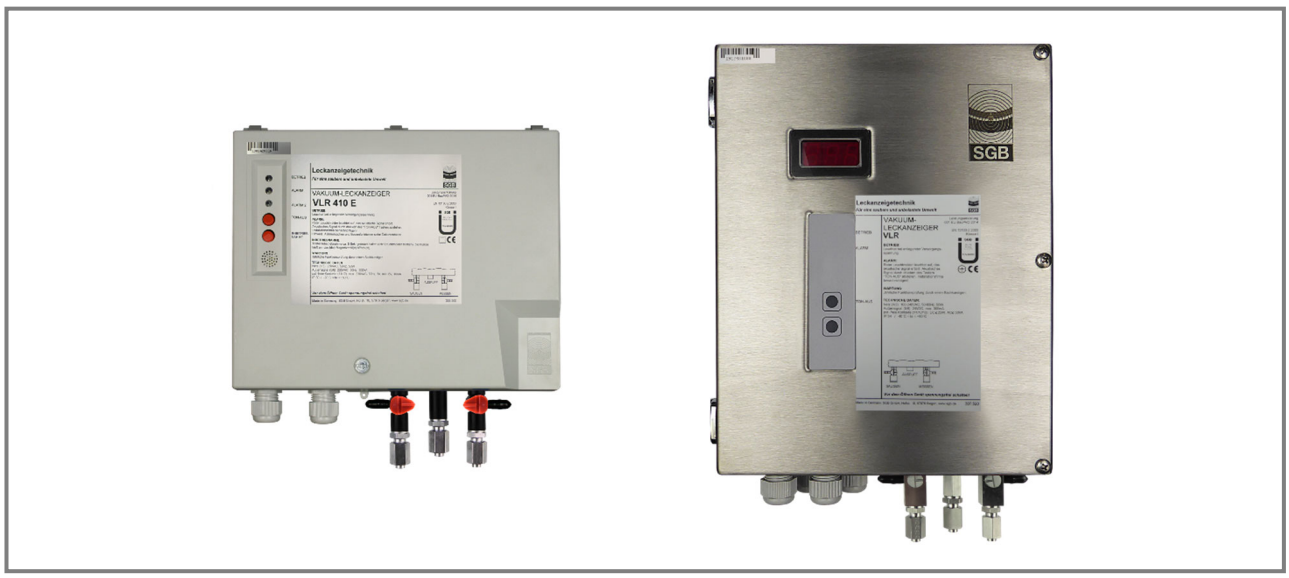
Documentation

Vacuum leak detector VLR

in 100–240 V AC | 24 V DC



Read instructions prior to commencing any work

As of: 06/2023

Item no.: 605342

Design Variations

Vacuum leak detectors VLR are available in different versions that are described more precisely by the letters attached to them. The levels of availability and the possible combinations depend on the device. Please contact our sales team: phone +49 271 48964-0, email sgb@sgb.de

VLR .. E FA P M MV S Si T

- “**T**ightness alarm”
- “**S**ervice **I**ndication”: (LED) display with variably adjustable service periods
- “**S**ervice display”: Integrated service display with fixed 12-month interval
- “Solenoid valve” (**MV**): 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
- “Filling level indicator” (**FA**): An electronic filling level indicator is integrated in the leak detector
- “**E**nhanced functions”: This version provides the option of connecting additional equipment, such as a solenoid valve and/or a probe in the leak detector.
- “**..**” = 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 pipes” (**R**). The leak detector operates with negative pressure toward the atmosphere.

Table of Contents

1. General

1.1 Information

These instructions provide important notes on using the leak detector VLR … 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

1.5 Warranty Conditions

We provide warranty for the leak detector VLR .. 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.

The serial number of the leak detector must be stated.

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

No liability is accepted for delivery parts that wear or are consumed prematurely due to their material properties or application (e.g., pumps, valves, seals, etc.). We do not assume responsibility for corrosion damage due to a humid installation site.

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 pipes 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
- Conveyed product needs to have a flash point of over 60 °C (for Germany > 55 °C in accordance with TRBS and TRGS), i.e., the conveyed product 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

Any claims arising from misuse are excluded.

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

2.2 Obligation of the Operating Company

The leak detector VLR .. 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 commissioning leak detectors must be trained by SGB or an authorized representative.

National guidelines must be adhered to.

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

2.4 Personal Protective Equipment

Personal protective equipment must be worn during work.

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


Entry in the “Safety Book”


Wear hard hat


Wear HV vest


Wear gloves – where necessary


Wear safety footwear


Wear safety goggles – where necessary

2.5 Fundamental Hazards

DANGER:

From electric current

When working on the open 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 in order to complete the mounting process.

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 11.2
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 (feed pressure)
with solenoid valve:	> 5 ≤ 25 bar (feed pressure)
with solenoid valve and additional pressure switch:	> 25 bar ≤ 90 bar (feed pressure)

3.2 Electrical Data

Power supply:	100 to 240 V AC, 50/60 Hz or: 24 V DC
Power input:	50 W (incl. heating)
Terminals 5, 6, external signal:	max. 24 V DC; max. 300 mA
Terminals 11–13, potential free:	DC ≤ 25 W or AC ≤ 50 VA
Terminals 17–19, potential free:	DC ≤ 25 W or AC ≤ 50 VA
Fuse protection[1]:	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 (in the event that the system being monitored leaks) without a safety function.

3.3.1 Volume

Leak detector:	0,05 liters
Kit (193…), with solenoid valve:	0,05 liters
Manifold 2 to 8[2]:	0,07–0,27 liters

[1] Acts as a separating point for the device and should be attached as close as possible.
[2] With manometer and liquid stop valve

3.3.2 Max. operating pressure

Leak detector[3]:	5 bar
Kit (193…), with solenoid valve:	25 bar
Kit with solenoid valve and additional pressure switch:	90 bar
Manifold 2 to 8[4]:	25 bar

3.4 Switching Values

Type	**Alarm ON,** at the latest:	**Pump OFF,** not more than:	**Functionality** of the interstitial space given for
34	- 34 mbar	- 120 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.

Overpressure alarm (VLR .. with solenoid valve) at +50 mbar

3.5 Field of Application

3.5.1 Pipelines/tubes

In factory or on-site construction

- Suction lines: The alarm vacuum shall be at least 30 mbar higher than the max underpressure in the inner pipe at the high point of the interstitial space
- Pressure lines with feed pressures of up to 5 bar:
  Version VLR 330 to VLR 570
- Pressure lines with feed pressures of up to 25 bar:
  Version VLR 330 to VLR 570, each with solenoid valve
- Pressure lines with feed pressures of up to 90 bar:
  Version VLR 330 to VLR 570 with solenoid valve and only in conjunction with an additional pressure switch
- In particular applications (single pipe, downward gradient to the low point of the interstitial space to which the suction line is also connected), version VLR 34 can also be used (no H_{max}).
- For Germany: with proof of usability from construction authority

[3] Suction line side up to liquid stop valve and measuring line side up to pressure sensor
[4] With manometer and liquid stop valve

Usage limits:

Density of the stored product [kg/dm³]	**330**	**410**	**500**	**570**
0.8	3.8	4.8	6.0	6.9
0.9	3.4	4.3	5.3	6.1
1.0	3.1	3.9	4.8	5.5
1.1	2.8	3.5	4.4	5.0
1.2	2.6	3.2	4.0	4.6
1.3	2.4	3.0	3.7	4.2
1.4	2.2	2.8	3.4	3.9
1.5	2.0	2.6	3.2	3.7
1.6	1.9	2.4	3.0	3.4
1.7	1.8	2.3	2.8	3.2
1.8	1.7	2.2	2.7	3.1
1.9	1.6	2.0	2.5	2.9

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

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.

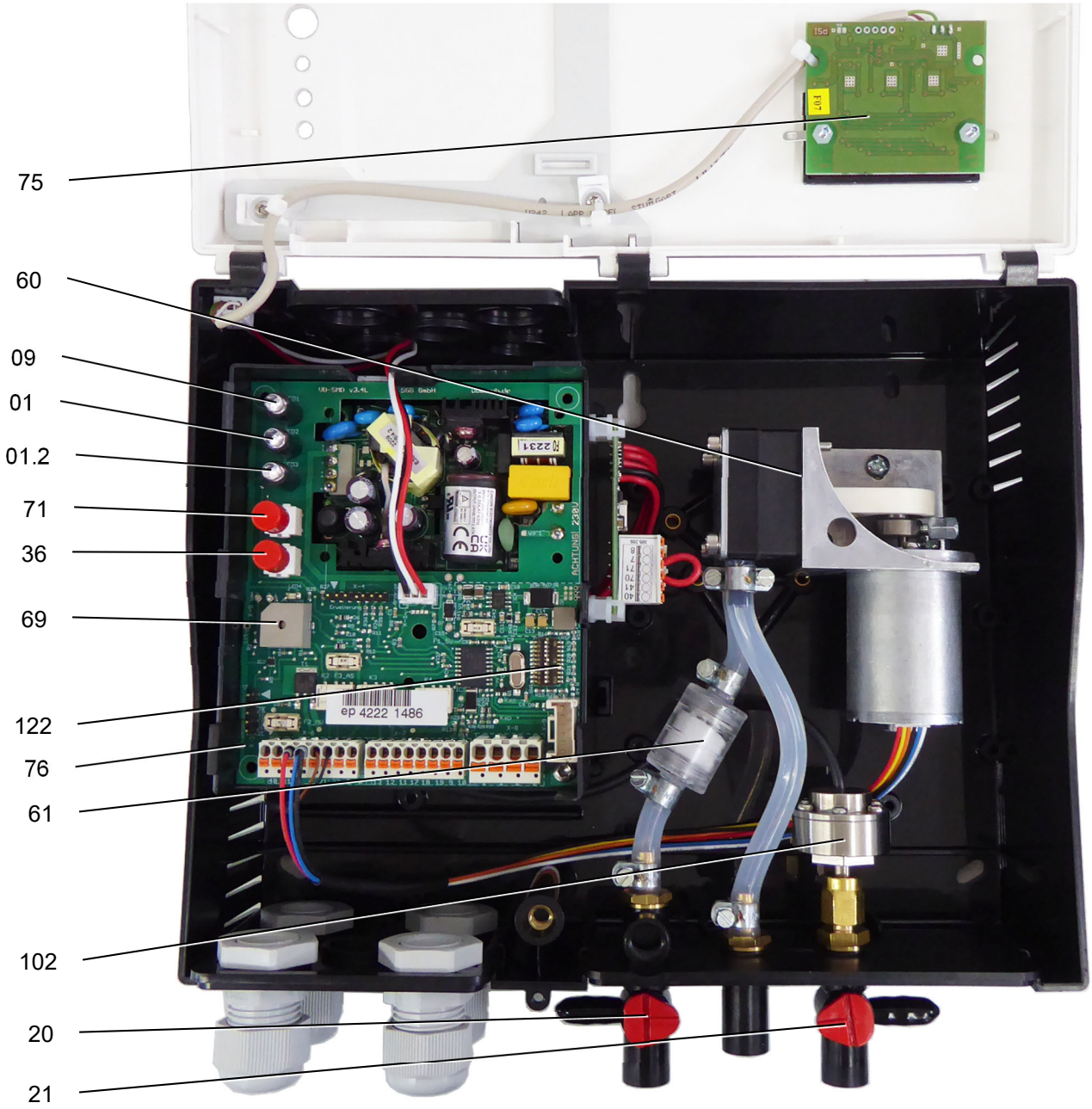
The following also applies:

- 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).
- If different water-polluting liquids are conveyed in individual pipelines and monitored with a leak detector, these liquids or their mixing must not have any hazardous effects on one another or cause any chemical reactions.

