Documentation

Leak Detection Probe LS 816

Read instructions prior to commencing any work

As of: 02/2024

Art. No.: 641622

Table of Contents

1. General

1.1 Information

These instructions provide important notes on using the LS 816 leak detection probe. Workplace safety requires all the safety and handling instructions specified in this manual to be adhered to.

Furthermore, any local regulations for prevention of accidents that are applicable at the site of use of the leak detection probe 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 with consideration given to 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 detection probe 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 the 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
- Unintended 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 or the label of the leak detection probe.

2. Safety

2.1 Intended Use

WARNING!

Danger from misuse

- Install the indicating unit of the LS 816 outside of the Ex area.
- Install inside a closed and dry room in buildings or alternatively in a suitable housing.
- Do not install near strong heat sources.
- The probe itself can be installed in zone 1.
- The probe and circuit board must be integrated into the potential equalization. Ensure that the power supply grounding and potential equalization are at the same potential.
- Conditions from section 3.3 "Field of Application" must be adhered to.
- The probe must be operated together with the LS8-i circuit board to ensure Ex-protection is maintained.
- The power supply cannot be disconnected

Any claims arising from misuse are excluded.

CAUTION: The device may not be adequately protected if it is not used as specified by the manufacturer.

2.2 Obligation of the Operating Company

WARNING!

Danger in case of incomplete documentation

The leak detection probe 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:

- 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 or leak detection probes into operation 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 (PPE)

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 HV vest

Wear safety footwear

Wear hard hat

Wear gloves – where necessary

Wear safety goggles – where necessary

2.5 Fundamental Hazards

DANGER:
From electric current

When working on an open indicating unit, disconnect it from the power supply.

Comply with relevant regulations regarding electric installation and regulations for prevention of accidents.

DANGER:
From explosive vapor-air mixtures

Comply with explosion regulations, e.g., German Ordinance on Industrial Safety and Health (Betriebssicherheitsverordnung, BetrSichV) (and/or Directive 1999/92/EC and the laws of the respective member states resulting from this) and/or others.

3. Technical Data of the Indicating Unit

3.1 General Data

Dimensions and drilling pattern	see section 8
Weight	0.5 kg
Storage temperature range	-5 °C to +50 °C
Operating temperature range	
Housing	0 °C to +40 °C
Sensor	-25 °C to +60 °C
Buzzer volume	> 70 dB(A) in 1 m
Degree of protection	
Housing	IP 30
Sensor	IP 67

3.2 Electrical Data

Power supply	100…240 V AC, 50–60 Hz optionally: 24 V DC
Power input	5.5 W
Terminals 5/6, external signal	max. 24 V DC; max. 300 mA
Potential-free outputs	DC ≤ 25 W or AC ≤ 50 VA
Probe circuit (max. per probe)	7.5 V; 5.0 mA; 40.0 mW
Probe circuit (typical per probe)	5.0 V; 3.5 mA; 17.5 mW

3.3 Field of Application

3.3.1 Monitorable spaces

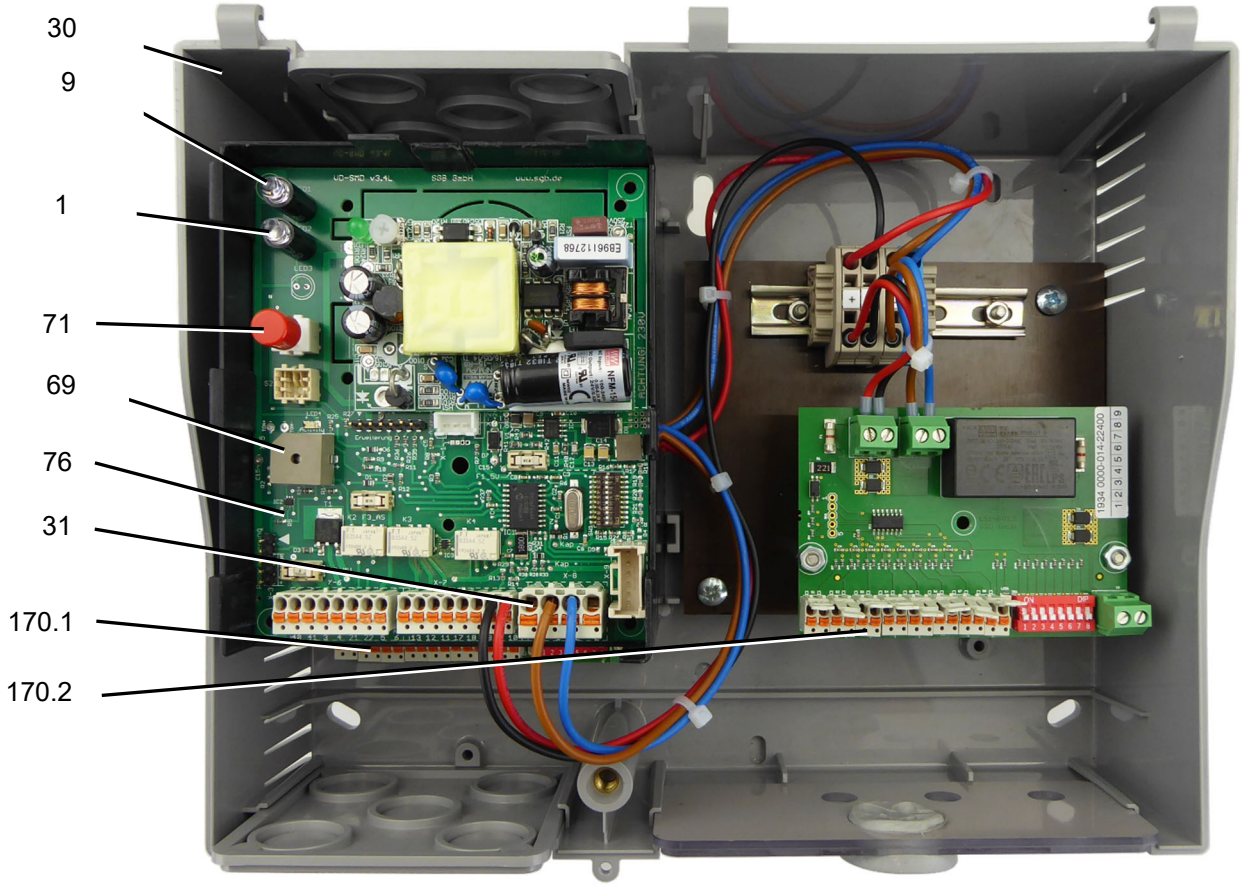
- Collecting chamber
- Interstitial space
- Collecting tub
- Access chamber, inspection chamber, and filling chamber
- Closed space with interior overpressure or vacuum

