Documentation

Vacuum leak detector VLXE ..

Please read the instructions before commencing any work

Last updated: 08/2020

Item no.: 602 222

Table of Contents

1. General

1.1 Information

This manual provides important information about how to handle the VLXE leak detector. The precondition for safe working is compliance with all of the specified safety notices and instructions for action.

In addition, all the applicable local accident prevention regulations and general safety instructions must be complied with at the operating site of the leak detector.

1.2 Explanation of symbols

Warnings in this manual are indicated by a symbol next to them.

The signal word expresses the level of risk.

DANGER:
An immediately hazardous situation that results in death or serious injuries if not avoided.

WARNING:
A potentially hazardous situation that can result in death or serious injuries if not avoided.

CAUTION:
A potentially hazardous situation that can result in minor or slight injuries if not avoided.

INFORMATION:
Highlights useful tips, recommendations and information.

1.3 Limitation of liability

All the data and information in this documentation have been compiled taking account of applicable standards and regulations, the current state of technology and our many years of experience.

SGB will not accept liability for:

- Non-compliance with this manual
- Unintended use
- Deployment of unqualified personnel
- Unauthorized conversions
- Connection to systems not approved by SGB

1.4 Copyright

1.5 Warranty

We provide 24 months of warranty on the VLXE .. leak detector from the day of installation on-site in accordance with our General Terms and Conditions of Sale and Delivery.

The warranty period is a maximum of 27 months from our date of sale.

The prerequisite for any warranty is the presentation of the function/test report about initial commissioning by trained personnel. Specification of the serial number of the leak detector is required.

The warranty obligation is rendered null and void in the case of
- inadequate or incorrect installation,
- improper operation,
- changes/repairs made without the agreement of the manufacturer.

Our warranty does not include parts, which may be perished premature due to their consistence or category of usage (e.g. pumps, valves, gaskets, etc.). Furthermore, we are not liable for defects or corrosion damages caused by humid or inappropriate installation environments.

1.6 Customer Service

Our Customer Service department is available to provide you with information.

You can find information about contacts on the World Wide Web at sgb.de or on the rating plate of the leak detector.

2. Safety

2.1 Intended Use

- Leak detector fitted in the open air outside the explosion hazard area (also possible in the building under the conditions listed)
- Conditions from Sec. 3.5 “Field of application” must be complied with.
- Pressureless double-walled tanks and pressureless double-walled pipes, if any explosive steam-air-mixtures and vapors that occur comply with these conditions:
  - Explosion group IIA to IIB3
  - Temperature class T1 to T3
  - Must be **heavier** than air
- Double-walled pipes with up to 5 bar conveyance pressure in the inner pipe for liquids with a flashpoint > 60 °C (for Germany 55 °C) and which end in the ex-area. Possible steam-air-mixtures and vapors must comply with the following conditions:
  - Explosion group IIA to IIB3
  - Temperature class T1 to T3
  - Must be **heavier** than air
- Only for monitoring spaces of double-wall tanks/pipelines with sufficient resistance to underpressures
- Tightness of the monitoring spaces according to this documentation (Chap. 6.1.).
- Detonation flame arresters are to be used on the vessel/pipe.
- Ambient temperature -40°C … +60°C
- Penetrations in the manhole or control shafts must be closed off so that they are gas-tight
- Power connection cannot be switched off
- Earthing/equipotential bonding in accordance with applicable regulations
- Mains earth may be on the same potential as the equipotential bonding of the tank/pipeline

Any claims resulting from misuse will not be accepted.

WARNING!

Danger from misuse

2.2 Responsibility of the operating company

The VLXE leak detector is used in the industrial sector. The operating company must therefore comply with statutory occupational health and safety requirements.

In addition to the safety information in this documentation, all the applicable safety, accident prevention and environmental protection regulations must be complied with. In particular:

- Compilation of a hazard analysis and implementation of its results in operating instructions
- Regular checking of whether the operating instructions comply with the current state of regulations

WARNING!

Hazard in the case of incomplete documentation

- The content of the operating instructions may also be the reaction to a possible alarm
- Instigation of an annual functional check

2.3 Qualification

WARNING!

Danger to people and environment in case of insufficient qualification

The personnel must be sufficiently qualified to recognize and avoid possible dangers on their own.

Companies that put the leak detector into operation should have been trained at SGB, by SGB or by the authorized representative.

National regulations must be complied with.
For Germany: Specialist company qualification for the installation, commissioning and maintenance of leak detection systems.

2.4 Personal protective equipment (PPE)

Personal safety equipment must be worn during work.

- Wear the necessary protective equipment for the respective work
- Observe and comply with any signs concerning PPE
- For additional information see 12.2

Entry in the "Safety Book"

"Wear a warning vest"

Wear safety shoes

Wear a protective helmet

Wear gloves - where necessary

Wear protective goggles - where necessary

2.41 Personal protective equipment when working on systems which pose an explosion hazard

The parts listed here apply in particular to safety when working on systems which pose an explosion hazard.

If work is carried out in areas with a potentially explosive atmosphere, the following items of equipment are required as an absolute minimum:

- Suitable clothing (risk of a build-up of electrostatic charge)
- Suitable tools (compliant with EN 1127)
- A suitable gas warning device which is calibrated for the existing vapor-air mixture (work should only be performed at a concentration of 50 % below the lower explosion limit)[1]
- Measuring device for determining the oxygen content of the air (Ex/O meter)

2.5 Basic hazards

DANGER:
From electric current

When working on the opened leak detector, it must be disconnected from the power supply unless otherwise stated in the documentation.

Comply with the relevant regulations for electrical installations, explosion protection (e.g. EN 60 079-17) and accident protection regulations.

CAUTION:
Through moved parts

If work is carried out on the leak detector, switch off the power supply.

DANGER:
From explosive vapor-air mixtures

There may be explosive steam-air mixtures in the leak detector and in the connection lines.

The absence of gas must be established before carrying out work.

Comply with explosion protection regulations, such as the German BetrSichV (or the Directive 1999/92/EC and the resulting laws in the respective member states) and/or others.

DANGER:
When working in shafts

The leak detectors are fitted outside the manhole shafts. The pneumatic connection is typically made in the manhole shaft. The shaft should therefore be entered for the installation.

Before entry, the appropriate protection measures must be installed and the absence of gas and sufficient oxygen must be ensured.

[1] Other percentages may be applicable according to national, regional or plant-specific regulations.

3. Technical data of the leak detector

3.1 General Data

Dimensions and drilling template	see Sec. 12.3
Weight	8.3 kg
Storage temperature range	-40°C to +60°C
Use temperature range	-40°C to +60°C
Buzzer volume Summer	> 70 dB(A) in 1 m
Protection rating of the housing	IP54

3.2 Electrical data

Supply voltage	100…240 VAC, 47-63 Hz optionally: 24 VDC
Power consumption	50 W (including heating)
Terminals 5, 6, external signal:	max. 24 VDC; max. 300 mA
Terminals 11…13, potential-free: terminals 17…19, potential-free:	DC: ≤ 25 W or. AC ≤ 50 VA DC: ≤ 25 W or AC ≤ 50 VA
Fuse:	max. 10 A, 1500 A breaking capacity
Overvoltage category:	2

3.3 Ex data

Important: **only** pneumatic part	Ex II 1/2G Ex c IIB3 T4 Ga/Gb

3.4 Switching values

Type	**Alarm ON,** at the latest at:	**Pump OFF,** not more than:	**Functional capability*** of the IS** for
34	-34 mbar	-100 mbar	-250 mbar
80	-80 mbar	-140 mbar	-400 mbar
230	-230 mbar	-360 mbar	-650 mbar
255	-255 mbar	-380 mbar	-650 mbar
330	-330 mbar	-450 mbar	-700 mbar
410	-410 mbar	-540 mbar	-750 mbar
500	-500 mbar	-630 mbar	-850 mbar
570	-570 mbar	-700 mbar	-900 mbar

Special switching values can be agreed between the customer and SGB.

* Lower values can be agreed, but an underpressure valve must then be integrated into the leak detector.

** interstitial space

3.5 Field of application

3.5.1 Vessel

a) Single-walled (underground/above-ground), cylindrical tanks with leak protecting lining (LPL) or leak protecting jacket (LPJ) and the suction line up to the low point

Usage limits: none in relation to density and diameter

b) Double-walled, horizontal cylindrical tanks (underground/above-ground) (e.g. DIN 6608-2, 6616 or DIN EN 12 285-1-2)
- as with a), but without suction line to low point
- as with c), but without suction line to low point
- as with d), but without suction line to low point

Usage limits:

Density of the material being stored [kg/dm³]	$H_{max.}$ Vessel height or height from low point of the pipe to the node point[2] [m]					
	230	**255**	**330**	**410**	**500**	**570**
0.8	2.6	2.9	3.8	4.8	6.0	6.9
0.9	2.3	2.6	3.4	4.3	5.3	6.1
1.0	2.0	2.3	3.1	3.9	4.8	5.5
1.1	1.9	2.1	2.8	3.5	4.4	5.0
1.2	1.7	1.9	2.6	3.2	4.0	4.6
1.3	1.6	1.8	2.4	3.0	3.7	4.2
1.4	1.5	1.6	2.2	2.8	3.4	3.9
1.5	1.4	1.5	2.0	2.6	3.2	3.7
1.6	1.3	1.4	1.9	2.4	3.0	3.4
1.7	1.2	1.4	1.8	2.3	2.8	3.2
1.8	1.1	1.3	1.7	2.2	2.7	3.1
1.9	1.1	1.2	1.6	2.0	2.5	2.9

For **underground** systems at least **density 1** is to be assumed.

In above-ground systems, the leak detector is to be fitted above the top of the tank.

c) Double-walled (including single-walled with leak protecting lining or leak protecting jacket) cylindrical standing vessels or tanks with curved floors (underground/above-ground) with a suction line up to the low point (DIN 6618-2: 1989)

[2] Node point is the junction of the suction and measuring line with a vacuum leak detector for pipes. This can also be in the assembly kit or a manifold.

Usage limits:

Diameter [mm]	Height [mm]	Max. density of the material being stored [kg/dm³]			
		34	**230**	**255**	**330 to 570**
1600	≤ 2,820	≤ 1.9	≤ 1.9	≤ 1.9	≤ 1.9
	≤ 3,740	≤ 1.6	≤ 1.9	≤ 1.9	≤ 1.9
	≤ 5,350	≤ 1.6	≤ 1.9	≤ 1.9	≤ 1.9
	≤ 6,960	≤ 1.6	≤ 1.9	≤ 1.9	≤ 1.9
2 000	≤ 5,400	≤ 1.4	≤ 1.9	≤ 1.9	≤ 1.9
	≤ 6,960	≤ 1.4	≤ 1.9	≤ 1.9	≤ 1.9
	≤ 8,540	≤ 1.4	≤ 1.9	≤ 1.9	≤ 1.9
2500	≤ 6,665	≤ 1.0	≤ 1.9	≤ 1.9	≤ 1.9
	≤ 8,800	≤ 1.0	≤ 1.9	≤ 1.9	≤ 1.9
2900	≤ 8,400	≤ 0.9	≤ 1.9	≤ 1.9	≤ 1.9
	≤ 9,585	≤ 0.9	≤ 1.9	≤ 1.9	≤ 1.9
	≤ 12,750	≤ 0.8	≤ 1.2	≤ 1.2	≤ 1.6
	≤ 15,950	-	≤ 1.0	≤ 1.0	≤ 1.2

d) Right-angle or cylindrical tanks or tubs with flat floors (double-walled or LPL or LPJ) with suction line to low point

Density of the material being stored [kg/dm³]	$H_{max.}$ [m]						
	34	**230**	**255**	**330**	**410**	**500**	**570**
0.8	7.5	17.3	19.1	23.4	23.8	24.5	24.2
0.9	6.6	15.3	17.0	20.8	21.1	21.8	21.5
1.0	6.0	13.8	15.3	18.7	19.0	19.6	19.4
1.1	5.4	12.6	13.9	17.0	17.3	17.8	17.6
1.2	5.0	11.5	12.8	15.6	15.8	16.4	16.2
1.3	4.6	10.6	11.8	14.4	14.6	15.1	14.9
1.4	4.3	9.9	10.9	13.4	13.6	14.0	13.8
1.5	4.0	9.2	10.2	12.5	12.7	13.1	12.9
1.6	3.7	8.6	9.6	11.7	11.9	12.3	12.1
1.7	3.5	8.1	9.0	11.0	11.2	11.5	11.4
1.8	3.3	7.7	8.5	10.4	10.6	10.9	10.8
1.9	3.1	7.3	8.1	9.8	10.0	10.3	10.2

3.5.2 Pipes/tubes

In the design manufactured either in the plant or on-site

Usage limits: in accordance with the Table in Sec. 3.5.1 in b), where the height between the low point of the interstitial space and the node point (junction of the suction line and measuring line, generally in the assembly kit or manifold, see also 5.7.4 ff) is to be used instead of the tank diameter.

