LECKANZEIGETECHNIK

SGB

Underpressure leak detector

VL - N2

Z – 65.22 - 361

Documentation VL-N2

Art. no.: 600 002
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1. Subject

Type VL-N2 .. underpressure leak detector as part of a leak detection system.

2. Operative Range

A SUCTION LINE to the low point of the interstitial space is required for all of the tanks and/or interstitial spaces listed below.

2.1. Tanks in accordance with DIN

- DIN 6608, 6616/A, 6619, 6623, 6624, and 6625, each in single-walled construction equipped with an approved leak detection lining or jacketing.
- DIN 6618 T2 (T4) with the following limitation with regard to the tank height and density.

Diameter [mm]	Height [mm]	Max. density of the stored material [kg/dm^3]
1600	≤ 2 820	≤ 1.90
	≤ 6 960	≤ 1.60
2000	≤ 8 540	≤ 1.40
2500	≤ 8 800	≤ 1.00
2900	≤ 9 585	≤ 0.90
	≤ 12 750	≤ 0.90
	≤ 15 950	-

2.2. Other tanks

- Structural shapes as in Sect. 2.1, but made of other materials with permit from the construction authority.
- Cylindrical, rectangular or spherical design of reinforced concrete or comparable tanks from other materials, with leak detection lining or jacketing.
- Approved double-walled collecting tubs and double-walled surface sealings.

2.3. Stored/Transported Product

Liquids hazardous to water with a flash point of >55°C

2.4. Resistance to Materials

The MS 58 material and the material of the connecting lines opposite the stored material must be sufficiently [1] resistant for the VL-N2 .. leak detector.

[1] Sufficient means that the physical properties are not adversely affected; discoloration is acceptable.

3. Function Description

3.1. Normal Operation

The underpressure leak detector is connected to the interstitial space via suction and measuring line(s). The underpressure generated by the pump is measured and controlled by a pressure switch.

When the operating underpressure is reached (Pump OFF), the pump shuts off. The underpressure slowly drops and when the Pump ON switch value is reached, the pump turns on and the interstitial space is evacuated until the operating underpressure is reached (Pump OFF).

In normal operation, the underpressure swings between the Pump OFF and Pump ON switch values, with short periods when the pump is run and longer standstills, depending on the tightness and temperature fluctuations of the leak detection system.

3.2. Air Leaks

If an air leak occurs (in the outer or inner wall, above the liquid or groundwater table), the underpressure 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.

Leak rates that become higher result in further pressure increase. When the switch value Alarm ON is reached, the optical and acoustic alarm is triggered.

3.3. 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 until the operating underpressure is reached. This process is repeated until the leaking liquid is taken into the suction line run to the low point and then arrives at the liquid stop valve. As soon as the liquid stop valve has closed, the pump can no longer generate a vacuum.

Due to the pressure still present in the interstitial space, more leaking liquid is sucked into the interstitial space. This causes the underpressure to drop until the "Alarm ON" pressure is reached. This triggers the visual and acoustic alarms.

3.4. Switch Values of the Leak Detector

Type	Alarm ON	Pump OFF
VL-N2	50 ± 16	80 ± 10

The measured switch value for "Alarm OFF" must be at least 5 mbar less than the measured switch value for "Pump OFF".

The measured switch value for "Pump ON" must be at least 5 mbar more than the measured switch value for "Alarm ON".

4. Installation Instructions

4.1. General Notes

(1) Keep in mind the manufacturer approvals of the tank and/or the leak detection lining or jacketing (suction line must be run to the low point of the interstitial space).

(2) Only qualified service companies may be used for installation and start up[2].

(3) Compliance with the accident prevention regulations.

(4) Applicable regulations regarding electrical installation[3]

(5) Pneumatic connections, connecting lines and fittings must maintain the pressure that may occur over the entire temperature range in case of a leak.

(6) Before entering inspection chambers, the oxygen content must be tested and the inspection chamber flushed, if necessary.

4.2. Installation of the Leak Detector

(1) Outside the Ex-area.

(2) Installation on a wall, in a building.

(3) Installation on a wall outdoors or in damp locations using a suitable protective box. In this case, an additional acoustic outdoor signal or the voltage-free contacts (available as an option) must be used for forwarding the alarm to a switchboard.

4.3. Installation of the Connecting Lines

(1) Generally plastic tubing (e.g. PVC), or metallic pipes as an alternative

(2) Inside clearance at least 4 mm for connecting lines laid out underground, inside clearance at least 6 mm for all other types of line laying.

(3) Resistant to the stored product.

(4) Color coding: Measuring line: RED; *suction line:* WHITE or CLEAR; *exhaust* GREEN.

(5) The full cross section must be maintained.

(6) 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.

(7) Laying of pipes at a downward angle if possible (overground lines: 4%) to the tank. If a downward angle to the tank is not possible, a condensate trap must be installed at every low point.

(8) Install a liquid stop valve in the suction line.

(9) Lay underground or aboveground pipes, not UV-resistant tubes/pipes in the protective pipe.

[2] For Germany: Specialist service companies per § 19l WHG, which have documented qualifications to install leak detection systems.

[3] For Germany: e.g., VDE regulations, regulations of the electrical supply companies.

(10) Run the exhaust line at a downward angle to the tank ventilation. If piping is done with low points, install condensate traps.

Alternatively: The exhaust line can lead outside to a safe area (e.g. liquid-tight surfaces). In this case, provide a condensate trap and liquid stop valve in the exhaust.

4.4. Electrical Connection

(1) Power supply: see nameplate.

