

INSTRUCTIONS

FOR INSTALLATION, OPERATION AND MAINTENANCE OF

Glass Tube Level Indicators [LIG]



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1. General safety information's

Instructions for installation, start-up and maintenance during the period of exploitation of valves manufactured in the “Termovent SC” should be used as a manual intended for all personnel directly or indirectly involved in dealing with the aforementioned goods

These instructions are only related to Glass Tube Level Indicators.

Operators in charge of installation, operation and maintenance of valves during the period of use, should be fully trained for the correct / optimal performance of these tasks.

Because valves in working conditions have hot parts and may cause burns, the operator has an obligation to undertake all necessary precautions to avoid such by using protective facilities.

Level Indicator in work conditions on high temperatures should cause burns to operators or someone else come into contact with them, so protection with heat insulators and use of protective glasses are recommended.

Before the service or reinstallation of the valves, the plant or installation should be taken out of operation (pressure 0 bar, temperature of valves should be the same temperature as the environment).

These products are recyclable. No ecological hazard is anticipated with disposal of these products providing due care is taken.

2. Product description

Level Indicators in basic construction are intended for indication of fluid level in the boilers and tanks.

If anything is unclear at the time of installation, start-up or during use, and not covered in these instructions, the departments of the “Termovent SC” should be contacted directly in order to obtain the required support.

All Level Indicators manufactured in “Termovent SC” are marked with following marks: ufactured in “Termovent SC” are marked with following marks:

- Identification of manufacturer (“Termovent SC” logo);
- Nominal diameter of indicators valves NPS (inch) or DN (mm);
- Nominal pressure Class rating or PN (#);
- Material designation of level indicator valve bodies;



- Level Indicator Valve body melt identification/heat number;
- Trim identification- material grade for stem, disc and seat;
- Unique serial number;
- Maximum allowable pressure at maximal temperature according to EN 12516;
- Date of manufacture (month and year);
- Other marks in accordance with customer request or product standard.



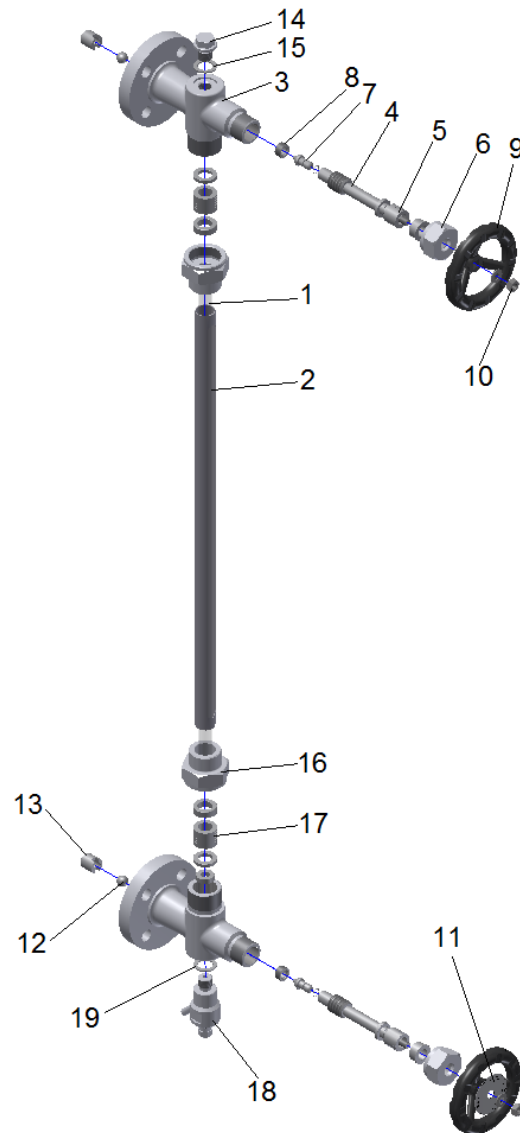


Fig. 1 Parts

Table 1

Pos.	Part Name	Quantity	Spare Parts
1	Glass Tube	1	
2	Protective Tube	1	
3	Level Indicator Valve Body	2	
4	Stem	2	
5	Stem Packing	2 set	Yes
6	Stem Packing Nut	2	



7	Disc	2	
8	Seat	2	
9	Handwheel	2	
10	Handwheel Nut	2	
11	Nameplate	1	
12	Ball	2	
13	Ball Plug	2	
14	Plug	1	
15	Plug Gasket	1	Yes
16	Connection Nut	2	
17	Connection Packing	2 set	Yes
18	Discharge Valve	1	
19	Discharge Valve Gasket	1	Yes

3. Transport and storage

Transport and storage of level indicator should be performed at a temperature between -20°C to $+60^{\circ}\text{C}$ and should be protected against outer and atmospheric influences, as well as protecting painted surfaces against damage. The purpose of painted surfaces is to protect level indicator against corrosion during transport and storage.