- Suction lines: The alarm underpressure must be at least 30 mbar greater than the max. underpressure in the inner pipe at the highest point of the interstitial space
- Pressureless lines such as filling lines
- Pressure-controlled pipelines with up to 5 bar overpressure (only if flash point > 60 °C), see also chap. 2.1.
- In special application cases (individual pressureless pipeline, gradient to a point) the VLXE 34 design can also be used.
- For Germany: with usability certificate from construction oversight authority

Note: Double-walled fittings may also be integrated into the pipeline. Double-walled fittings can also be monitored for themselves with this leak detector. The installation examples for pipes are to be applied analogously.

3.5.3 Monitorable fluids

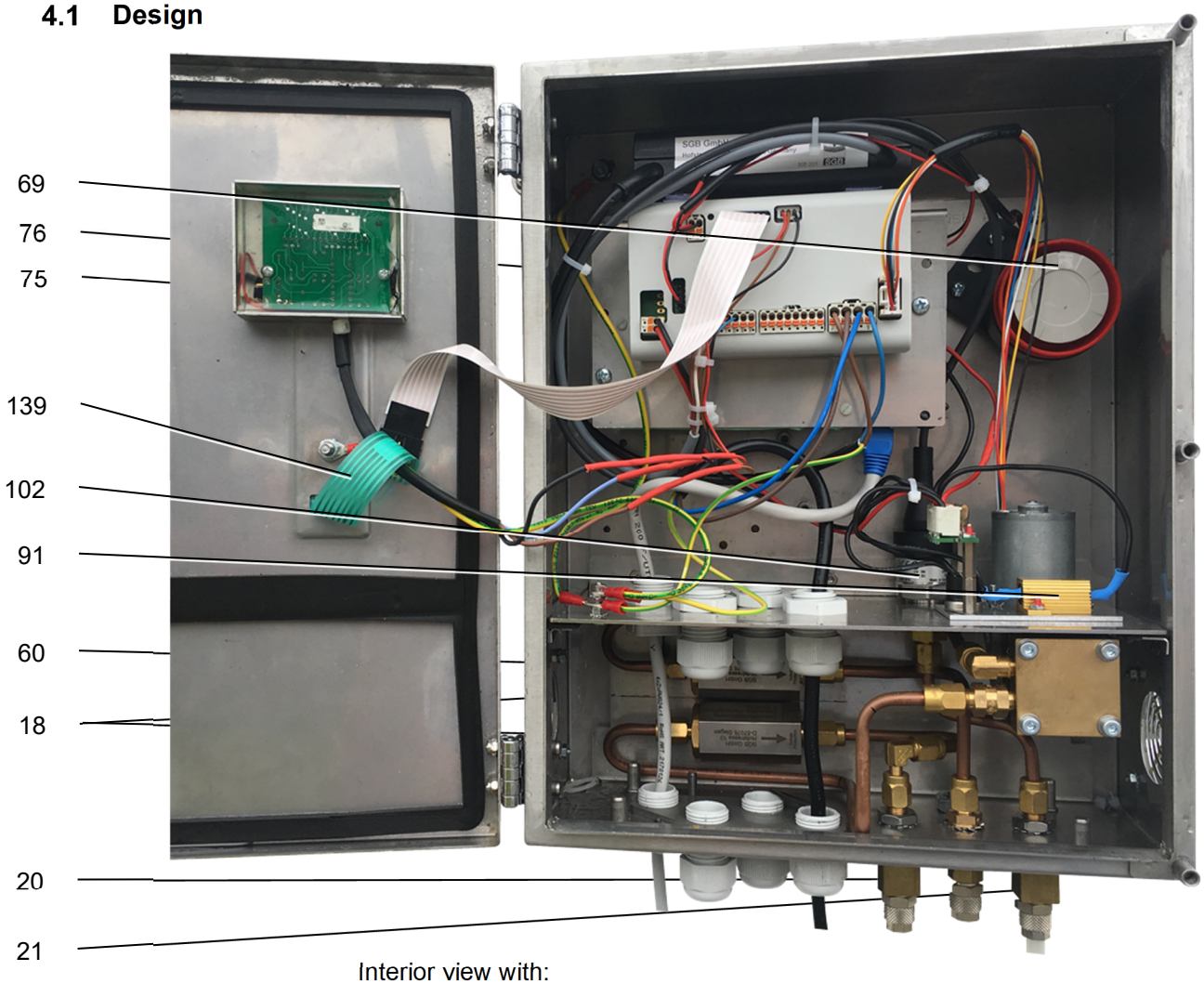
Water-polluting liquids with a flashpoint ≤ 60°C (for Germany the limit is 55°C in accordance with TRGS 509 and 751), such as fuels and combustibles.

The following conditions also apply:

- The materials used must be resistant to the liquids being monitored.
- Water-polluting liquids with flashpoint ≤ 60 °C (for Germany the limit is 55 °C in accordance with TRGS 509 and 751)[1] and flashpoint > 60 °C (for Germany the limit is 55 °C in accordance with TRGS 509 and 751) with possible explosive vapor-air mixtures (e.g. due to outgassing).
  These possible explosive vapor-air mixtures must be heavier than air and classifiable into Explosion group IIA or IIB as well as in temperature class T1 to T3, such as fuel e.g. (petroleum).
- If different water-polluting liquids are being conveyed in single pipes and monitored with a leak detector, these liquids must not negatively influence one another and the mixture must not lead to chemical reactions.

4. Design and function

4.1 Design



Interior view with:

18	Detonation flame arrester
20	Three-way valve in suction line
21	Three-way valve in measuring line
60	Vacuum pump
69	Buzzer
75	Display board
76	Main circuit board
91	Heater
102	Pressure sensor
139	Membrane keyboard

4.2 Normal operation

The vacuum leak detector is connected to the interstitial space through the suction, measurement and connection line(s). The underpressure generated by the pump is measured by a pressure sensor and regulated.

When the operating underpressure (Pump OFF) is reached the pump is switched off. Due to small leaks in the leak indication system which are unavoidable, the underpressure will slowly start to fall. When the Pump ON switching value is reached, the pump is switched on and the interstitial space is evacuated until the operating underpressure (Pump OFF) is reached.

Depending on the level of tightness and temperature fluctuation in the overall system, the underpressure alternates between the Pump OFF switching value and the Pump ON switching value, with short pump running times and longer down times.

4.3 Air leak

If an air leak occurs (in the outer wall or inner wall, above the fluid level), the underpressure pump switches on, in order to restore the operating underpressure. If the volume of air flowing in through the leak exceeds the limited conveying quantity of the pump, the pump continues to run.

Increasing leak rates lead to a further drop in underpressure (with pump running) until the switching value “Alarm ON” is reached. Visual and audible alarm signals are then triggered.

4.4 Liquid leak

If there is a liquid leak, liquid penetrates the interstitial space and collects at the bottom of the interstitial space.

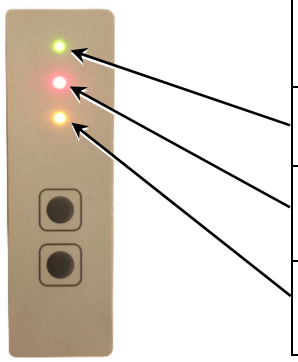
The liquid entering lowers the underpressure, the pump is switched on and evacuates the interstitial space(s) until the operating underpressure is reached. This process is repeated multiple times until the liquid stop valve in the suction line is closed.

Due to the underpressure still existing on the measuring line side, further fluid leaks will be sucked into the interstitial space, the measuring line and, if appropriate, the pressure compensation vessel. This leads to a decline in underpressure until the “Alarm OFF” pressure is reached. Visual and audible alarm signals are then triggered.

Note: A liquid sensor connected to a magnetic valve can optionally be used instead of a liquid stop valve. The liquid alarm is then triggered by the liquid’s contact with the sensor.

4.5 Display and control elements

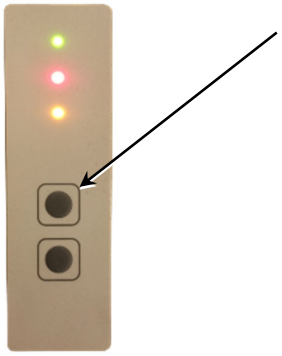
4.5.1 Display



Signal lamp	Operating status	Alarm, underpressure below “Alarm ON”	Alarm probe	Magnetic valve fault	Device fault
OPERATION: green	ON	ON	ON	ON	ON
ALARM: red	OFF	ON (flashing)[3]	OFF	ON (flashing)	ON[4]
ALARM 2: yellow	OFF	OFF	ON (flashing)	ON	OFF

[3] (flashing) is always active when acknowledged external signal is active.
[4] The “Audible alarm” button has no function, meaning the acoustic signal cannot be stopped.

4.5.2 Function: "Switch off audible alarm signal"

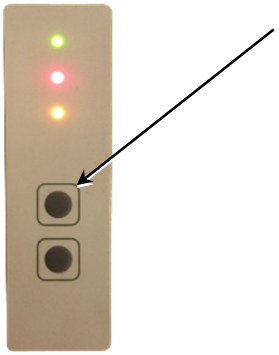


Briefly press the "Mute" button once. The audible alarm signal is then switched off and the red LED flashes.

Pressing the button again switches on the audible signal.

This function is not available in normal operation and for malfunctions.

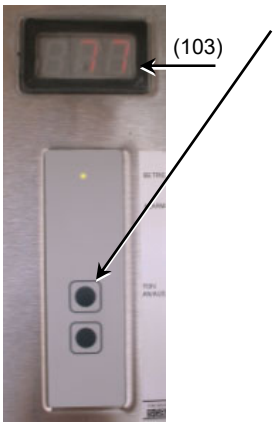
4.5.3 Function: "Test visual and audible alarm signal"



Press the "Mute" button and keep it pressed (approx. 10 seconds). The alarm signal is triggered until the button is released again.

This test is only possible if the pressure in the system has exceeded the "Alarm OFF" pressure level.

4.5.4 "Leak tightness check” function



Press the "Mute" button and keep it pressed until the "Alarm" signal lamp flashes quickly, then release. A value for the leak tightness is shown on the display (103). The same value is indicated by the number of times the “Alarm” signal lamp flashes.

After 10 seconds this display goes off and the current underpressure in the system is shown again.

For the "Test leak tightness" function, the leak detector must have performed at least 1 automatic feed interval in normal operation (i.e. without being filled/evacuated by an assembly pump) in order to obtain a valid result.

It is recommended to make this test before performing any recurring functional test of a leak detector. This makes it possible to directly assess whether to look for leaks.

Number of flashing signals	Assessment of the leak tightness
0	Very leak tight
1 to 3	Leak tight
4 to 6	Sufficiently leak tight
7 to 8	Maintenance recommended
9 to 10	Maintenance urgently recommended

The smaller the above value, the tighter the system is. The meaningfulness of this value also depends on temperature fluctuations and should therefore be considered an indicative value.

5. Installation of the system

5.1 General Information

- Before starting work, the documentation must be read and understood. If anything is unclear, please contact the manufacturer.
- Take manufacturer approvals into account for the vessel/pipe or the interstitial space.
- The safety instructions in this documentation must be observed.
- Installation and start-up must only be performed by qualified firms[5].
- Feedthroughs for pneumatic and electrical connection lines, via which the Ex atmosphere can spread, must be sealed so that they are gas-tight.
- Comply with the relevant regulations for electrical installations, explosion protection (e.g. EN 60 079-14, EN 60 079-17) and accident protection regulations.
- Comply with explosion protection regulations, such as the German BetrSichV (or the Directive 1999/92/EC and the resulting laws in the respective member states) and/or others.
- Pneumatic connections, connection lines and fittings must be designed in at least PN 10 for the entire temperature range that may occur.
- Before entering inspection shafts, check the oxygen content and, if necessary, flush the inspection shaft.
- When metal connection lines are used, it must be ensured that the mains power supply earth has the same potential as the tank/piping to be monitored.

