Documentation

Vacuum leak detector VL ..

in 100–240 VAC and 24 VDC

Read instructions prior to commencing any work
As of 05/2025
Item no.: 605322

Overview of the Design Variations

VL vacuum leak detectors are available in different versions that are described more precisely by the suffix characters. The levels of availability and the possible combinations depend on the device. Please contact our sales team: +49 271 48964-0, sgb@sgb.de.

VL .. P M MV S Si T 8S DB

- “Pressure limitation (**D**ruck**b**egrenzung)”: The leak detector has a pressure limiting unit (DBE) that protects the interstitial space and thus the tank from damage due to excessive pressure.

- “8S”: Up to eight leakage probes can be connected to the leak detector to monitor manholes, pump sumps or similar.
- “**T**ightness alarm”
- “**S**ervice **I**ndication”: (LED) display with variably adjustable service periods

- “**S**ervice display”: integrated (LED) service display with fixed 12-month interval
- “Solenoid valve (Magnetventil)”: A MV with monitored function can be connected for applications with high pressure in the inner pipe.

- “**M**anometer”: The leak detector is equipped with a digital pressure indicator in the housing cover.
- “**P**rotected”: Leak detector version in a weather-protected housing (stainless-steel)
- “**..**” = numerical value stands for the alarm vacuum of the leak detector. The alarm pressures range from 34 mbar to 570 mbar.

- “**V**acuum **L**eak detector” for tanks. The leak detector operates with negative pressure towards the atmosphere.

Table of Contents

1. General

1.1 Information

These instructions provide important notes on using the leak detector VL … Complying with all safety instructions and guidelines is a prerequisite for safe working.

Furthermore, any local regulations for prevention of accidents applicable at the site of use of the leak detector and general safety instructions must be complied with.

1.2 Explanation of Symbols

In these instructions, warnings are marked with the adjacent symbol.

The signal word expresses the level of hazard.

DANGER:
Imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING:
Potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION:
Potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

Information:
Highlights useful tips, recommendations, and information.

1.3 Limitation of Liability

All information and instructions in this documentation have been compiled considering the applicable standards and regulations, the state of the art, and our longstanding experience.

SGB does not assume any liability in the case of:

- Noncompliance with these instructions
- Improper use
- Use by unqualified personnel
- Unauthorized modifications
- Connection to systems not approved by SGB

1.4 Copyright

The contents, texts, drawings, images, and other representations are copyrighted and subject to industrial property rights. Any misuse is punishable.

1.5 Warranty Conditions

We provide a warranty for the leak detector VL .. for a period of 24 months from the day of installation on site in accordance with our General Terms & Conditions.

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

Warranty is subject to submission of the functional/test report on initial commissioning by qualified personnel.
Stating the serial number of the leak detector is required.

The obligation of warranty shall cease to exist in the case of
- inadequate or improper installation,
- improper use,
- modifications/repairs without consent 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 is available for any inquiries.

For information on contacts, please refer to our website sgb.de/en or the label of the leak detector.

2. Safety

2.1 Intended use

WARNING!

Danger from misuse

- Conditions from Section 3.5 “Field of Application” must be adhered to.
- Only for the interstitial spaces of double-walled tanks that show sufficient vacuum resistance:
- Grounding/equipotential bonding in accordance with applicable regulations
- Tightness of the interstitial space according to this documentation (Section 6.1).
- Assembly outside of the potentially explosive area only
- Stored material needs to have a flash point of over 60°C (for Germany > 55°C in accordance with TRBS and TRGS), i.e., the stored material must not develop explosive vapor-air mixtures.
- Ambient temperature -40°C to +60°C in the stainless-steel housing and 0°C to 40°C in the plastic housing
- The power supply cannot be disconnected
- The volume of the space monitored by the leak detector must not exceed 10 m^3 (manufacturer’s recommendation: 4 m^3).

Any claims arising from misuse are excluded.

CAUTION: The protective function of the device may not be impaired if it is not used as specified by the manufacturer.

2.2 Obligation of the Operating Company

The leak detector VL .. is used in the commercial sector. The operating company is therefore subject to statutory occupational safety obligations.

In addition to the safety instructions in this documentation, all applicable safety, accident prevention, and environmental regulations must be adhered to. In particular:

WARNING!

Danger in case of incomplete documentation

- Compiling a risk assessment and implementing its results in a directive
- Performing regular checks as to whether the directive is in compliance with the current standards
- The directive includes information on how to react to an alarm that might arise
- Arranging for an annual functional check

2.3 Qualification

WARNING!

Danger to humans and the environment in the case of inadequate qualification

The personnel must be capable of independently recognizing and avoiding potential risks based on their qualifications.

Companies that put leak detectors into operation must be trained by SGB or an authorized representative.

National guidelines must be adhered to.

For Germany: Technical service qualification for assembly, commissioning, and maintenance of leak detection systems.

2.4 Personal Protective Equipment (PPE)

Personal protective equipment must be worn during work.

- Wear necessary protective equipment for the relevant work
- Note and comply with existing PPE signs

Entry in the “Safety Book”

Wear HV vest

Wear safety footwear

Wear a hard hat

Wear gloves – where necessary

Wear safety goggles – where necessary

2.5 Fundamental Hazards

DANGER:

From electric current

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

Comply with relevant regulations regarding electric installation, explosion protection (e.g., EN 60079-17), and accident prevention.

CAUTION:

From moving parts

If work is being done on the leak detector, it must be disconnected from the power supply.

DANGER

From working in chambers

The leak detectors are mounted outside the access chambers. Pneumatic connection is usually performed inside the access chamber. Therefore, the chamber must be entered for mounting.

Before entering, the corresponding protective measures must be taken and it must be ensured that no gas and sufficient oxygen are present.

3. Technical Data of the Leak Detector

3.1 General Data

Dimensions and drilling pattern:	see Section 11.4
Weight	
Plastic housing:	2.0 kg;
Stainless-steel housing:	4.5 kg
Storage temperature range:	-40°C to +60°C
Operating temperature range	
Plastic housing:	0°C to +40°C
Stainless-steel housing:	-40°C to +60°C
Max. height for safe operation:	≤ 2000 m above sea level
Max. relative humidity for safe operation:	95 %
Buzzer volume:	> 70 dB(A) in 1 m
Housing protection class	
Plastic housing:	IP 30
Stainless-steel housing:	IP 66
Version without solenoid valve:	≤ 5 bar (pressure in the inner tank)
with solenoid valve:	> 5 ≤ 25 bar (pressure in the inner tank)

3.2 Electrical Data

Power supply:	100 – 240 VAC, 50/60 Hz or: 24 VDC
Supply tolerance (network):	± 10 %
Power input:	50 W (incl. heating)
Terminals 5, 6, external signal:	max. 24 VDC; max. 300 mA
Terminals 11…13, potential free:	DC ≤ 25 W or AC ≤ 50 VA
Fuse protection: **Note:** Acts as a separating point for the device and should be attached as close as possible!	max. 2 A
Overvoltage category:	2
Degree of soiling:	PD2

3.3 Data for applications that fall under the Pressure Equipment Directive (PED) in case of an error

Note: The leak detector, installation kits, and manifolds are pressure accessories without a safety function.

Volume leak detector:	0,05 liter
Max. operating pressure in case of an error	
- Screw connection:	5 bar
- With solenoid valve MV:	25 bar
- With solenoid valve MV and additional pressure switch DS:	90 bar

Volume manifold 2…8:	0,07…0,27 liter
Max. operating pressure in case of an error:	25 bar
Volume installation kit:	< 1,67 liter
Max. operating pressure in case of an error:	25 bar

3.4 Switching Values

Type	**Alarm ON,** at the latest:	**Pump OFF,** not more than:	**Functionality*** of the interstice given for
34	- 34 mbar	- 120 mbar	- 500 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 values can be agreed upon between the client and SGB.

Excess pressure alarm (only VL .. MV[1]) at + 50 mbar

* Considered fulfilled for double-walled steel tanks. In principle, lower values are possible, if need be, with the use of a vacuum valve[2]

3.5 Field of Application

3.5.1 Tank

a) Single-walled horizontal (underground or aboveground) cylindrical tanks with leak protection lining (LAK) or jacket (LUM) and suction line leading to the low point

   Usage limits: None for density and diameter

[1] MV = solenoid valve
[2] See also appendix 11.3: Leak detectors with pressure limiting unit DBE

b) Double-walled horizontal cylindrical (underground or aboveground) tanks (e.g., DIN 6608-2, 6616, or DIN EN 12 285-1-2)
- Same as a), but with no suction line to low point
- Same as c), but with no suction line to low point
- Same as d), but with no suction line to low point

Usage limits:

Density of the stored material [kg/dm³]	$H_{max.}$(tank height) [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

A minimum of **density 1** is needed for **underground** systems.

c) Double-walled (or single-walled with leak protection lining or jacket) vertical cylindrical tanks or troughs with a dished bottom (underground or aboveground) with a suction line leading to the low point (DIN 6618-2: 1989)

Usage limits:

Diameter [mm]	Height [mm]	Max. density of the stored material [kg/dm³]			
		34	**230**	**255**	**330 to 570**
1600	≤ 2820	≤ 1.9	≤ 1.9	≤ 1.9	≤ 1.9
	≤ 3740	≤ 1.6	≤ 1.9	≤ 1.9	≤ 1.9
	≤ 5350	≤ 1.6	≤ 1.9	≤ 1.9	≤ 1.9
	≤ 6960	≤ 1.6	≤ 1.9	≤ 1.9	≤ 1.9
2000	≤ 5400	≤ 1.4	≤ 1.9	≤ 1.9	≤ 1.9
	≤ 6960	≤ 1.4	≤ 1.9	≤ 1.9	≤ 1.9
	≤ 8540	≤ 1.4	≤ 1.9	≤ 1.9	≤ 1.9
2500	≤ 6665	≤ 1.0	≤ 1.9	≤ 1.9	≤ 1.9
	≤ 8800	≤ 1.0	≤ 1.9	≤ 1.9	≤ 1.9
2900	≤ 8400	≤ 0.9	≤ 1.9	≤ 1.9	≤ 1.9
	≤ 9585	≤ 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) Rectangular or cylindrical tanks or troughs with a flat bottom (double-walled or with leak detection lining or leak detection jacket) with a suction line to low point

Density of the stored material [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

e) Vertical cylindrical tanks with double-layered floor made of metal (e.g., according to DIN 4119 or EN 14015)
   - As above, but with leak protection lining (stiff or flexible)
   - Vertical cylindrical tanks made of plastic with double-layered floor

   Usage limits: None for density and diameter

f) Tanks according to a) to d) that operate with an inner overlay pressure of up to 25 bar

   Usage limits: in line with the aforementioned points using type VL .. MV

3.5.2 Monitorable fluids

Liquids hazardous to water with a flash point of over 60°C (for Germany: 55°C in accordance with TRBS and TRGS), e.g., heating oil, diesel, acids, and alkalis.

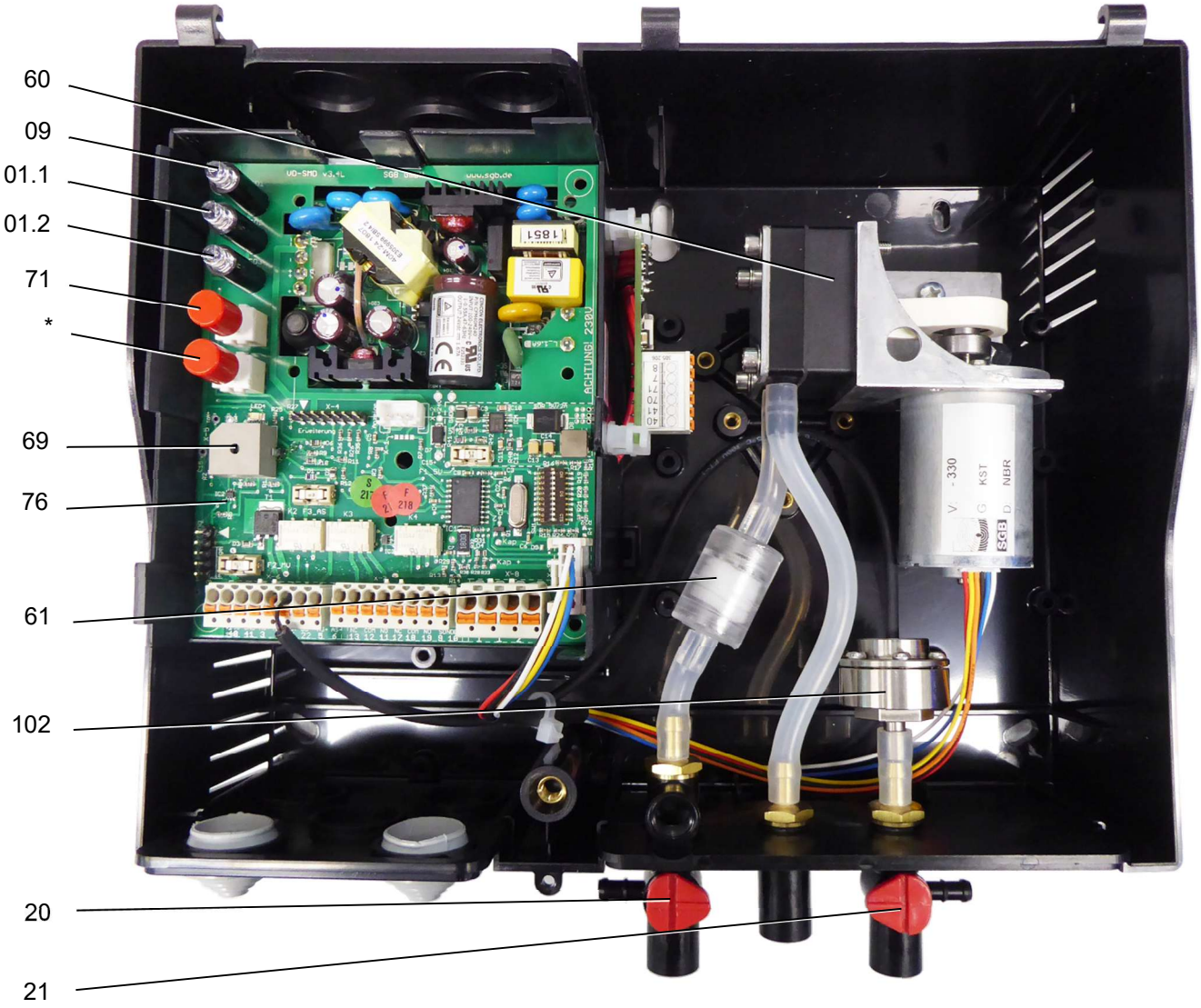
The following also applies:

- The materials used must be resistant to the liquids being monitored.
- Liquids hazardous to water must **not** develop explosive vapor-air mixtures (not even those that can arise through stored/conveyed liquid in contact with air, humidity, condensation, or the materials used).