3.3.2 Monitorable fluids

- Stainless steel must be resistant to the fluid present.
- Monitorable fluids must be classifiable in gas group II A to II C as well as in temperature code T1 to T4.
- Monitorable fluids must have a density of > 0.7 kg/dm^3.

4. Design and Function

4.1 Design



Interior view with:

1	"Alarm" indicator light, red
9	"Operation" indicator light, green
30	Housing
31	Power terminal strip, power supply 100–240 V AC
69	Buzzer
71	"Mute" button
76	Main board
170.1	LS8-i circuit board for sensors 1 to 8
170.2	LS8-i circuit board, additional circuit board when sensors 9 to 16 are installed)

4.2 Function

The LS 816 leak detection probe is used to monitor increases in liquid in tubs and spaces. It consists of an indicating unit and associated sensors.

The indicating unit has 8 input channels as standard, or these can be increased to 16.

If liquid arises in the monitored tub, the sensor activates and triggers the alarm when the liquid level[1] reaches 3 cm at the latest. The alarm is indicated visually and acoustically and the potential-free contact switches.

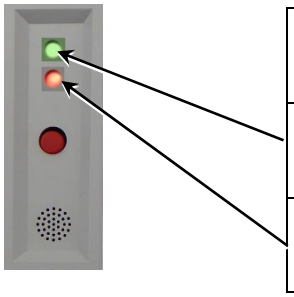
The wiring between the indicating unit and the sensor is arranged so that short circuits and cable breaks will both trigger an alarm.

Note:
Channels in the indicating unit that are not in use must be taken out of operation via the corresponding DIP switch.

If a connected sensor leaves its (good) operating state, its contact opens and the signal circuit is interrupted. In this way, both alarms and cable breaks are detected.

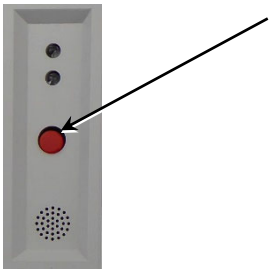
4.3 Displays and Controls

4.3.1 Display



Indicator light	Operating condition	Alarm	Alarm, audible alarm acknowledged
OPERATION: green	ON	ON	ON
ALARM: red	OFF	ON	FLASHING

4.3.2 Function "Turn off audible alarm signal"



Briefly press "mute" button once; audible signal turns off, and the relevant LED flashes (red for alarm).
This function is not available during normal operating conditions.

[1] Measured from the bottom edge of the sensor.

5. Mounting the System

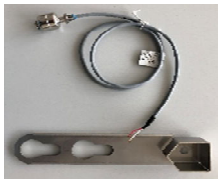
- Prior to commencing work, the documentation must be read and understood. In case of ambiguities, please ask the manufacturer.
- Comply with the safety instructions in this documentation.
- Only qualified service companies may be used for mounting and commissioning[2].
- Leadthroughs for connection lines through which the explosion atmosphere can carry over must be sealed gas-tight.
- Comply with relevant regulations regarding electric installation, explosion protection (e.g., EN 60 079-14, -17), and accident prevention in the relevant (country-specific) version.