5.2 Installation of the leak detector

- Wall installation using the supplied installation material.
- Outside the explosion hazard area in the open air, without other protective boxes, but not in shafts or tanks.
  Over shafts and tanks only if these will be or are defined as explosion hazard zones.
- If the installation is to take place in an enclosed area, it must be well ventilated. The basis for the assessment by the operating company is EN 60 079-10/EN 13 237.
- To avoid excessive heating, the leak detector may not be fitted directly alongside heat sources.
  The ambient temperature may not exceed 60°C. Appropriate measures may need to be taken (e.g. installing a sunroof to limit solar radiation).

[5] For Germany: "qualified firms" in the sense of the Water Act, which have demonstrated their qualification for installing leak detection systems.

- If the leak detector is used on containers with internal overpressures of max. 50 mbar (e.g. gas recirculation), it must be fitted at least 1 meter above the top of the vessel.
- Air supply and ventilation lines must be kept clear.
- Integrate the leak detector housing into the equipotential bonding system.

5.3 Pneumatic connection cables

5.3.1 Requirements

- At least 6 mm clearance
- Resistance to the stored or conveyed product
- At least PN 10 over the complete temperature range
- The full cross-section must be retained (do not bend)
- Color coding:
  Measuring line: RED;
  Suction line: WHITE or CLEAR;
  Exhaust: GREEN
- The length of the cables between the interstitial space and the leak detector should not exceed 50 m. If the distance is greater, a larger cross-section is to be used. Special conditions apply to the exhaust line, see Sec. 5.3.2.
- Condensate traps should be fitted at all of the lowest points of the connection lines.
- Fit liquid stop valve in the suction line (generally a part of the mounting kit).
- If liquids are being stored or conveyed for which explosion protection regulations must be complied with, suitable detonation flame arresters must be fitted at the connection to the interstitial space.

5.3.2 Exhaust

- The length of the exhaust line may not exceed 35 m. The manufacturer should be contacted if this is not enough.
- The exhaust line is generally led to the tank ventilation line, a detonation flame arrester being fitted immediately before connection to the tank ventilation line.
- <u>Exceptions from the recirculation of the exhaust to tank ventilation:</u> such as double-walled pipes or comparable:
  - Exhaust ends in the open air, in a safe[6] space, outside the explosion protection area:
    Provide condensate trap and liquid stop valve in the exhaust line, apply Zone 1 conditions in a 1 m circle around the end of the exhaust, affix warning notice if appropriate.

[6] Among other things, not accessible to public traffic/people

- The exhaust ends in Zone 1 (for example remote filling shaft or catch area):
  A detonation flame arrester is provided at the end of the exhaust line[7]. Condensate traps are to be provided at low points; the liquid stop valve can be dispensed with if the end of the exhaust ends in an area that is liquid-tight according to the Water Act (e.g. catch surface).

- Note: under some circumstances an exhaust line ending in the open air must be marked with warning notices.

5.3.3 Several pipelines/interstitial spaces connected in parallel

- Lay connection lines at a gradient towards the interstitial space or distributor. Fit condensate traps at low points in connection lines and at all low points when laying simultaneously in the open air.
- Lay suction and measuring line at gradient to the distributor. If this is not possible, place condensate traps at all low points.
- Connect a liquid stop valve in every connection line to the interstitial space against the block direction. This can prevent leaked fluid penetrating the interstitial spaces of the other pipelines.
- If shut-off valves are fitted in these connection lines, they should be sealable in the open position.
- For pressure compensation vessel applications, see (p. 5.7.4 and 5.7.5):
  Length of the measuring line from the pressure compensation vessel (V=0.1 l)[8]:

Model 230…330:	L_{max}	16 m
Model 410	L_{max}	12 m
Model 500	L_{max}	10 m
Model 570	L_{max}	8 m

<u>IMPORTANT:</u> The lower edge of the pressure compensation vessel may not be lower than the node point. The upper edge of the pressure compensation vessel may not be more than 30 cm above the node point.
Per 10 ml of the condensate trap(s) used in the measuring line between the pressure compensation vessel and the leak detector
L_{max} falls by 0.5 m

- OR (as an alternative to the pressure compensation vessel)
  50% of the entire measuring line length must be laid at a gradient of 0.5 to 1% to the node point.
  L_{min} = 0.5 x entire length of the measuring line.

5.3.4 Several pipelines/interstitial spaces connected in series

The liquid stop valves (27*) connected against the direction of flow prevent the other interstitial spaces being filled with leaked fluid if

[7] The detonation flame arrester can be dispensed with if the exhaust is laid in such a way that it is frost-free and kinking (e.g. laying in the protective pipe) or stopping up of the exhaust can be excluded.
[8] Multiplying this volume leads to the same multiplying of L_{max}.

there is a leak in the pipeline.
The interstitial space volumes for the connected pipelines must comply with the following conditions:
$3 \cdot V_{IS\,1} > V_{IS\,1} + V_{IS\,2} + V_{IS\,3} + V_{IS\,4}$ and
$3 \cdot V_{IS\,2} > V_{IS\,2} + V_{IS\,3} + V_{IS\,4}$ etc.
$V_{IS\,(number)}$ is the volume of the particular interstitial space. No. 1 is the interstitial space to which the suction line is connected (see 5.7.6)

5.4 Making pneumatic connections

5.4.1 Fitting the connection to the vessel interstitial space

(1) Generally according to the guidelines of the container manufacturer.

(2) SGB offers assembly kits with various connection kits.

5.4.2 Fitting the connection to the pipe interstitial space or test valves

(1) Generally according to the requirements of the manufacturer of the pipeline / interstitial space.

(2) If Schrader valves are used, the following points must be noted:

- Unscrew protective cap
- Tighten lock nut
- Unscrew valve insert and stick up next to the connection with a piece of adhesive tape. (as proof of the disassembly)
- Screw on connection to the interstitial space or test valve and tighten by hand.
- Tighten if necessary, with suitable pliers.

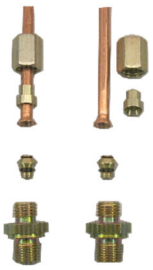
5.4.3 Between the leak detector and the interstitial space

(1) Select and lay suitable pipe.

(2) When laying the pipe, check again that the hoses are protected against damage when entering the manhole shaft.

(3) Make the appropriate connection (as shown in the following pictures).

5.4.3.1 Flange screw connections (for flanged pipes)



(1) Oil O-rings

(2) Insert intermediate ring loosely in the coupling connecting piece

(3) Push union nut and compression ring over the pipe

(4) Tighten the union nut by hand

(5) Tighten union nut until increased force is clearly noticeable

(6) Final assembly: turn further by ¼ turn

5.4.3.2 Clamping ring screw fitting for metal and plastic pipes

(1) Insert support sleeve (only plastic pipe) into the pipe end

(2) Insert pipe (with support sleeve) as far as the stop

(3) Tighten nut of screw connection by hand to the resistance; then turn further 1¾ turns with the wrench

(4) Loosen nut

(5) Tighten nut by hand until stop is felt

(6) Final fitting of the screw connection by tightening ¼ turn

5.4.3.3 Quick screw connection for PA pipe

(1) Cut the PA pipe to length at a right angle

(2) Unfasten the union nut and push it over the pipe end

(3) Push the pipe onto the nipple up to the start of the thread

(4) Tighten the union nut by hand

(5) Tighten the union nut with a spanner until there is a noticeable increase in force (approx. 1 to 2 turns)

5.5 Electrical lines

Mains power connection:

Suggested cable: Ölflex Classic 100

- 2.5 mm^2 without wire end ferrule
- 1.5 mm^2 with wire end ferrule and plastic collar

Floating contacts and external signal

Suggested cable: Ölflex Truck 1700

- 1.5 mm^2 without wire end ferrule
- 0.75 mm^2 with wire end ferrule and plastic collar

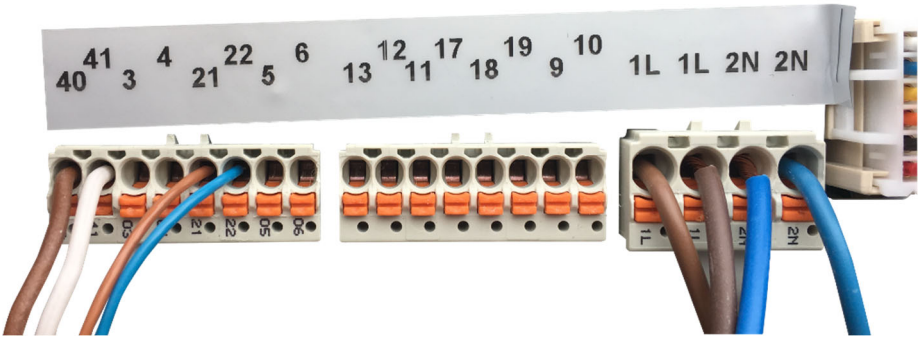
Must be resistant to liquids that are stored/transported!

5.6 Electrical connection diagram

(1) Power supply: as printed on the manufacturer's plate.

(2) Hard wire electrical connections, without plug-in or switch connections.

(3) Comply with regulations regarding electrical installations, and, if appropriate, those of the electricity supply company.

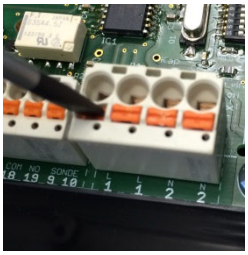


(4) Terminal assignment: (See also block diagram Sec. 5.6.3)

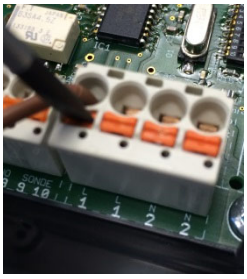
1/2	Mains power supply connection (100…240 V AC)
PE	Earth for the mains power supply connection
3/4	assigned (vacuum pump)
5+/6-	External signal (assigned to internal buzzer if applicable) 24 V DC
9/10	Special contacts, the potential-free contacts of a leak detection probe can be connected here.
11/12	Potential-free contacts (open in the event of an alarm and in the event of a power failure)
12/13	as above, however closed contacts
17/18	Potential-free contacts, parallel to the pump start (closed at pump standstill and in the event of a power failure)
18/19	as above, however open contacts
21/22	Connected (to internal pressure sensor)
40+/41-	24 V DC as permanent power supply for supplying other components or the power supply is connected here for a device using 24 V DC supply voltage.

(5) Only apply power when all electrical and pneumatic lines are connected and the housing lid is closed.

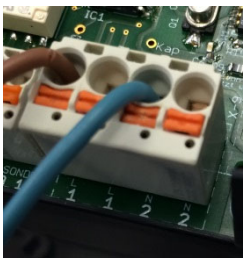
5.6.1 Connection of the wires



(1) Press in the orange point using a screwdriver. This opens the tension spring of the terminal.

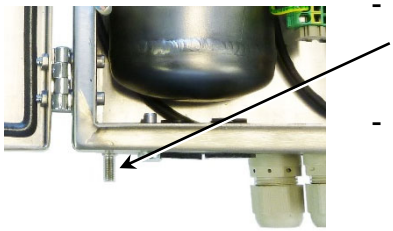


(2) Insert cable into the opened terminal.
(3) Hold cable in place and remove screwdriver.