The basic version of level indicator are protected with particular/special paints applied to the outer parts and protective preservatives inside. As such, any corrosion is prevented for a period of 6 months. Protection for special conditions is applied only with prior agreement.

It is recommended to store the level indicators in closed, dry and ventilated storage facilities and to protect level indicator against any atmospheric influence. In order to avoid the appearance of corrosion before the expiry of protection it is necessary to store the level indicators on a pallet/crate or other appropriate place.

WARNING !!!

- You must not lift the level indicator using the connection flange holes or the handwheel;
- You must not remove the protection covers from the valve connection ends;
- Store the level indicators in the 'closed' position.



4. Installation and start-up

After the removal of the protection covers it is necessary to thoroughly clean inside the indicator valves with compressed air without first opening the valves.

Closure of a indicator valves is performed by turning the handwheel in a clockwise direction. On the handwheel is an arrow and the letter “C” indicating the closing direction, and another arrow and the letter “O” indicating the opening direction.

When installing level indicator with flanged ends it is necessary to take into consideration the selection of adequate bolt material and the appropriate type of gasket depending on the type of working fluid, pressure, temperature, and the type of flange facing. It is necessary to install gaskets strictly in accordance with instructions given from the manufacturer of the gaskets.

Indicator with welding ends should be welded onto the pipeline by an expert and with appropriate WPS. After welding, if necessary, local normalization should be performed and the inside of the pipeline should be cleaned to remove possible welding remains.

At the moment of installation the influence of the load of the pipeline on the indicator should be reduced. The same also applies for temperature oscillation, hydraulic impact and similar. The level indicator should not be used as a support for a pipeline.

During installation appropriate tools should be used and protective measures undertaken.



WARNING !!!

- You must not lift the level indicators using the connection flange holes or the handwheel at the moment of the installation– you should use lifting straps;
- Before installation the impurities should be removed from the pipeline or from the appliance;
- Remove protecting covers from the level indicators valves ends, degrease and clean the inside of the valves, and in case of a flanged connection, carefully clean the sealing surfaces;
- Confirm that the marks on the level indicator correspond to the projected parameters of the plant (e.g. size, pressure, material etc.);
- During the installation check if there is enough space for normal and safe manipulation;
- At the moment of testing of a pipeline or an installed appliance valve; take care about the predicted maximal differential pressure.
- **The Level Indicator should not be used as a support for a pipeline.**

5. Usage and maintenance

It is convention during usage of the level indicators that all minor defects, if operating conditions allow, should be repaired on the spot. If not, the level indicators should be dismantled from the site in order to perform a full repair. If the level indicators is severely damaged it should be replaced with a new one. Such repairs protect level indicators against further deterioration, being permanently out of work and being the cause of severe accidents in the plant.

Stem packing and connection packing should be the subject of particular attention as it is important for the qualitative maintenance of tightness and should be periodically checked. If leakage at the stem packing is detected, the stem packing nut should be tightened slowly or if leakage at the connection packing is detected, the connection nut should be tightened slowly (Fig. 2). Stem packing nut tightening must be provided with engineers' wrenches dimension 36mm, Connection nut tightening must be provided with engineers' wrenches dimension 46mm.



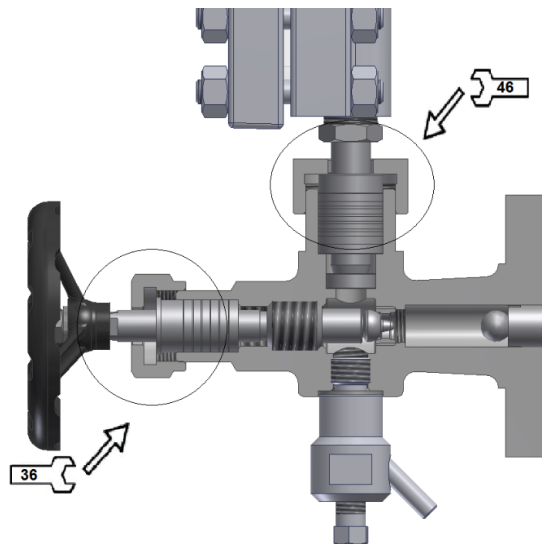


Fig.2 Stem packing and connection packing tightening

In case of leakage through gaskets between valve connection flanges or between the cover and body, it is necessary to make replacements of the gaskets as soon as possible to prevent damage of the sealing surfaces due to erosion.

The valve stem packing should be the subject of particular attention as it is important for the qualitative maintenance of tightness and should be periodically checked. If leakage at the stem packing is detected, the stem packing nut should be tightened slowly.

After a longer period of use, the valve stem packing becomes rigid and unusable so a replacement should be done. When the replacement of stem packing is performed, remains of the old packing should be removed carefully and the sealing chamber should be thoroughly cleaned before the new packing is installed. The packing rings of the new stem packing should be identical in quality as before, especially for valves with high working parameters. Individual packing rings should be used for stem packing (Fig. 3) and arranged in a manner that the connection of one ring is at angle of 90° to the connection of next one.