5.1 Mounting the Indicating Unit

- Wall mounting usually with dowels and screws in a dry room
- **NOT in potentially explosive areas!**
- For housing dimensions and hole pattern, see section 7.

5.2 Mounting the Probe

5.2.1 Leak detection system



- Mount the probe in the intended position with the supplied mounting bracket.
- Mount the probe with a maximum deviation of 15° from vertical alignment.

5.2.2 In a zone 1 (access) chamber

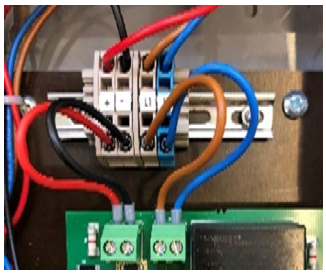
- The supplied bracket is intended for mounting under an access cover screw. This does not need to be removed, only loosened.

5.2.3 Class 3 leak detection system

- The collecting container is included in the scope of delivery.
- Installation under low point of pipe
- Up to 6 interstitial spaces can be connected.
- If the possibility of water flooding cannot be excluded, the pressure equalization line must be installed up to above the maximum water level.

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

5.3 Mounting an Additional LS8-i Circuit Board (Channels 9–16)



(1) Ensure that the device is disconnected from the power supply and secured to prevent it being switched back on.

(2) Take the additional LS8-i circuit board out of the packaging and mount in the housing using the supplied screws.

(3) Insert the cables in the terminals above the circuit board according to the color coding.

(4) Connect the sensors to this circuit board.

(5) Carry out a functional check as per section 6.2.

5.4 Electrical Cables

Cables must be resistant to stored/pumped liquids.

The sensor cable is 1 meter long and must be extended in a suitable terminal box. The extension should be no longer than 250 m.

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 with/without ferrule, without plastic collar
- 0.75 mm^2 with ferrule and plastic collar

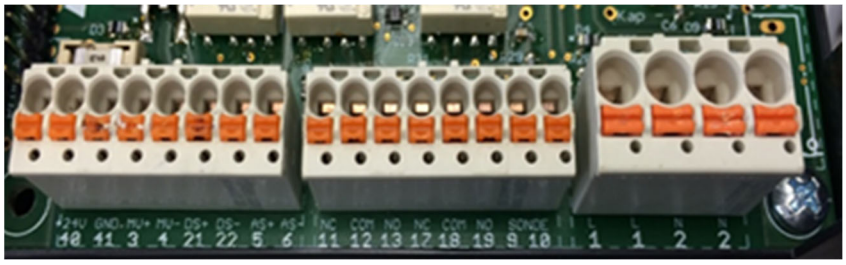
5.5 Electrical Wiring

(1) Install the electrical connection securely, i.e., without plug or switching connections.

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

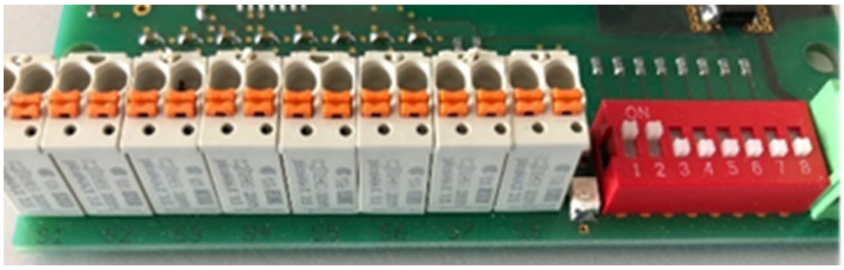
(3) Observe the requirements for electric installations, if necessary, also those of the electric companies.

(4) Terminal layout:



1/2	Power connection (100–240 V AC)
5/6	External signal 24 V DC (5+; 6-)
9/10	Internally occupied
11/12	Potential-free contacts (open in case of alarm or power failure)