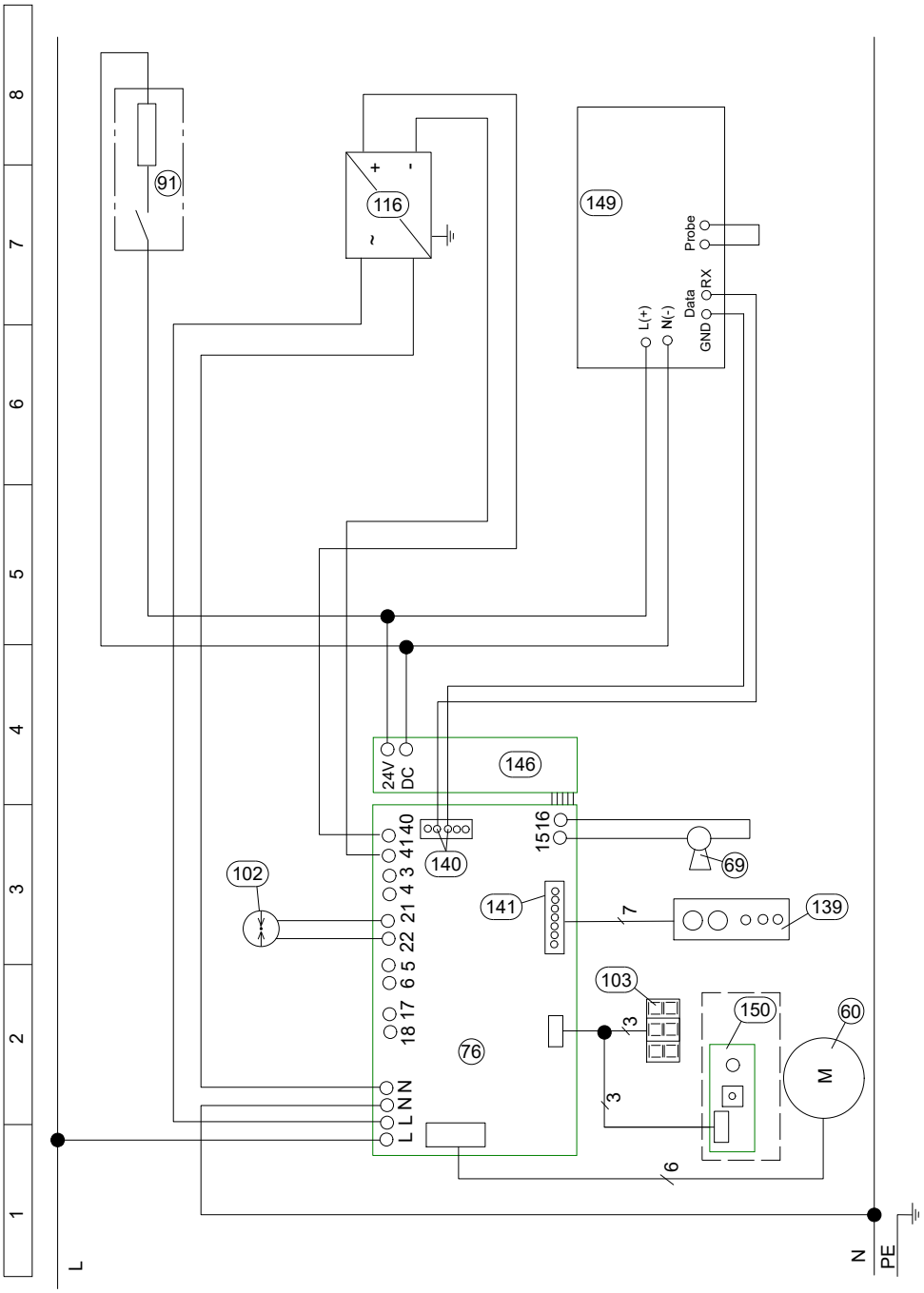
(4) Check cable for tightness and connect other cables to the terminals in the same way.

5.6.2 Equipotential bonding



- The housing of the leak detector is to be incorporated into the equipotential bonding of the entire system using the bolts provided.
- The fittings in the connection lines also need to be integrated into the equipotential bonding system, particularly if plastic pipes (connection lines to the tank) have been used.
- Before replacing a leak detector, disconnecting lines or similar work, ensure that equipotential bonding is maintained (pull electrically conducting bridge if applicable).

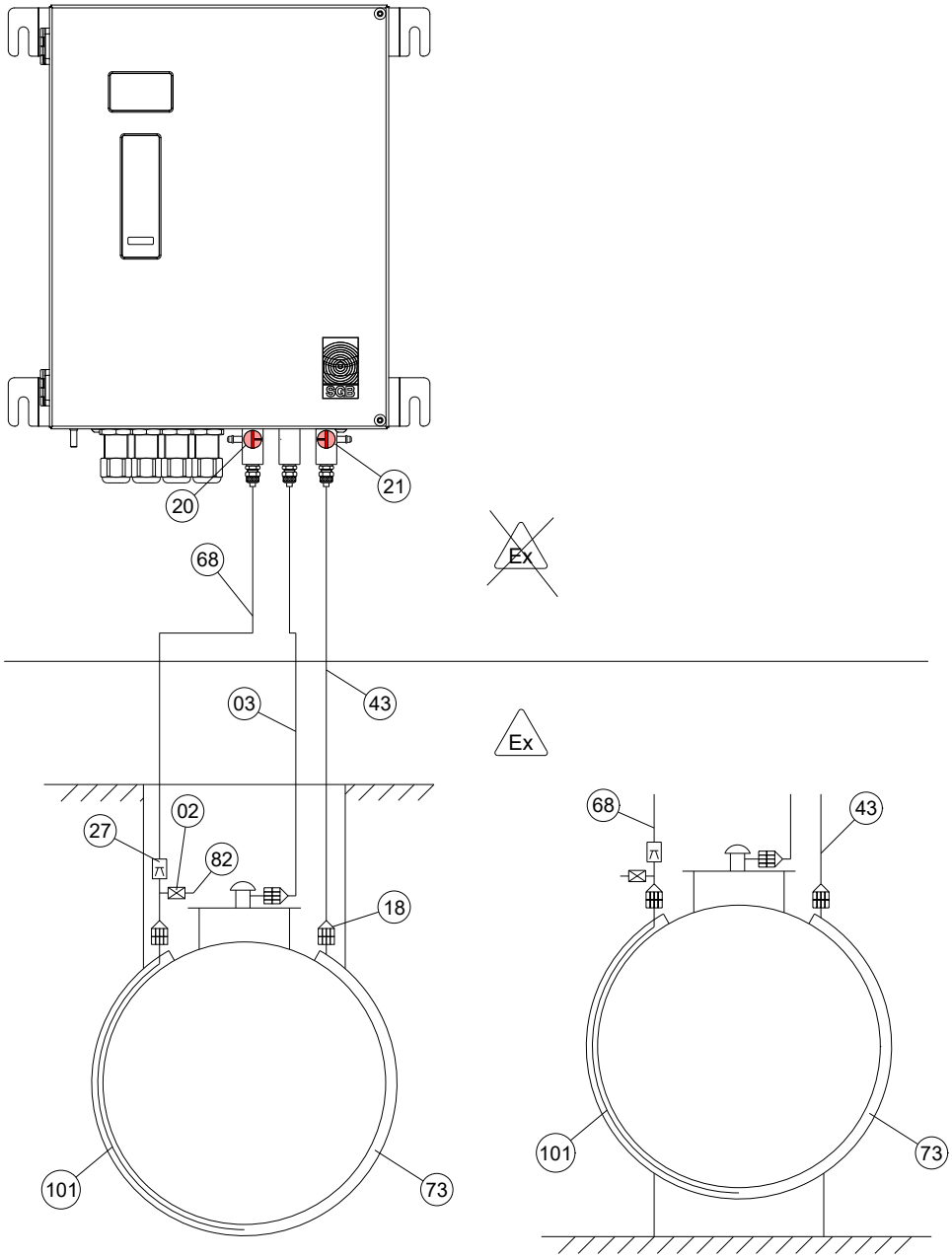
5.6.3 Block diagram (SL 854 210)



60	Pump (24 V DC)
69	Buzzer, if applicable
76	Main circuit board
91	Heater
102	Pressure sensor
103	Display
116	Power supply 24 V DC
139	Membrane keyboard
140	Contacts for serial data transfer
141	Membrane keyboard connection strip
146	Magnetic valve monitoring boards
149	Ethernet board (if available)
150	PCB for maintenance display