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

(3) Terminal configuration (see also SL-850 100/120):

2 Outer conductor (phase)
3 Neutral conductor
4/5 Contacts, in the event of an alarm there will be a power supply
7/8 voltage-free contacts (open in the event of an alarm or loss of power), available as an option, not included in the standard supply.

4.5. Installation Examples

Installation examples are given in the Appendix.

Observe the following information at all times:

1. For tanks with a suction line:
   The suction line must lead either through the interstitial space or outside of the tank (but must then be compression proof), from the low point of the interstitial space to above the interstitial space, as well as above the tank's maximum fill level.

5. Start Up

(1) Observe and comply with all guidelines from section 4.

(2) Install pneumatic connections between tank and leak detector.
CAUTION: An existing test underpressure in the interstitial space must be reduced to a underpressure of max. 80 mbar by means of VENTILATION.
Only then can the pneumatic lines be connected to the interstitial space.

(3) Complete the electrical connection, but do not yet connect to the power supply.

(4) Close the housing cover.

(5) Apply voltage supply.

(6) Lighting up the operating lamp and, if needed, checking the alarm lamp as well as the acoustic alarm. Then activate the "Acoustic Alarm" switch.

(7) Set test cock to position "III" and connect the test measuring instrument.

(8) The pump in the leak detector will supply the system with a vacuum.
An installation pump is recommended for large interstitial spaces.

(9) After the operating underpressure of the leak detector is reached (the pump in the leak detector shuts off), the test cock must be put in “I” position (see P-100 100/120), and the test measuring instrument removed.

(10) Activate the ”Acoustic Alarm” switch.

(11) Perform the function test per section 6.4.

CAUTION:

If a tank is equipped with a flexible leak detection lining, the underpressure in the interstitial space must never be let off.
The leak detection lining may collapse.

6. Operating Instructions

6.1. General Notes

(1) If the leak detection system is installed properly and tightly, it can be assumed that the leak detector works within the control range.

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

(3) If the alarm goes off, this always indicates a more significant leak or a defect. Determine the cause and correct it quickly.

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

(5) For any repair work, disconnect the power to the leak detector.

(6) A loss of power is indicated by the “Operating” signal light going off. The voltage-free contact opens (if available).
After the power loss, the green signal light lights up again and the voltage-free contacts no longer generate an alarm (unless the power loss has caused the pressure to drop below the alarm pressure).

6.2. Intended Use

- Double-walled tanks (as well as leak detection lining or jacketing) with a suction line to the low point
- The leak detection system must be tight in accordance with the table in the documentation (6.4.7)
- Leak detector installed outside of the Ex-area.
- Leadthroughs (conduits) inside and out of the manhole or inspection chambers must be sealed gas-tight
- The power supply cannot be disconnected

6.3. Maintenance

(1) Maintenance work and function tests must be performed by trained personnel only.

(2) Once a year to ensure functional and operational safety.

(3) Test scope per section 6.4.

(4) Compliance with the conditions per sections 4 to 6.3 must also be tested.

(5) Disconnect the power to the leak detector before opening the housing.

6.4. Function Testing

The functional and operational safety tests must be performed

- after each start-up,
- according to section 6.3[4]
- each time a malfunction has been corrected.

6.4.1 Test Scope

(1) If necessary coordinate the work to be performed with those responsible for operation.

(2) Observe the safety instructions for working with the stored material.

(3) Checking and if necessary emptying the condensate traps (6.4.2).

(4) Check the free passage of air in the interstitial space (section 6.4.3).

(5) Test the switch values with the interstitial space (section 6.4.4)
or Test the switch values with the testing device (section 6.4.5).

(6) Test the underpressure pump delivery (section 6.4.6).

(7) Test the leak detection system for tightness (section 6.4.7).

(8) Create the operating conditions (section 6.4.8).

(9) An expert must complete a test report, confirming functional and operational safety.

6.4.2 *Checking and if necessary emptying of the condensate trap*

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

(2) Open and empty the condensate traps.
CAUTION: The condensate traps may contain the stored/transported product. Take appropriate protective measures.

(3) Close the condensate traps.

(4) Open the shut-off valves on the interstitial space side.

[4] For Germany: regulations of the respective *Länder* must also be observed (e.g., VAwS)

6.4.3 Checking the Free Passage of Air in the Interstitial Space

(1) Connect the test measuring instrument at the test cock, then put in position III. (P – 100 100/120
(2) Open the venting device on the leak detector; air will flow into the suction line and the interstitial space.
(3) Check the pressure drop on the test measuring instrument. If no pressure drop occurs, locate and correct the cause.
(4) Close venting device and put test cock in position I.
(5) Remove test measuring instrument.

6.4.4 Testing the Switch Values with the Interstitial Space

(1) Connect the test measuring instrument at the test cock, position III.
(2) Ventilate using the venting device.
(3) Check switch values “Pump ON” and “Alarm ON” (with visual and acoustic alarm). Record the values.
(4) if necessary. Activate the ”Acoustic Alarm” switch.
(5) Close the venting device and check switch values “Alarm OFF” and “Pump OFF”. Record the values.
(6) The unit passes the test if the measured switch values fall within the specified values.
(7) Put test cock in position I. If necessary, activate “acoustic alarm” switch again.
(8) Remove test measuring instrument.

6.4.5 Testing the Switch Values with the Testing Device (P-115 394)

(1) Connect the testing device at the test cock, position II.
(2) Unscrew venting device at the testing device and at the leak detector.
(3) Seal the suction line and connect testing device to the venting device.
(4) Connect the test measuring instrument to the tee of the testing device.
(5) Close the needle valve of the testing device.
(6) The operating underpressure is built up in the test vessel.
(7) Ventilate using the needle valve, check switch values “Pump ON” and “Alarm ON” (visual and acoustic). Record the values.
(8) Slowly close the needle valve and check switch values “Alarm OFF” and “Pump OFF”.
(9) The unit passes the test if the measured switch values fall within the specified values.
(10) Sections (1)-(4) in reverse order to create the operating condition of the leak detector.