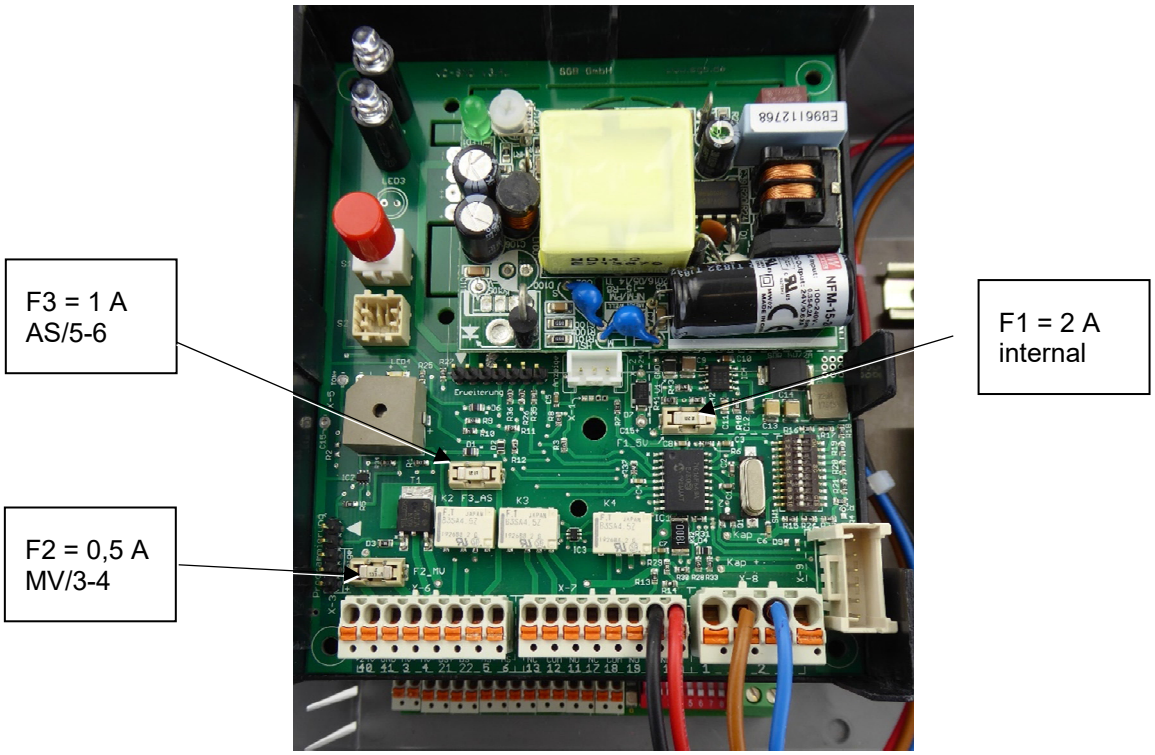
12/13	Potential-free contacts (closed in case of alarm or power failure)
40/41	24 V DC power supply



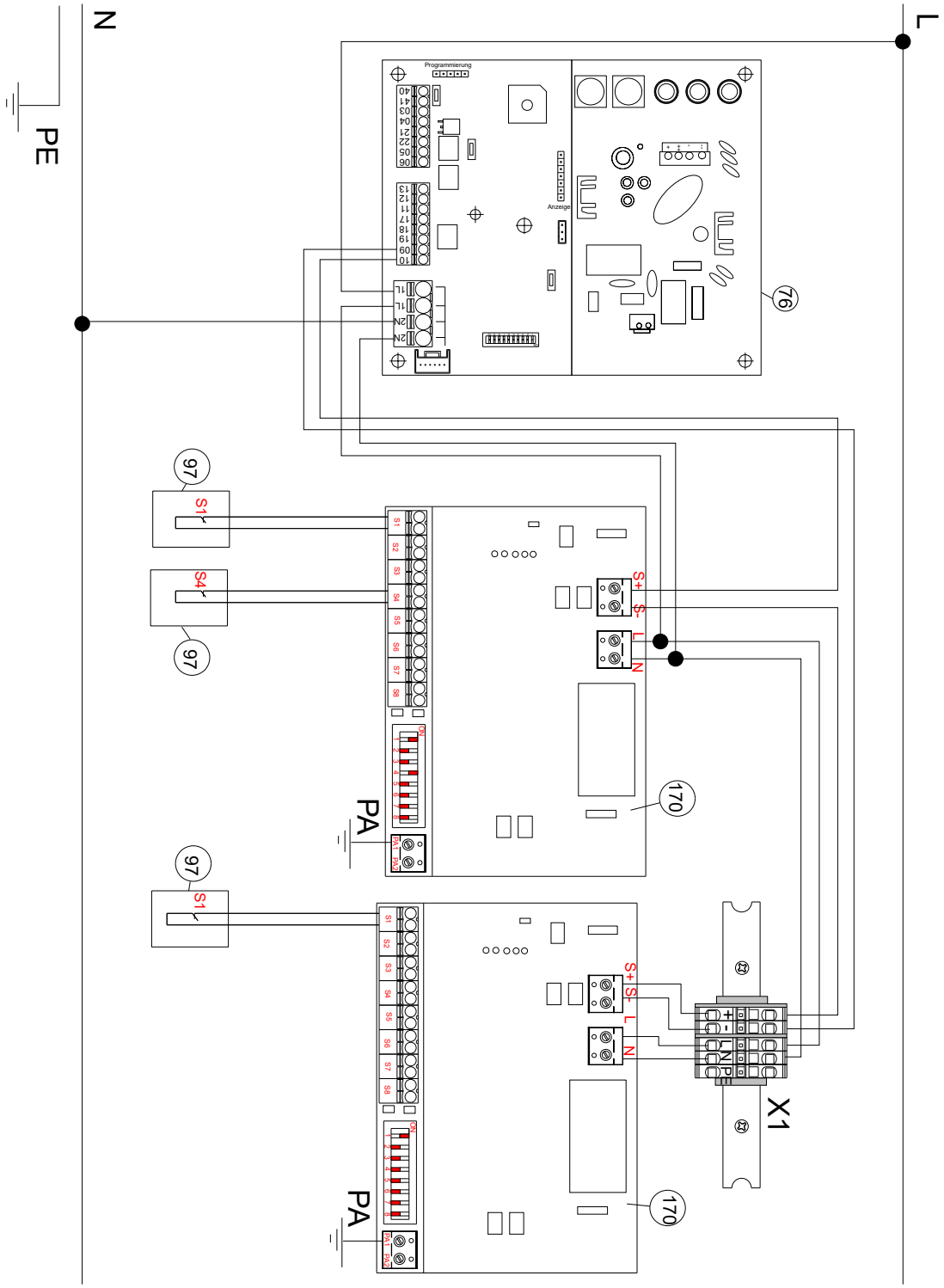
S1 to S8	Connection of the leak detection probes (by the customer)
PA	Potential equalization, must be connected!