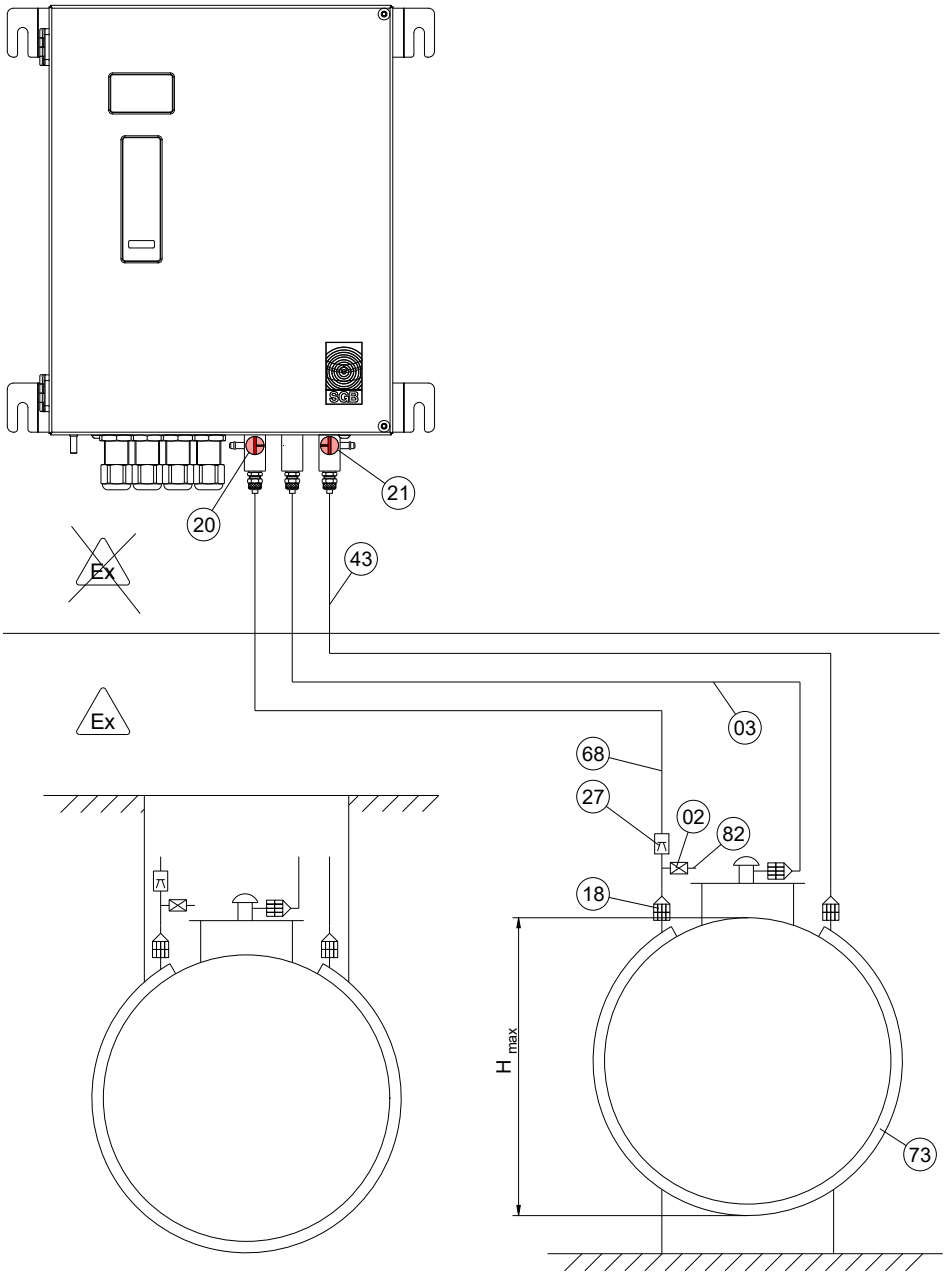
5.7 Installation examples

5.7.1 Cylindrical tank with LPL and suction line to low point



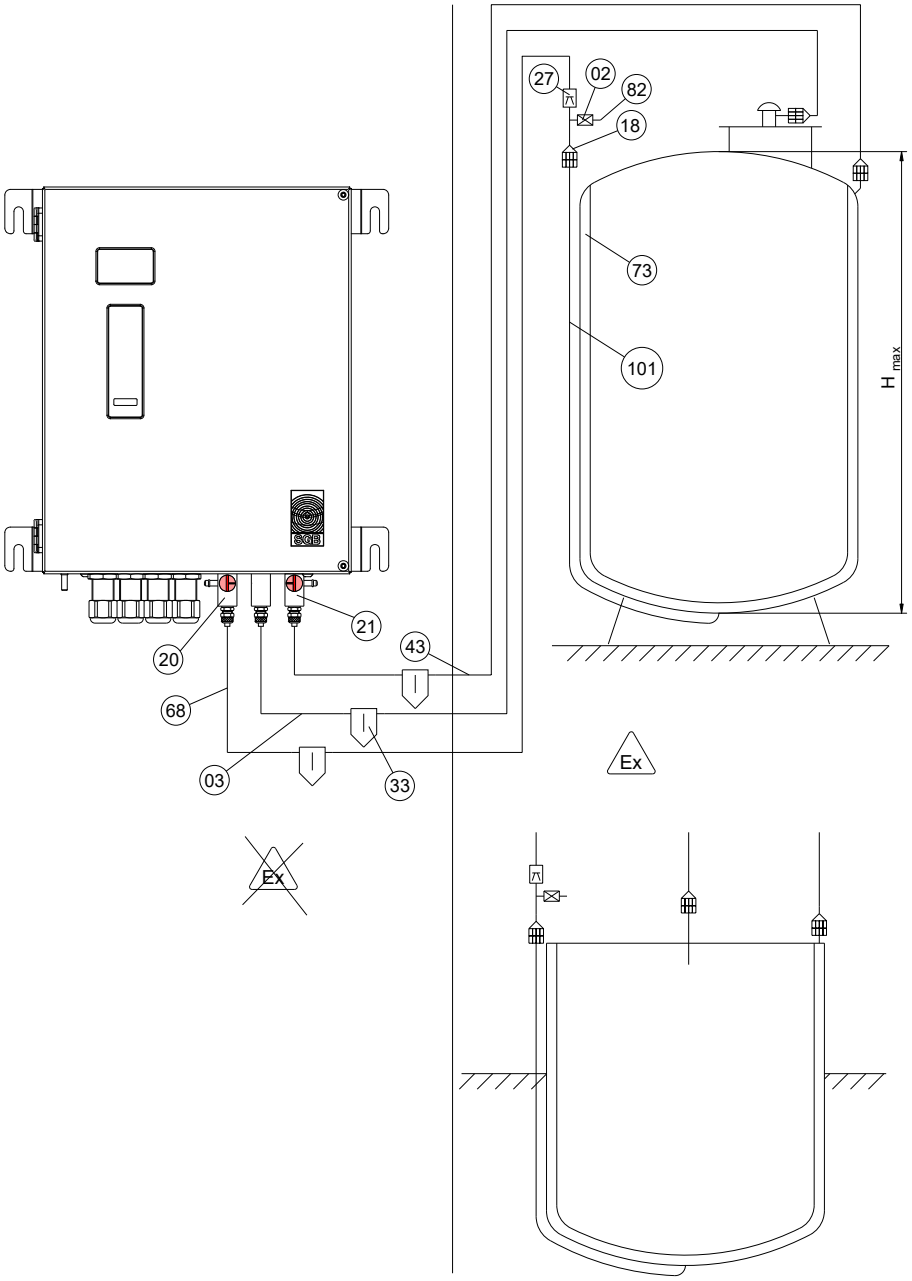
02	Stop valve
03	Exhaust
18	Detonation flame arrester
20	Three-way valve, suction line
21	Three-way valve, measuring line
27	Liquid stop valve
43	Measuring line
68	Suction line
73	Interstitial space
82	Nozzle for installation pump
101	Suction line to low point

5.7.2 Cylindrical, horizontal tank, double-walled, steel, without suction line to low point



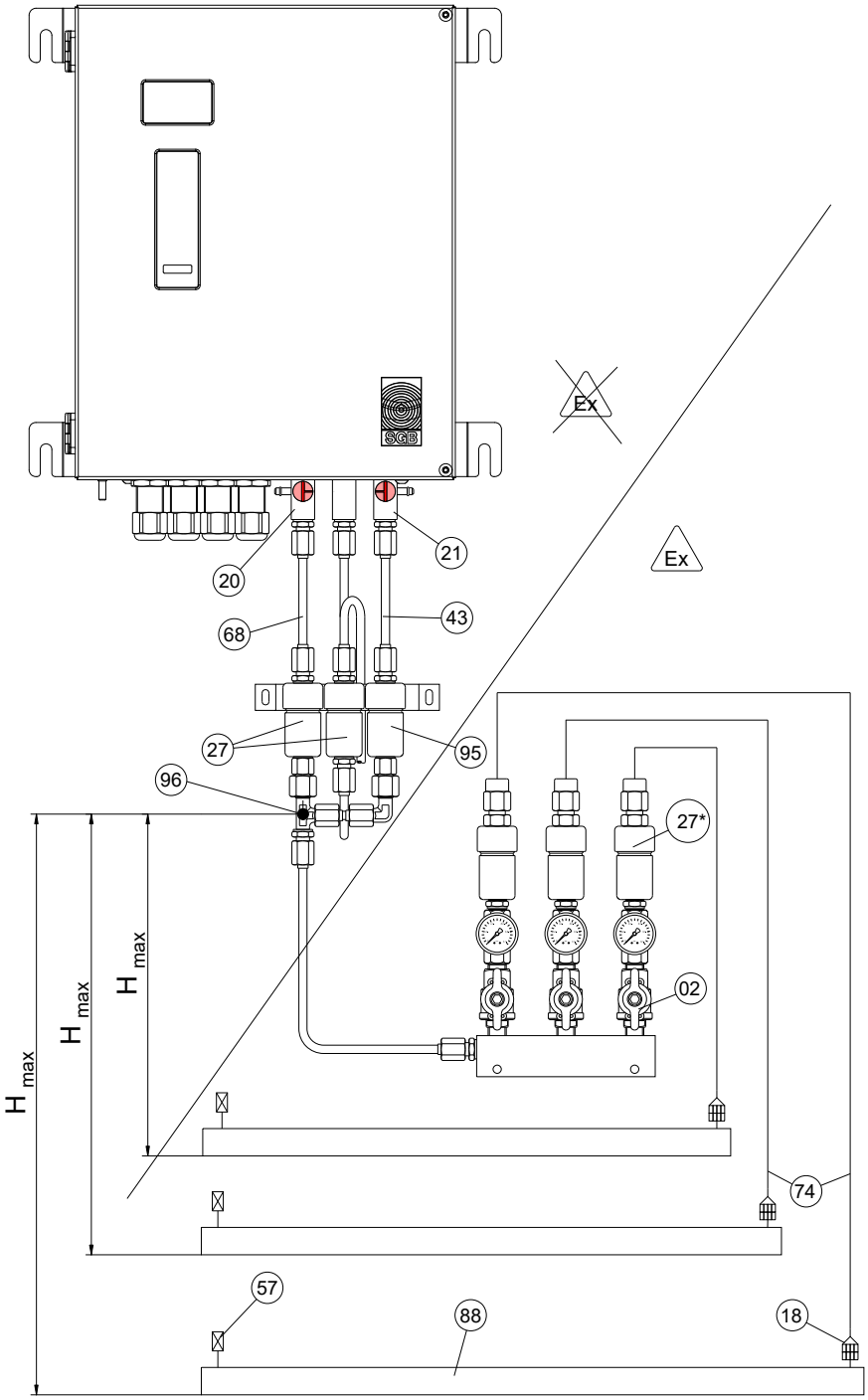
02	Stop valve
03	Exhaust
18	Detonation flame arrester
20	Three-way valve, suction line
21	Three-way valve, measuring line
27	Liquid stop valve
43	Measuring line
68	Suction line
73	Interstitial space
82	Nozzle for installation pump

5.7.3 Cylindrical, standing tank with suction line led down in accordance with DIN 6618-2



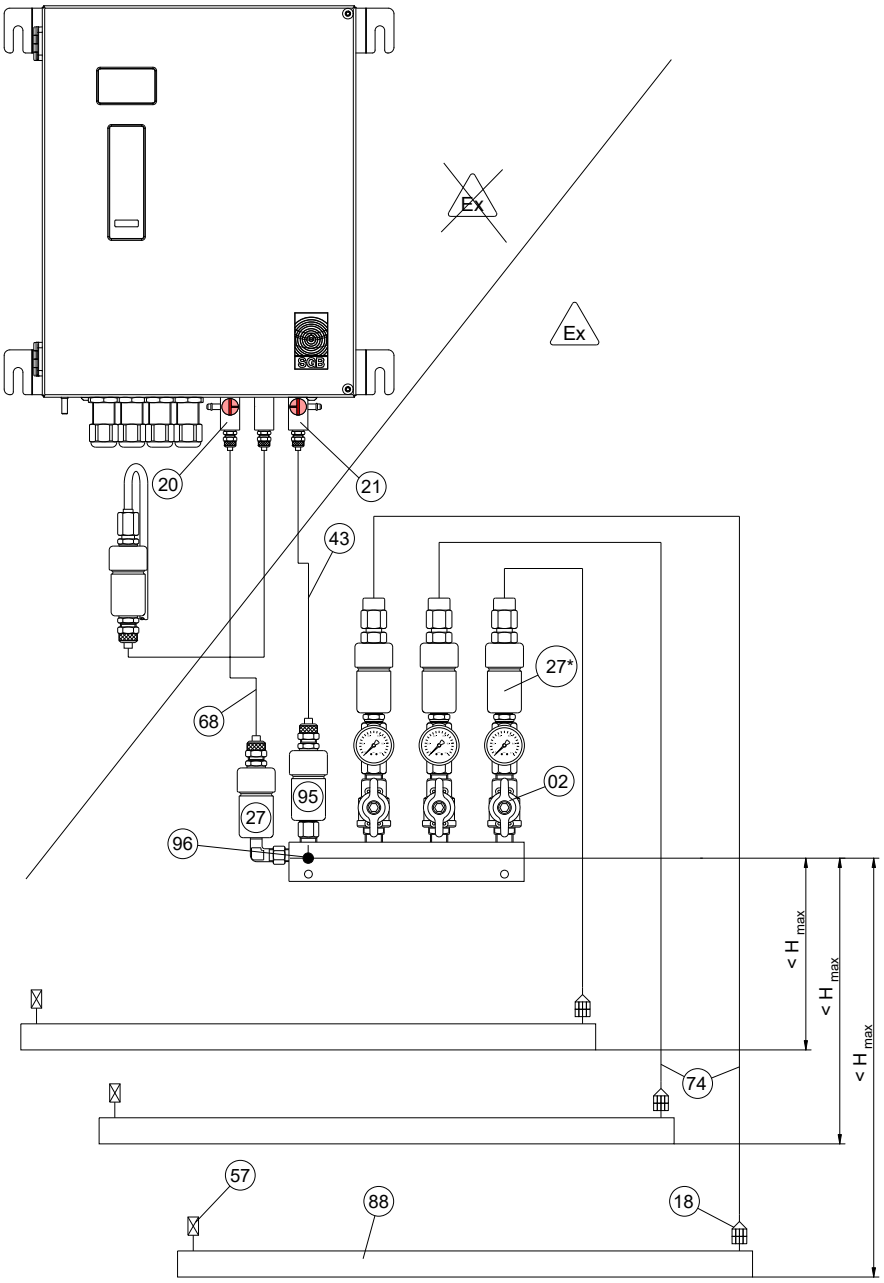
02	Stop valve
03	Exhaust
18	Detonation flame arrester
20	Three-way valve, suction line
21	Three-way valve, measuring line
27	Liquid stop valve
33	Condensate trap
43	Measuring line
68	Suction line
73	Interstitial space
82	Nozzle for installation pump

