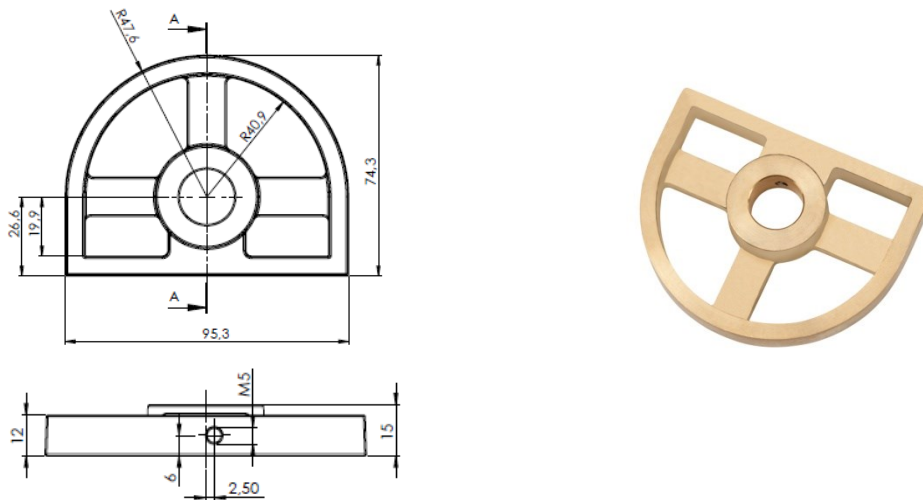
- Figure 7009 Plastic level gauge tube 12 x 8 x 2000 MM
- Figure 7010 Level gauge borosilicate glass OD 12,5 x 2000 MM
- Figure 240 Support bracket suitable for mounting Perspex sight glass protector, Figure 239 (also to be used for the stainless steel version)
- Figure 239 Perspex sight glass protector (also to be used for the stainless steel version)



Fig.571 D – 7010 - 240 – 239 and 571 U

Figure 240 - Support bracket suitable for mounting Perspex sight glass protector can be used on all above mentioned figure numbers. For a level gauge complete with glass, please mention the required centre to centre size and the proper figure numbers. The glass and if necessary the protector will then be cut to the proper size. The length of the tubular glass must be the c.t.c. dimension minus 35 mm. The length of the Perspex protector must be the c.t.c. dimension minus 94 mm.

Figure 240 - Support bracket



Assurance by means of Hexagon bolt M5

6. Application

The ECON tubular level gauges are suitable for liquids as water, oil and petrol in both open and closed reservoirs. The tubular level gauges are designed for standard operating conditions. For the use of extreme conditions e.g. aggressive or abrasive media, it is recommended to mention this at the ordering stage, to verify whether the tubular level gauge is suitable. The installation designer is responsible for the tubular level gauge selection, suitable for the working conditions. The tubular level gauges are unsuitable, without written permission of an ERIKS company, to apply for hazardous media as referred into Regulation (EC) No 1272/2008.

7. Installation

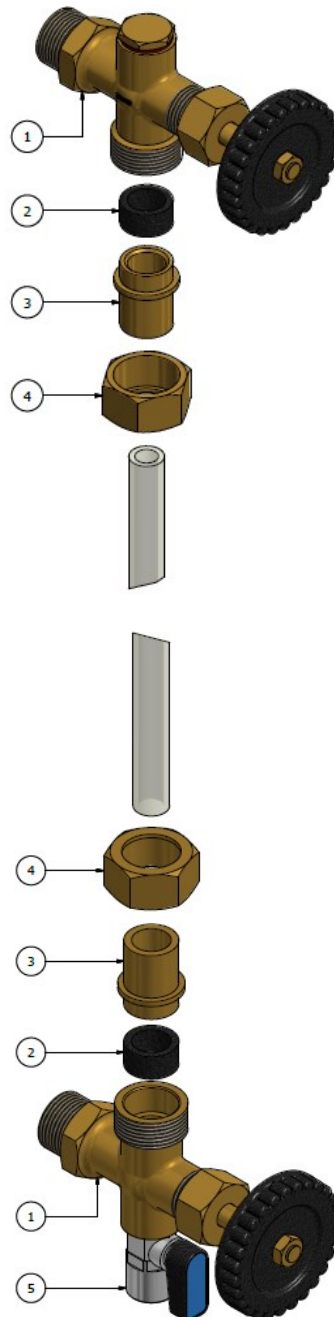
During the assembly of the tubular level gauges, the following rules should be observed:

- make sure, before assembly, that the level gauges were not damaged during transport or storage, are executed according request, are to your order specification and are suitable for the job.
- make sure that the thread or flange on the tank is executed in the same standard as the gauge connection and also free from pollution.
- choose a position on the tank which is flat and unobstructed vertically for mounting of the level gauges.
- for tubular level gauges on the bottom and at the top, mark out two holes on the tank wall at the same centre distance as needed and ordered. The markings will locate the valves and both markings should be positioned on an exact vertical centre line.
- the bottom gauge must be located above any known or suspected sludge level.
- drill a hole at each marked position, weld a nipple with inside thread ½" BSPP or a flange according to the gauge perpendicular to the tank wall, as connection for the gauge.
- remove pollution, as burrs and welding parts from the new tank connection.
- for a correct functioning, the level gauge must be connected stress free, intermediate parts must be arranged when the total length is above 2 Meter, this to prevent any additional stress, caused by the total length of the tubular level gauges.
- for mounting the threaded gauges, always use appropriated sealing material on the thread.
- for mounting the flanged gauge, use appropriate gaskets and fasteners.
- the length of the tubular glass must be the c.t.c. dimension minus 35 mm.
- after installation, a tightness check must be made on the joint seals, bolts and nuts.