4. Design and Function

4.1 Design

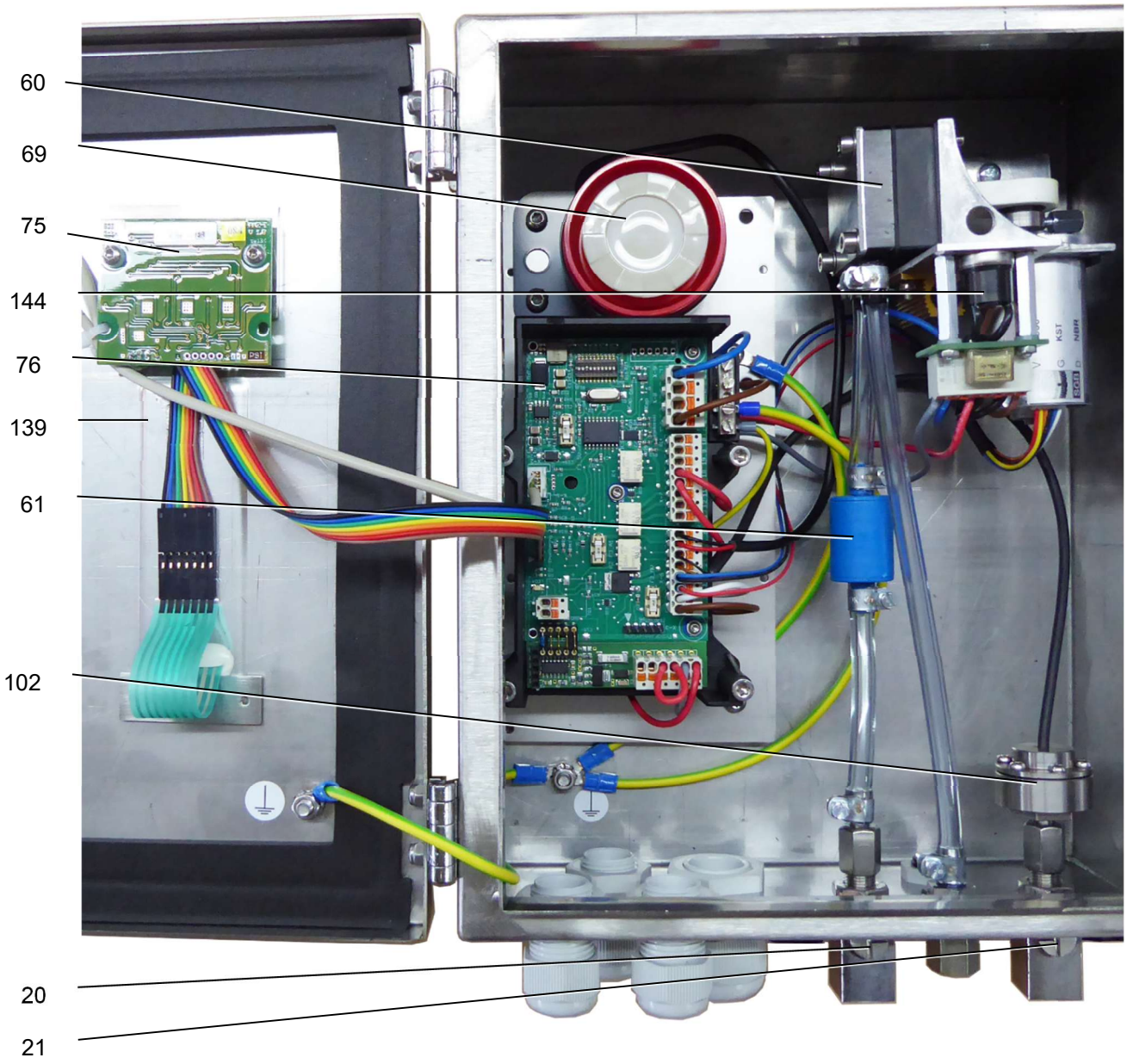
4.1.1 Plastic housing interior view



Interior view with:

01	Signal lamp “Alarm”, red
01.2	Signal lamp “Alarm 2” (solenoid valve and probe), yellow
09	Signal lamp “Operation”, green
20	Three-way valve, suction line
21	Three-way valve, measuring line
60	Vacuum pump
61	Check valve with filter
69	Buzzer
71	“Mute” button
76	Main board
102	Pressure sensor
*	Without function

4.1.2 Stainless-steel housing internal view



Interior view with:

20	Three-way valve, suction line
21	Three-way valve, measuring line
60	Vacuum pump
61	Check valve with filter
69	Buzzer
71	“Mute” button
75	Display board
76	Main board
102	Pressure sensor
139	Keypad (on front)
144	Temperature switch, frost protection

4.2 Normal Operating Condition

The vacuum leak detector is connected to the interstitial space via suction, measuring, and connection lines. The vacuum generated by the pump is measured and controlled by a pressure sensor.

When the operating vacuum is reached (Pump OFF), the pump shuts off. The vacuum slowly drops due to slight, unavoidable leaks in the leak detector system. When the Pump ON switching value is reached, the pump turns on and the interstitial space is evacuated until the operating vacuum is reached (Pump OFF).

In normal operating condition, the vacuum swings between the Pump OFF and Pump ON switching values, with short periods when the pump is run and longer standstills, depending on the tightness and temperature fluctuations of the entire unit.

4.3 Air Leaks

If an air leak occurs (in the outer or inner wall, above the liquid level), the vacuum pump switches on to restore the operating vacuum. If the leak causes the incoming air to exceed the pump's capacity limit, the pump remains on continuously.

Increasing leak rates lead to a further decrease in pressure (with the pump running) until the Alarm ON switching value is reached. This triggers the visual and audible alarms.

4.4 Liquid Leaks

In case of a liquid leak, the liquid enters the interstitial space and collects in the low point of the interstitial space.

The incoming liquid decreases the vacuum, which causes the pump to turn on and evacuate the interstitial space(s) until the operating vacuum is reached. The process repeats itself until the liquid stop valve in the suction line closes.

Because of the vacuum that still exists on the measuring line side, additional stored material or water is sucked into the interstitial space, the measuring line, and, if applicable, into a pressure compensation vessel. This causes the vacuum to drop until the "Alarm ON" pressure is reached. This triggers the visual and audible alarms.

Comment: It is also an option to use a liquid sensor in conjunction with a solenoid valve instead of the liquid stop valve. The liquid alarm is then triggered when the sensor comes into contact with liquid.

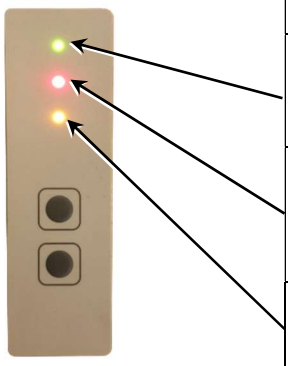
4.5 Pressure increase above atmospheric pressure in the interstitial space when using a leak detector VL .. with solenoid valve (MV)

If a pressure increase of more than 50 mbar above atmospheric pressure occurs in the interstitial space, the solenoid valve in the suction and/or measuring line is closed and the pump switches off.

The pressure increase is indicated visually and acoustically (pressure build-up alarm).

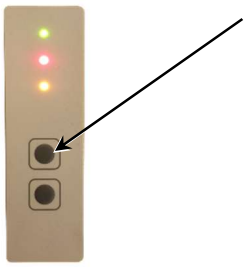
4.6 Displays and Controls

4.6.1 Display



Signal lamps	Operating condition	Alarm, vacuum below " Alarm ON"	Probe alarm	Solenoid valve malfunction	Pressure build-up alarm	Device malfunction
OPERATION: green	ON	ON	ON	ON	ON	ON
ALARM: red	OFF	ON (flashing)[3]	OFF	ON (flashing)	ON (flashing)	ON[4]
ALARM 2: yellow	OFF	OFF	ON (flashing)	ON	Flashing	OFF

4.6.2 "Turn off audible alarm signal" function

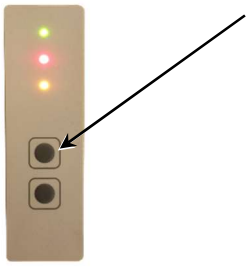


Briefly press "Mute" button once; audible signal turns off, and the red LED flashes.

Pressing the button again will turn the audible signal on.

This function is not available during normal operating conditions and malfunctions.

4.6.3 "Testing the optical and audible alarm signal" function



Press and hold the "Mute" button (for about 10 seconds). The alarm will be triggered until the key is released.

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

[3] (Flashing) is active for the acknowledged external signal.
[4] The "Sound off" key does not have a function, which means the audible signal cannot be turned off.

4.6.4 “Tightness inquiry” function

Press and hold the “Mute” button until the signal lamp is flashing rapidly, then release it. The display (103) will show a tightness value and the same value will be indicated by the number of “Alarm” signal lamp flashes.

This display disappears after 10 seconds and the current vacuum in the system is displayed again.

For the tightness inquiry function, the leak detector must have performed at least 1 automatic refilling interval in normal operating conditions (i.e., without external filling/evacuation, e.g., by an assembly pump) to achieve a valid statement.

This inquiry is recommended before performing a regular functional check of a leak detector. In this way, it is possible to estimate immediately whether it is necessary to look for leaks.

Number of flash signals	**Assessment of tightness**
0	Very tight
1 to 3	Tight
4 to 6	Sufficiently tight
7 to 8	Maintenance recommended
9 to 10	Maintenance urgently recommended

The smaller the above value, the tighter the system. The significance of this value also depends on temperature fluctuations and should thus be considered a reference point.

5. Mounting the System

5.1 Basic Instructions

- Prior to commencing work, the documentation must be read and understood. In case of ambiguities, please ask the manufacturer.
- Observe the approvals of the manufacturer for the tank and the interstitial space.
- The safety instructions in this documentation must be adhered to.
- Only qualified service companies may be used for assembly and commissioning[5].
- Lead-throughs for pneumatic and electric connection lines must be sealed gas-tight.
- Comply with relevant regulations regarding electric installation and regulations for prevention of accidents.
- Pneumatic connections, connection lines, and fittings must withstand the excess pressure that may occur over the entire temperature range.
- Before entering inspection chambers, the oxygen content must be tested and the inspection chamber flushed if necessary.
- When using metallic connection lines, proper equipotential bonding must be ensured; alternatively, electrical isolators must be used.

5.2 Assembly of the Leak Detector

- Wall mounting using the supplied mounting material.
- To allow the ventilation slots to work properly, make sure there is a side clearance of at least 2 cm from other objects and walls.
- Outside of the potentially explosive area (zone 1 or 2), also applies to the connection lines and interstitial space.
- Plastic housing: In a dry room
  Stainless steel housing: Outdoors, without additional protective box.
- To avoid excessive heating, the leak detector must not be installed directly next to a heat source.

  The ambient temperature must not exceed 60°C; appropriate measures may need to be taken (e.g., installation of a roof to protect against sunlight).
- Ventilation systems must be kept clear.
- Do not mount in access or inspection chambers.

[5] For Germany: Specialist service companies as per German water legislation that have documented qualifications to install leak detection systems.

5.3 Pneumatic Connection Lines

5.3.1 Requirements

- At least 6 mm inside clearance
- Resistant to the stored or conveyed product
- Pressure and vacuum-resistant across the entire temperature range
- The full cross section must be maintained (not bent)
- Color coding: *Measuring line*: RED
  Suction line: WHITE or CLEAR
  Exhaust: GREEN
- The lines between the interstitial space and leak detector must not exceed 50 m in length. If the distance is greater than this, a larger cross section must be used.
- Condensate traps must be installed at all low points of the connection lines.
- Assemble liquid stop valve in the suction line (generally included in the assembly kit).

5.3.2 Exhaust

- The exhaust line usually feeds to the tank ventilation.
- Exceptions to the return of the exhaust to the tank ventilation:
  Tanks with interior overlay pressure, tanks according to DIN 4119 or EN 14015 with double-layered floor, or comparable:
  The exhaust line can lead outside to a safe[6] area: Fit a condensate trap and a liquid stop valve in the exhaust line.
- Caution: An exhaust line which ends outdoors must not in any circumstances be used to detect leaks (e.g., by “sniffing”). Attach warning signs if necessary.

5.4 Completing Pneumatic Connections

5.4.1 Assembling the connection to the tank’s interstitial space

(1) Generally according to the tank manufacturer’s specifications.

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

5.4.2 Between leak detector and interstitial space

(1) Select and install suitable pipe.

(2) During installation of the pipe, ensure that it is protected against damage when the access chamber is entered.

(3) Complete the relevant connection (according to the illustrations in the following images).