5.7.4 Double-walled pipe (as per 3.5.2), connected in parallel 1



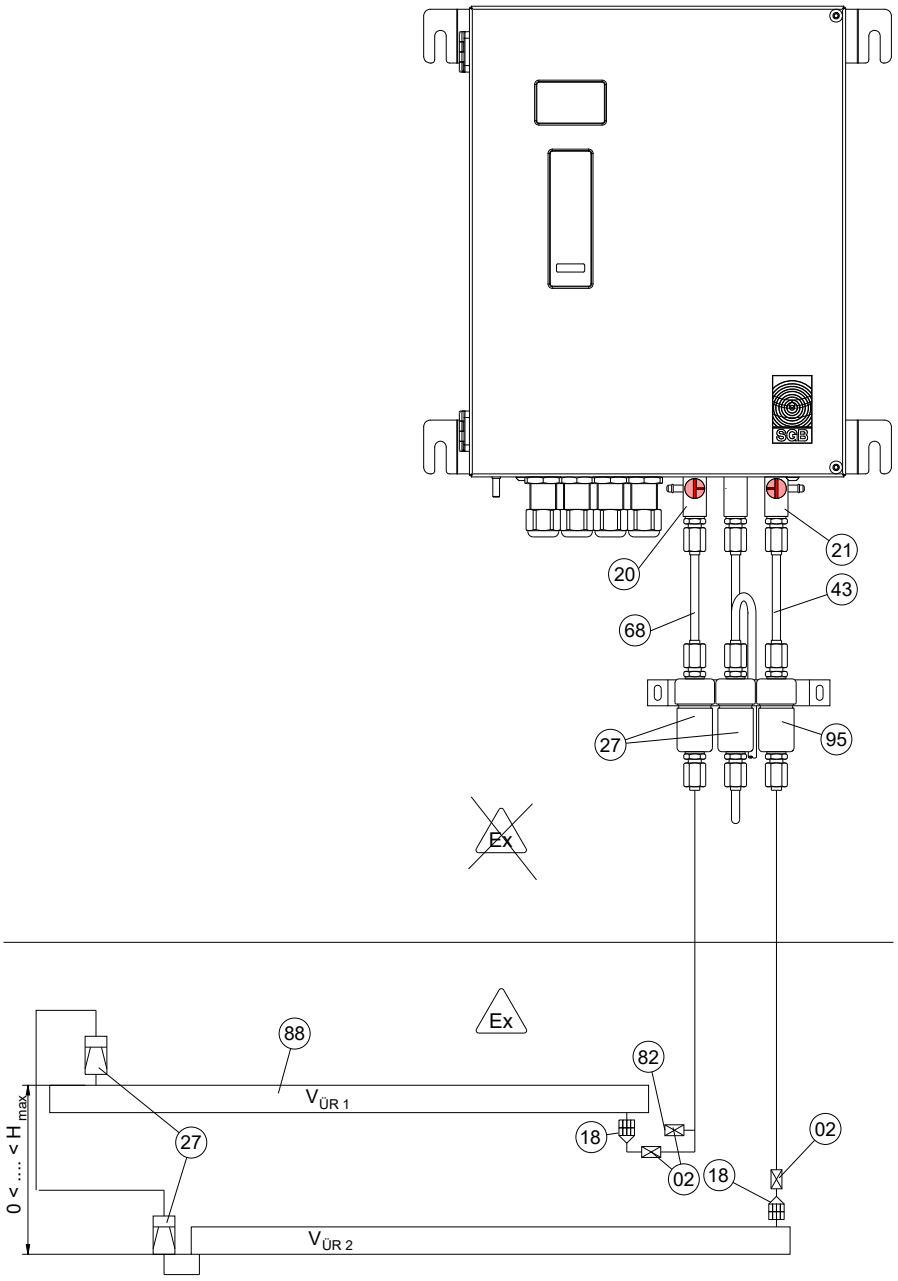
02	Stop valve	57	Test valve
03	Exhaust	68	Suction line
18	Detonation flame arrester	74	Connecting line
20	Three-way valve, suction line	82	Nozzle for installation pump
21	Three-way valve, measuring line	88	Double-walled tube
27	Liquid stop valve	95	Expansion vessel
27*	Liquid stop valve, connected against the direction of flow	96	Node point
33	Condensate trap		
43	Measuring line		

5.7.5 Double-walled pipe, connected in parallel 2



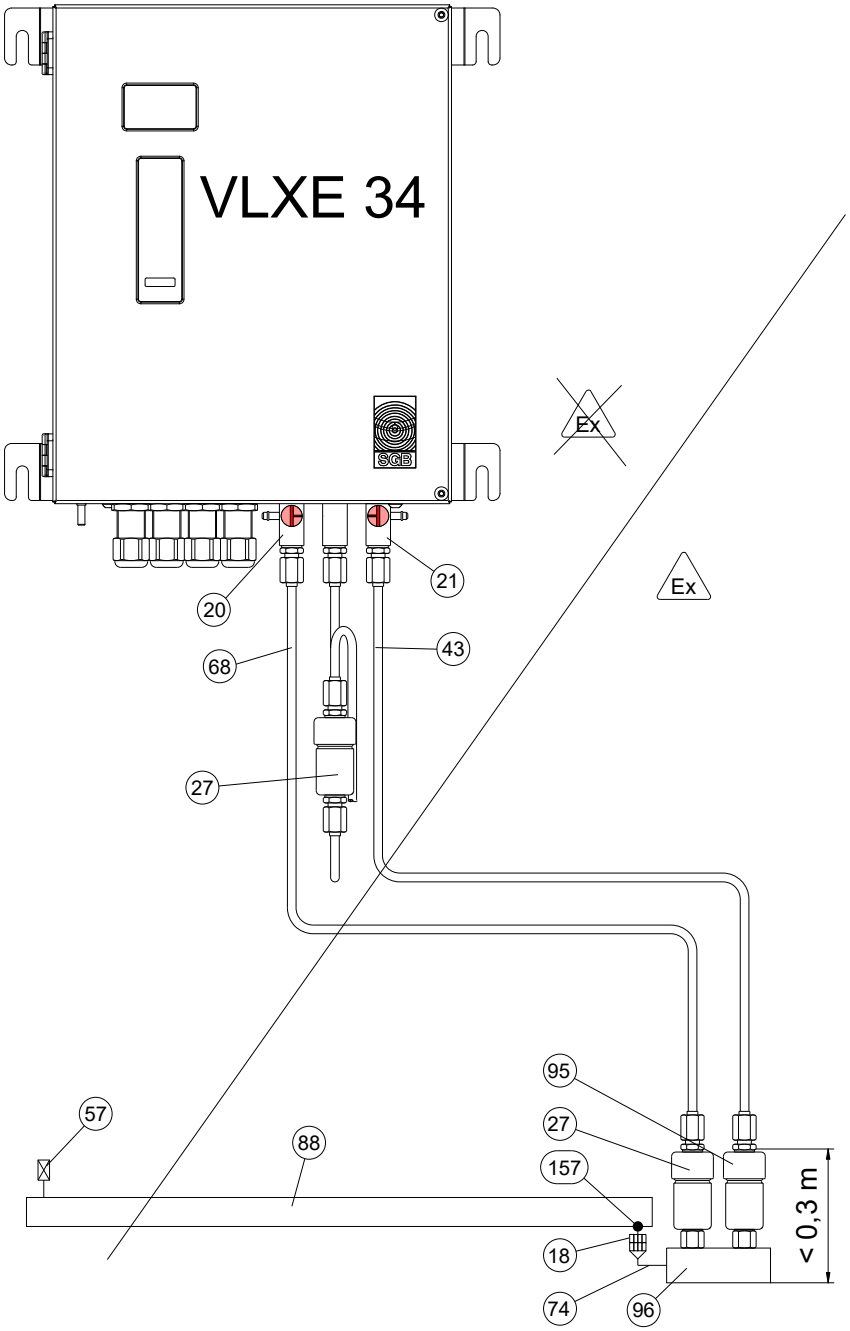
02	Stop valve
03	Exhaust
18	Detonation flame arrester
20	Three-way valve, suction line
21	Three-way valve, measuring line
27	Liquid stop valve
27*	Liquid stop valve, connected against the direction of flow
43	Measuring line
44	Solenoid valve
57	Test valve
68	Suction line
74	Connection line
82	Nozzle for installation pump
88	Double-walled pipe
95	Pressure compensation vessel
96	Node point

5.7.6 Double-walled pipe, connected in series



02	Stop valve
03	Exhaust
18	Detonation flame arrester
20	Three-way valve, suction line
21	Three-way valve, measuring line
27	Liquid stop valve
43	Measuring line
57	Test valve
68	Suction line
74	Connection line
82	Nozzle for installation pump
88	Double-walled pipe
95	Pressure compensation vessel
96	Node point

5.7.7 Double-walled pipe, individual pipe with low vacuum



18	Denotation flame arrester
20	Three-way valve, suction line
21	Three-way valve, measuring line
27	Liquid stop valve
43	Measuring line
57	Test valve
68	Suction line
74	Connecting line
88	Double-walled tube
95	Pressure compensation vessel
96	Node point **Here:** must (geodetically) be under 157!
157	Lowest point of the interstitial space

6. Commissioning

(1) Do not perform the start-up until the points from section 5 "Installation" have been fulfilled.

(2) If a leak detector is put into operation on a tank or a pipe which is already in operation, then special protection measures need to be taken (e.g. checking that the leak detector and/or interstitial space is free of gas). Further measures may be required depending upon the local conditions and should be assessed by qualified personnel.

(3) Used to evacuate an external vacuum pump, must be designed for **explosion protection** (Important: Note temperature class and explosion protection group!).

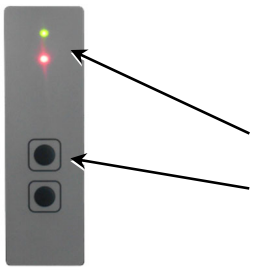
6.1 Tightness test

The leak tightness of the interstitial space must be established before commissioning.

The underpressure should be created with an external vacuum pump.

The test is to be considered as having been passed, if the vacuum does not fall by more than one mbar during a testing period (in minutes) of the monitoring period volume, divided by 10.
Example: 800 liters interstitial space volume
resulting in: 800/10 = 80
resulting in: 80 minutes of testing for max. 1 mbar vacuum loss.

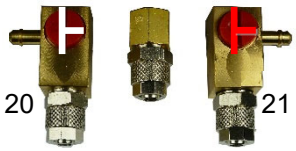
6.2 Commissioning of the leak detector



(1) The leak tightness of the interstitial space is a prerequisite for start-up.

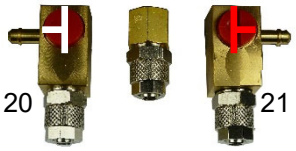
(2) Switch on power.

(3) Check that the signal lamps for "Operation" and "Alarm" light and that the audible alarm signal sounds. Switch off audible alarm if necessary.
The vacuum pump starts immediately and builds up the underpressure in the monitored system, insofar as the interstitial space has not previously been evacuated.



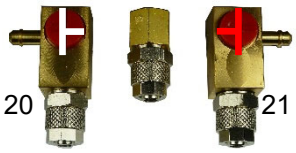
(4) Connect test measuring instrument to the spout of the three-way valve 21 and rotate the tap by 180°.
IMPORTANT NOTE: There may be explosive steam-air mixtures inside the (test tap/connection lines). Suitable protective measures should be taken (e.g. use diaphragm seal or an authorized pressure measuring instrument).

(5) The underpressure build-up can be monitored via the connected measuring instrument.



(6) If the underpressure builds up too slowly, an installation pump can be connected to the spout of the three-way valve 20.

Rotate tap by 180° and switch on the installation pump.



(7) After reaching the operating underpressure of the leak detector (pump in the leak detector switches off), the three-way valve 20 must be rotated by 180° and the pump must be switched off and removed.

(8) Rotate three-way valve 21 by 180° and remove pressure measuring instrument.

(9) Perform functional check according to section 7.3.

7. Functional test and maintenance

7.1 General

(1) It can be assumed that the system will work correctly without any problems if the leak detection system is installed correctly without leaks.

(2) If the pump switches on frequently or runs continuously, this indicates that leaks are present that must be rectified within a reasonable time.

(3) If an alarm is triggered, locate and eliminate the cause quickly.

(4) The operator must check at regular intervals that the operating lamps work properly.

(5) Disconnect the supply voltage to the leak detector whenever performing maintenance and repair work on it. Check Ex. atmosphere, if applicable.

(6) Interruptions in the power supply are indicated by the "Operation" signal lamp going out. The alarm signal is triggered via the floating relay contacts if the contacts 11 and 12 have been used. After the interruption in the power supply, the green leak detector starts up again on its own and the alarm signal via the potential-free floating contacts is removed (unless the pressure has dropped below the alarm pressure during the power failure).

(7) IMPORTANT: For single-walled containers fitted with flexible leak protecting lining, the interstitial space must never be depressurized (the leak protecting lining coming together)!

(8) If the leak detector needs to be cleaned, a **moist** cloth should be used (electrostatics).

7.2 Maintenance

- Maintenance work and functional checks must only be performed by qualified persons[9].
- Once a year to ensure functional and operational reliability and safety.
- Test scope according to section 7.3.
- It must also be checked whether the conditions in sections 5 and 6 are satisfied.
- Comply with explosion protection regulations (if required), such as the German BetrSichV (or the Directive 1999/92/EC and the resulting laws in the respective member states) and/or others.
- The housing lid may only be opened in the gas-free state.
- As part of the annual functional check, the pump motor should be checked for running noise (bearing damage).

[9] For Germany: specialist company according to water legislation with expertise in leak detection systems
For Europe: authorisation by the manufacturer

- If the pump or its piping on the exhaust side is to be replaced or removed, after the replacement a tightness test must be carried out on the fitted pump with 10 bar pressure, in order to ensure the tightness of the exhaust in the housing. Note the special operating manual for this purpose.
- If the installation is to be removed or dismantled, this is only permitted in the gas-free state. After refitting, the earthing / equipotential bonding must be re-established.