6.4.6 Testing the Underpressure Pump Delivery Pressure

(1) Remove and seal suction line at the venting device. Slide test measuring instrument onto the free pipe unions of the venting device.

(2) Set test cock to position II to ventilate the pressure switch. The alarm is triggered and the pump runs.

(3) Read the delivery rate of the pump from the test measuring instrument.

(4) The test is considered passed if a pressure value of > 150 mbar is reached.

(5) Set test cock to position I. Carefully remove test measuring instrument and reconnect suction line.

6.4.7 Leak Detection System Tightness Testing

(1) Connect the test measuring instrument at the test cock, position III.

(2) The underpressure pump must have reached the Pump OFF switch value for the tightness test. Wait for a possible pressure compensation and then start the tightness test.

(3) The test is positive if the values of the following table are met. A higher pressure drop means a higher load on the wear parts.

Interstitial space volume in liters	**1 mbar pressure drop in**
100	9 minutes
250	22 minutes
500	45 minutes
1000	1.50 hours
1500	2.25 hours
2000	3.00 hours

(4) Set the test cock to position I and remove the test measuring instrument.

6.4.8 Creating the Operating Condition

(1) Seal the housing and “acoustic alarm” switch.

(2) Possibly attach a sign showing the operation being installed.

6.5. Alarms

(1) An alarm is indicated by the “Alarm” signal lighting up and the sounding of the acoustic signal.

(2) Shut off the acoustic signal by activating the ”Acoustic alarm” switch.

(3) Inform the installation company.

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

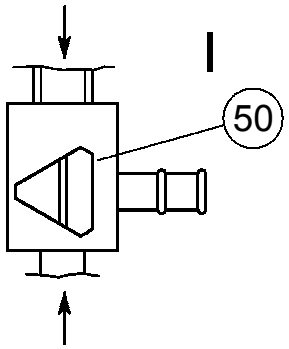
(5) Perform the function test per section 6.4, observing the conditions from sections 4 to 6.2.

7. Identification

- Type
- Electrical data
- Manufacturer or manufacturer symbol
- Date of manufacture (month/year)
- Serial number
- Approval number
- Symbol specified by law

8. Index Used

01	”Alarm” signal light, red
03	Exhaust line
09	”Operating” signal light, green
10	Ventilation device
11	Underpressure switch
22	Vents
27	Liquid stop valve
30	Housing
33	Condensate trap
41	Alarm switch in 11
42	Pump switch in 11
43	Measuring line
50	Test cock
52	Test measuring instrument
59	*Relay (available as an option)*
60	Underpressure pump
61	Non-return valve with filter
68	Suction line
69	Buzzer
71	”Acoustic Alarm” switch
73	Interstitial space
84	1 liter test vessel
85	Test pipe unions (test measuring instrument)
98	Sealing plug
101	Suction line leading to the low point


I
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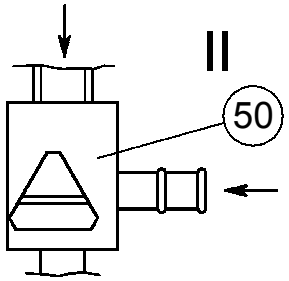
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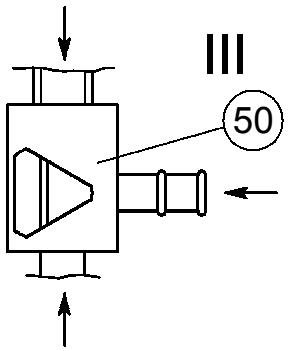
III
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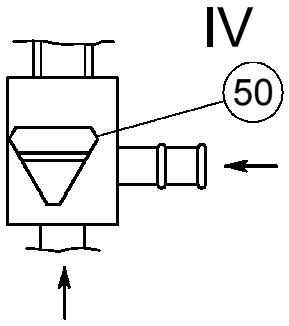
IV
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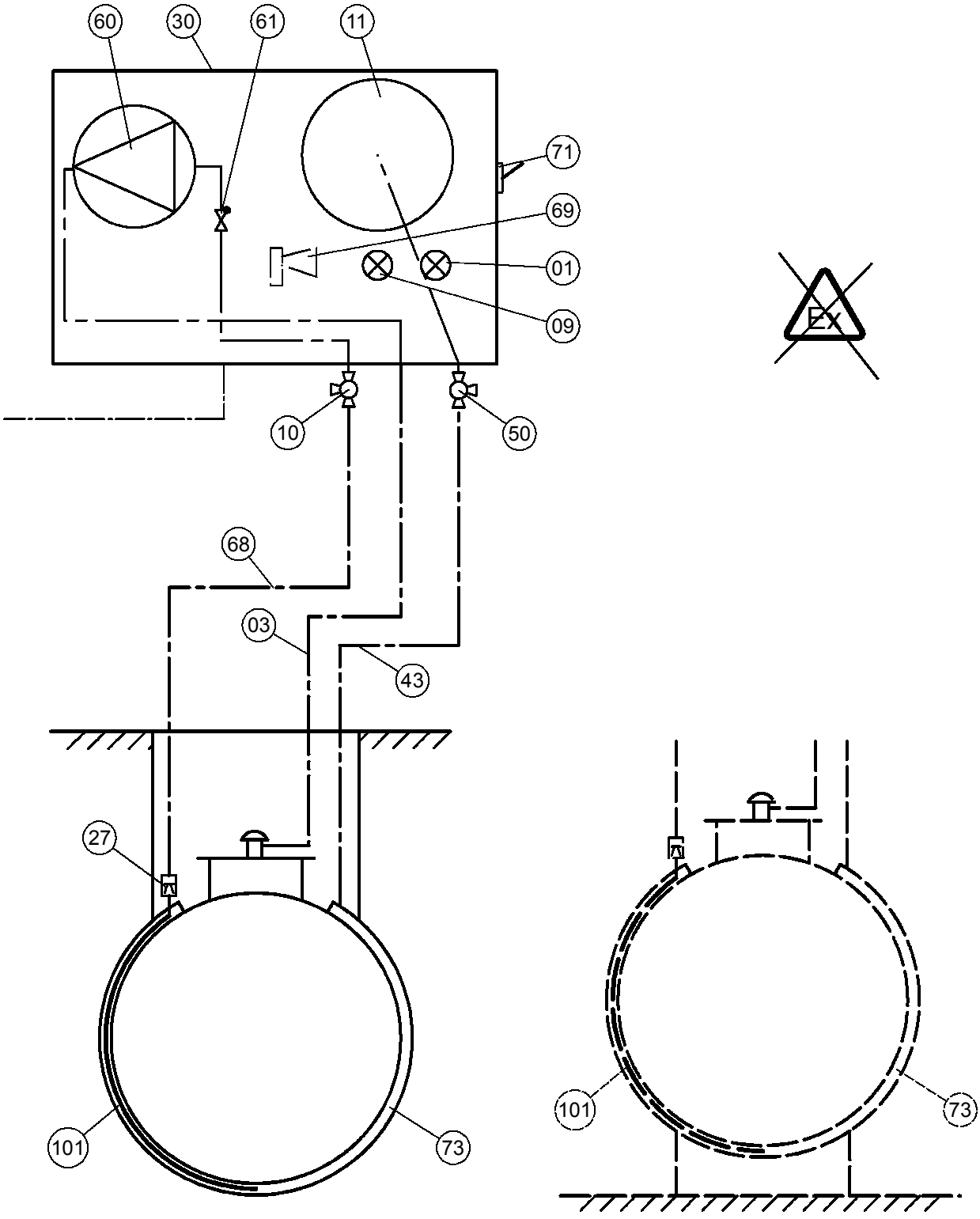