[6] Among other things, not accessible to public transport/persons

5.4.2.1 Flanged screw connection (for flanged pipes)

(1) Lubricate O-rings

(2) Insert spacer ring loosely into the screw socket

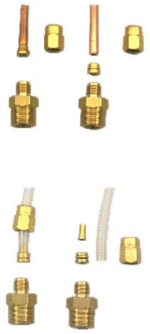
(3) Slide union nut and pressure ring over the pipe

(4) Hand-tighten union nut

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

(6) Final assembly: Tighten by another ¼ turn

5.4.2.2 Clamping ring screw connection for metal and plastic pipes



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

(2) Insert pipe (with support sleeve) all the way to the stop

(3) Tighten the screw connection by hand until resistance becomes noticeable, then tighten a further 1¾ turns with a wrench

(4) Loosen nut

(5) Tighten the nut by hand up to a noticeable stop

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

5.4.2.3 Quick screw connection for PA pipes

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

(2) Unfasten union nut and slide over the end of the pipe

(3) Slide pipe onto nipple up to the beginning of the thread

(4) Hand-tighten union nut

(5) Wrench-tighten union nut until need for increased force is noticeable (approx. 1 to 2 turns)

5.5 Electrical Cables

The electrical connection lines should be resistant to the existing or expected vapors and liquids.

Supply line: at least 1.0 mm^2, e.g., NYM 3 x 0.75 mm^2, and max. 2.5 mm^2

Power connection:

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

Voltage-free contacts, external signal, and power supply 24 V DC via terminals 40/41:

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

Outer cable diameter of 5.5 to 13 mm. If other cable diameters are used, the screw connections need to be replaced to provide proper protection.

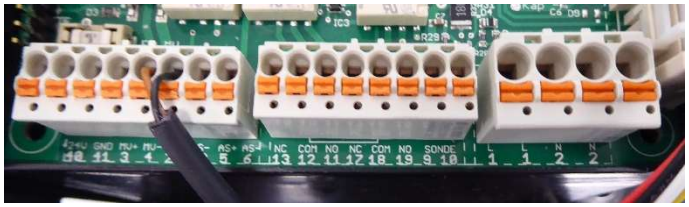
5.6 Electrical Wiring Diagram

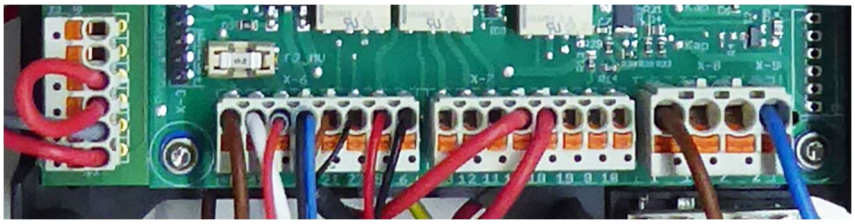
(1) Fixed wiring, i.e., no plug or switch connections

(2) Devices with plastic housing may only be connected with a fixed cable.

(3) Observe the requirements for electric installations, if necessary, also those of the electric companies.

(4) Terminal layout (see also SL-854851):



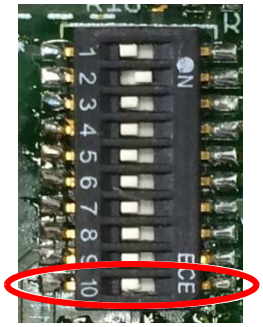


1/2	Power connection (100–240 VAC)
3/4	Occupied (vacuum pump)
5/6	External signal, 24 VDC, can be disconnected
7/8	Solenoid valve
11/12	Potential-free contacts (opened in case of alarm or loss of power)
12/13	As above, but contacts closed
(17/18)	Potential-free contacts, in parallel with pump running (closed when pump is inactive and in case of loss of power)
(18/19)	As above, but contacts open
40/41	24 VDC as permanent power supply to power other assemblies or, for a device with a supply voltage of 24 VDC, the power supply is connected here
70/71	Probe contacts; the potential-free contacts of a leak detection probe can be connected here. Note: with deactivated solenoid valve see 5.6.2

(5) Close unused cable glands properly and professionally.

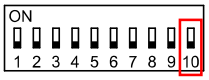
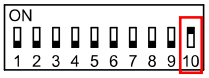
(6) Do not apply voltage until all electrical and pneumatic cables are connected and the housing cover is closed.

5.6.1 Activation or deactivation of the solenoid valve monitoring

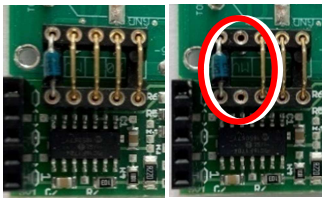


ATTENTION: The solenoid valve monitoring is **always switched on** when a new device is delivered (DIP switch 10 to OFF)!

(1) If a solenoid valve is used subsequently the solenoid valve monitoring **must be activated** using DIP switch 10.

Switch position 10, Solenoid valve monitoring	Monitoring ON	
	Monitoring OFF	

5.6.2 Deactivated solenoid valve but with probe



ATTENTION: The solenoid valve monitoring is **always switched on** when a new device is delivered (DIP switch 10 to OFF)!

(1) Check that the solenoid valve monitoring is activated (5.6.1).

(2) For the version ...PMMV, the second jumper from the left must then be pulled out.

(3) The probe is connected to terminals 9/10 (and not to the terminals 70/71).

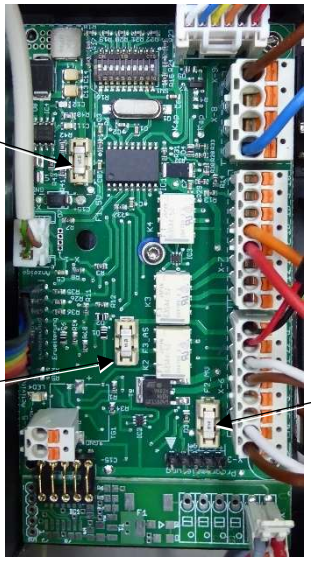
5.6.3 Location of fuses and their values

Fuse F3 1 A
External signal AS

Fuse F2 1,5 A
Solenoid valve MV
or pump

Fuse F1 2 A
intern

Plastic housing



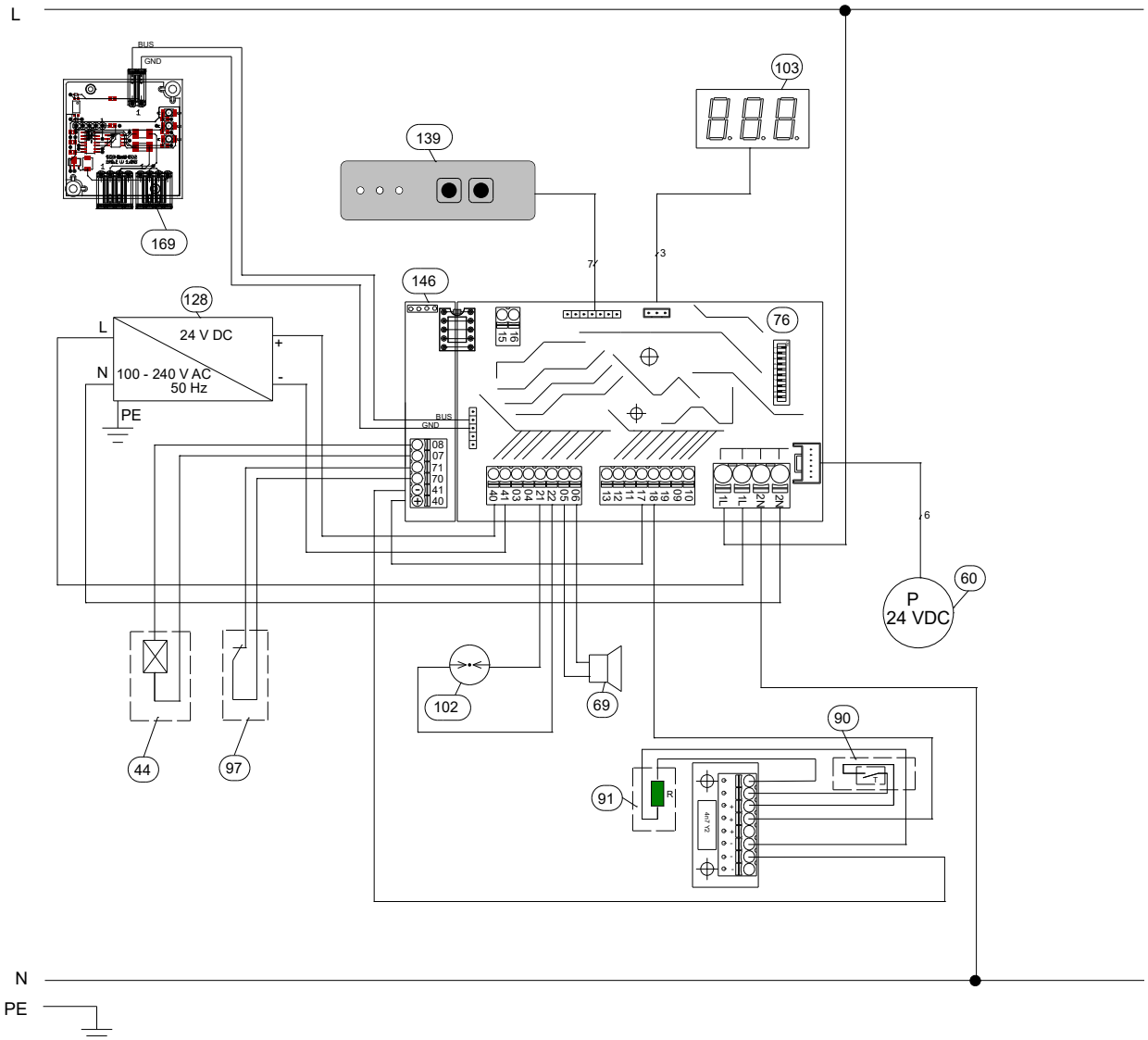
Fuse F1 2 A
intern

Fuse F3 1 A
External signal AS

Fuse F2 1,5 A
Solenoid valve MV
or pump

Stainless-steel housing

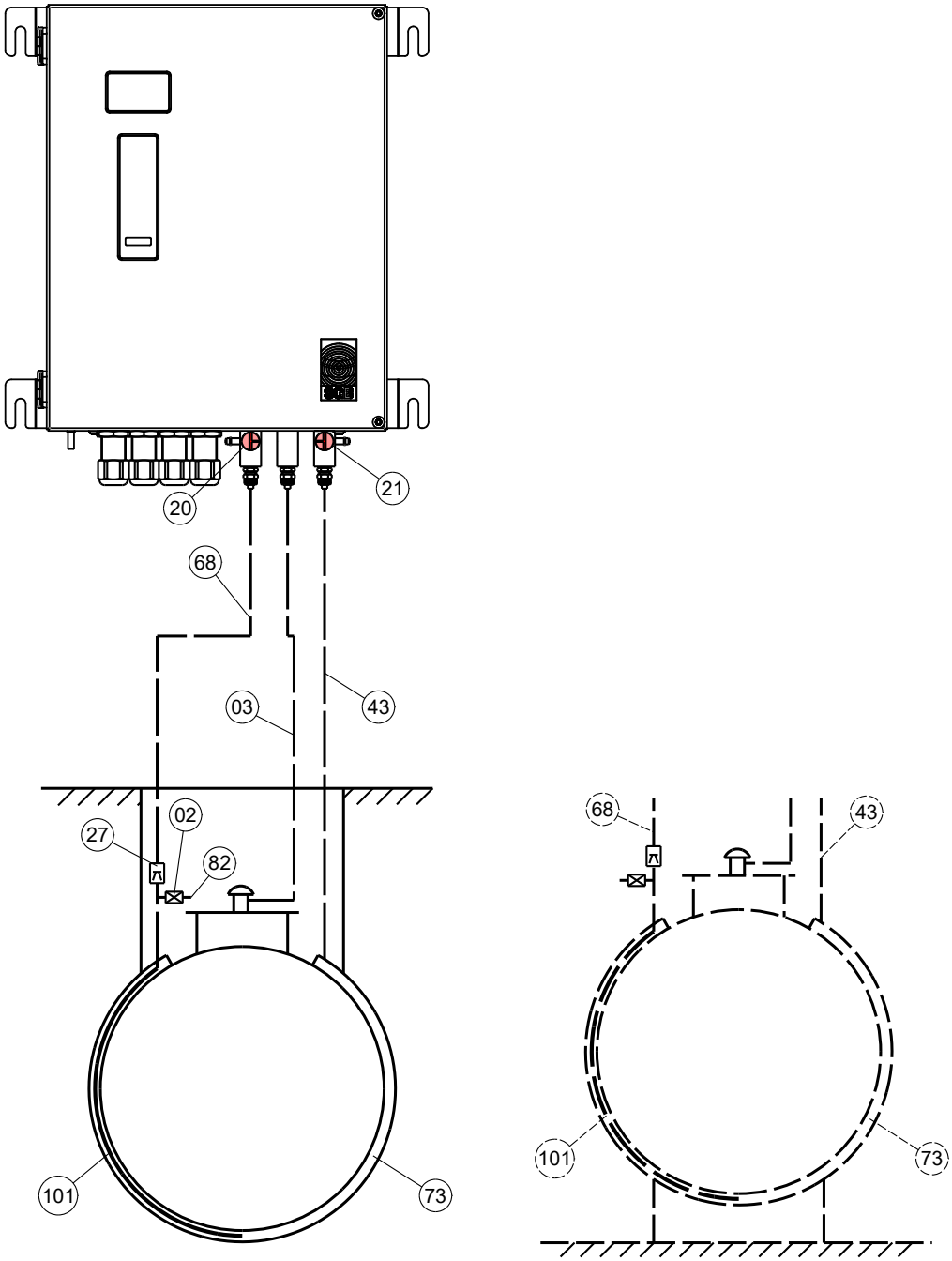
5.6.2 Block diagram (SL 854 851)