7.3 Functional check

Checking of the functional and operational safety and reliability must be performed:

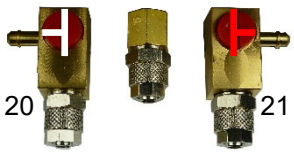
- After every start-up,
- In accordance with the time intervals specified in section 7.2[10],
- Whenever a fault has been rectified.

2 people may be required to perform a functional check, depending on the design of the pipe or tank. The following content must be noted or complied with:

- Agreement of work with the responsible operative officer
- Observe the safety information regarding handling of the materials being stored or conveyed
- Checking and if necessary, emptying condensate traps (7.3.1)
- Continuity test of the interstitial space (7.3.2)
- Testing of the switching values with interstitial space (7.3.3) or testing of the switching values with test device (7.3.4)
- Testing of the conveying height of the pump (7.3.5)
- Tightness test of the system (section 7.3.6)
- Leak tightness check in the course of the annual functional check (7.3.7)
- Setting up of the operating state (section 7.3.8)
- Completion of a test report with the confirmation of functional and operation safety. (Test reports are available for downloading on the SGB website.)

7.3.1 Checking and if necessary, emptying condensate traps

IMPORTANT: Condensate traps may contain the product being stored/transported. Take suitable protective measures.

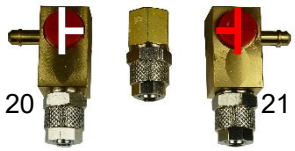


(1) If there are shut-off cocks on the interstitial space side, close them.

(2) Turn the three-way valves each 180°, so that the connection lines are ventilated.

(3) Open and empty condensate traps.

[10] For Germany: Regional regulations must also be observed (e.g. AwSV)



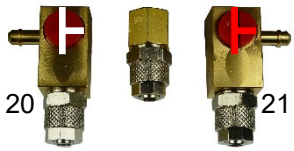
(4) Close condensate traps.

(5) Three-way valves back to the operational setting.

(6) Re-open the cocks closed under No. (1).

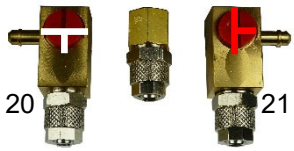
7.3.2 Continuity test of the interstitial space

The continuity test checks that an interstitial space is connected to the leak detector and that it has sufficient continuity for an air leak to cause an alarm.



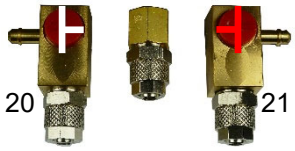
(1) Connect test measuring instrument to the spout of the three-way valve 21 and rotate the tap by 180°.

(2) <u>For pipes:</u>
Open test valve at the end away from the leak detector. If there are several pipe interstitial spaces, the test valves are to be opened one after another at each end away from the leak detector.



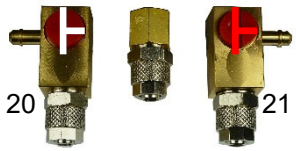
<u>For tanks:</u>
Rotate three-way valve 20 by 90° (clockwise) so that the suction line and thus the system are ventilated.

(3) Note underpressure loss on the measuring instrument. If there is no pressure loss, locate and rectify the cause.



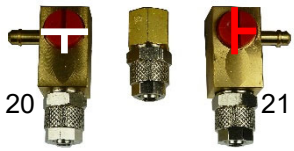
(4) Restore operating position of the three-way valves and remove test measuring instrument.

7.3.3 Testing the switching values with the interstitial space



(1) Connect test measuring instrument to the spout of the three-way valve 21 and rotate the tap by 180°.

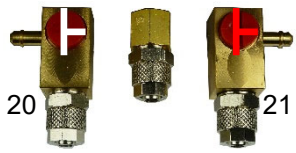
(2) <u>For pipes:</u>
If several pipe interstitial spaces are connected via a manifold, it is recommended that all interstitial spaces except one be shut off. Open test valve at the end away from the leak detector.



<u>For tanks:</u>
Rotate three-way valve 20 by 90° (clockwise) so that the suction line and thus the system are ventilated.

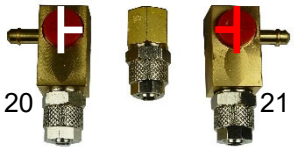
(3) Determine the switching values for "Pump ON" and "Alarm ON" (with visual and, if available, audible alarms). Note values.

(4) If appropriate, activate “Acoustic alarm”.



(5) Turn three-way valve 20 back or close test valve and determine “Alarm OFF” and “Pump OFF” switching values. Note values.

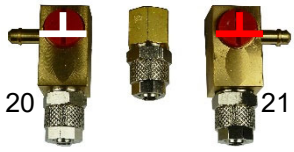
(6) The test is considered to have been passed if the measured switching values are within the indicated tolerance range.

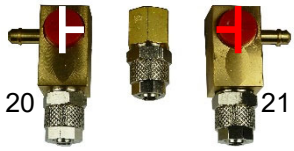


(7) Open previously closed shut-off cocks.

(8) Restore operating position of the three-way valves and remove test measuring instrument.

7.3.4 Check of the switching values with test equipment (Accessories section)





(1) Connect test device to a free nozzle on each of three-way valves 20 and 21.

(2) Connect measuring instrument to the T-piece of the test device.

(3) Close the needle valve of the test device.

(4) Turn three-way valve 20 by 90° (counter-clockwise) and three-way valve 21 by 90° (clockwise), to shut off the interstitial space.

The interstitial space volume will now be simulated by the test container.

(5) The operating vacuum will now be built up in the test container.

(6) Slowly vent using the needle valve; determine the switching values for "Pump ON" and "Alarm ON" (visual and, if appropriate, audible). Note values.

(7) If appropriate, activate “Acoustic alarm” switch.

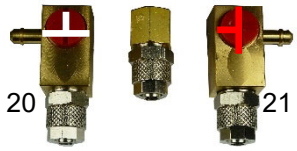
(8) Slowly close the needle valve and determine the switching values for "Alarm OFF" and "Pump OFF".

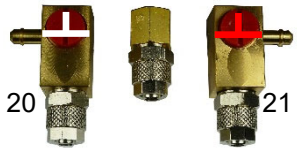
(9) The test is considered to have been passed if the measured switching values are within the indicated tolerance range.

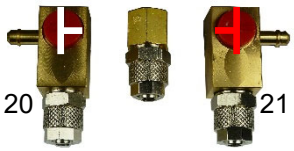
(10) Turn back three-way valves 20 and 21 and remove test device.

7.3.5 Testing of the conveying height of the pump

The testing of the pump conveying height is carried out in order to determine whether the vacuum source is able to create the operating vacuum in the interstitial space.







(1) Connect test measuring instrument to the spout of the three-way valve 20 and rotate the cock by 90° (counter-clockwise).

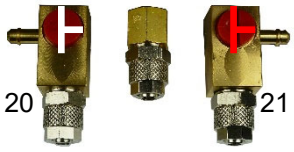
(2) Generally, the pump is not running at this time, i.e. the pressure sensor must be ventilated to start the pump.

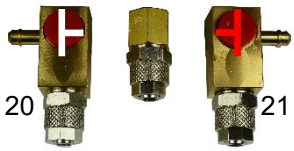
(3) Rotate three-way valve 21 (clockwise) by 90°. The pressure sensor is ventilated, the pump start (and the alarm is triggered, acknowledge if necessary).

(4) This test is considered as passed when the suction height of the vacuum source is at least 40 mbar higher than the "Pump OFF" switching value, i.e. the operating vacuum.

(5) Turn valves back after the test has been carried out and remove measuring instrument.

7.3.6 Tightness test of the system





(1) Requirements for system tightness is defined in Chap. 6.1.

Determine the testing time for each connected interstitial space (or the entire monitored system) (calculate it or use the prepared SGB GmbH test reports).

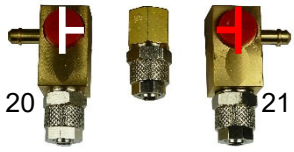
(2) Connect test measuring instrument to the spout of the three-way valve 21 and rotate the tap by 180°.

(3) Read off the start vacuum and time and write them down. Let the test time elapse and determine the vacuum drop.

(4) The test is considered passed when the vacuum does not fall by more than 1 mbar within the test time.
Of course, a multiple of the test time can be measured, for which the approved vacuum drop is then also a multiple.

(5) Turn valves back after the test has been carried out and remove measuring instrument.

7.3.7 Setting up the equipment ready for operation



(1) Check whether all the pneumatic connections are set up correctly.

(2) Check that the three-way valves are in the correct position.

(3) Seal device housing.

(4) Seal shut-off cocks in the open position (between leak detector and interstitial space) for each connected interstitial space.

(5) Affix plate with details of the support service.

(6) Fill out test report and hand over one copy to the operating company.

8. Fault (Alarm)

8.1 Alarm description

If there is an alarm, it can be assumed that there is an explosive steam-air mixture in the interstitial space. Take appropriate protective measures.

(1) An alarm is indicated by the signal lamp lighting up; the acoustic signal sounds, if one exists.

(2) If any exist, close shut-off cocks in the connection line between the interstitial space and the leak detector.

(3) Stop acoustic signal, if any, by pressing the switch “Acoustic alarm”.

(4) Contact the installation company.

(5) The installation company must determine the cause and rectify it. **IMPORTANT NOTE:** Do not depressurize interstitial spaces of tanks with flexible leak protecting linings (layers coming together).

(6) Repairs on the leak detector (e.g. replacement of components) may only be performed outside the explosion hazard area or suitable protective measures have to be taken.

(7) Perform functional check in accordance with 7.3.

8.2 Fault

In the case of a fault, only the red signal lamp lights up along with the green signal lamp (yellow is off); at the same time, the audible signal cannot be acknowledged.

8.3 Behavior

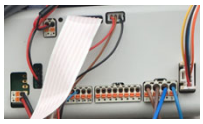
The different alarms can be used for various automated reactions (e.g. switching off pumps).

Contact the installation company. They must find and eliminate the error.

A functional check must be carried out after repair work.

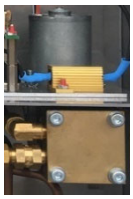
9. Spare parts

Spare parts can be found on our shop site shop.sgb.de, e.g.



PCBs

331665	VD SMD PCB or LED or transformer in the housing with forwarding boards for 24 V (MVS)
331725	Display PCB for electronic leak detector VL, VLR, DL, DLG, DLR-G, DLR-P



Pump

201003-MSV	Vacuum pump 24 V DC, 34 mbar Brass, Viton seal set

Sensor

344506-01	Sensor -1...+3 bar welded, with VA and capillary tube for VLXE ..

Heating module

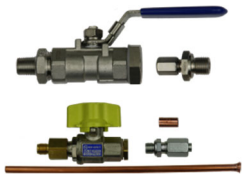
332275	Heating module for VLXE pumps 24 V DC with heating board

Buzzer

330306	Buzzer 24V DC, 110 dB LD-82 PL mini siren

10. Accessories

Accessories can be found on our shop site shop.sgb.de such as



- Assembly kits

- Electrical separating pieces

- Manifolds

- LOD service (data remote transfer)
    - here DTM with GSM
    - here DTM with ETH

- Optional design “Service indication Si” (variably adjustable service interval)

11. Disassembly and disposal

11.1 Disassembly

Check for absence of gas and sufficient oxygen content of the air before and during the work.

Seal any openings gas-tight which could otherwise allow the spread of an explosive atmosphere.

If possible, do not use tools capable of generating sparks (saw, angle grinder...) for dismantling. If this remains unavoidable, comply with EN 1127, and the area must not have a potentially explosive atmosphere.

Avoid any build-up of electrostatic charge (e.g. due to friction).

11.2 Disposal

Contaminated components (potential outgassing) must be disposed of appropriately.

Dispose of electronic components appropriately.

12. Appendix

12.1 Use on interstitial spaces that are filled with leak detection liquid

12.1.1 Prerequisites

(1) The only leak detectors that may be used are those with suitable alarm pressures depending on the vessel diameter and the density of the stored goods.

(2) The approach described below is for cylindrical vessels lying horizontally (e.g. DIN 6608 or EN 12285-1).

(3) If this procedure is performed on other vessels, in individual cases the consent of the local authorities responsible is required.

12.1.2 Preparation

(1) Dismantle liquid-based leak detector.