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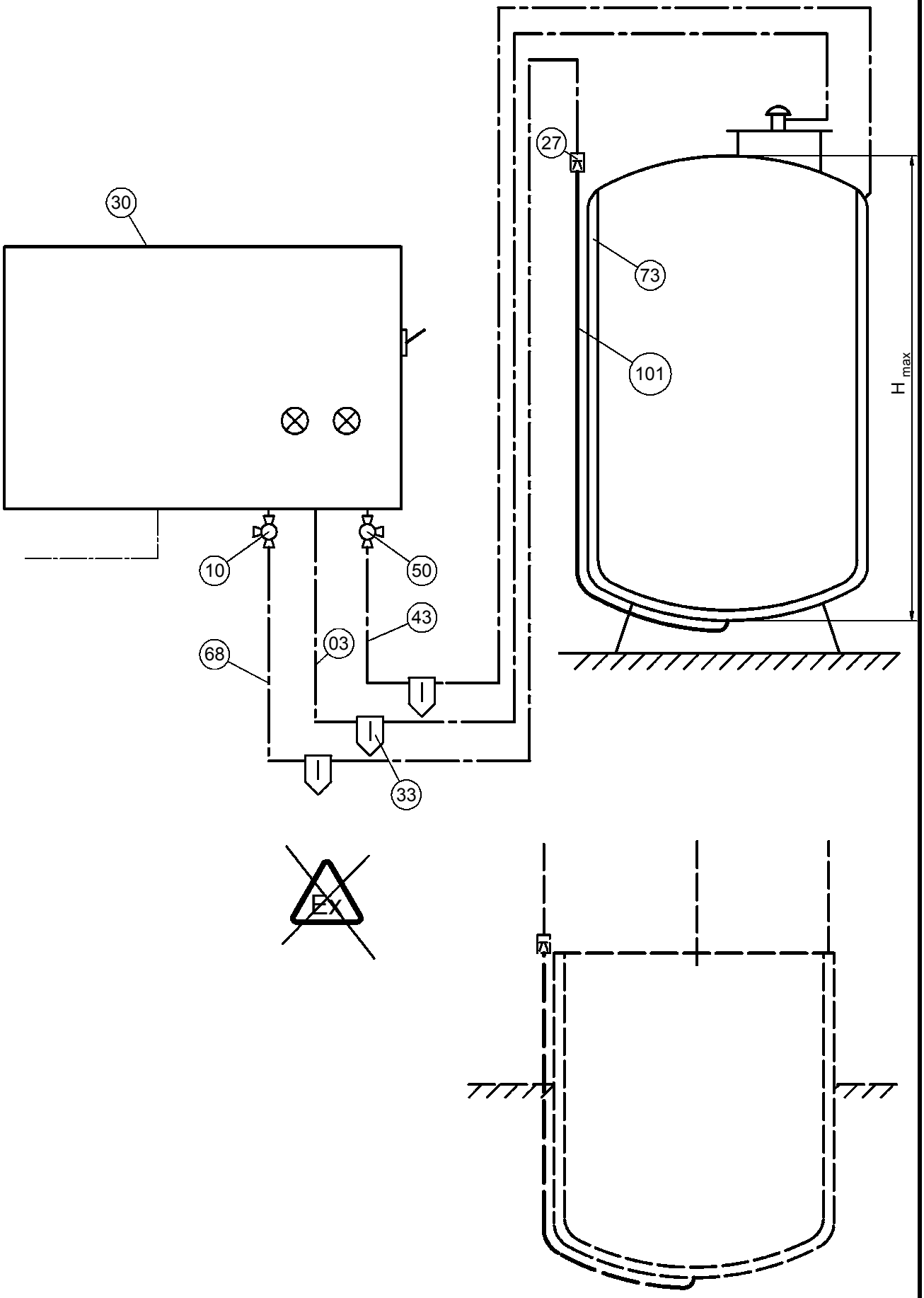
M1 - 100 100/120