(5) Close unused cable glands properly and professionally.

5.5.1 Location of fuses and their values



5.5.2 Block diagram



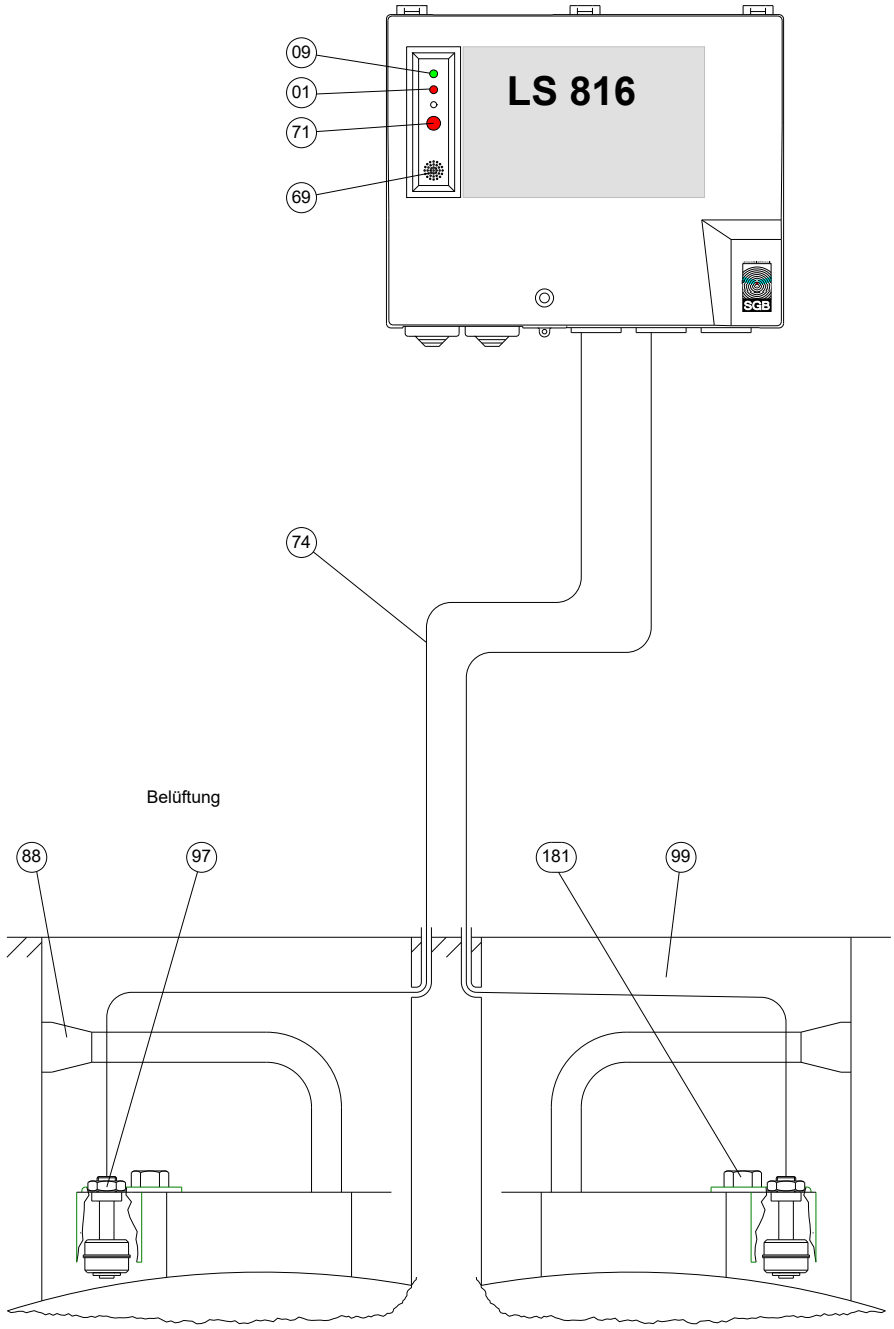
with:

97 Leak detection probe

170 LS1-8 circuit board

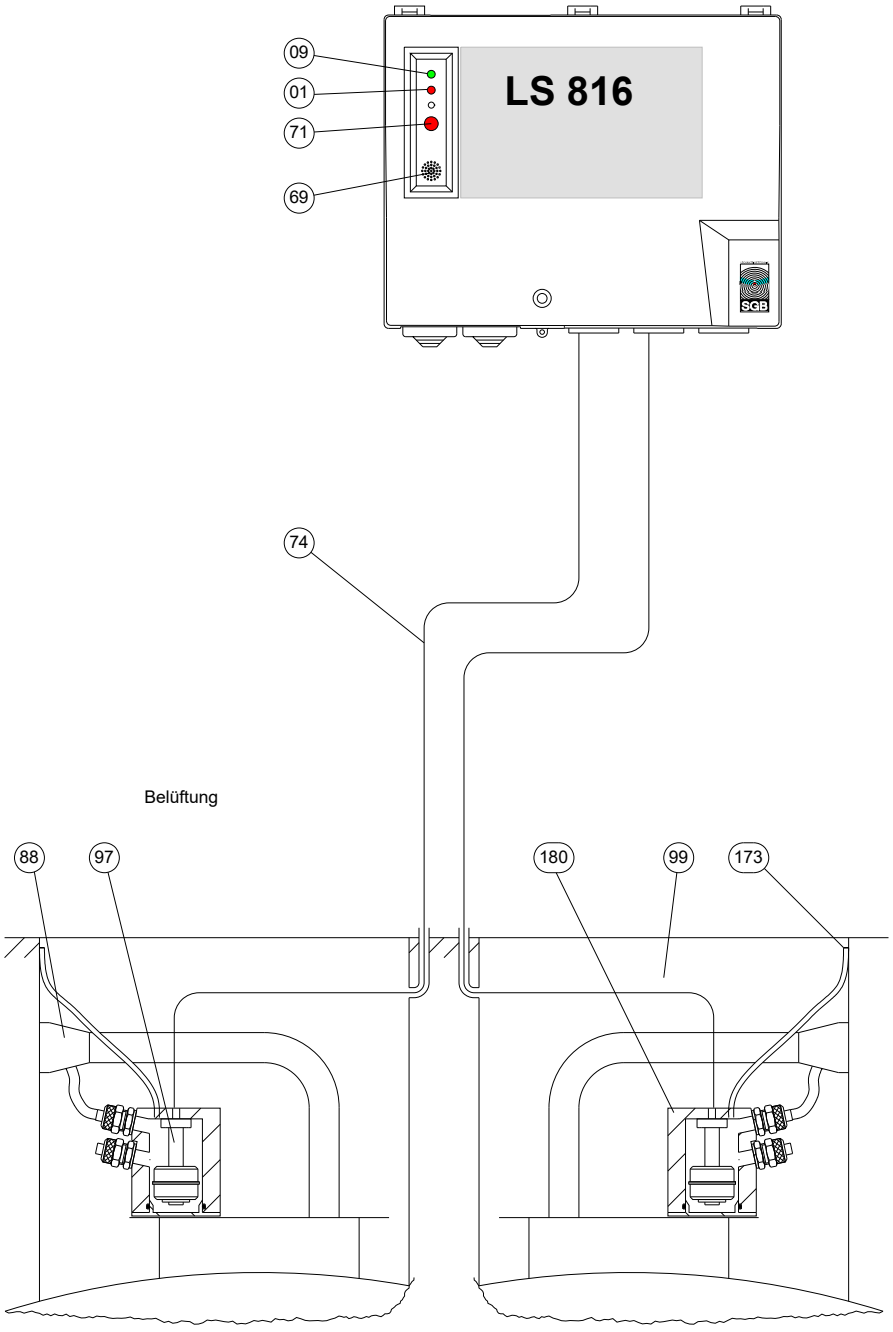
5.6 Installation Examples

5.6.1 As a leak detection probe in collecting spaces or chambers



01	Indicator light Alarm I, red
09	"Operation" indicator light, green
69	Buzzer
71	"Mute" button
74	Connection line
88	Double-walled pipe
97	Leak detection probe
99	Access chamber
181	Access cover screw

5.6.2 As a leak detection system for double-walled pipes



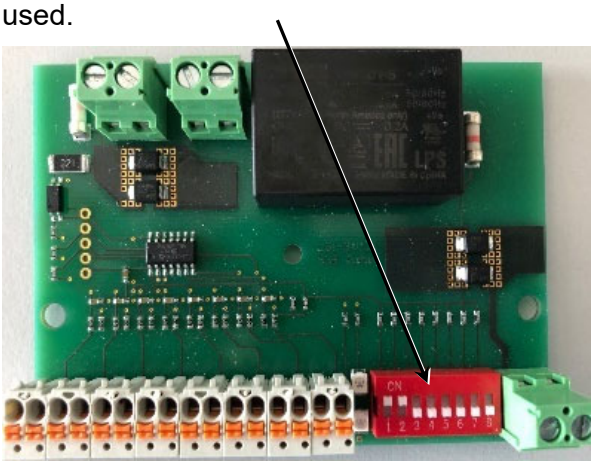
01	Indicator light Alarm I, red
09	"Operation" indicator light, green
69	Buzzer
71	"Mute" button
74	Connection line
88	Double-walled pipe
97	Leak detection probe
99	Access chamber
173	Housing ventilation (GORE vent)
180	Liquid collector
181	Access cover screw