4. Design and Function

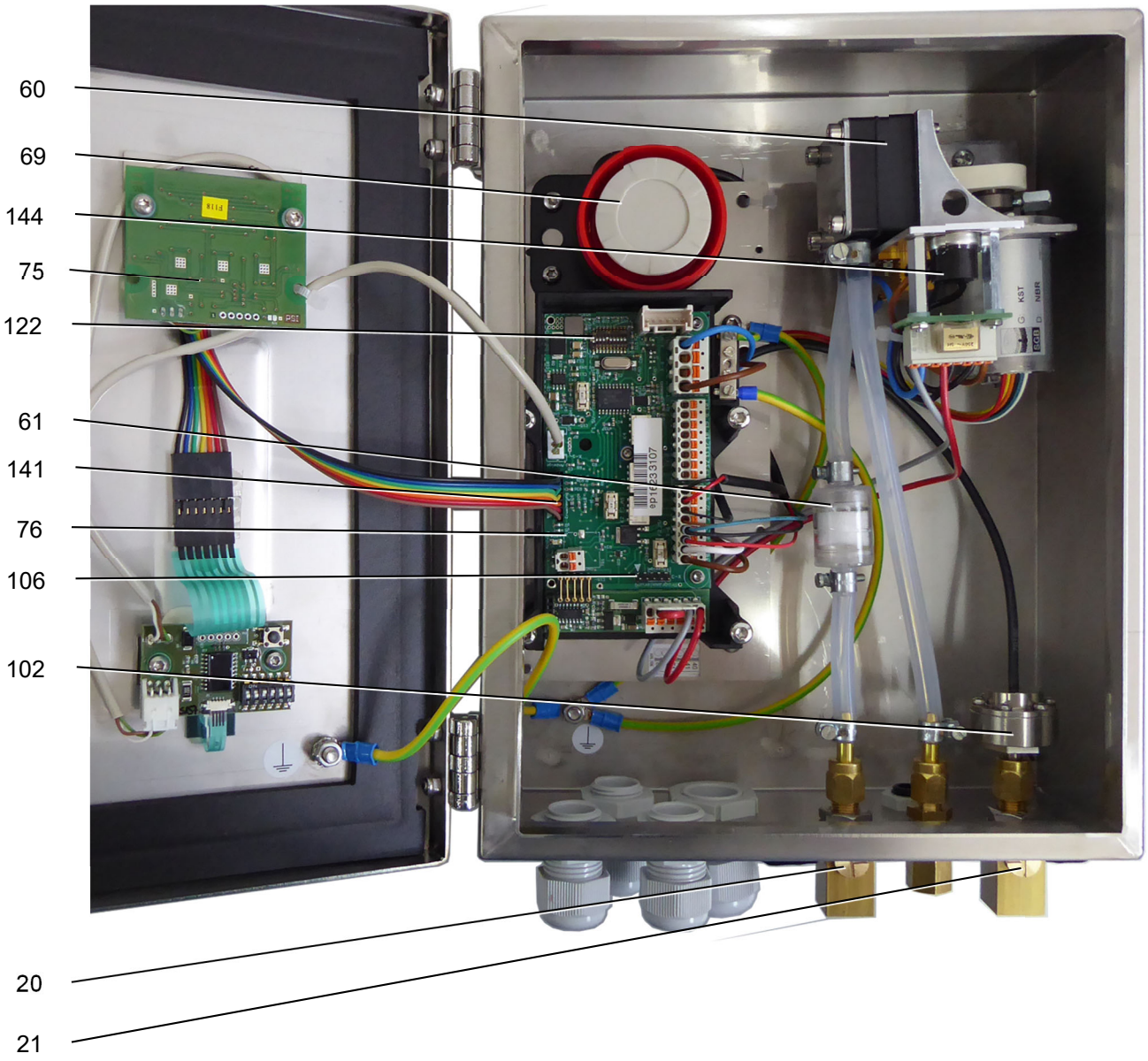
4.1 Design

4.1.1 Plastic housing interior view



01	“Alarm” indicator light, red	61	Check valve with filter
01.2	“Alarm 2” indicator light, yellow	69	Buzzer
09	“Operation” indicator light, green	71	Mute button
20	Three-way valve in the suction line	75	Display board
21	Three-way valve in the measuring line	76	Main board
36	“Commissioning” key	102	Pressure sensor
60	Vacuum pump		
122	DIP switch		

4.1.2 Stainless-steel housing internal view



Interior view with:

20	Three-way valve in the suction line
21	Three-way valve in the measuring line
60	Vacuum pump
61	Check valve with filter
69	Buzzer
75	Display board
76	Main board
102	Pressure sensor
106	Contact for serial data transfer
122	DIP switch
141	Keypad terminal strip
144	Temperature switch, frost protection

4.2 Normal Operating Conditions

The vacuum leak detector is connected to the interstitial space via suction, measuring, and connection line(s). 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 conditions, 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 the event 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 or conveyed product 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 VLR .. with Solenoid Valve (MV)

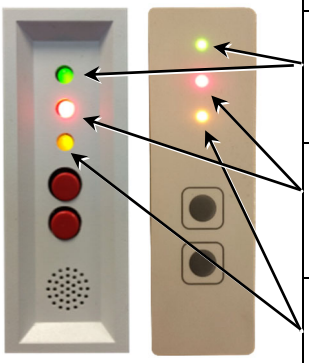
If a pressure increase of more than 50 mbar above atmospheric pressure occurs in the interstitial space, the solenoid valve in the connection line is closed and the pump switches off.

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

For the version up to 90 bar (additional pressure switch and solenoid valve), the additional pressure switch is actuated in the case of a fast pressure increase, which immediately closes the solenoid valve to protect the leak detector from inadmissibly high pressures. The pressure build-up alarm is triggered; if the additional pressure switch is connected via the probe contacts, the probe alarm is also shown.

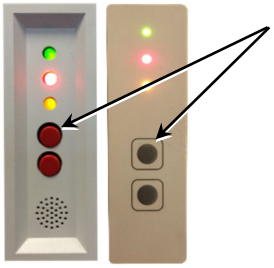
4.6 Displays and Controls

4.6.1 Display



Indicator light	Operating condition	Alarm vacuum below "Alarm ON"	Probe alarm	Solenoid valve malfunction	Pressure build-up alarm	Malfunction	Tightness alarm T
OPERATION: green	ON	ON	ON	ON	ON	ON	ON
ALARM: red	OFF	ON (Flashing)[5]	OFF	ON (Flashing)	ON (Flashing)	ON[6]	ON (Flashing)
ALARM 2: yellow	OFF	OFF	ON (Flashing)	ON	Flashing	OFF	ON (Flashes twice)

4.6.2 Function "Turn off audible alarm signal"

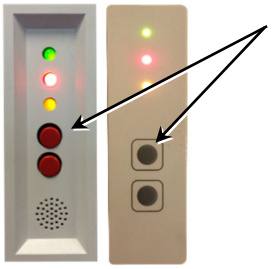


Briefly press "Mute" button once; audible signal turns off, and the red LED flashes.

Pressing the key 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

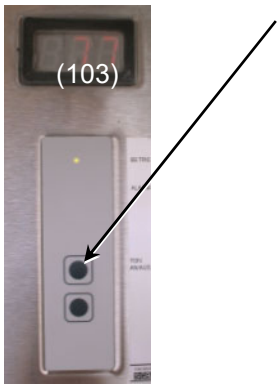


Press and hold the "mute" button (for about 10 seconds). The alarm will be triggered until the key is released.

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

[5] (Flashing) is active for the acknowledged external signal.
[6] The "mute" button 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 pipeline 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[7].
- 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.
- 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
  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.

  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.

[7] 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 can lead outside to a safe[8] 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.

5.3.3 Several pipeline interstitial spaces are connected in parallel

- Lay connection lines at a downward angle to the interstitial space or the manifold. If there are low points in the connection lines and lines are laid outdoors as well, install condensate traps at all low points.
- Lay suction and measuring lines at a downward angle to the manifold. If this is not possible, place condensate traps at all low points.
- Connect a liquid stop valve to each connection line to the interstitial space, against the valve direction.
  This prevents leaking liquids from entering the interstitial spaces of the other pipelines.
- If shut-off valves are installed in the connection lines, then they should be sealable in the open position.
- For applications with pressure compensation vessel (see 5.7.4 and 5.7.5):
  Length of the measuring line from the pressure compensation vessel (V=0.1 l)[9]:

[8] Among other things, not accessible to public transport/persons
[9] If this volume is multiplied, L_{max} is multiplied in the same way.