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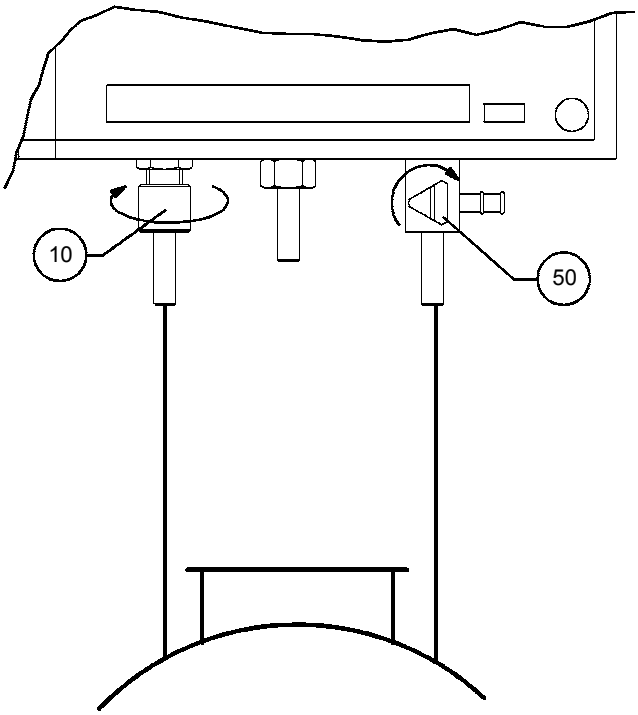
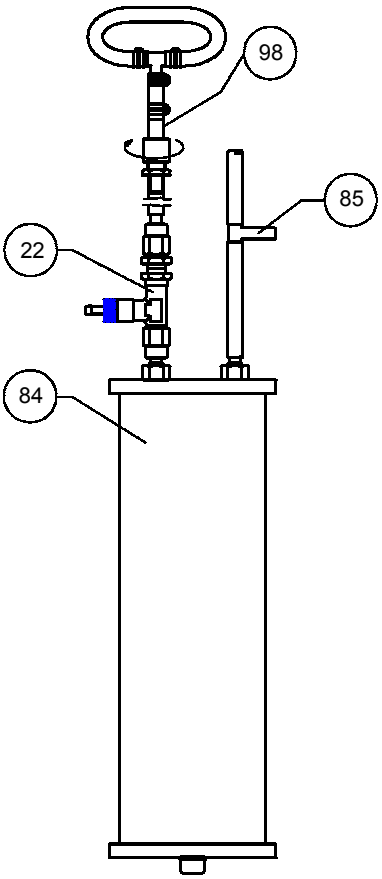
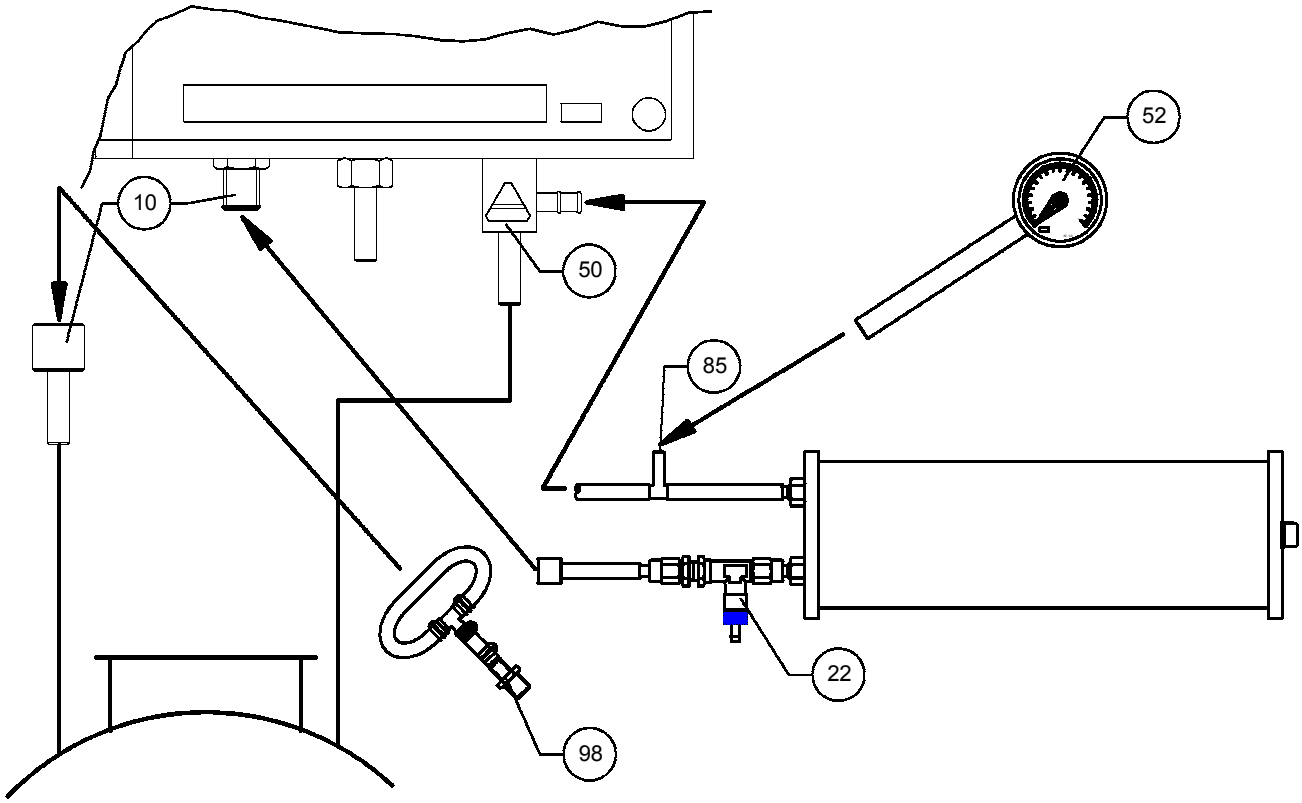
M2 - 100 100/120