6. Commissioning, Functional Check, and Maintenance

Only perform commissioning once the steps in section 5 "Mounting" are fulfilled.

6.1 Commissioning the Indicating Unit

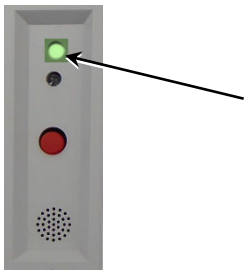
(1) Activate the DIP switches for the indicating unit channels to be used.



Caution:

If a channel is activated but there is no sensor connected, an alarm will be indicated. If, on the other hand, a sensor is connected and the channel is **not activated**, nothing will be indicated!

(2) Connect the power supply to the indicating unit.



(3) Check that the "Operation" indicator light on the indicating unit lights up.

(4) When the signal circuits are correctly closed, only the "Operation" indicator lights up.

Note:

The green LED on the upper left next to the DIP switches will also light up – this is not visible from the outside, however.

6.2 Functional Check

The functional check is carried out via a test on the sensor.

(1) Prepare the container with water or a suitable testing liquid.

(2) Carry out a visual check for soiling on the sensor to be tested, looking for any deposits on the float in particular. Clean the float if necessary.

(3) Locate the installed sensor and submerge the sensor in the container.

(4) Determine the alarm on the indicating unit. If no alarm is emitted, check the channel activation.

(5) Replace the sensor again. The alarm will stop.

(6) If it is not possible to carry out the check with a container, the check can be undertaken either by turning the sensor 180° (the float will move to the upper position) or by lifting the float with a suitable tool.

(7) This check (steps 2 to 6) must be carried out for all connected sensors.

(8) In each case, the acoustic alarm can be switched off by pressing the acknowledge button.

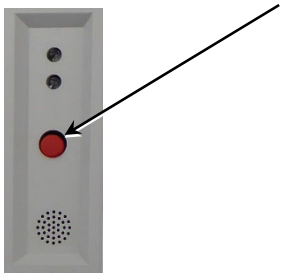
6.3 Maintenance

The leak detection probe is maintenance-free. However, it is recommended that the operator regularly checks the following points in accordance with local conditions:

(1) Soiling on the sensor: clean if necessary

(2) Water level in the area being monitored (in order to prevent false alarms)

7. Alarm



In the event of an alarm, acknowledge the acoustic signal by pressing the "Mute" button.