Type 330: L_{max} 16 m
Type 410 L_{max} 12 m
Type 500 L_{max} 10 m
Type 570 L_{max} 8 m

CAUTION: The bottom edge of the pressure compensation vessel must not be lower than the node point; the upper edge of the pressure compensation vessel must not end more than 30 cm above the node point.
For each 10 ml of the condensate trap(s) used in the measuring line between the pressure compensation vessel and leak detector, **L_{max} is reduced** by 0.5 m

- OR (alternatively to the pressure compensation vessel)
  50% of the overall length of the measuring line must be laid with a 0.5 to 1% downward gradient to the node point. L_{min} = 0.5 x total length of the measuring line.

5.3.4 Several pipeline interstitial spaces are connected in series

The liquid stop valves installed against the direction of flow (27*) prevent the other interstitial spaces from becoming filled with liquid in the event of a leak in a pipeline.
The interstitial space volumes of the connected pipes must meet 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 respective interstitial space. No. 1 is the interstitial space the suction line is connected to (see 5.7.6)

5.4 Completing Pneumatic Connections

5.4.1 Assembling the connection to the pipeline interstitial space or test valves

(1) Generally according to the specifications provided by the manufacturer of the pipeline/interstitial space.

(2) If Schrader valves are used, please proceed as follows:

- Unscrew protective cap
- Re-tighten lock nut
- Unscrew valve insert and stick next to the connection with adhesive tape. (As evidence of disassembly)
- Screw connection to the interstitial space or test valve and fasten finger-tight
- If necessary, further tighten with suitable pliers

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 manhole chamber is entered

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

5.4.2.1 Flanged screw connection (for flanged pipes)

(1) Lubricate O-rings

(2) Insert spacer ring loosely into the screw socket

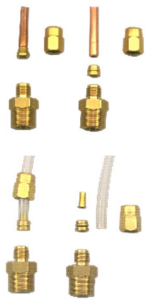
(3) Slide union nut and pressure ring over the pipe

(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 1 ¾ turns with a wrench

(4) Loosen nut

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

(6) Finish assembling the screw connection by tightening a ¼ turn

5.4.2.3 Quick screw connections 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 cable: minimum 1.0 mm^2, e. g. NYM 3 x 1.5 mm^2, and maximum 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 VDC 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

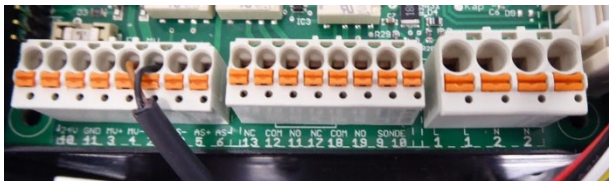
(1) Fixed wiring, i.e., no plug or switch connections.

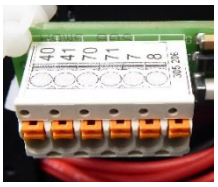
(2) Devices with plastic housing may only be connected with a fixed cable.

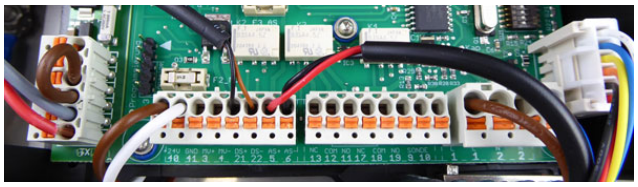
(3) Close unused cable glands properly and professionally.

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

(5) Terminal layout: (see also SL 854 851)





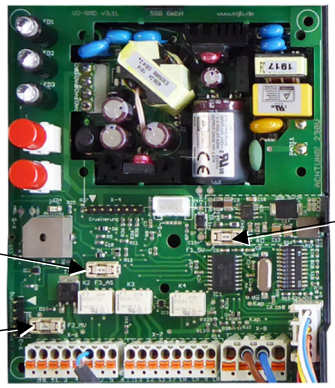


1/2	Power connection (100–240 V AC)
3/4	Occupied (vacuum pump)
5/6	External signal 24 V DC, can be disconnected
7/8	Solenoid valve
70/71	Probe contacts; the potential-free contacts of a leak detection probe can be connected here
11/12	Potential-free contacts (opened in case of alarm or loss of power)
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 V DC as permanent power supply to power other assemblies or, for a device with a supply voltage of 24 V DC, the power supply is connected here

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

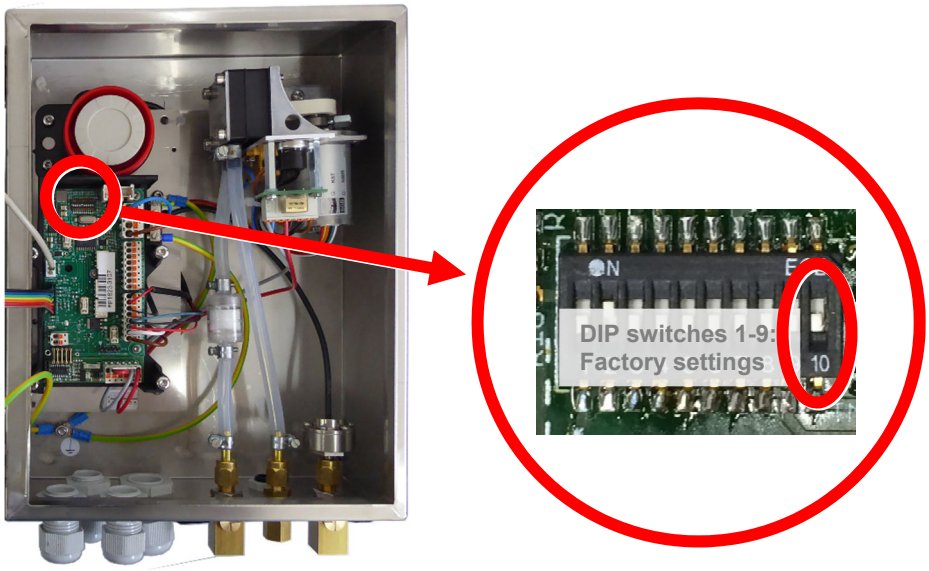
5.6.1 Location of fuses and their values

5.6.1.1 Plastic housing

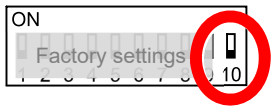


5.6.1.2 Stainless-steel housing

5.6.2 Activation or deactivation of the solenoid valve monitoring



ON:



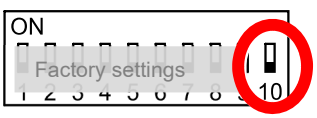
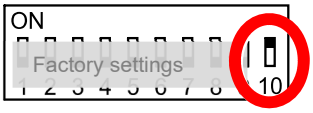
The solenoid valve monitoring is **ALWAYS SWITCHED ON** when a new device is delivered (DIP switch 10 to OFF).

OFF:

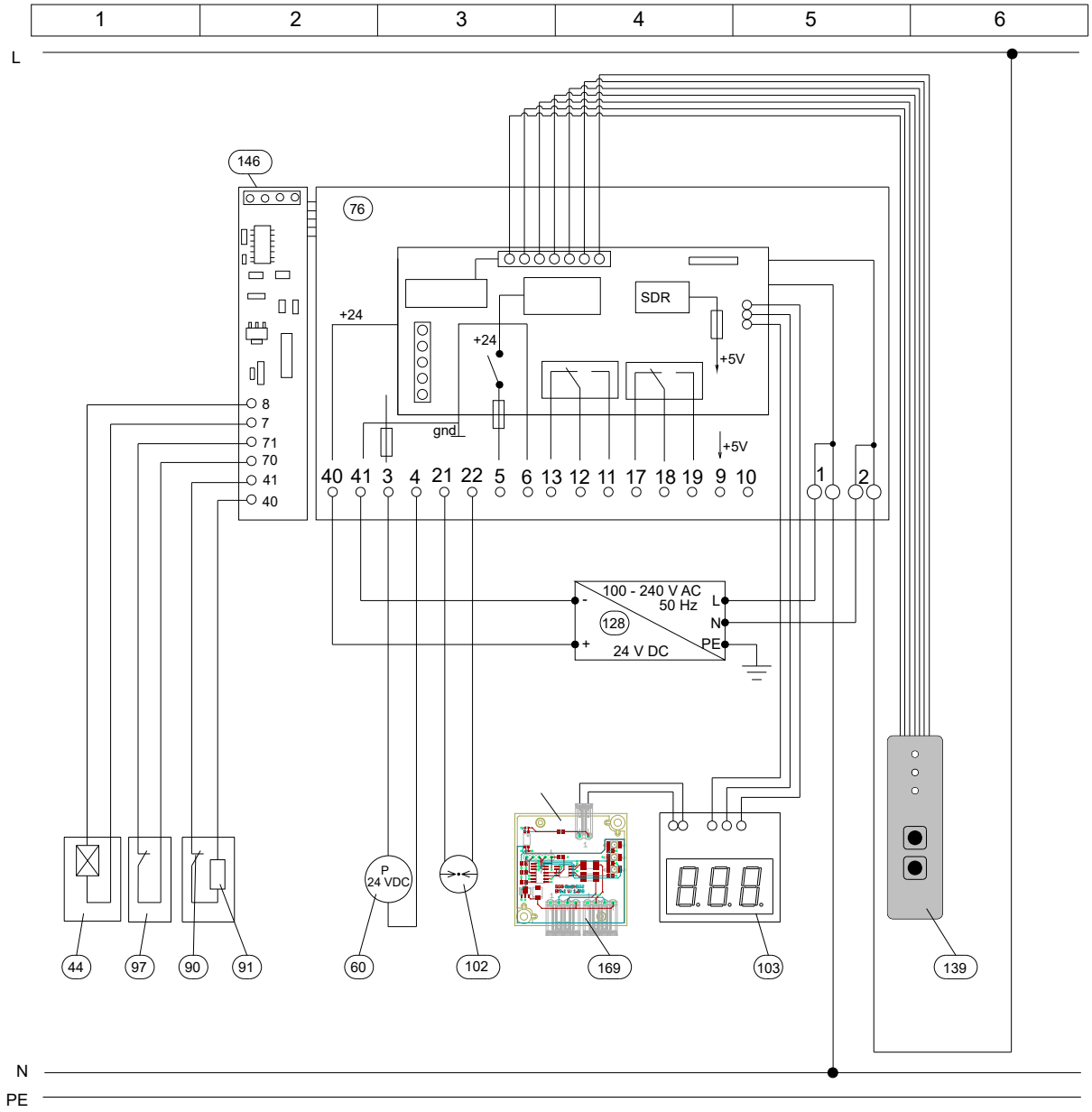
If **no solenoid valve is used**, the solenoid valve monitoring **must be deactivated** before commissioning the leak detector.