44	Solenoid valve
60	Vacuum pump (24 VDC)
69	Buzzer
76	Main board
90	Thermostat
91	Heating
97	Leak detection probe
102	Pressure sensor
103	Display
128	Switching power supply
139	Keypad
146	Solenoid valve monitoring board (MVÜ board)
169	Data bus module (DBM)

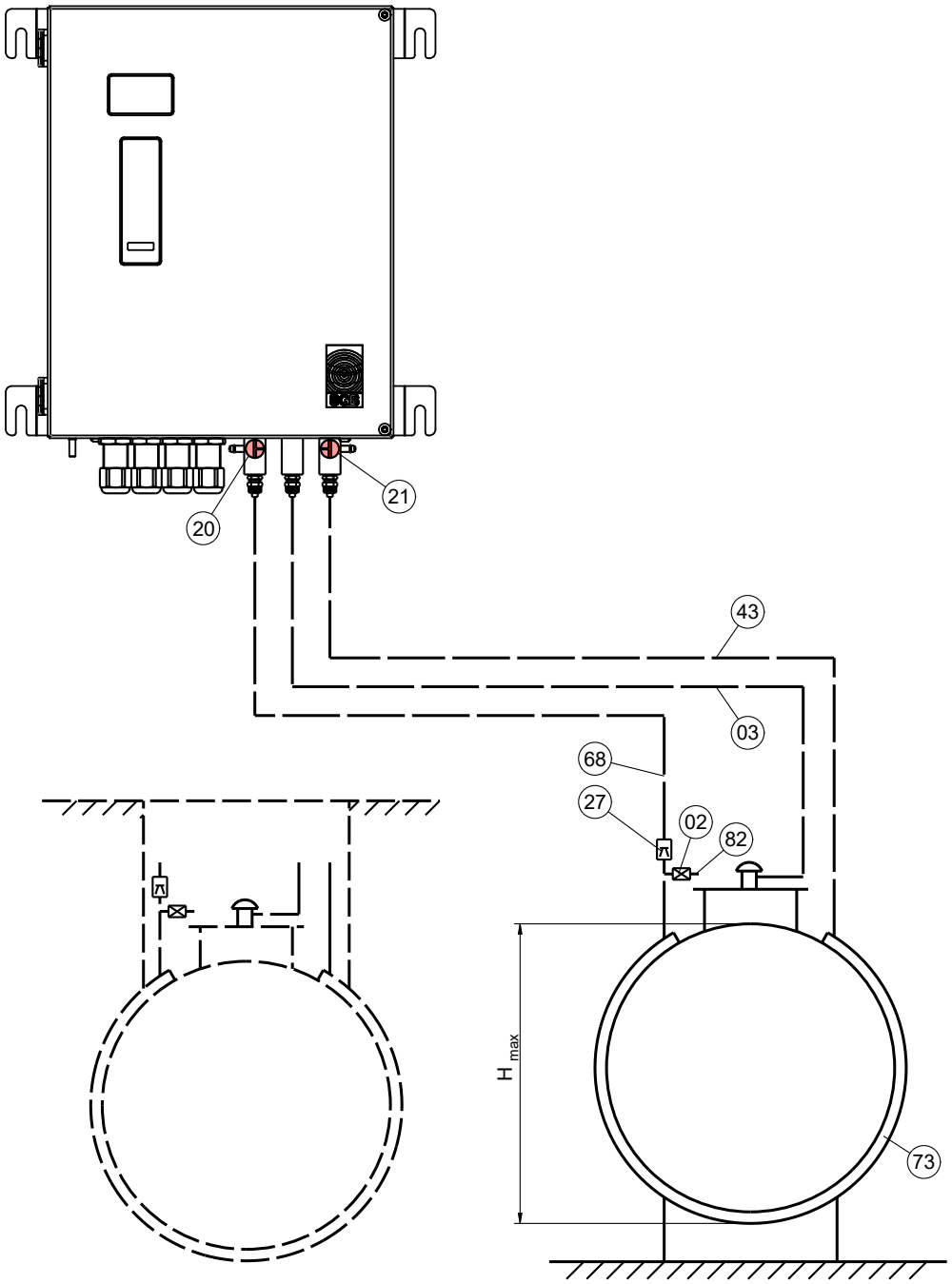
5.7 Installation Examples

5.7.1 Horizontal cylindrical tank with leak protection lining and suction line to low point



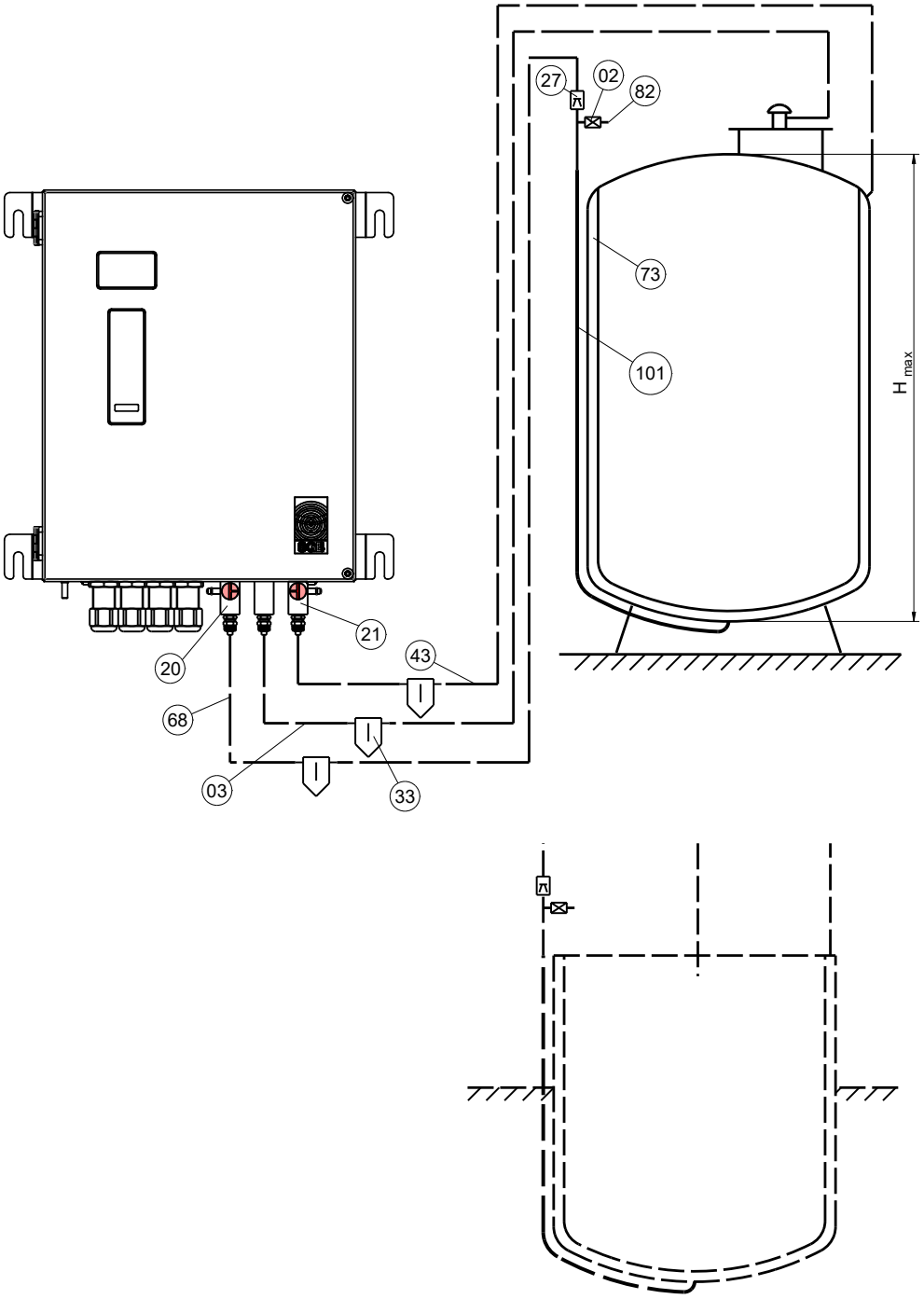
02	Shut-off valve
03	Exhaust line
20	Three-way valve, suction line
21	Three-way valve, measuring line
27	Liquid stop valve
43	Measuring line
68	Suction line
73	Interstitial space
82	Connection assembly pump
101	Suction line to low point

5.7.2 Horizontal cylindrical tank, double-walled steel, without suction line to low point



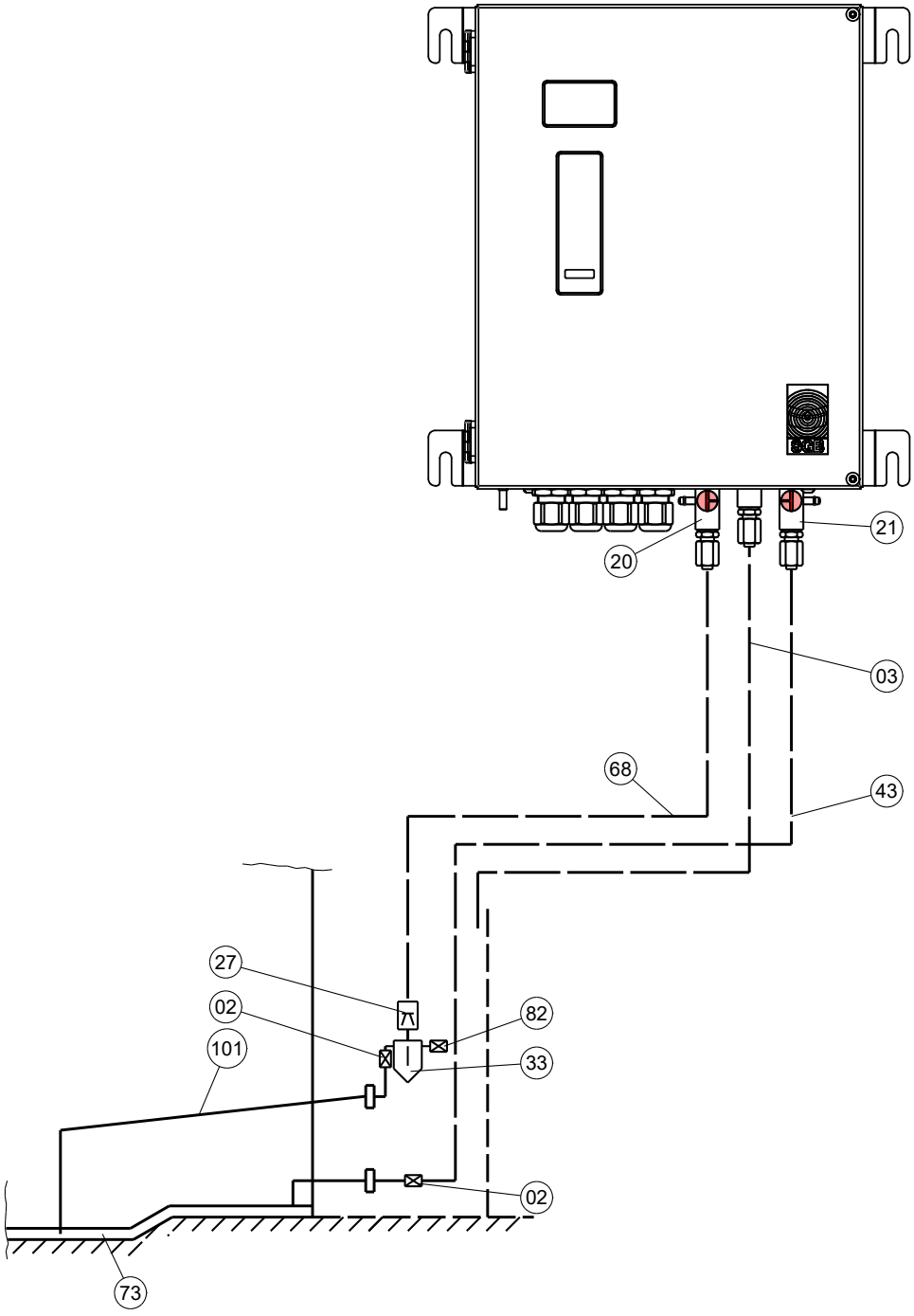
02	Shut-off valve
03	Exhaust line
20	Three-way valve, suction line
21	Three-way valve, measuring line
27	Liquid stop valve
43	Measuring line
68	Suction line
73	Interstitial space
82	Connection assembly pump