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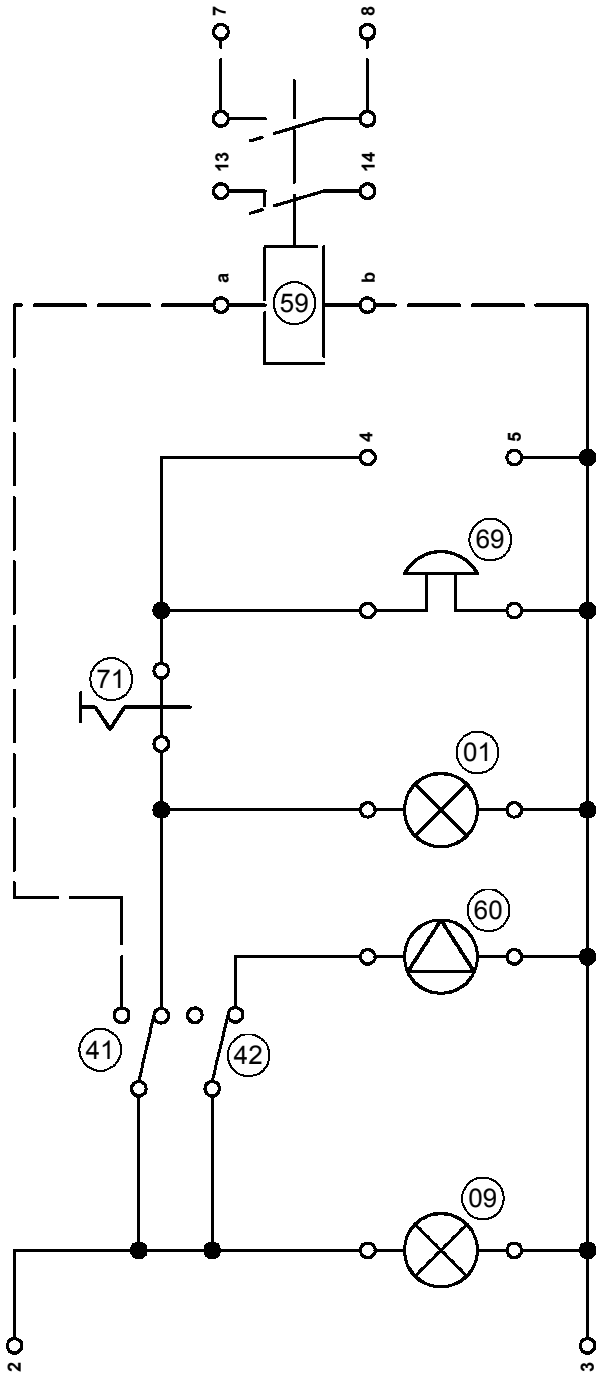
P - 115 394



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SL - 850 100/120

A.1 Ensuring the Alarm

(1) To ensure the alarm, the interstitial space volume must be reduced by incoming liquid to V = 5.8%.

(2) Based on the alarm pressure (alarm ON), the interstitial space (in case of a leak) can be filled up to a height h_1 with respect to the tank low point.

$$h_1 = \frac{p_{AE}}{g \cdot \rho}$$

with:

h1 Height in m

p_{AE} Alarm pressure: 3 400 Pa

ρ Density in kg/m^3

G Gravitation constant: 9.81 m/s^2

(3) The interstitial volume V_1 at a fill level of h_1 is determined by calculating (or gauging the capacity by liters), while taking into account the tank geometry.

(4) The alarm is considered ensured if the following condition is met:

$$V < \frac{V_1}{V_0} \cdot 100\%$$

with:

V volume to be displaced in %

V_1 Interstitial space volume from the low point of the interstitial space to height h_1 in m^3

V_0 total interstitial space volume in m^3

Technical Data

1. Electrical Data (voltage variant: see label!)

Input capacity (without external signal)	230 V -50 Hz -60 W 115 V - 60 Hz - 60 W 24 V (=) -25 W 12 V (=) -25 W
Switch contact load, terminals 4 and 5	max. 50 VA
Switch contact load, voltage-free contacts, terminals 7 and 8	max: 230 V – 50 Hz -8 A min: 5 V - 5 mA
External fuse protection of the leak detector	max. 10 A
Over-voltage category	2