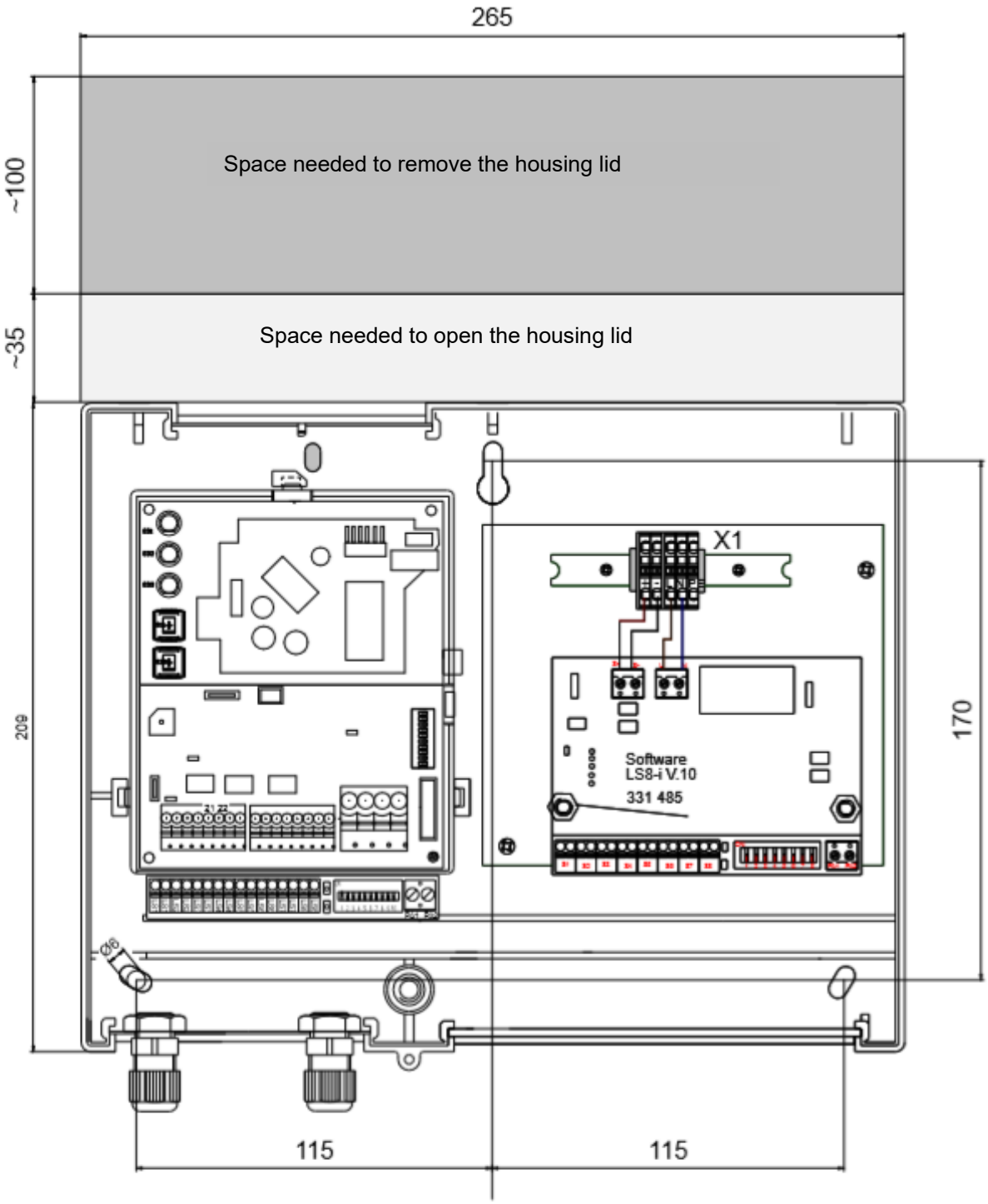
Inform the responsible technical service. They will establish and rectify the cause of the alarm.

After any malfunctions have been corrected, a complete functional check of the system must be carried out.

Note:

An alarm is triggered if the power circuit is interrupted (cable break or presence of liquid), but also if there is a short circuit in the power circuit (cables touching, water in the distribution box).

8. Dimensions and Drilling Pattern



Housing dimensions: 210 x 265 x 110 mm

9. EU Declaration of Conformity

We,

SGB GmbH
Hofstr. 10, 57076 Siegen
Germany,

hereby declare in sole responsibility that the

indicating unit LS 816

comply with the essential requirements of the EU directives/regulations/UK statutory requirements listed below.

If 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
2014/34/EU Equipment for potentially explosive atmospheres SI 2016 No. 1107	The following document has been consulted: IMQ 08 ATEX 017 X (sensor) with: EN 60079-0:2012+A11:2013; EN 60079:2015 The ignition hazard assessment did not result in any additional hazards

Conformity is declared by:

As of: February 2023

ppa. Martin Hücking
(Technical Director)

10. Declaration of Compliance of the Manufacturer (ÜHP)

SGB
MVV TB
Anhang C 2.15.15
TÜV-NORD

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

Conformity is declared by:

As of: February 2023

ppa. Martin Hücking
(Technical Director)

11. Certification TÜV-Nord

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

TÜV NORD Systems GmbH & Co. KG
Accredited test laboratory
Accreditation no.: D-PL-11074-04
Test center identifier: HHA02

Test report no.:	**8117607335**
Manufacturer:	SGB GmbH Hofstr. 10 57076 Siegen
Test object:	Float switch type CPTL07 (serial no.: 0719002) as category 1 leak detection probe in accordance with EN 13160:2016 Part 4 connected to a leak detector type DL 330 + L in accordance with EN 13160:2016 Part 2
Test date	November 2019
Test basis:	EN 13160-4:2016
Test location:	TÜV NORD Systems GmbH & Co. KG test laboratory
Test results:	As a category 1 leak detection probe in accordance with EN 13160:2016 Part 4, the float switch type CPTL07 meets the requirements with regard to reusability, software, and temperature resistance (sections 4.1.4, 4.1.5, 4.2.1 of EN 13160-4:2016). The documentation requirements set out in EN 13160-4 section 5.1.1 are fulfilled.
Note:	The float switch is only to be used in conjunction with a suitable alarm device in accordance with 13160 Part 1. Suitable evidence of the resistance of the float switch is to be provided, e.g., with the aid of the resistance list in EN 12285-1, Annex B. If the float switch comes into contact with the medium, it must be taken out of operation and checked to ensure its integrity before being used again.

The tests only refer to the test object.

The test report may only be published in its full form. The publication of shortened versions or excerpts requires prior written consent from the test laboratory.

This test report comprises 6 pages. Total number of pages: 6

Head of Test Laboratory
Head of Test Laboratory

Hamburg, 2019-12-09

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Legal notice

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