5.7.3 Vertical cylindrical tank in accordance with DIN 6618-2 (downwards outside suction line)



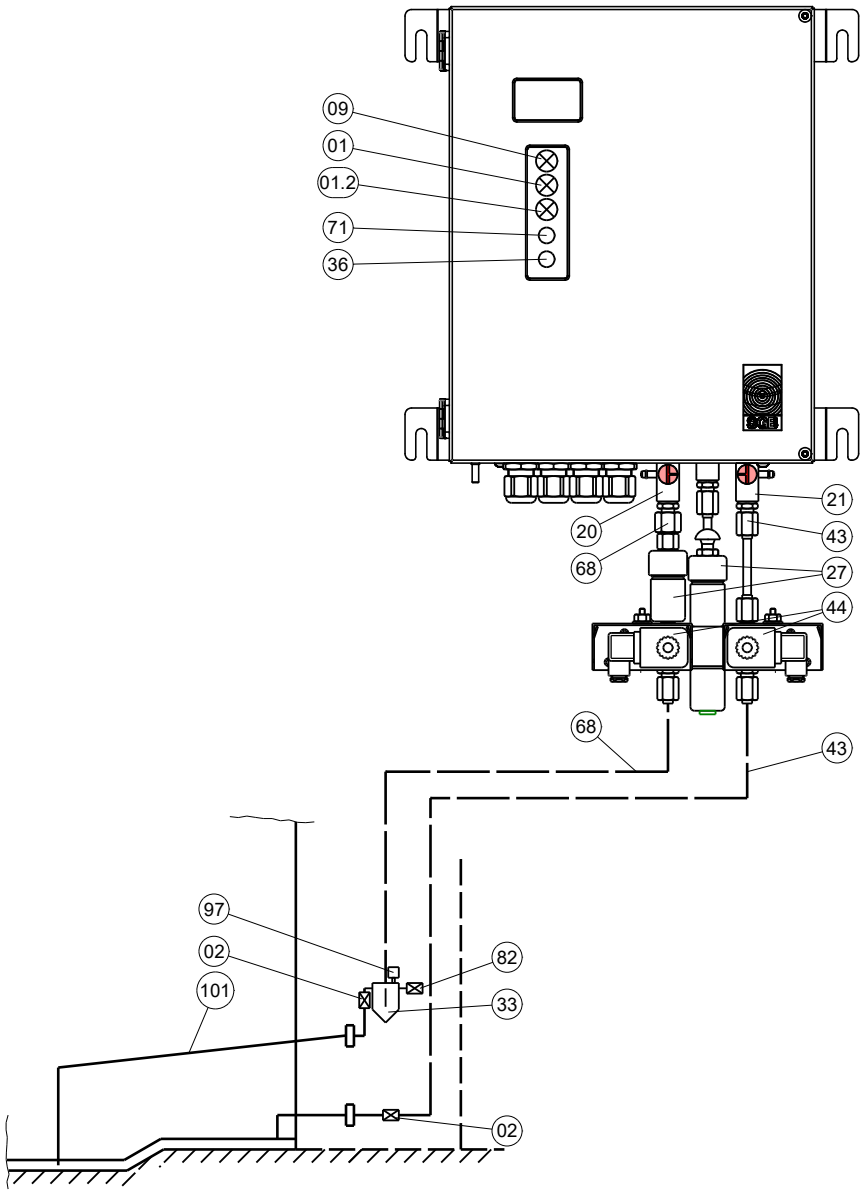
02	Shut-off valve
03	Exhaust line
20	Three-way valve, suction line
21	Three-way valve, measuring line
27	Liquid stop valve
33	Condensate trap
43	Measuring line
68	Suction line
73	Interstitial space
82	Connection assembly pump
101	Suction line to low point

5.7.4 Flat-bottomed tank structure



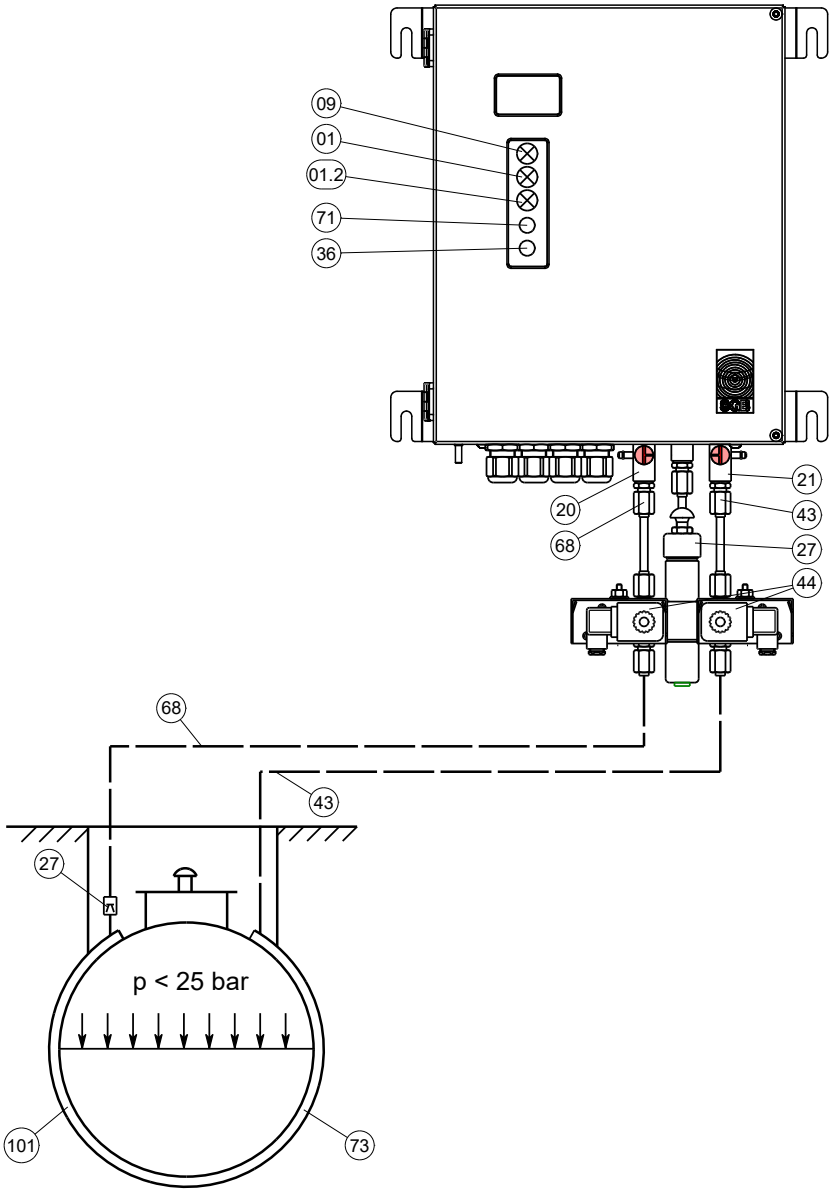
02	Shut-off valve
03	Exhaust line
20	Three-way valve, suction line
21	Three-way valve, measuring line
27	Liquid stop valve
33	Condensate trap
43	Measuring line
68	Suction line
73	Interstitial space
82	Connection assembly pump
101	Suction line to low point

5.7.5 Flat-bottomed tank structure, monitored using probe and solenoid valves



01	Signal lamp “Alarm”, red
01.2	Signal lamp “Alarm 2”
02	Shut-off valve
09	Signal lamp “Operation”, green (white)
20	Three-way valve, suction line
21	Three-way valve, measuring line
27	Liquid stop valve
33	Condensate trap
36	“Commissioning” key
43	Measuring line
44	Solenoid valve
68	Suction line
71	“Sound off” key
73	Interstitial space
82	Connection assembly pump
97	Leak detection probe
101	Suction line to low point

5.7.6 Pressure Vessel



01	Signal lamp “Alarm”, red
01.2	Signal lamp “Alarm 2”
09	Signal lamp “Operation”, green (white)
20	Three-way valve, suction line
21	Three-way valve, measuring line
27	Liquid stop valve
36	“Commissioning” key
43	Measuring line
44	Solenoid valve
68	Suction line
71	“Sound off” key
73	Interstitial space
101	Suction line to low point

6. Commissioning

(1) Only perform commissioning once the steps in Section 5 “Mounting” have been completed.

(2) If a leak detector is operated on an interstitial space that is already in operation, special protective measures must be taken (for example, testing for liquid freedom in the interstitial space). Additional measures may be necessary depending on the local conditions and must be assessed by qualified personnel.

6.1 Tightness test

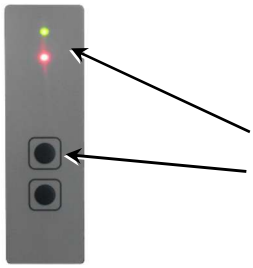
Prior to commissioning, ensure the leak-tightness of the interstitial space.

The vacuum build-up (depending on the pressure level of the leak detector) should be executed using an external vacuum pump.

The starting vacuum for the tightness test should not be below the operating pressure of the leak detector (value for pump OFF).

The test is generally considered passed if the vacuum does not drop by more than 1 mbar within a test period (in minutes) calculated from the interstitial space volume divided by 10.
Example: The test period for an interstitial space volume of 800 liters is: 800/10 = 80 minutes. Within this test period, the vacuum must not fall below 1 mbar.

6.2 Commissioning the Leak Detector



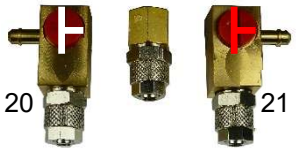
(1) Tightness of the interstitial space prior to commissioning is assumed.

(2) Connect voltage supply.

(3) Ascertain lighting of “Operation” and “Alarm” signal lamps and sounding of the audible alarm. If necessary, turn off audible alarm signal.

The vacuum pump starts immediately and builds up the vacuum in the monitored system (if the interstitial space has not already been evacuated).

Note: If the VL .. MV is used as per Section 3.4.1 f), it must be ensured that the probe contacts (70/71) are bridged and a solenoid valve (24 VDC, alternatively 2x12 VDC in series) is connected to terminals 7 and 8.

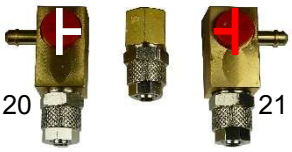


(4) Attach measuring gauge to connection on three-way valve 21 and turn valve 180°.

(5) The vacuum build-up can be monitored via the connected measuring gauge.

(6) If the vacuum build-up is too slow, an assembly pump can be attached to the connection on three-way valve 20.

Turn valve 180° and switch on the assembly pump.



(7) After the operating vacuum of the leak detector has been reached (pump in leak detector shuts off), turn three-way valve 20 180°, switch off the assembly pump, and remove it.

(8) Turn three-way valve 21 180° and remove the pressure measuring gauge.

(9) Perform a functional check according to Section 7.3.

7. Functional Check and Maintenance

7.1 General

(1) If the leak detection system has been properly installed and is free of leaks, trouble-free operation can be assumed.

(2) Frequent switching on or continuous running of the pump indicates leaks, which should be corrected within a reasonable time.

(3) In the event of an alarm, determine the cause and fix it quickly.

(4) The operator must check the function of the operating lights at regular intervals.

(5) The leak detector must be disconnected from power for any repairs to be performed on the leak detector.

(6) A loss of power is indicated by the “Operation” signal lamp going off. Alarm signals are triggered via the potential-free relay contacts if contacts 11/12/13 were used.
After the power loss, the leak detector automatically goes into operation again and the potential-free contacts no longer generate an alarm (unless the power loss has caused the pressure to drop below the alarm pressure).

(7) CAUTION: For single-walled tanks equipped with a flexible leak protection lining, the interstitial space can never be without pressure (risk of collapse of the leak protection lining).

(8) Use a dry cloth to clean the leak detector with a plastic housing.

7.2 Maintenance

- Maintenance work and functional checks must be performed by trained personnel only[7].
- Once a year to ensure functional and operational safety.
- Test scope according to Section 7.3.
- Compliance with the conditions from Sections 5 and 6 must also be checked.
- As part of the annual functional check, check the motor of the pump for running noises (damaged bearings).
- If the pump or its exhaust pipe is exchanged or detached, then a tightness test should be carried out for the installed pump with a pressure of 10 bar after the exchange in order to ensure the impermeability of the exhaust in the housing.

[7] For Germany: Technical service according to water legislation with expertise in leak detection systems
For Europe: Authorization by the manufacturer

7.3 Functional Check

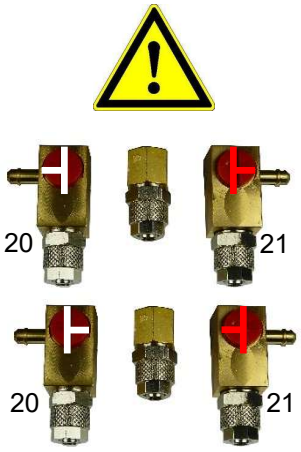
The functional and operational safety check must be performed:

- After each commissioning
- According to the time intervals given in Section 7.2[8]
- Each time a malfunction has been corrected

Two persons may be required to perform a functional check, depending on the type of tank. The following contents must be observed or met:

- Coordinate the work to be performed with those responsible for operation.
- Observe the safety instructions for working with the product to be stored or conveyed.
- Check the condensate traps and empty if necessary (7.3.1)
- Continuity test of the interstitial space (7.3.2)
- Testing the switching values with the interstitial space (7.3.3) Testing the switching values with the testing device (7.3.4)
- Testing the pump delivery pressure (7.3.5)
- System tightness test (7.3.6)
- Checking the excess pressure alarm (only for version with solenoid valve) (7.3.7)
- Checking the additional pressure switch in conjunction with VL .. MV (7.3.8)
- Checking the probe (if used) (7.3.9)
- Creating the operating condition (7.3.10)
- A test report must be completed, confirming functional and operational safety. Test reports are available for download from the SGB website.

7.3.1 Checking and emptying the condensate traps, if required



CAUTION: The condensate traps may contain the stored/conveyed product. Take appropriate protective measures!

(1) Close any shut-off valves on the interstitial space side.

(2) Turn three-way valves 180° to ventilate the connection lines.

(3) Open and empty the condensate traps.

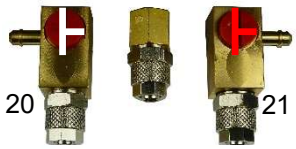
(4) Close the condensate traps.

(5) Three-way valves back to the operating position.

(6) Reopen the valves closed in No. (1).

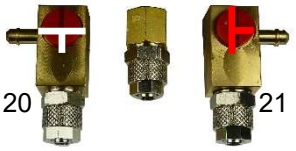
[8] For Germany: In addition, national laws apply (e.g., AwSV)

7.3.2 Checking free passage in the interstitial space



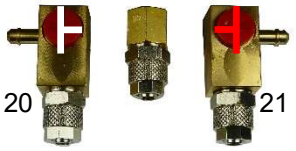
Checking the free passage of air ensures that an interstitial space is connected to the leak detector and that it has sufficient passage to cause an air leak to trigger an alarm.