(2) Suck leak detection fluid from the interstitial space. As follows:
- Connect the suction line connection of the installation pump to a vessel nozzle via an intermediate vessel[11].
- Suck until there is no more liquid to be sucked.
- Finish fitting a (large) shut-off cock (at least ½”) on the other nozzle and shut-off cock.
- Pump off liquid until no new liquid appears in the intermediate vessel.

- Suddenly open shut-off cock (with pump running); this brings another rush of liquid into the intermediate vessel.
- Continue procedure, opening and closing the test cock, until no more liquid enters the intermediate vessel when either opening or closing.

12.1.3 Installation and start-up of the leak detector

(1) By sucking away the leak detection fluid, an air cushion is created above the leak detection fluid.

(2) Install leak detector as indicated by the documentation and take into operation.

(3) Perform functional check of the leak detector.

[11] The liquid to be sucked is collected in this vessel.

12.2 Version 8S "Leak Detection Probes for Monitoring Access and Monitoring Chambers"

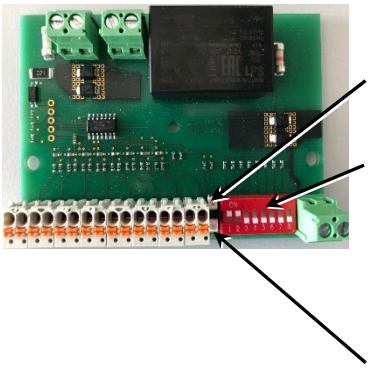
12.2.1 Object

With the 8S version of the VLXE leak detector, it is possible to connect up to 8 leak detection probes.

The probes have an explosion-proof design and can therefore be mounted in Zone 1 (e.g., in the access chamber). The sensor cable is 1 m long and must be extended in a suitable terminal box. The extension should not be more than 250 m.

The probe will respond to an increase in liquid in the access chamber.

12.2.2 Design and function

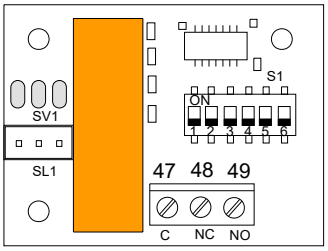


(1) The PCB can only be operated in conjunction with a leak detector and is installed at the manufacturer's factory.

(2) Once the leak detector has been switched on, a green LED lights up to indicate normal operating conditions.

(3) Each connected sensor must be activated via the relevant DIP switch.
If a channel is activated but there is no sensor connected, an alarm will be indicated. If, on the other hand, a sensor is connected and the channel is **not activated**, **nothing** will be indicated!

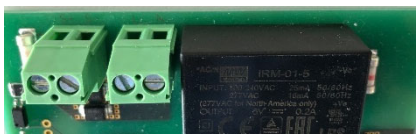
(4) If an alarm or a malfunction (short circuit, cable break, channel activated and no sensor connected) is detected on one of the probe channels (1 to 8), the red LED will light up.



(5) At the same time, the "probe alarm" will be triggered on the leak detector (see also section 4.6) and the potential-free contacts switch

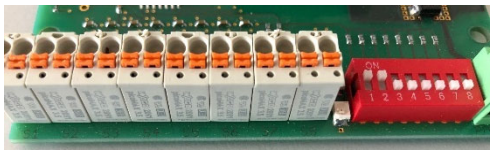
47	C	(common)
48	NC	(normally closed)
49	NO	(normally open)
47/48	Normal operation: opened; probe alarm: closed	
47/49	Normal operation: closed; probe alarm: opened	

(6) Electrical connection (already completed by the manufacturer)



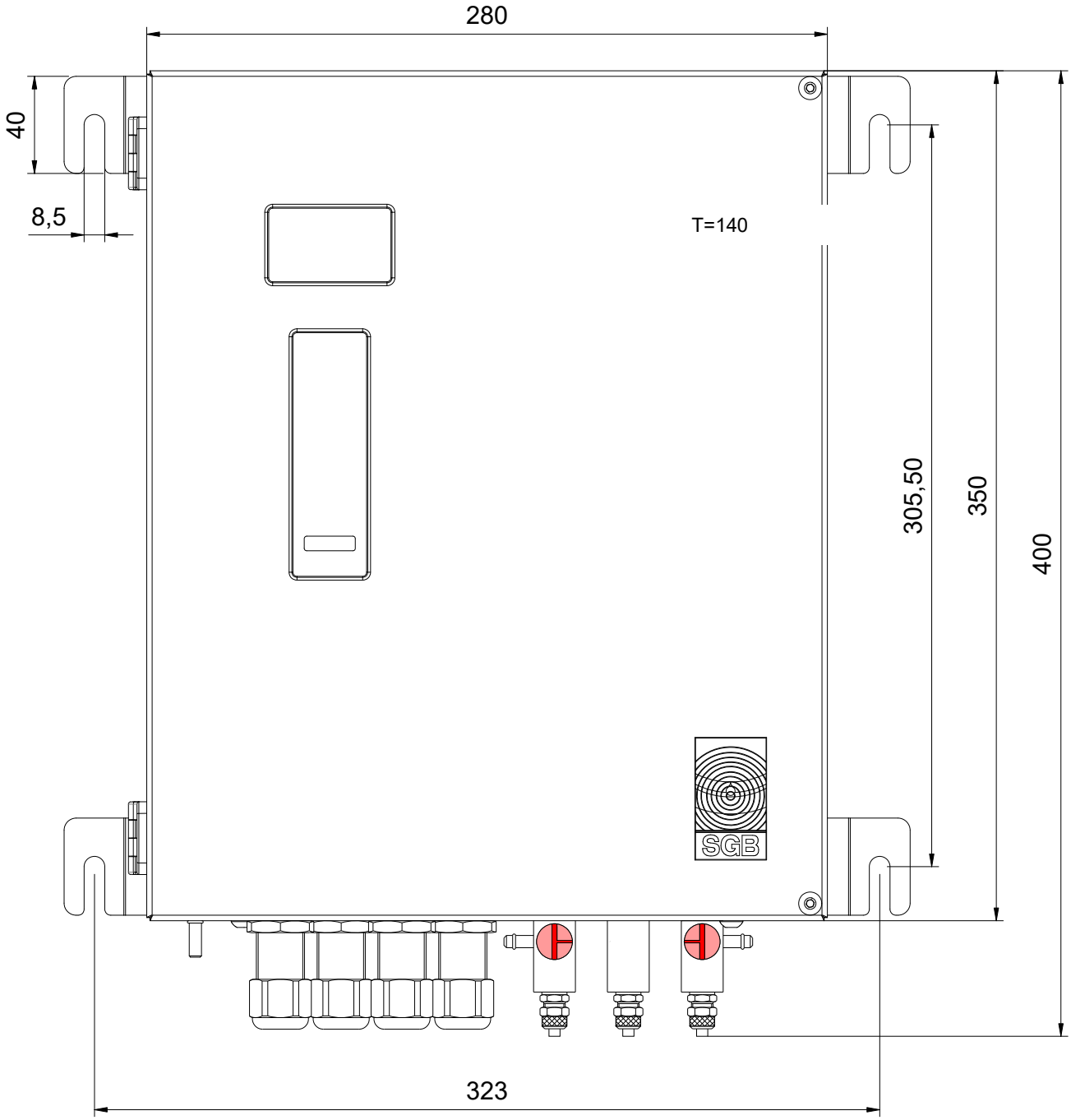
S+/S-	Connection for probe contact on main board
L/N	Power connection

(7) Electrical connection of the probes and the potential equalization



S1 to S8	Connection of the leak detection probes (by the customer)
PA	Potential equalization, must be connected

12.3 Dimensions and drilling template



12.4 EU declaration of conformity

We,

SGB GmbH

Hofstr. 10

57076 Siegen

Germany,

hereby declare in sole responsibility that the leak detectors

VLXE ..

comply with the basic requirements of the EU Directives listed below.

This declaration shall lose its validity if the device is modified or used for another purpose without our agreement.

Number / short title	Satisfied regulations
2014/30/EU EMC Directive	EN 61 000-6-3: 2012 EN 61 000-6-2: 2006 EN 61 000-3-2: 2015 EN 61 000-3-3: 2014
2014/35/EU Low Voltage Directive	EN 60 335-1: 2012 EN 61 010-1: 2011 EN 60 730-1: 2017
2014/34/EU Equipment in Potentially Explosive Atmospheres	The leak detector must be installed outside the ex-area, but with its pneumatic parts may be connected to spaces (interstitial spaces of tanks / pipelines / fittings) which require category 1 devices. The following documents have been used: Annex II of 2014/34/EU EN 1127-1: 2011 The ignition hazard analysis did not result in any additional hazards. The intended use should be observed.

Compliance is declared by:

Last updated: 02/2019

ppa. Martin Hücking
(Technical Director)

12.5 Declaration of performance

Number: **010 EU-BauPVO 2017**

1. Unique identification code of the product type:

   Vacuum leak detector model VLXE xx/yy

2. Usage purpose:

   Class I vacuum leak detector for monitoring double-walled pipelines and containers

3. Manufacturer:

   SGB GmbH; Hofstraße 10; 57076 Siegen; Germany
   Tel.: +49 271 48964-0; Email: sgb@sgb.de

4. Authorized representative:

   n/a

5. System for assessment and verification of consistency of performance:

   System 3

6. In the case of the declaration of performance concerning a construction product that is covered by a harmonized standard:

   Harmonized standard: EN 13160 -1-2: 2003

   Notified body: TÜV Nord Systems GmbH & Co.KG, CC Tankanlagen, Große Bahnstraße 31, 22525 Hamburg, Germany

   Code number of the notified test laboratory: 0045

7. Declared performance:

Key characteristics	**Performance**	**Harmonized standard**
Electrical function	As per documentation	EN 13160-2: 2003
Operation / alarm signal lamp	Green / Red	
Leak test	< 1 Pa l/s	
Pressure switching values, depending on model	Compliant	
Ensuring alarm output	System requirement (present, if application range observed)	

8. Signed for and in the name of the manufacturer by:

   Dipl.-Ing. M. Hücking, Technical Director

   Siegen, 20-09-2017

12.6 Manufacturer's declaration of compliance (MDC)

Compliance with the "Muster-Verwaltungsvorschrift Technische Baubestimmungen" (sample administrative regulation technical building regulations) is hereby declared.

12.7 TÜV-Nord certification

Note:
By TÜV not certified translation
of the German original version

COMPLIANCE CERTIFICATE

[Declaration of Compliance from the manufacturer following prior inspection of the building product by a recognised inspection authority]
No. PÜZ-07-8112235530

It is hereby confirmed, in accordance with Section 24, para.2, No. 2 of the Building Regulations for the State of North Rhine-Westphalia 2018, that the

building product **Leak detector Type VLXE.. Ex (with solenoid valve Type VLXE.. MV-Ex) for installation in Ex-areas and VLXE.. for installation outside of Ex-areas**

of the manufacturer **SGB GmbH**
Hofstraße 10
57076 Siegen

production site **SGB GmbH**, Hofstraße 10, 57076 Siegen

complies, according to the results of the initial inspection carried out by the
Inspection authority for building products in accordance with the state building code of TÜV NORD Systems GmbH & Co. KG,

with the provisions of

Appendix C 2.15.15, Section C 2

of the Administrative Instruction Technical Building Provisions (W TB NRW 2019/1), specifically EN 13160 Parts 1 and 2: 2016.

This entitles the manufacturer to provide the building product, and also the accompanying documentation, with the compliance mark (C-mark) in accordance with the Compliance Mark Ordinance. *

Note: Appendix ZA, Table ZA.1 and Table ZA.3 of DIN EN 13160-1 applies for the in-plant production inspection. Regular external monitoring is not intended. Details on the inspection are provided in Inspection Report No. 8112235530 dated 19.06.2018.

* Exceptions are leak detectors for installations for the storage of fuel cells designed to supply heating systems in buildings.

Hamburg, 14.02.2019

Validity entry:
Valid until 02/2024

J. Straube
Head of the Inspection Authority
Building products in accordance
with State Building Code
of TÜV NORD Systems GmbH & Ca. KG
Code: HHA02

TÜV NORD Systems GmbH & Co. KG
Große Bahnstraße 31
D-22525 Hamburg
Germany

Tel. +49-(0) 40-8557-2368
Fax +49-(0) 40-8557-2710
e-mail technikzentrum@tuev-nord.de

Rev. 05 / 2019-02

Company details

SGB GmbH
Hofstr. 10
57076 Siegen
Germany

T +49 271 48964-0
E sgb@sgb.de
W www.sgb.de