1.1. Terminal layout ~

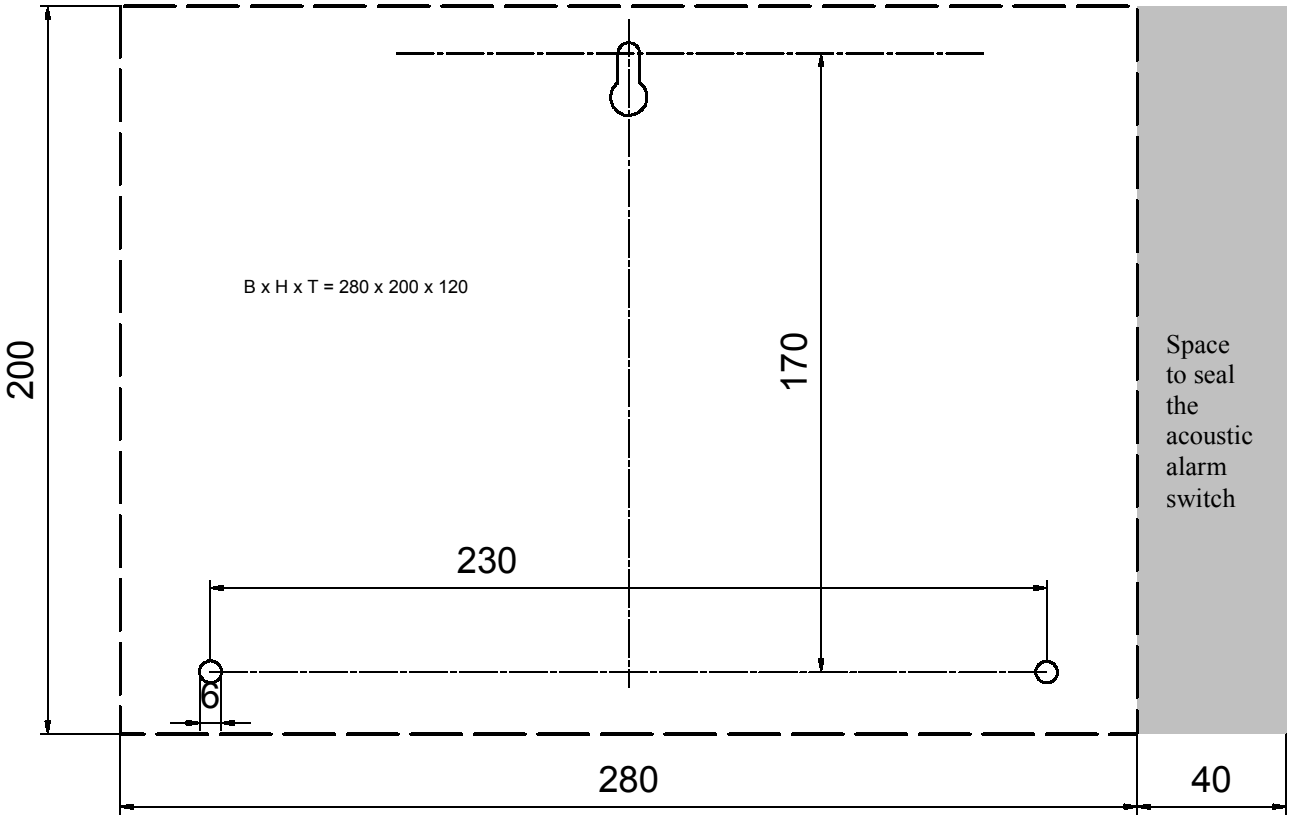
2 Outer conductor (phase)
3 Zero conductor
4 / 5 External signal (voltage in the event of an alarm)
7 / 8 Voltage-free contacts, contact open in the event of an alarm (and in case of loss of power) (optional)

1.2. Terminal layout:

2 Plus +
3 Minus -
4 / 5 External signal (voltage in the event of an alarm)
7 / 8 Voltage-free contacts, contact open in the event of an alarm (and in case of loss of power) (optional)

2. Pneumatic Data (Requirements for the Test Measuring Instrument)

Nominal size	at least 100
Class precision	at least 1,6
End scale value	600 mbar (160 mbar)



28-04-2003

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Dimension / Measurement

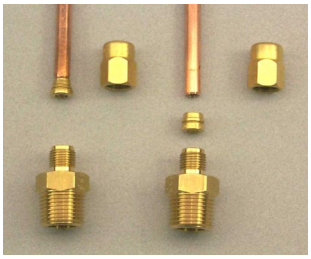
Work Sheet: AB-820 500

Pneumatic connections

1 Flare type fitting for flare type pipes

1. Lubricate the O-rings
2. Place the intermediate ring loosely in the threaded connection piece
3. Push the union nut and the thrust collar over the pipe
4. Tighten the union nut manually
5. Tighten the union nut until clearly increased force is needed
6. Finished assembly: turn by a further ¼ of a revolution

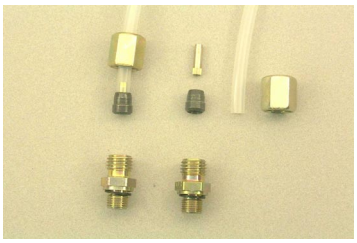
2 Clamping ring threaded fitting for plastic and metal pipes



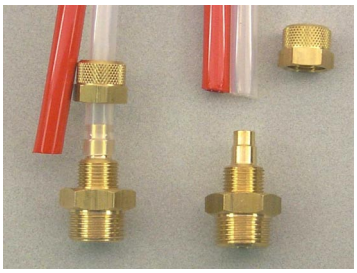
1. Insert the support sleeve into the end of the pipe
2. Insert the pipe with support sleeve as far as it will go
3. Tighten the thread until strong resistance can be clearly felt
4. Lightly loosen the nut
5. Tighten the nut until resistance can be felt (nut must exactly match the thread of the basic body)