If a solenoid valve is **subsequently installed**, the solenoid valve monitoring **must be reactivated** via DIP switch 10.

Overview:

Position switch10, solenoid valve monitoring	ON:	
	OFF:	

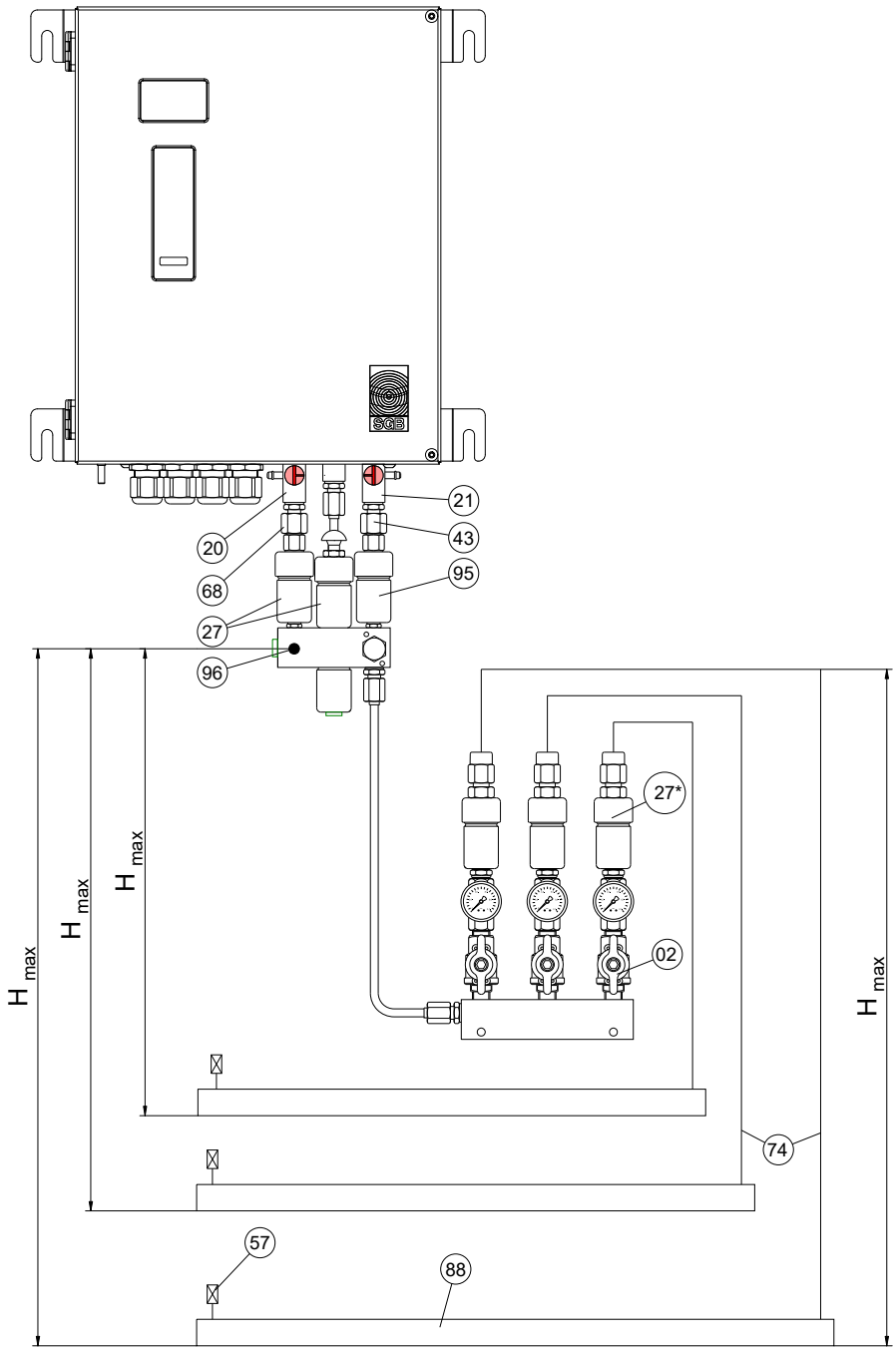
5.6.2 Block diagram (SL 854 851)



44	Solenoid valve
60	Pump (24 V DC)
76	Main board
90	Temperature switch
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)

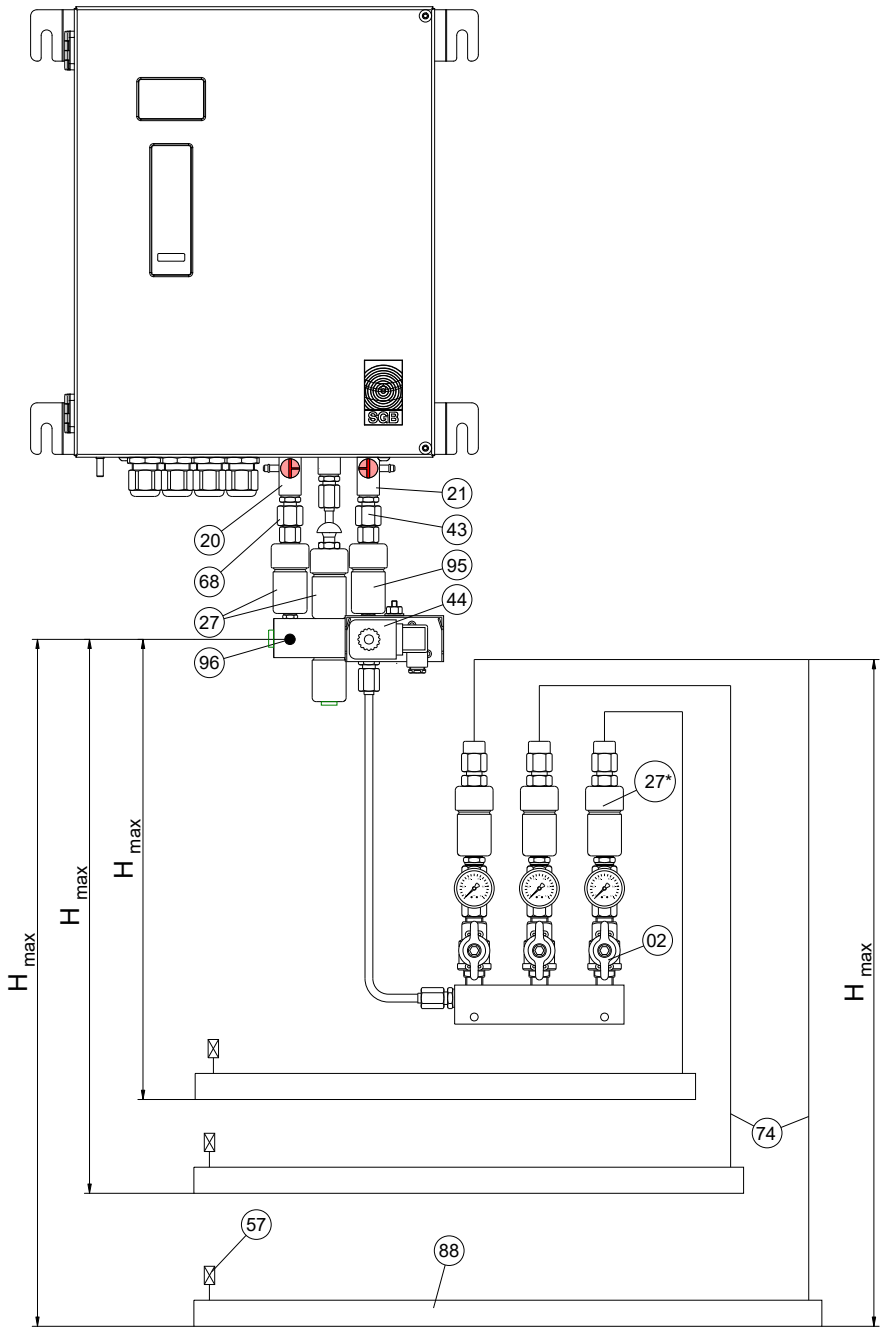
5.7 Installation Examples

5.7.1 Double-walled pipe, connected in parallel, with solenoid valve in the suction line. To be used for feed pressures < 5 bar in the inner pipe. Version VLR ..