(1) Attach measuring gauge to connection on three-way valve 21 and turn valve 180°.



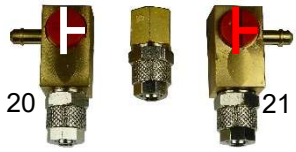
(2) Turn three-way valve 20 90° (UZS) so that the suction line and system are ventilated.

(3) Check if the measuring gauge registers a vacuum drop. If no pressure drop occurs, locate and correct the cause.

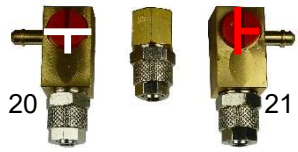


(4) Return three-way valves to the operating position and remove the measuring gauge.

7.3.3 Testing the switching values with the interstitial space



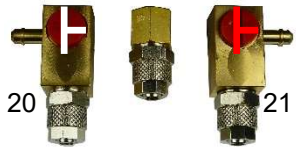
(1) Attach measuring gauge to connection on three-way valve 21 and turn valve 180°.



(2) Turn three-way valve 20 90° (UZS) so that the suction line and system are ventilated.

(3) Check switching values “Pump ON” and “Alarm ON” (with visual and audible, if available). Record the values.

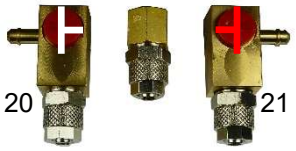
(4) Activate the “Sound off” key, if necessary.



(5) Return three-way valve 20 to its original position or close test valve and check the switching values “Alarm OFF” and “Pump OFF”. Record the values.

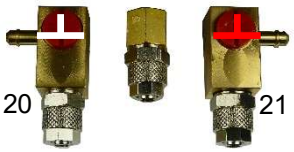
(6) The unit passes the test if the measured switching values fall within the specified tolerance.

(7) Open any shut-off valves that were closed prior to the test.



(8) Return three-way valves to the operating position and remove the measuring gauge.

7.3.4 Testing the switching values with the testing device (see Section “Accessories”)



(1) Connect the testing device to the two hose ends on each of the free connections of three-way valves 20 and 21.

(2) Connect the measuring gauge to the T-piece of the testing device.

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

(4) Turn three-way valve 20 90° (anti-clockwise) and three-way valve 21 90° (clockwise) so that the interstitial space is disconnected.

The interstitial space volume is now simulated by the test tank.

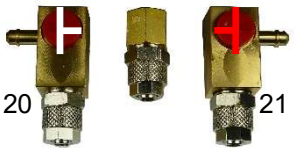
(5) The operational vacuum is now established in the test tank.

(6) Ventilate slowly using the needle valve; check switching values “Pump ON” and “Alarm ON” (visual and audible, if necessary). Record the values.

(7) Activate the “Sound off” key, if necessary.

(8) Slowly close the needle valve and check switching values “Alarm OFF” and “Pump OFF”.

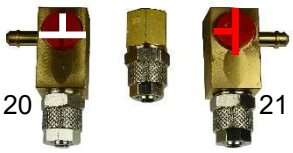
(9) The unit passes the test if the measured switching values fall within the specified tolerance.



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

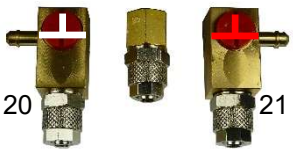
7.3.5 Testing the pump delivery pressure

The test of the delivery pressure of the pump is carried out in order to determine if the vacuum source is capable of establishing the operating vacuum in the interstitial space.



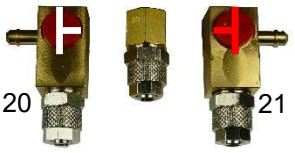
(1) Attach measuring gauge to connection on three-way valve 20 and turn valve 90° (anti-clockwise).

(2) The pump is usually not running at this moment, i.e., the pressure sensor must be vented to start the pump.



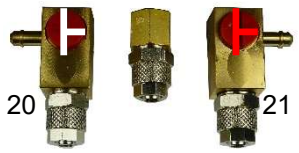
(3) Turn three-way valve 21 90° (clockwise). The pressure sensor is vented, the pump starts (and the alarm is triggered, acknowledge if necessary).

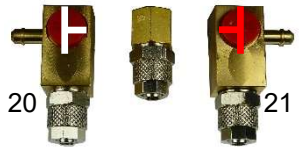
(4) This unit passes the test if the suction height of the vacuum pump is at least 40 mbar higher than the switching value “Pump OFF” (i.e., the operational vacuum).



(5) Once the test is complete, return valves to their original positions and remove the measuring gauge.

7.3.6 System Tightness Test





(1) The system tightness requirement is defined in Section 6.1.

Determine the test period for each interstitial space connected (and/or the entire monitored system) (calculate or use test reports prepared by SGB GmbH).

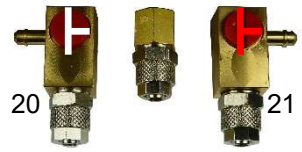
(2) Attach measuring gauge to connection on three-way valve 21 and turn valve 180°.

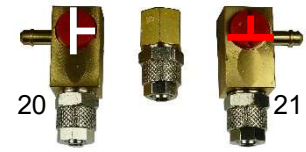
(3) Read off and record starting vacuum and time. Wait for the test period to elapse and determine the vacuum drop.

(4) The test is considered passed if the vacuum does not drop by more than 1 mbar during the test period.
Of course, a multiple of the test period can also be measured; in this case, the permissible vacuum drop is also a multiple.

(5) Once the test is complete, return valves to their original positions and remove the measuring gauge.

7.3.7 Checking the excess pressure alarm (only for version with solenoid valve)





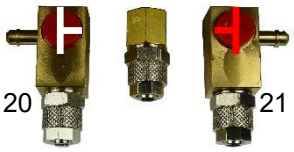
(1) Attach excess pressure testing device to connection on three-way valve 21 and turn valve 180°.

(2) Then turn three-way valve 21 90°.

(3) Apply pressure using the excess pressure testing device. First the pump is switched on, then the alarm is triggered (red LED on), and if the pressure continues to increase, the excess pressure alarm is triggered (yellow LED flashes).

(4) With the excess pressure alarm, the pump is switched off and the solenoid valve closes.

(5) Relieve excess pressure by detaching the excess pressure testing device. The excess pressure alarm goes out and the pump runs; the solenoid valve opens.



(6) Once the test is complete, return valves to their original positions.

7.3.8 Checking the additional pressure switch in conjunction with VL .. MV

(1) Connect the testing device as per Section 7.3.5 and complete steps (1) to (5).

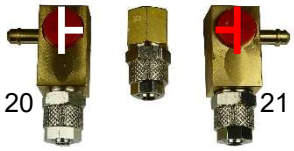
(2) Close shut-off valve on the interstitial space side.

(3) Connect an external pressure booster to connection 82 and open the relevant valve.

(4) Pressure build-up until activation of the pressure switch (probe alarm is triggered and the solenoid valve switches).

(5) Check the corresponding alarm(s).

(6) Relieve pressure; probe alarm goes out and the solenoid valve switches.



(7) Close the shut-off valve at 82 and remove the pressure booster.

(8) Open the shut-off valve on the interstitial space side, put three-way valves 20 and 21 into operating position, and remove testing device.

7.3.9 Checking the probe (only VL .. with additional probe)

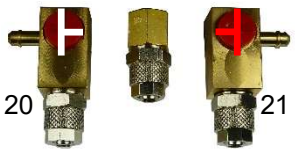
(1) Establish the probe alarm state. Depending on the probe version, this is achieved:
- By pressing a test button (“WHG probes”)
- By turning the housing (float)
- Through removal and immersion in test liquid

Note: If the probe is checked by removing it, the stop valves must be closed to maintain the vacuum in the interstitial space. Open again after the test!

(2) Check probe alarm as per Section 4.6.1 and the switching of the solenoid valve.

(3) Establish the probe operating condition again; the probe alarm goes out and the solenoid valve opens.

7.3.10 Achieving the Operating Condition



(1) Test if all pneumatic connections are completed.

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

(3) Seal the housing.

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

(5) Attach a sign with troubleshooting information.

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

8. Malfunction (Alarm)

8.1 Alarm Description

If an alarm goes off, one must assume that there are vapors stored in the interstitial space. Take appropriate protective measures.

(1) An alarm (vacuum loss) is indicated by the red “Alarm” signal lamp lighting up and the sounding of the audible signal, if available.

(2) Other alarms are indicated as follows:

Probe alarm: Yellow LED on. This flashes when the audible signal is acknowledged.

Pressure build-up alarm: Yellow LED flashes, red LED lights up. The red LED flashes when the audible alarm is acknowledged.

(3) Close any shut-off valves in the connection line between the interstitial space and leak detector.

(4) Shut off the audible signal by activating the “Sound off” key, if available.

(5) Inform the installation company.

(6) The installation company must detect the cause and correct it.

CAUTION: Depending on the tank, there could be liquid under pressure in the connection lines.

CAUTION: Do not depressurize the interstitial space in the tanks with flexible leak protection lining (risk of collapse of the insert)!

(7) Perform a functional check as per 7.3.

8.2 Malfunction

In case of a malfunction, only the red signal lamp will light up in addition to the green signal lamp (yellow is off), and at the same time, the audible signal cannot be acknowledged.

Solenoid valve malfunction (e.g., no power): Yellow LED lights up and the red LED flashes.

8.3 How to Behave

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

Inform the installation company. They need to find and rectify the error.

After repair a functional check must be conducted.

9. Spare Parts

See: shop.sgb.de

10. Accessories

You can find accessories on our website shop.sgb.de, for example:

- Installation kits

- Electrical isolators

- Manifolds

- Testing devices

- Pressure booster

11. Appendix

11.1 Use of Interstitial Spaces That Are Filled with Leak Detector Fluid

11.1.1 Requirements

(1) Only leak detectors with suitable alarm pressures which depend on the tank diameter and the density of the stored material may be used.

(2) The procedure described below is intended for horizontal cylindrical tanks (e.g., DIN 6608, EN 12285-1, or comparable).

(3) If this method is used on other tanks, the permission of the locally responsible authority is required on a case-by-case basis.

11.1.2 Preparation

(1) Remove the fluid-based leak detector.

(2) Extract the leak detection fluid from the interstitial space using the following procedure:

- Connect the suction line connection of the assembly pump to a tank[9] socket via intermediately connected tanks.
- Suction out until no more liquid is being suctioned.
- Assembly of a (large) shut-off valve (at least ½") on the other connection and close the shut-off valve.
- Pump out liquid until no more liquid comes into the intermediate tanks.
- Suddenly open shut-off valve (with pump running) so that a further “surge” of leak detecting fluid enters the intermediate tanks.
- Continue operating with opening and closing of the test valve until no fluids enter the intermediate tanks either in the open position or in the close position.

11.1.3 Installation and Commissioning of the Leak Detector

(1) The suctioning of the leak-detection liquid creates an air cushion above the leak detection liquid.

(2) Install the leak detector according to the documentation and start it up.

(3) Perform a functional check on the leak detector.

[9] The liquid to be suctioned out is collected in this tank.

11.2 Appendix W, Warmed Tanks

11.2.1 Heated tanks (> 50°C $\vartheta \leq$ 200°C)

(1) It is assumed that the temperature increase from before filling to after filling the tank is not more than 25 K. If there are major temperature differences, Section 11.2.2 must also be observed.

(2) The design of the leak detector for use on a heated tank is essential due to the temperature resistance and/or suitability of the components used.
For this reason, both the cooling line (cooling the intake air or vapors) and the probe in conjunction with the solenoid valve (retention of the hot liquid) are used.

(3) When commissioning a tank like this, special attention should be paid to the leak detector, especially during the heating phase, as this can result in strong pressure changes.

When using the VL .. MV, the following points must be observed or checked:

a) Check whether special switching values as per 11.2.2 are required.

b) Only use metallic pipes as the connection line between the leak detector and the tank.

c) The leak detector including the solenoid valve(s) must be installed so that the ambient temperature does not exceed 60°C (e.g., radiant heat of the tank).

d) The process temperature for the sensor can be up to 200°C[10]; the ambient temperature must not exceed 70°C (clarification with SGB GmbH on a case-by-case basis).

e) If the sensor used is approved as overfill protection, its testing is based on this approval. Other sensors must be checked in the annual functional check, by removing them if necessary (e.g., float switch, where the mobility needs to be checked).

f) The vacuum build-up should be executed using an external vacuum pump.