Fig.3 Stem packing ring

WARNING !!!

- During usage level indicator valves must be completely in an open or closed position;
- If, when a valve is overhauled, a decrease of wall thickness of more than 30% is detected at any of the ports (due to erosion) the valve should stop being used;
- Any time when a level indicator is dismantled or reinstalled the gaskets should be replaced with new ones with the appropriate quality;
- Level indicator Valves opening and closing by handwheel, should be done without use of auxiliary means such as a rod or similar;
- Level indicator Valves maintenance and manipulation during use should be done only by experts and persons well trained for such purpose;
- At the moment of installation of the plant sudden and extreme change of pressure and temperature should be avoided.

6. Service and repair

Only authorized persons should perform service and repair with appropriate tools and, if it is possible, using original spare parts. Personal protection should be applied in accordance with valid regulations and legalizations.

Attention should always be paid to the reliability of the level indicators and parameters of the working implementation / plant, and only materials which can successfully replace those originally installed should be used.

Before the service or reinstallation of the level indicators, the plant or installation should be taken out of operation (pressure 0 bar, temperature of level indicators should be the same temperature as the environment).

Every level indicators serviced or repaired should be subject to all necessary tests usually performed for a newly produced level indicators.

7. Possible malfunctions and solutions

During operation of installed Level Indicator some irregularities should appear. Only competent personal of the user or very manufacturer should resolve such irregularities. Most common irregularities which may appear and actions in such situation are listed in Table 2.



Table 2

Failure	Possible cause	Troubleshooting
Absence of level indication	Indicator Valves are in closed position	Open the valves
	Protective caps are not removed.	Remove protective caps off connection ends
	Pipeline is completely covered with deposits.	Check and clean pipeline, remove deposits
Leakage on glass tube connection packing	Connection nut (Pos.16) are not tightened	Tighten Connection Nut (Pos.16)
	Connection packing (Pos. 17) lost own functionality	Carefully add new connection packing rings to original packing (Pos. 17) or replace whole packing (Pos.17) with new one
Leakage on stem packing	Stem Packing Nut (Pos. 6) are not tightened	Tighten Stem Packing Nut (Pos.6)
	Stem packing (Pos.5) lost own functionality	Completely open the valve and carefully add new stem packing rings to original stem packing (Pos.5) or replace whole stem packing (Pos.5) with new one
Leakage on connection flanges.	Connecting nuts between Level Indicator and tank are loosen.	Tighten connection nuts on Level Indicator flanges.
Leakage on discharge valve gasket	Discharge valve (Pos. 18) are not tightened	Tighten Discharge valve (Pos.18)
	Discharge valve gasket (Pos. 19) is damaged	Disassemble discharge valve (Pos.18) and replace discharge valve gasket (Pos. 19) with new one
Leakage on plug gasket	Plug (Pos.14) are not tightened	Tighten plug (Pos.14)
	Plug gasket (Pos.15) is damaged	Disassemble plug (Pos. 14) and replace plug gasket (Pos.15) with new one



8. Guarantee

The Guarantee issued by “Termovent SC” confirms the safe working of its products under conditions when these products are properly installed in accordance with the instructions in the documentation given to the customer, and usage is in accordance with approved technical conditions and working parameters.

The Guarantee is void if inappropriate parts from other manufacturers are implemented, if the user changes construction, or if there is any decline in function or malfunction due to natural wear and tear.

Guarantee conditions:

The Guarantee is valid for defective parts or defective products, when any such defect is confirmed by an expert engaged by the customer and approved by experts from our company. In such a situation “Termovent SC” will replace the defective part(s) or defective product(s).

Replacement of defective part(s) or defective product(s) with new one(s) should be done only by an expert engaged by the customer upon approval or by instruction of our experts and in accordance with the instructions for installation.

The Guarantee period is not valid if installation and manipulation of the level indicators isn't in accordance with these instructions. The Guarantee period for all replaced parts or product(s) starts from the moment the replacement(s) is/are done.

Guarantee is valid only for following storage and maintenance conditions:

Crate and pallets with level indicators should be stored indoors in a building with access limited to authorized personnel only. In the case of an inappropriate storage place crates (or pallets) should be stored under an awning and should be protected against rain and moisture with an appropriate waterproof cover, again with access limited to authorized personnel only.

Level indicators should only be taken out of a crate or removed from the covering of a pallet just before installation and only quantity to be installed should be taken out / removed. After the level indicators for installation are taken out of a crate (or pallet) the crate/pallet should be closed/covered again.

Do not remove the protector covers from valves until installation.

Valves prepared for installation should be manipulated and transported in a careful manner to prevent possible mechanical damage.



WARNING !!!

- After detection of mistakes “Termovent SC” should be informed immediately.
- Claims must be made in writing.