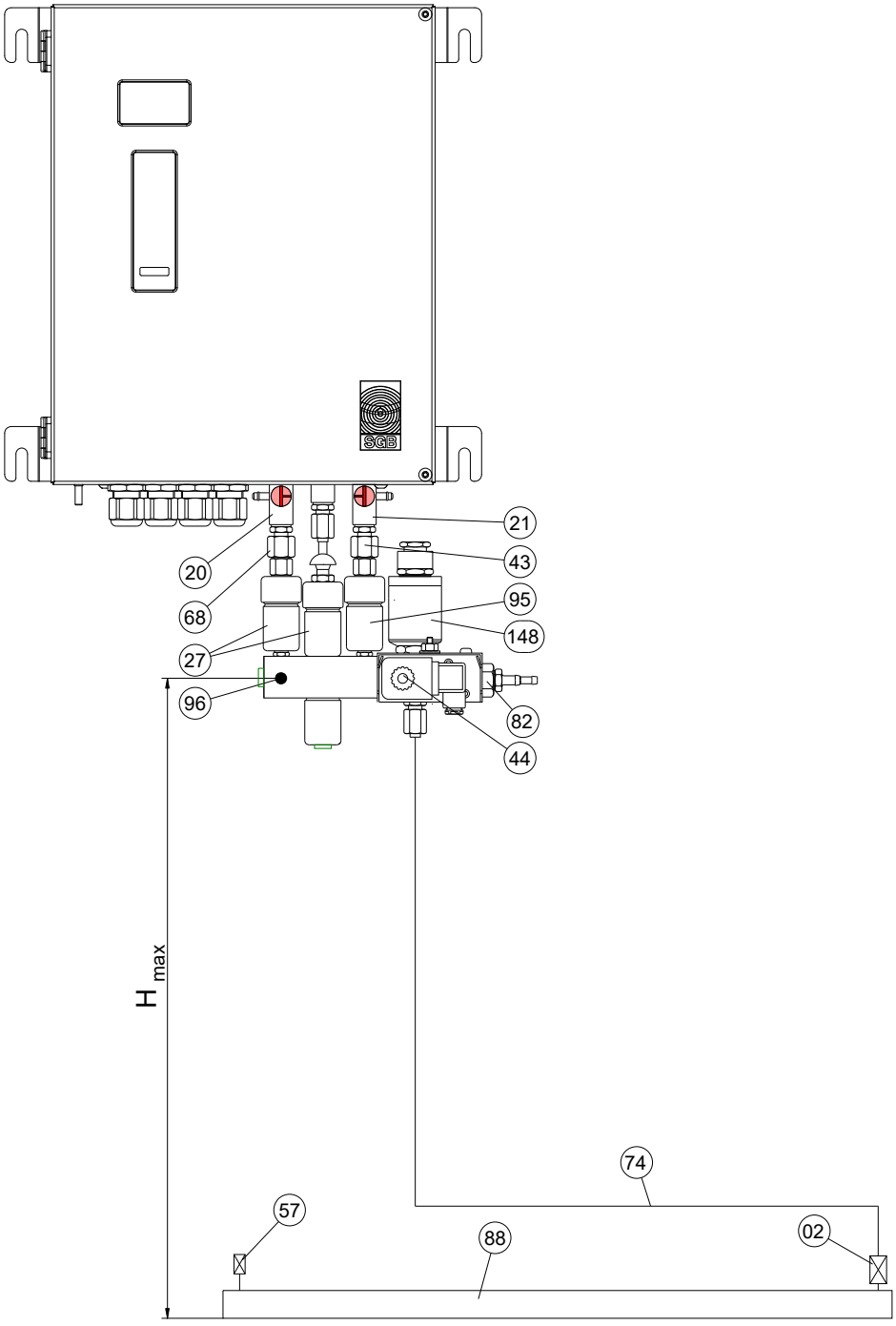
02	Shut-off valve	57	Test valve
20	Three-way valve, suction line	68	Suction line
21	Three-way valve, measuring line	74	Connection line
27	Liquid stop valve	88	Double-walled pipe
27*	Liquid stop valve, connected against the flow direction	95	Pressure compensation vessel
		96	Node point
43	Measuring line		

5.7.2 Double-walled pipe, connected in parallel, with solenoid valve in the connection line. To be used for feed pressures 5 bar > p < 25 bar in the inner pipe. Version VLR .. MV



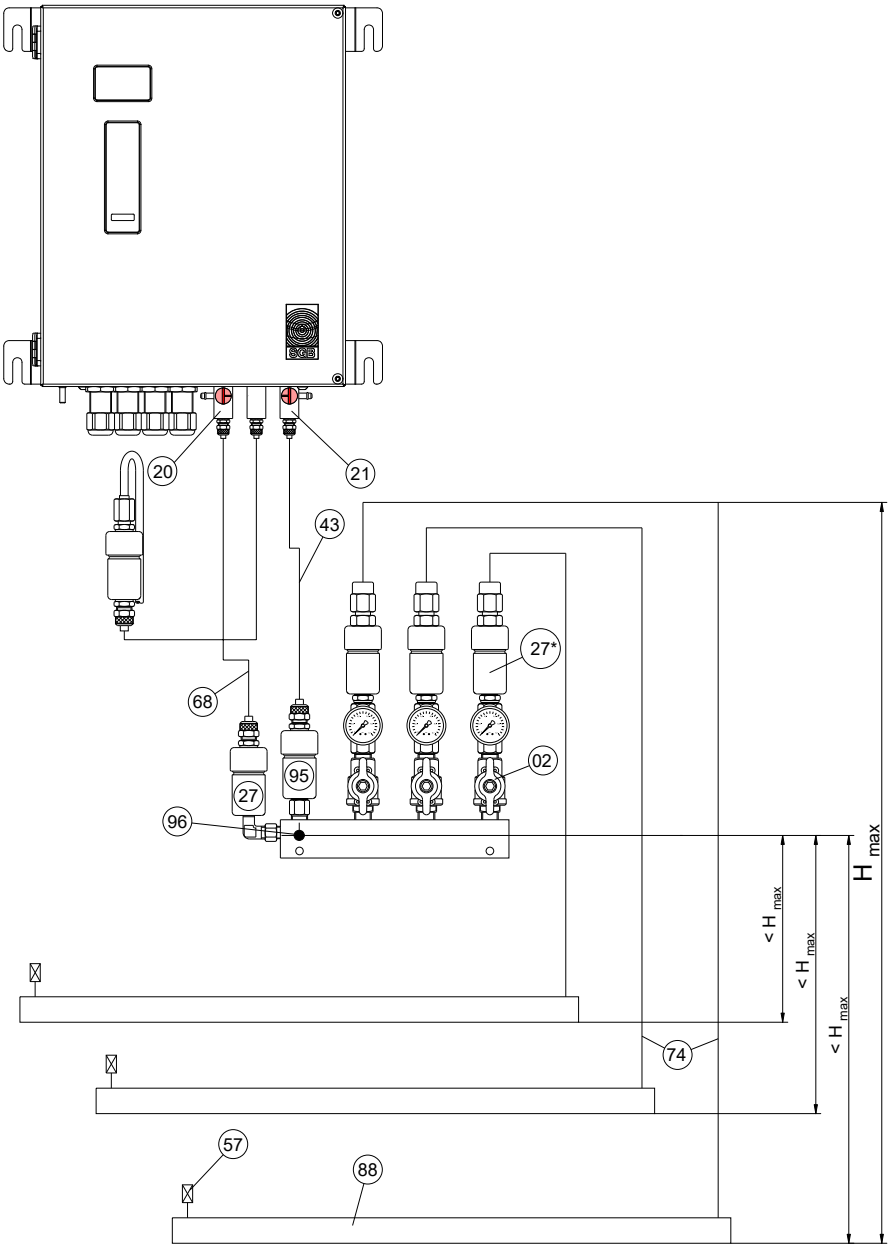
02 Shut-off valve
20 Three-way valve, suction line
21 Three-way valve, measuring line
27 Liquid stop valve
27* Liquid stop valve, connected against the flow direction
43 Measuring line
44 Solenoid valve
57 Test valve
68 Suction line
74 Connection line
88 Double-walled pipe
95 Pressure compensation vessel
96 Node point

5.7.3 Double-walled pipe with solenoid valve in the connection line and additional pressure switch. To be used for feed pressures 25 bar > p < 90 bar in the inner pipe.



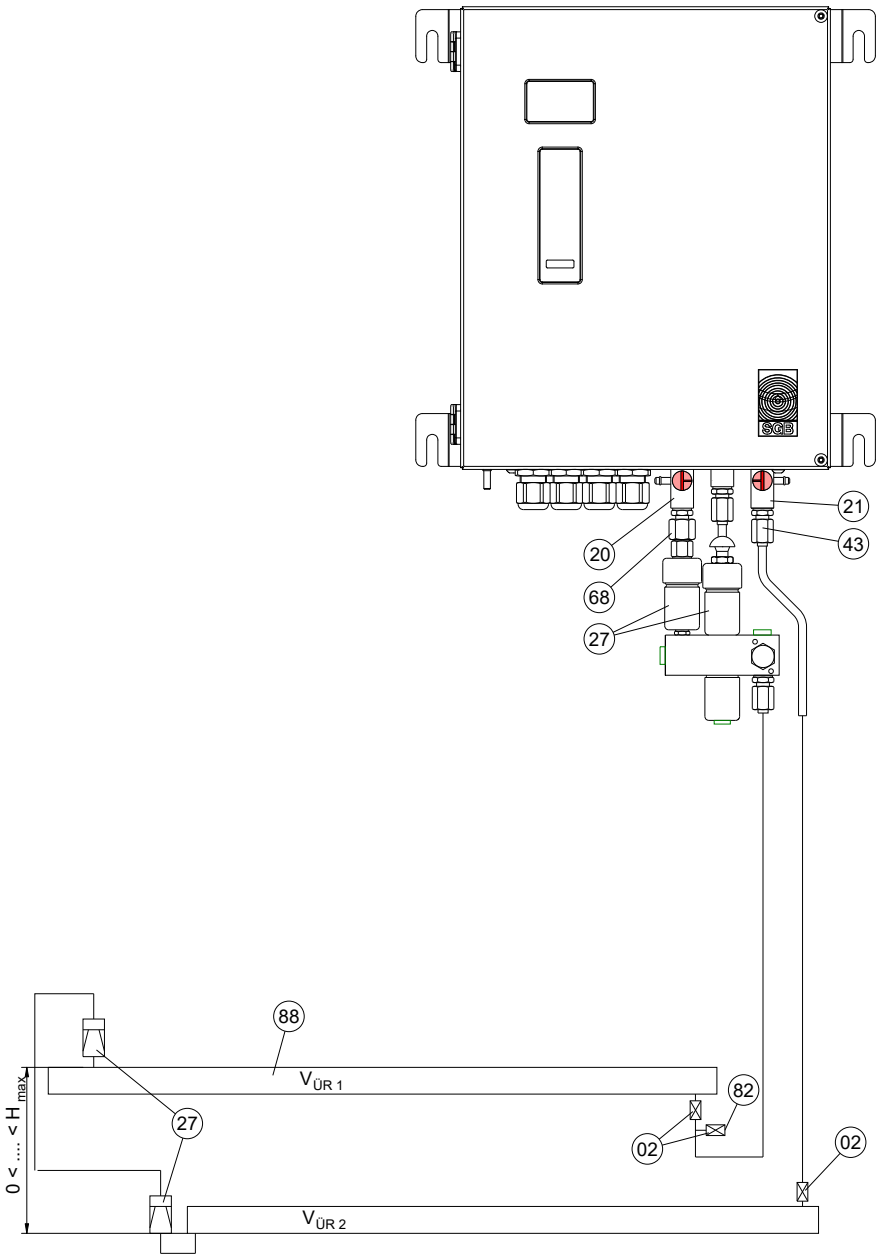
02	Shut-off valve	68	Suction line
20	Three-way valve, suction line	74	Connection line
21	Three-way valve, measuring line	82	Connection assembly pump
27	Liquid stop valve	88	Double-walled pipe
43	Measuring line	95	Pressure compensation vessel
44	Solenoid valve	96	Node point
57	Test valve	148	Additional pressure switch ZD-