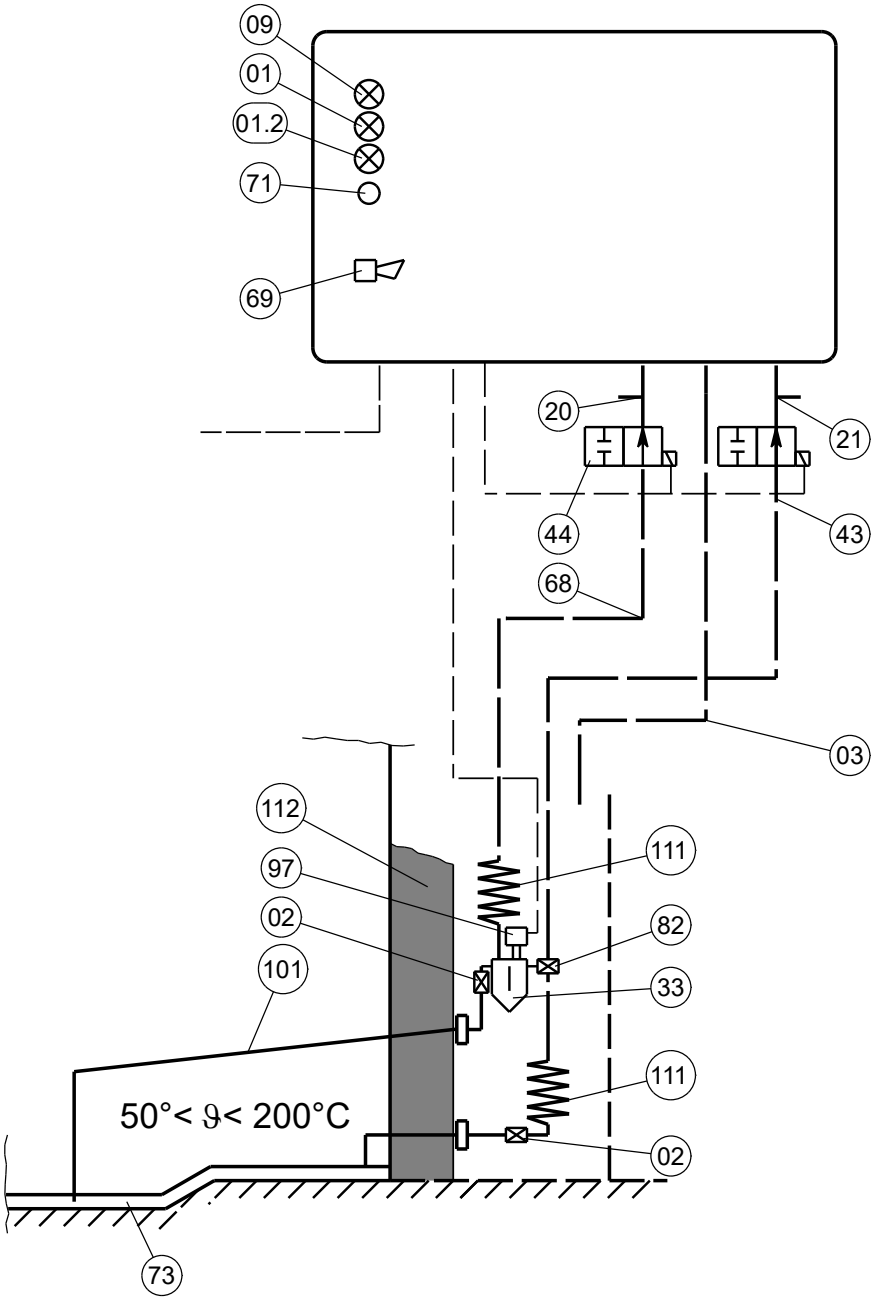
11.2.2 Tanks that need to be filled hot (ΔT > 25°C)

Calculation of the (possibly) required special switching valuesin coordination with SGB GmbH. Special switching values are intended to ensure that the alarm is triggered and that false alarms cannot occur.

It is important that the temperature differences are noted, as well as the speed of the temperature change in the interstitial space and the interstitial space volume.

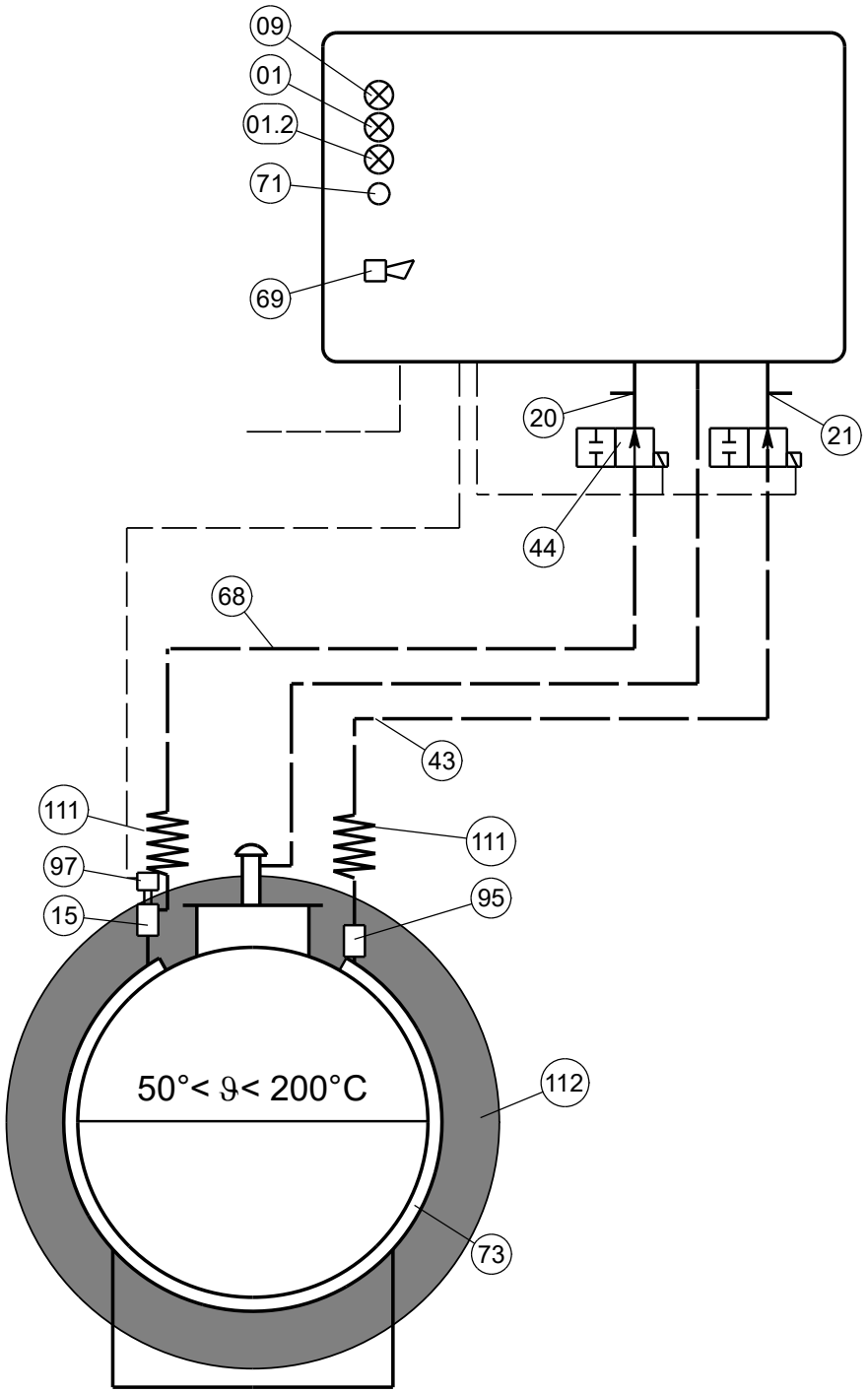
[10] Can vary, depending on the sensor used

11.2.3 Installation example of heated flat-bottomed tank (> 50°C ϑ ≤ 200°C)



01	Signal lamp “Alarm”, red	68	Suction line
01.2	Signal lamp “Probe alarm”, yellow	69	Buzzer
02	Shut-off valve	71	“Mute” button
03	Exhaust line	73	Interstitial space
09	Signal lamp “Operation”, green	82	Connection assembly pump
20	Three-way valve, suction line	97	Leak detection probe
21	Three-way valve, measuring line	101	Suction line to low point
33	Condensate trap	111	Cooling line, 3 m
43	Measuring line	112	Isolation
44	Solenoid valve		

11.2.4 Installation example of heated horizontal cylindrical tank (> 50°C ϑ ≤ 200°C)



01	Signal lamp “Alarm”, red	69	Buzzer
01.2	Signal lamp “Probe alarm”, yellow	71	“Mute” button
09	Signal lamp “Operation”, green	73	Interstitial space
15	Detector pipe	95	Pressure compensation vessel (here: mounted inside the isolation, i.e., needs to be warm due to fluidity)
20	Three-way valve, suction line		
21	Three-way valve, measuring line	97	Leak detection probe
43	Measuring line	111	Cooling line, 3 m
44	Solenoid valve	112	Isolation
68	Suction line		

11.3 Leak detector with pressure limiting unit DBE

11.3.1 General

(1) The DBE limits the negative pressure to the value in mbar, that is carried out according “DBE”.
Example: DBE 420 – the max. negative pressure in the interstitial space is limited to 420 mbar. When reaching 420 mbar, the solenoid valve of the DBE opens and releases air to the interstitial space until the negative pressure has dropped by 10 mbar (to 410 mbar here).

(2) To enable a DBE to be connected, the corresponding leak detector must have the marking “DB” in its designation.

(3) The DBE can be integrated into the mounting kit or in a separate housing. The solution integrated is represented in this Appendix.

(4) It is recommended only to use the DBE in conjunction with a leak detection probe (instead of the liquid stop valve) to prevent the DBE from responding if liquid is located on the interstitial space.

(5) The DBE is delivered wired permanently with the DBE. No separate electrical connection has to be carried out.

(6) When the DBE opens to let air into the interstitial space, the yellow LED illuminates in the housing cover.

11.3.2 Functional check of the DBE

(1) This functional check must be carried out additionally to the functional check in chapter 7.

(2) This part describes the inspection for a leak detector with digital pressure display in the housing cover. If this is not present, a measuring instrument must be connected between the vacuum booster (UEH) and the test valve via a T-piece.

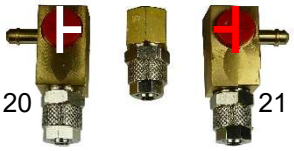
(3) Connect the UEH to the 3-way valve 21 and slowly turn the valve 270° counter-clockwise.

(4) Tighten the UEH to generate more negative pressure.

(5) When the set pressure on the DBE is reached, the valve opens and you can hear air flowing into the interstitial space.

(6) Let go of the UEH (or press in slightly), the pressure drops. When reaching a pressure of approx. 10 mbar below the set pressure of the DBE, the solenoid valve closes again.

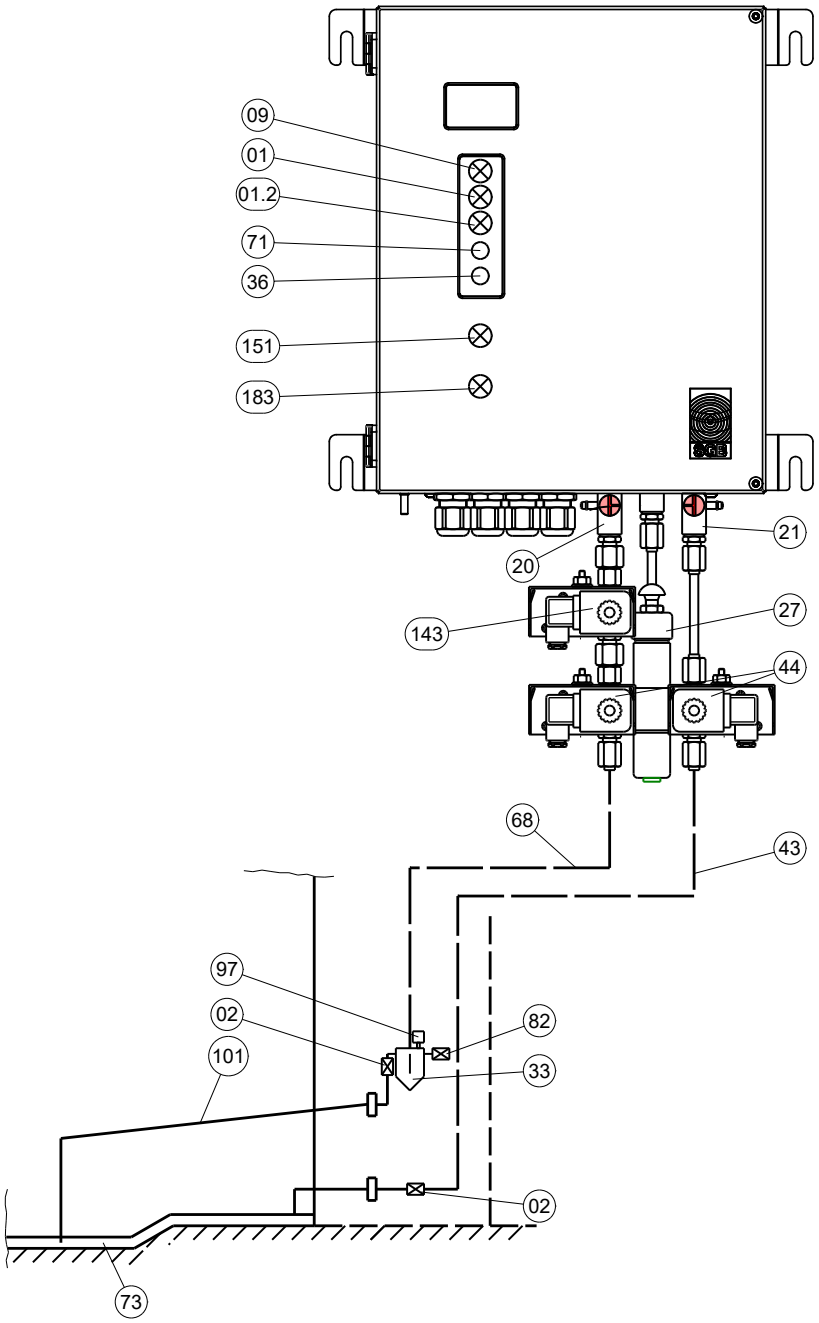
(7) When this is reached, the inspection has passed.



(8) Turn the 3-way valve 21 into the operating position and remove the UEH.