Installation steps

- mount upper and bottom part
- remove nut (No.4), bush (No.3) and seal (No.2) and slide the parts over the tube
- make sure the tube is the correct length
- first slide tube in the upper part, than lower the tube in the bottom part.
- push seal (No.2) with bush (No.3) into the level gauge and tighten with nut (No.4)

- No.1 Gauge body**
- No.2 Seal ring**
- No.3 Sight glass bush**
- No.4 Coupling nut**
- No.5 Brass ball valve (drain valve)**



8. Operating instructions to read the fluid level of the tank

Tubular 90° level gauges:

- for the tubular 90° level gauges a direct identification of the fluid level is always possible

Tubular level gauges with hand wheel:

- for the tubular level gauges with hand wheel, the hand wheel should always be in open position for a direct identification of the fluid level.

Tubular level gauges with press button, self-closing:

- for the tubular level gauges fast operated self-closing, press the button and hold open. The fluid inside the tank should now flow into the column, when the liquid level settles, release the button of the gauge to seal of the column from the tank. Identification of the fluid level is now possible.



Note: because of the self-closing gauge(s), the liquid level in the column stays the same. When a new reading is required, the gauge(s) should be opened.

9. Maintenance

During maintenance, the following rules must be observed:

- always keep personal safety precautions in mind and always use appropriate protection e.g. clothing, masks, gloves etc.
- be alert that the temperature still can be very high or low and can cause burns.
- make sure that the pressure is reduced to atmospheric pressure.
- dust, grease and medium residual, must be frequently removed from the valve body and all moving parts, such as stem, to maintain all operating functions.
- during maintenance of level indicator body (column) it is not allowed to open the valves.

Check the column and gauge(s) for signs of leakage. If leakage is detected, the gasket loading should be checked. The pressure in the tubular level gauges should be relieved before retightening is attempted. If leakage continues after retightening, the section should be disassembled. The bolts should be removed, the parts examined to determine a reason other than bolt loading for the continued leakage. After correcting the reason for leakage, reassemble the section, with using new glass if necessary. Although a used glass may look perfect, it may have lost some of its original brightness.

Before starting any service jobs on the level indicator, the column must be drained and depressurized to atmospheric pressure, if necessary then loosen the coupling nuts between column and gauge(s).

Before starting the reassembling, check if the seating surface of the flange gaskets is in good condition and centralize the gasket, or for the threaded gauges use appropriated new sealing material on the thread.

Maintenance on the gauges requires draining of the tank below level of connection point of the lowest gauge and then draining of the tubular level gauges. After this, dismantling of the complete tubular level gauges including valves is very easily.

The glass seal ring in the gauge can be replaced, by disconnecting the nut and sight glass bush and removing the glass, than the seal ring can be changed easily.

10. Service and repair

All service and repair jobs should be carried out by authorized staff, using suitable tools and user shall use genuine valve parts.

- welding repair and drilling of the valve is forbidden.
- after replacement of the push-button or hand wheel gauge, it is necessary to check the valve operation and tightness of all connections. Leakage test should be carried out.
- after installation, the valve should be checked and maintained periodically at least every 3 months, depending on the medium.

11. Safety notes



- do not perform maintenance on fitted gauges, with the system under pressure.
- the maximum working pressure may not exceed 5 bar.
- the maximum working temperature may not exceed 80°C for the brass valves, for the stainless steel versions the maximum working temperature is 150°C
- do not stress the fitted gauge(s) or column with external loads.
- make sure the gauge is not damaged in any way as this could impair good operation.
- keep the gauge away from heat sources that might impair good operation.
- the gauges with hand wheel or push-button have to be operated periodically, in order to avoid that the disc will stick to the seat, with the natural consequence of an increasing of the operating force or torque on the push-button or hand wheel. This interval period is to be decided by the operator, depending on the application. In any case we advise a limit period of three weeks.
- the user should check, if used materials are suitable for the application.

12. Troubleshooting

It is essential that the safety regulations are observed when identifying the fault.

Problem	Possible cause	Corrective measures
No flow level	Empty tank	Fill tank
	Obstruction in gauge or column	Clear obstruction
	Incorrect air ventilation	Check air ventilation
Filling level gauge failed	Incorrect use	See operating instruction,
Broken sight glass	Misuse	Replace glass
	Not exact vertical mounted and/ or not stress free.	Replace glass and check inline gauges and tank flatness
	Torsion/bending of column	
Gauge is not sealing	Mal function of gauge or broken spring, (push-button valve)	Replace gauge
Rough moving stem	For example because of pollution, swelling or damaged gasket	Check the gauge on the stem sealing and replace if necessary the gauge
Leakage from glass seal ring	Damaged seal ring	Replace seal ring
	Loose coupling nut	Tighten coupling nut

13. Removal

Dismantled and rejected valves cannot be disposed with household waste. The valves are made of materials which can be re-used and should be delivered to designated recycling centers.