5.7.4 Double-walled pipe, connected in parallel (node point in the manifold)



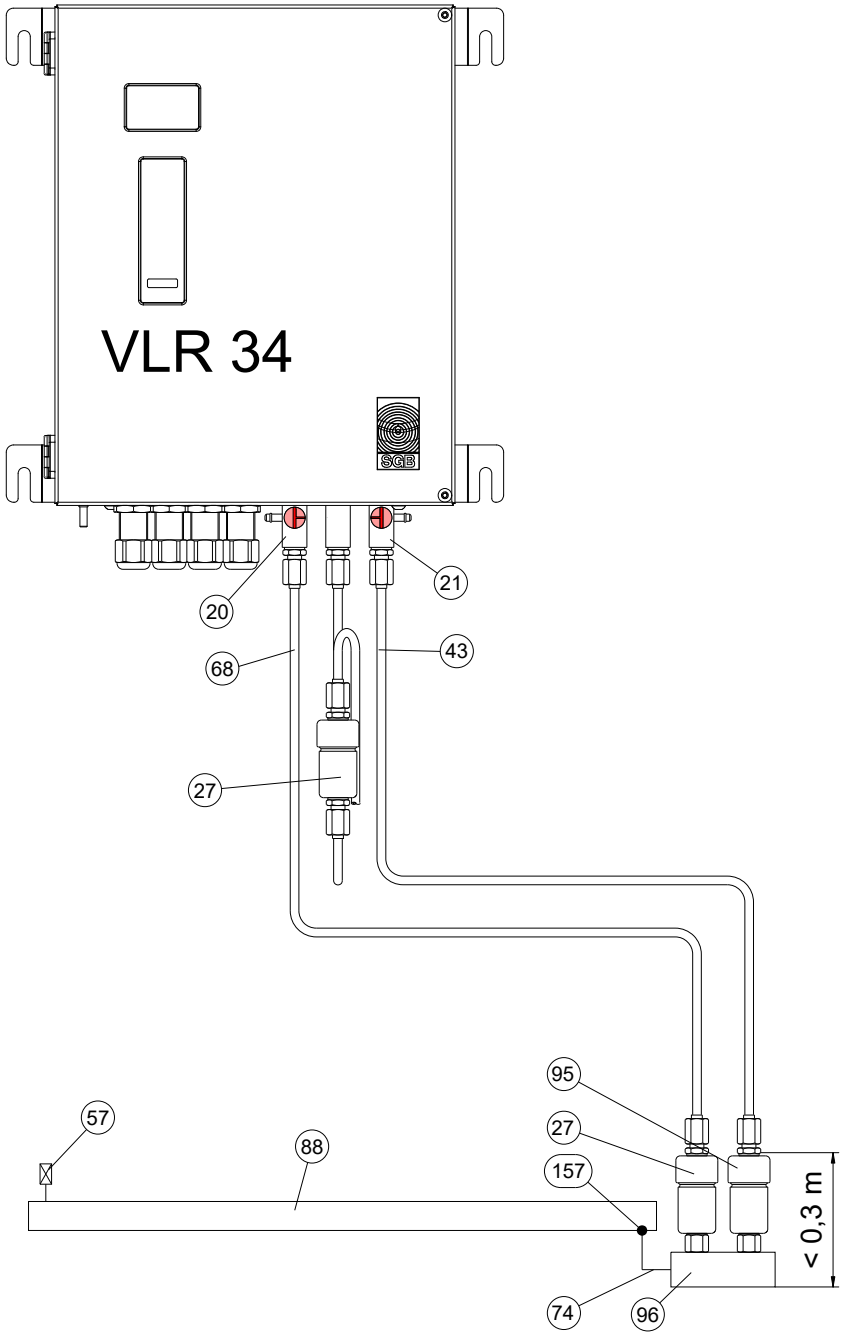
02	Shut-off valve
20	Three-way valve, suction line
21	Three-way valve, measuring line
27	Liquid stop valve
27*	Liquid stop valve, connected against the flow direction
43	Measuring line
57	Test valve
68	Suction line
74	Connection line
88	Double-walled pipe
95	Pressure compensation vessel
96	Node point

5.7.5 Double-walled pipe, connected in series



02 Shut-off valve
20 Three-way valve, suction line
21 Three-way valve, measuring line
27 Liquid stop valve
43 Measuring line
68 Suction line
82 Nozzle for assembly pump
88 Double-walled pipe

5.7.6 Double-walled pipe, individual pipe with low vacuum



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
88	Double-walled pipe
95	Pressure compensation vessel
96	Node point **Here:** must (geodetically) be under 157!
157	Lowest point of the interstitial space

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, checking that there is no liquid 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

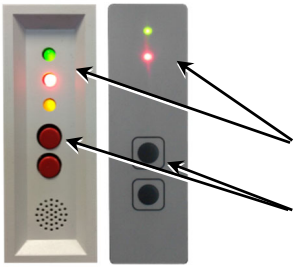
Prior to commissioning, ensure the leak-tightness of the interstitial space.

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.
E.g.: 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



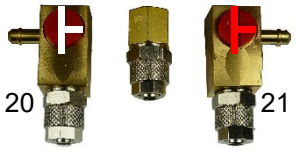
(1) Tightness of the interstitial space prior to commissioning is assumed.

(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.

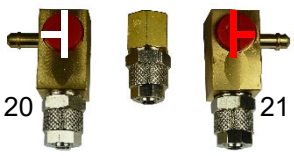
The vacuum pump starts immediately and builds up the vacuum in the monitored system (if the interstitial space has not already been evacuated).

Note: If the VLR .. MV is used, it must be ensured that the probe contacts (70/71) are bridged and a solenoid valve (24 V DC) is connected to terminals 7 and 8.



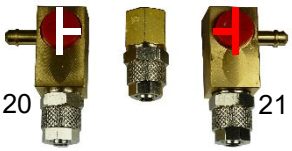
(4) Attach the measuring gauge to the connection on three-way valve 21 in order to turn the valve 180°.

(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 the 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 period of time.

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

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

(5) The leak detector must be disconnected from the power when performing any repairs.

(6) A loss of power is indicated by the “Operation” indicator light going off. Alarm signals are triggered via the potential-free relay contacts if contacts 11 and 12 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[10].
- Once a year to ensure functional and operational safety.
- Test scope according to Section 7.3.
- Compliance with the conditions in Sections 5 and 6 must also be tested.
- 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.

[10] 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:

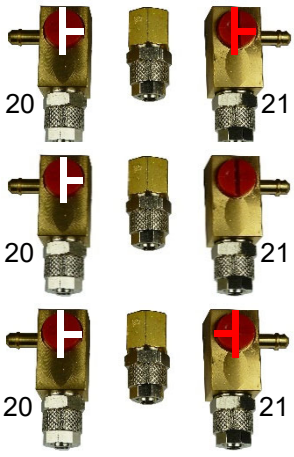
- After each commissioning process
- According to the time intervals given in Section 7.2[11]
- Each time a malfunction has been corrected

Two persons may be required to perform a functional check, depending on the length of pipeline and how it is laid. The following aspects must be observed or carried out:

- Coordinate the work to be performed with those responsible for operation
- Observe the safety instructions for working with the product to be conveyed
- Check and empty the condensate traps if necessary
- Check the free passage of air in the interstitial space (7.3.1)
- Test the switching values with the interstitial space (7.3.2)
- Test the switching values with the testing device (7.3.3)
- Test the pump delivery pressure (7.3.4)
- Perform a system tightness test (7.3.5)
- Check the excess pressure alarm (only for version with solenoid valve) (7.3.6)
- Check the additional pressure switch in conjunction with VLR .. (Version with solenoid valve) (7.3.7)
- Check the probe (if used) (7.3.8)
- Create the operating condition (7.3.9)
- 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 free passage of air 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 the measuring gauge to the connection on three-way valve 21 and turn the valve 180°.

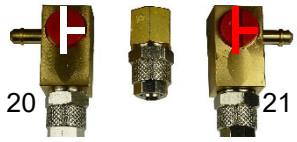
(2) Open the test valve at the end opposite the leak detector; if there are multiple pipe interstitial spaces, the test valves must be opened sequentially at the end opposite the leak detector.

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

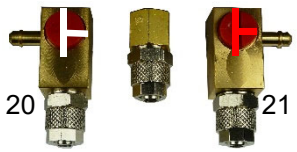
(4) Return the three-way valves to the operating position and remove the measuring gauge.

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

7.3.2 Testing the switching values with the interstitial space



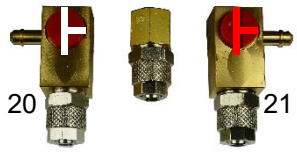
(1) Attach the measuring gauge to the connection on three-way valve 21 and turn the valve 180°.



(2) Open the test valve at the end opposite the leak detector; if there are multiple pipe interstitial spaces, the leak detector-side shut-off valves of the interstitial spaces not included in the test can be closed.

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

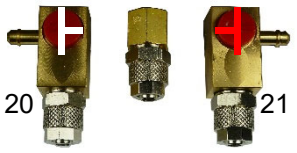
(4) Activate the “Mute” key, if necessary.



(5) Close the 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.



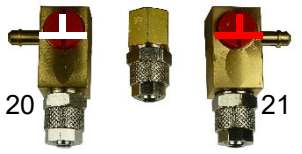
(8) Return the three-way valves to the operating position and remove the measuring gauge.

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

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

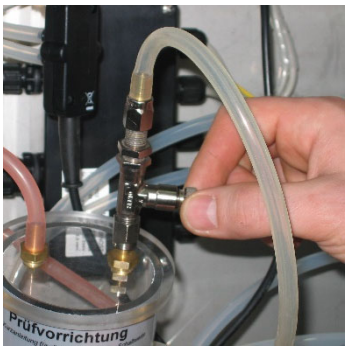
(2) Connect the measuring gauge to the T-piece of the testing device.

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



(4) Turn three-way valve 20 90° (counterclockwise) 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.

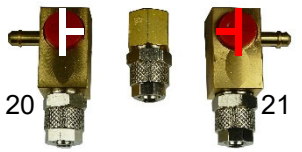


(5) The operational vacuum is now established in the test tank.