(9) Notes in the test report (remarks) about this inspection (including switching values determined)

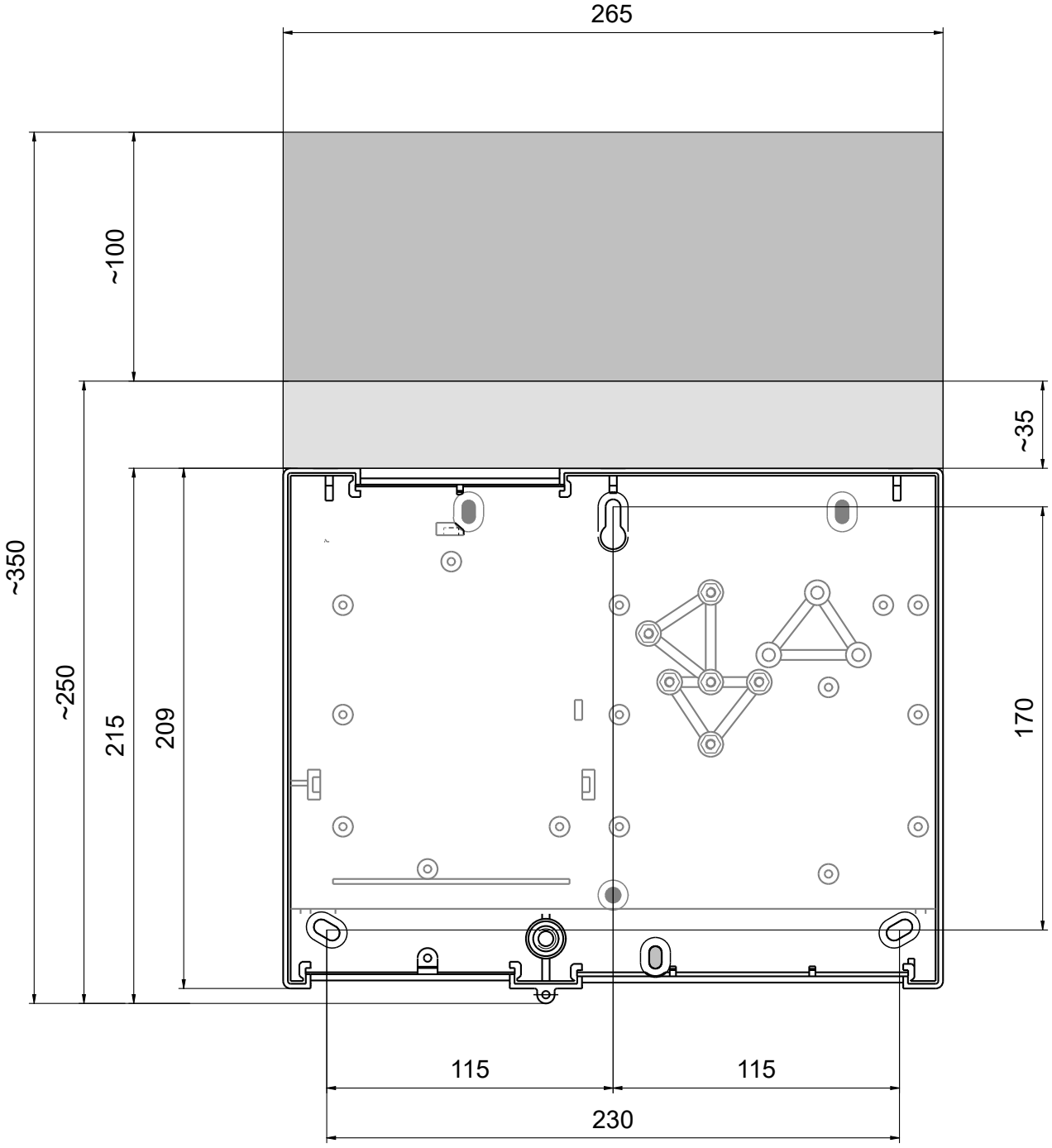
11.3.3 Mounting example



01	Signal lamp „Alarm“, red
01.2	Signal lamp „Alarm 2“
02	Shut-off valve
09	Signal lamp „Operation“, green
20	Three-way valve, pressure line
21	Three-way valve, measuring line
27	Liquid stop valve
33	Condensate trap
36	„Commissioning“ key
43	Measuring line
44	Solenoid valve
68	Suction line
71	“Mute” button
73	Interstitial space
82	Connection assembly pump
97	Leak detection probe
101	Suction line to low point
143	Over-/underpressure solenoid valve for pressure limiting unit DBE
151	Signal lamp „Service indication“, yellow
183	Signal lamp „DBE active”

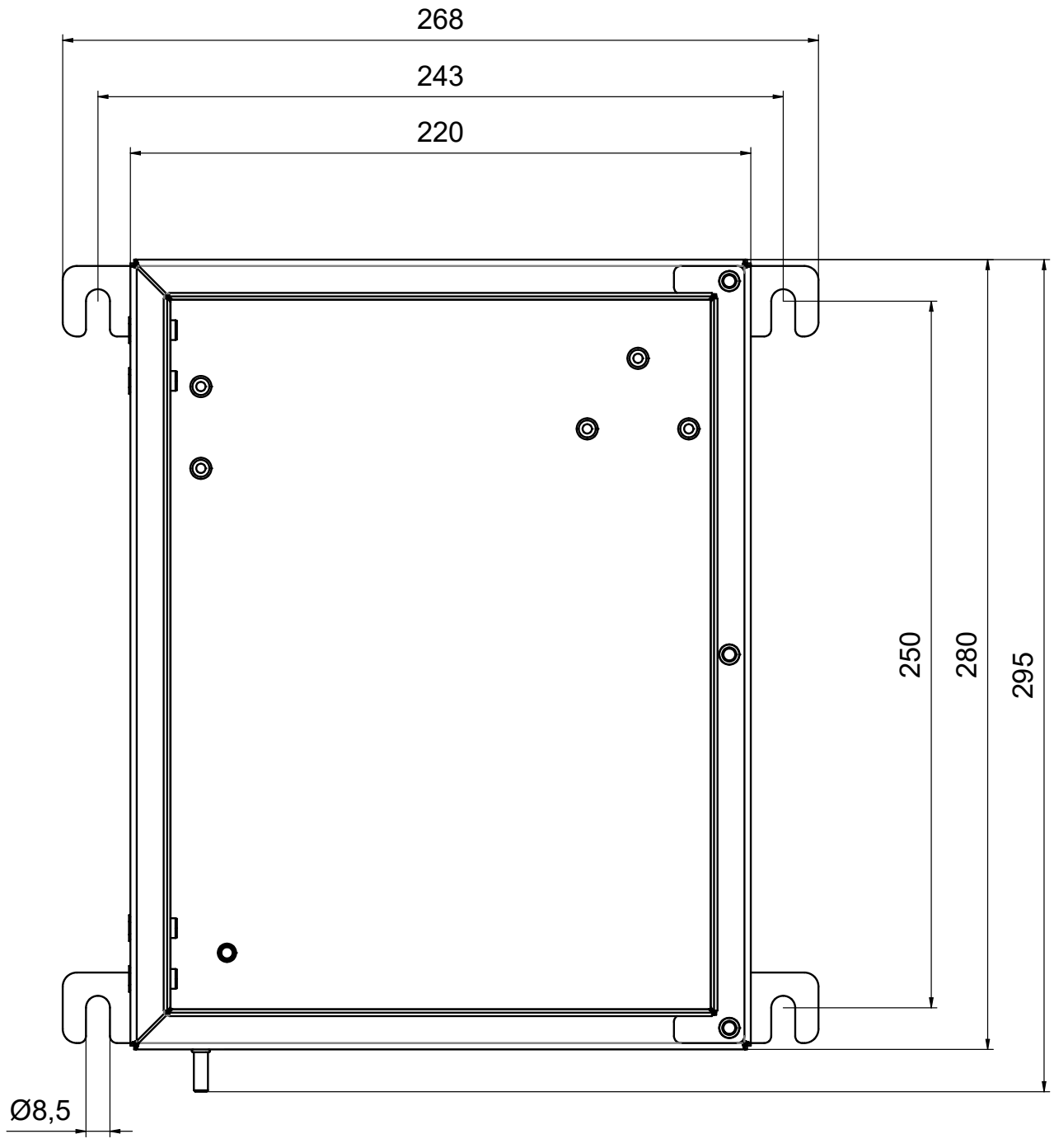
11.4 Dimensions and Drilling Pattern

11.4.1 Plastic housing



Depth = 110 mm

11.4.2 Stainless-steel housing



Depth = 120 mm

11.5 Declaration of Conformity

We,

SGB GmbH
Hofstr. 10
57076 Siegen, Germany,

hereby declare in sole responsibility that the leak detectors

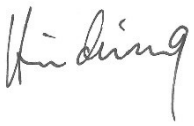
VL .. and **VL .. MV**

are in conformity with the essential requirements of the EU directives / regulations / UK statutory requirements listed below.

In case the device is modified or used in a way that was not agreed with us, this declaration shall lose its validity.

Number/short title	Satisfied regulations
2014/30/EU EMC Directive SI 2016 No. 1091	EN 61000-6-3:2007 / A1:2011 EN 61000-6-2:2006 EN 61000-3-2:2014 EN 61000-3-3:2013
2014/35/EU Low Voltage Directive SI 1989 No. 728	EN 60335-1:2012 / A11:2014 / A13:2017 / A1:2019 / A2:2019 / A14:2019 / A15:2020 EN 61010-1:2010 / A1:2019 EN 60730-1:2011
2014/68/EU Pressure Equipment Directive SI 2016 No. 1105	Pressure accessory without safety function

Conformity is declared by:



As of 01/2025

ppa. Martin Hücking
(Technical Director)

11.6 Declaration of Performance

Number: **001 EU-BauPVO [CPR] 2014**

1. Unique identification code of the product type:

   Vacuum leak detector type VL ..

2. Use:

   Vacuum leak detector of class I for monitoring double-walled tanks

3. Manufacturer:

   SGB GmbH, Hofstraße 10, 57076 Siegen, Germany
   Tel.: +49 271 48964-0, e-mail: sgb@sgb.de

4. Authorized representative:

   N/A

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

   System 3

6. In case of a declaration of performance for a construction product which 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

   Identification number of the notified testing laboratory: 0045

7. Declared performance:

Essential characteristics	Performance	Harmonized standard
Pressure switch points	Passed	EN 13160-2: 2003
Reliability	10,000 cycles	
Pressure test	Passed	
Volume flow rate test in the alarm switch point	Passed	
Function and tightness of the leak detection system	Passed	
Temperature resistance	0°C – 40°C/-40°C – 60°C	

8. Signed for and on behalf of the manufacturer by:

   Dipl.-Ing. M. Hücking, Technical Director

   Siegen, 01/2025

11.7 Declaration of Compliance of the manufacturer (ÜHP)

SGB
MVV TB
Anhang C 2.15.15
TÜV-NORD

Compliance of the leak detector with the Specimen Administrative Provision of the Technical Building Regulations is hereby declared.

Dipl.-Ing. M. Hücking, Technical Director

Siegen, 01/2025

11.8 TÜV Nord Certifications

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

TÜV NORD Systems GmbH & Co. KG
PÜZ (testing, supervision and certification) — centre for containers, pipelines and pieces of equipment for systems with substances hazardous to water

Große Bahnstraße 31.22525 Hamburg
Tel.: 040 8557-0
Fax: 040 8557-2295
hamburg@tuev-nord.de
www.tuev-nord.de

Certification

Contracting body:

SGB GmbH
Hofstraße 10
D-57076 Siegen

Manufacturer:
See above

Subject of testing:

Leak detectors with leak detector system type VL .../VLR ... according to DIN EN 131601:2003 and DIN EN 13160-2:2003
Class I vacuum monitoring system

Type of test:
Testing of the building product before confirming conformance in line with the ÜHP (manufacturer's declaration of conformity) procedure (initial testing)

Testing period: 19.06. – 08.12.2014

Test results:
The leak detectors of type VL .../VLR ... as vacuum systems correspond to the leak monitoring system class I according to EN 13160-1:2003 and meet the requirements of EN 13160-1:2003 in conjunction with EN 13160-2:2003.
Regarding the area of application and the installation of the leak detectors, the specifications given in the following shall apply:
- operating manual "Vacuum Leak Detector VL ..", document no. 605.300, updated 12/2014,
- operating manual "Vacuum Leak Detector VLR", document no. 605.400, updated 12/2014.
Compatibility with the building regulation list A, part 1, order No. 15.43, appendix is confirmed.

Details on testing can be found in the test report PÜZ 8111391811 dated 08.12.2014 for leak detectors type VL 330.

Hamburg, 08.12.2014

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

TÜV NORD Systems GmbH & Co. KG
Manufacturer Certification Competence Center

Grosse Bahnstrasse 31, D-22525 Hamburg
Phone: 040 8557-0
Fax: 040 8557-2295
hamburg@tuev-nord.de
www.tuev-nord.de

Certificate no. 8117744963-2

Subject of the test:	**Underpressure leak detector type VL(R)..**
Client:	SGB GmbH Hofstrasse 10 57076 Siegen
Manufacturer:	SGB GmbH
Test type:	Type testing of an underpressure leak detector with alarm device, type VL(R) in accordance with EN 13160-2:2016. Classification of the leak detection system as per classifications in accordance with EN 13160-1:2016.
Test object	Leak detector with alarm device, type VLR 410, device no. 1912430780
Test period:	02/2020
Test location:	Accredited test laboratory at TÜV NORD Systems GmbH & Co. KG
Test results:	**In the type test, the underpressure leak detector of type VLR 410 met the essential characteristics of Table ZA.1 of EN 13160-2:2016 and corresponds to leak detection system class I in accordance with EN 13160-1:2016. The specifications in the technical description "Documentation 605 400" dated 02/2018 apply in relation to the field of application and installation.**

Note: The certificate is only valid in combination with the test report of TÜV NORD test laboratory PB 8117744963-2 dated February 19, 2020. Production inspection is not required in accordance with EN 13160-2:2016.

Hamburg, 2/21/2020

TÜV NORD Systems GmbH & Co. GK
Manufacturer Certification Competence Center

J. Straube

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As of 02/2020
STPÜZ-QMM-321-032-02

Legal notice

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