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

(7) Press the “Audible alarm” button if necessary.

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

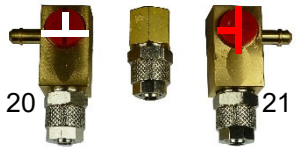


(9) The unit passes the test if the measured switching values fall within the specified tolerance.

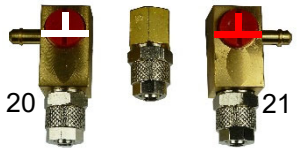
(10) Turn back three-way valves 20 and 21 and remove the testing device.

7.3.4 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.

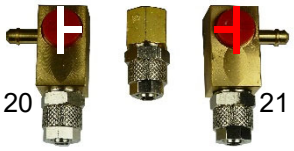


(1) Attach the measuring gauge to the connection on three-way valve 20 and turn the valve 90° (counterclockwise).



(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).



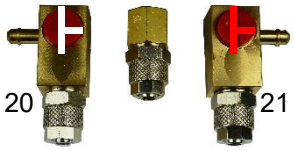
(4) This unit passes the test if the suction height of the vacuum pump is at least 40 mbar higher than the switching value “Pump OFF” (i.e., the operational vacuum).

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

7.3.5 System tightness test

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

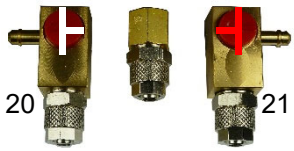
Determine the test period for each interstitial space connected (and/or the entire monitored system) (calculate or use test reports prepared by SGB GmbH).



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

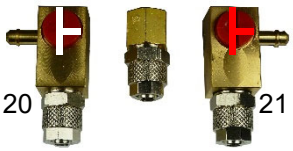
(3) Read off and record the starting vacuum and time. Wait for the test period to elapse and determine the vacuum drop.

(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.

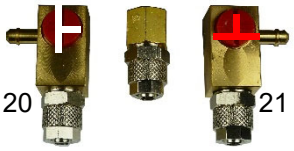


(5) Once the test is complete, return the valves to their original positions and remove the measuring gauge.

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



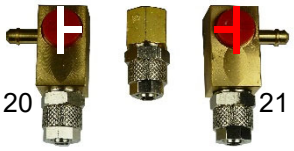
(1) Attach the excess pressure testing device to the connection on three-way valve 21 and turn the valve 180°.



(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 stops and the pump runs; the solenoid valve opens.

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

7.3.7 Checking the additional pressure switch in conjunction with VLR .. MV

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

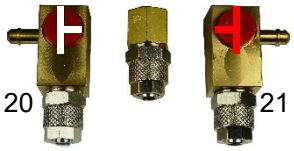
(2) Close the shut-off valve on the interstitial space side.

(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 stops 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, move three-way valves 20 and 21 into the operating position, and remove testing device.

7.3.8 Checking the probe (only VLR .. with additional probe)

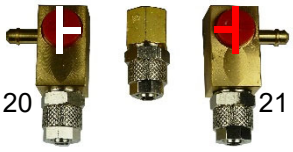
(1) Bring the probe into the alarm state. Depending on the probe version, either by pressing a test button (“WHG probes”), by turning the housing (float), or by removing it and dipping it in test liquid.

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 the 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 stops and the solenoid valve opens.

7.3.9 Achieving the operating condition



(1) Test whether all pneumatic connections have been established correctly.

(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 of the stored/conveyed product. 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) When monitoring pressure lines, use the potential-free contacts of the leak detector to switch off the feed pumps.

(3) Other alarms are indicated as follows:

Probe alarm: Yellow LED that 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.

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

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

(6) Inform the installation company.

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

CAUTION: Depending on the tank/pipelines, 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)!

(8) Perform a functional check as per 7.3.

8.2 Malfunction

In the event of a malfunction, only the red signal lamp will light up in addition to the green signal lamp (yellow is off). Also, 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.

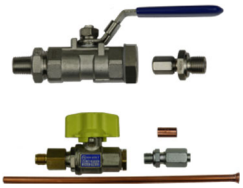
After repair, a functional check must be conducted.

9. Spare Parts

See: shop.sgb.de/en

10. Accessories

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



- Assembly kits

- Electrical isolators

- Manifolds with suction/measuring connections, expansion manifolds (e.g., art. no. 195420, 195434)

- Testing device/measuring equipment (e.g., art. no. 115392, 115360)

- Pressure booster (e.g., art. no. 115376)

11. Appendix

11.1 Appendix ZD (or also probe) – without MV

11.1.1 Object

ZD … (= “Additional Pressure Switch“) for applications in which this device is required, e.g. When exceeding certain pipe connection lengths (see approval for double-walled pipes).

The chapter under “Commissioning“ (11.1.4) are also used correspondingly for the connection of a probe.

11.1.2 Field of Application

(1) The ZD … can be mounted outdoors.

(2) Components making contact with the media made of stainless steel

(3) Pressure proof up to 25 bar

11.1.3 Electrical Connection

VL-HFw2	Terminals 10/11	ZD …	Terminals 21/22
VLR … /E	Terminals 21/22	ZD …	Terminals 21/22
VLR … PM	Terminals 9/10	ZD …	Terminals 21/22
VLR … PMMV WITHOUT connected MV	Terminals 9/10	ZD …	Terminals 21/22
VLR … PMMV WITH connected MV	Terminals 70/71	ZD …	Terminals 21/22

11.1.4 Commissioning

After the assembly and electrical connection has been completed

11.1.4.1 In conjunction with leak detector VL-HFw2

(1) Press the button on the ZD (engaged).

(2) Press the commissioning switch on the VL-HFw2 and generate a vacuum in the system.

(3) After reaching the negative operating pressure, press the commissioning switch again (for this purpose, see also the documentation for the aforementioned leak detector).

11.1.4.2 In conjunction with the leak detector VLR … E WITHOUT connected MV

(1) Button not pressed (not engaged).

(2) Generate negative operating pressure in the system.

(3) When the “Alarm OFF“ switching value of the ZD … is reached, the “Probe alarm” on the leak detector goes out.

11.1.4.3 In conjunction with the leak detector VLR … E WITH connected MV

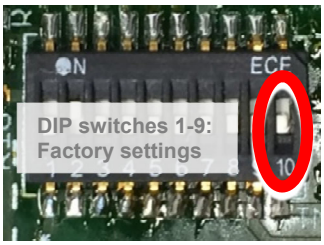
(1) Press the button on the ZD (engaged). This causes the “Probe alarm” to go off on the leak detector.

(2) Carry out the commissioning sequence according to the documentation for leak detector VLR .. E until reaching the pressure “Alarm OFF”.

(3) As soon as this negative pressure is reached, the probe alarm triggered again. The solenoid valve closes. The pump of the leak detector stops.[12]

(4) Press the button on the ZD (released). This causes the “Probe alarm” to go off on the leak detector again and another commissioning can be carried out (vacuum build-up) up to the operating pressure.

11.1.4.4 In conjunction with the leak detector VLR … PM or VLR … M



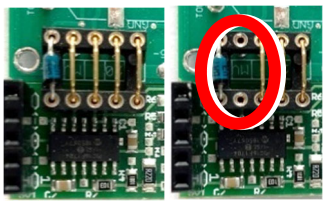
(1) Dip switch 10 to OFF position (as shown)

(2) Button not pressed (not engaged)

(3) Generate operating pressure in the system

(4) When the “Alarm OFF“ switching value of the ZD … is reached, the “Probe alarm” on the leak detector goes out.

11.1.4.5 In conjunction with the leak detector VLR … PMMV WITHOUT connected MV



(1) Pull out the bridge (second from the left) (see Fig. 11.1.4.5)

(2) Dip switch 10 to OFF position (see Fig. 11.1.4.4)

(3) Press the button on the ZD (engaged). This starts the pump.

(4) Build-up the vacuum until the “Alarm OFF” switching value. The pump stops.

(5) Press the button on ZD (do NOT engage), the pump starts and generates the operating pressure in the system.

11.1.4.6 In conjunction with the leak detector VLR … PMMV WITH connected MV

(1) Press the button on the ZD (engaged). This starts the pump.

(2) Build-up the vacuum until the “Alarm OFF” switching value. The pump stops.

(3) Press the button on the ZD (NOT engaged). The pump starts and generates the operating pressure in the system.

11.1.5 Normal Operating Conditions

In a normal operating condition, the button on the ZD .. for:

- VL-HFw2: must be pressed (engaged),
- VLR ..: must not be pressed (not engaged).

[12] The “Probe alarm” has priority switching, thus this alarm has the highest priority as it originally originates from an application where a probe replaces the liquid stop valve in conjunction with a solenoid valve.

11.1.6 Functional Check

11.1.6.1 Test of the electrical connection

(1) Press the button on ZD …: The alarm on the leak detector triggers.

(2) Press the button on ZD … again: The alarm goes out.

11.1.6.2 Testing the switching values of the ZD

(1) Connect the measuring instrument on the three-way valve in the measuring line (below the leak detector).

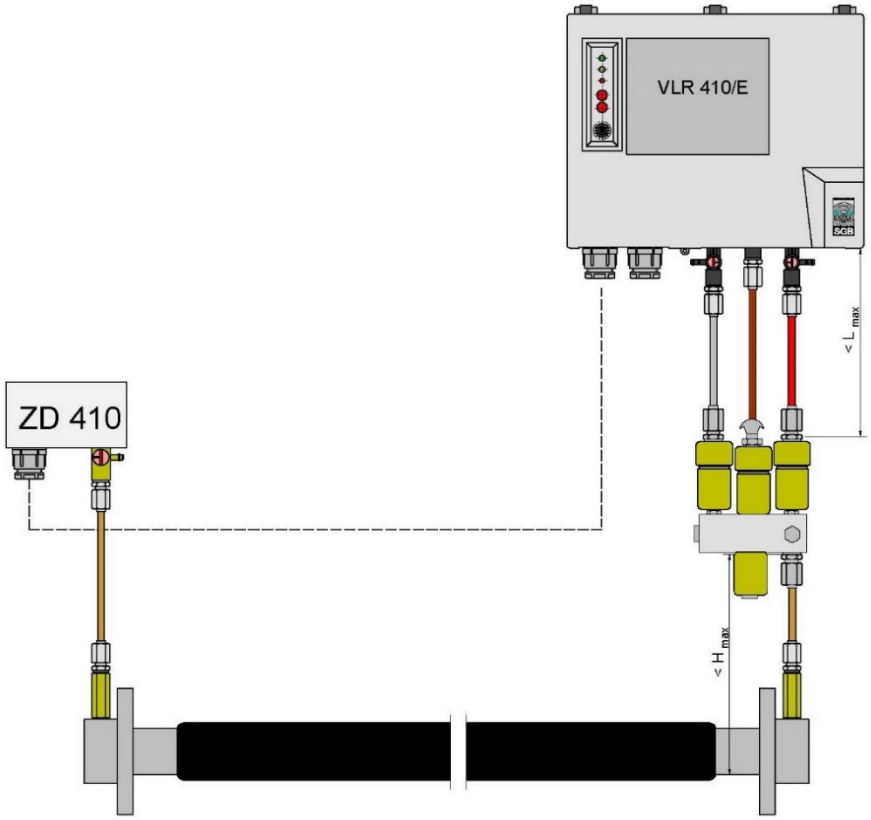
(2) Turn the cock 90° counter-clockwise. The pressure switch in the leak detector is “set blind”.

(3) Venting the system on the leak detector via the ventilation device or the three-way valve in the suction line up to the alarm signals.

(4) The switching value for “Alarm ON” must correspond with column 2 in chapter 3.4.

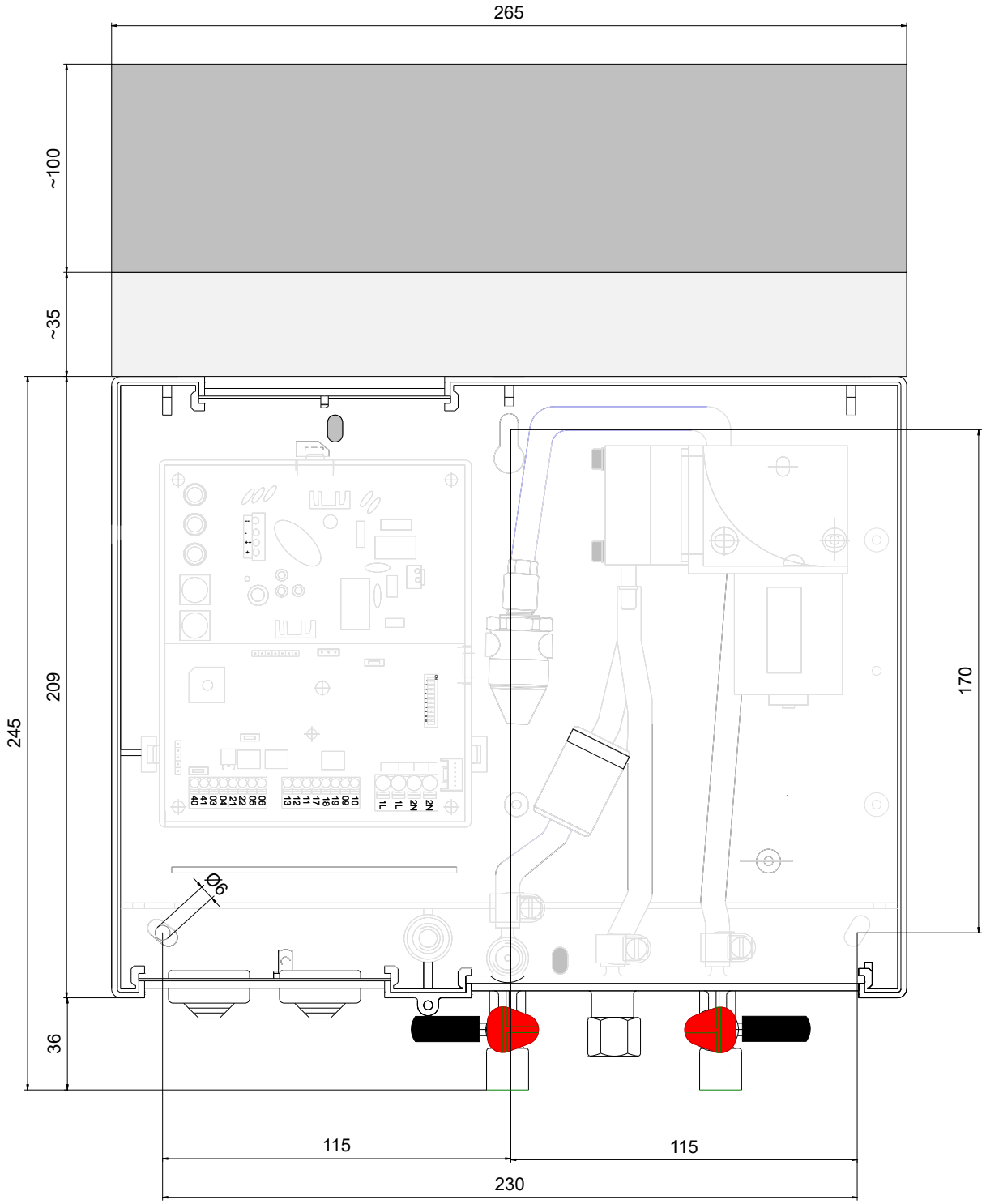
(5) Carry out a vacuum build-up according to chapter 4 of this appendix.

(6) The switching value for “Alarm OFF” must be lower than the switching value “Pump OFF” of the leak detector.



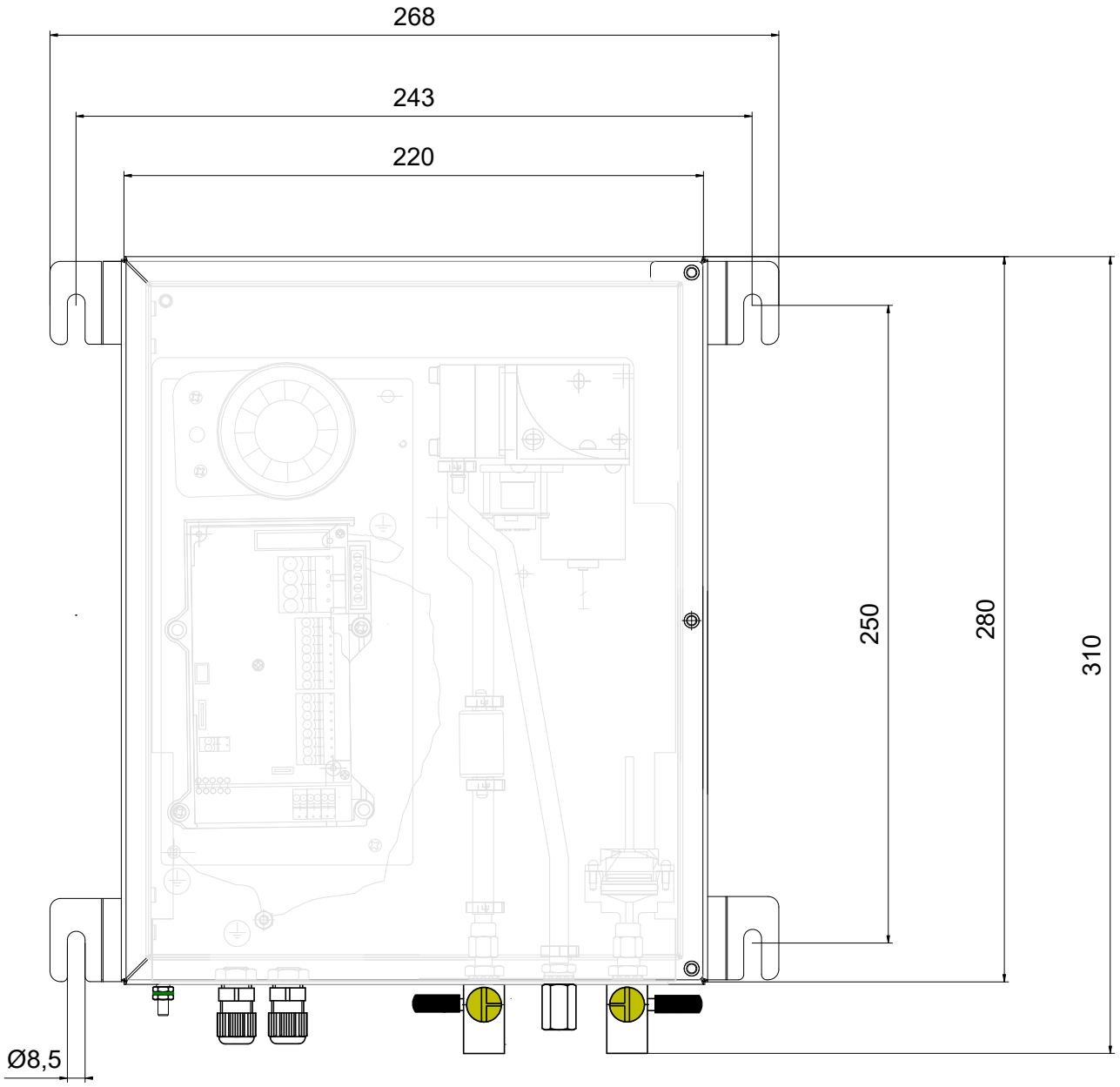
11.2 Dimension and drilling illustration

11.2.1 Plastic housing



Depth = 110

11.2.2 Stainless-steel housing



Depth = 120 mm

11.3 Declaration of Conformity

We,

SGB GmbH

Hofstr. 10

57076 Siegen, Germany,

hereby declare in sole responsibility that the leak detectors

VLR .. and VLR .. MV

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

If the device is modified in a way that has not been 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 in accordance with Art. 1 (2) letter f) iii)

Conformity is declared by

ppa. Martin Hücking

(Technical Director) As of: 02/2023

11.4 Declaration of Performance (DoP)

Number: **001 EU-BauPVO 2014**

1. Unique identification code of the product type:

   Vacuum leak detector type VLR ..

2. Use:

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

3. Manufacturer:

   SGB GmbH, Hofstrasse 10, 57076 Siegen, Germany
   Phone: +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	-20°C to +60°C	

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

   Dipl.-Ing. M. Hücking, Technical Director

   Siegen, 02/2023

11.5 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, 02/2023

11.6 TÜV Nord Certifications

Note:
By TÜV 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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