3 Olive threaded fitting for plastic and metal pipes

1. Insert the reinforcing sleeve into the end of the pipe
2. Knock in the reinforcing sleeve
3. Push the union nut and the olive over the end of the pipe
4. Screw the union nut by hand until you feel a stop
5. Press the pipe against the stop in the inner cone
6. Tighten the union nut by approx. 1.5 revolutions (pipe must not turn)
7. Loosen the union nut: check whether the pipe visibly projects from under the cutting ring (it doesn't matter if the clamping ring can be turned)
8. Retighten the union nut using normal force



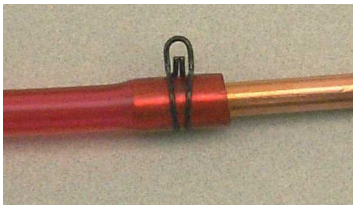
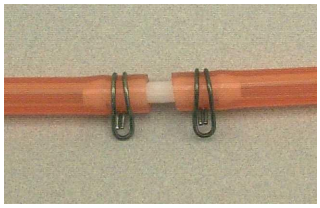
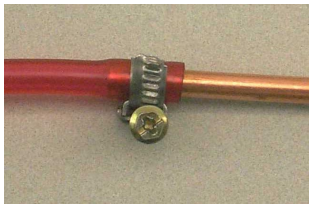
4 Quick-action fitting for PA- and PUR-tubes



1. Make a right-angled cut in the PA pipe
2. Loosen the union nut and push it over the end of the pipe
3. Push the pipe onto the nipple up to where the thread begins
4. Tighten the union nut by hand
5. Further tighten the union nut using a wrench until clearly increased force is needed (approx. 1 to 2 revolutions)

NOT suitable for PE-pipes

5 Tube connections (socket 4 and 6 mm for EXCESS PRESSURE)

1. Push wire or screw clip over the tube
2. Push the tube onto the Cu pipe or the tube socket (if necessary heat or dampen PVC tube), tube must fit tightly all the way round
3. Wire clip: clamp tightly using pliers and push onto the joint
   Screw clip: push the clip over the joint and tighten it using a screwdriver, care must be taken that the clip is a smooth tight fit.

6 Tube connections (socket 4 and 6 mm for VACUUM)

For vacuum applications where there is no excess pressure on the connection lines even in the case of a leakage proceed as in item 5, but without clips.

For vacuum applications where excess pressure could arise in the case of a leakage, proceed as in Item 5.

DEUTSCHES INSTITUT FÜR BAUTECHNIK
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Institute of Public Law

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GeschZ.: III 14-1.65.22-42/03

General Construction Permit

Approval number:	Z-65.22-361
Applicant:	Sicherungsgerätebau GmbH Hofstrasse 10 57076 Siegen
Subject matter of the approval:	Leak Detector according to the Type VL-N2 underpressure system
Valid until:	July 31, 2013

The above-mentioned approval item is herewith granted a general construction permit.
This general construction permit consists of six pages and two pages of appendices.

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II. SPECIAL PROVISIONS

1 Subject matter of the approval and scope of application

1.1 The subject matter of this general construction permit is leak detectors according to underpressure system type VL-N2 with an alarm pressure switch value of 50± 16 mbar with integrated underpressure producer.

1.2 The leak detectors may be connected to suitable interstitial spaces of tanks, collecting tubs and surface sealings for facilities for storing, filling and unloading liquids hazardous to water (see Appendix 1 for the design of the leak detector).

1.3 Suitable interstitial spaces within the meaning of section 1.2 include
- the interstitial spaces of double-walled tanks in accordance with planning and building rules list A Part 1, consecutive number 15.5,
- the interstitial spaces of double-walled tanks and collecting tubs that have been granted a general construction permit
- the interstitial spaces of single-walled tanks formed by leak protection linings or jacketings that have a general construction permit in accordance with planning and building rules list A Part 1, consecutive numbers 15.1, 15.3, 15.7, 15.9, 15.11 and 15.13,
- the interstitial spaces of single-walled tanks or collecting tubs having a general construction permit that are provided with leak protection lining or jacketing,
- the interstitial spaces of surface sealing systems having a general construction permit,
for which the suction line is run to the low point of the interstitial space and if the alarm of the alarm pressure switch value mentioned in section 1.1 is ensured for the density of the stored liquid for the respective interstitial space.

1.4 This general construction permit furnishes proof of the functional safety of the subject matter of the approval within the meaning of section 1.1.

1.5 The general construction permit is issued notwithstanding the test or approval reservations of other legal areas (e.g. 1st regulation on device safety law/low voltage directive, law on the electromagnetic compatibility of devices – the German Electromagnetic Compatibility Act (EMVG Directive).

1.6 Because this general construction permit has been granted, the suitability assessment and building class permit pertaining to water regulation in accordance with § 19 h of the Federal Water Act (WHG)[1] do not apply for the approval item.

2 Provision for the construction product

2.1 Characteristics and composition

2.1.1 A leak in the walls of the interstitial space is visually and acoustically indicated by a pressure increase of 80 ± mbar or 8000 ± 1000 Pa underpressure to the alarm switch value of 50 ± 16 mbar or 5000 ± 1600 Pa underpressure.

2.1.2 The leak detector can be used for connection to interstitial spaces, the interior walls of which, in accordance with the provisions of section 3.1 for pressureless storage, can be supplied with a static pressure of the stored liquid. An additional overpressure in the tank interior of < 0.5 bar is permissible. The leak detector connection lines must reach to the top of the maximum fill level of the stored liquid.

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[1] Law on the regulation of water resources (Wasserhaushaltsgesetz-WHG) (Federal Water Act) of November 11, 1996

2.1.3 The Type VL-N2 leak detector consists of the display and operating elements, the underpressure pump, the pressure switch and the electrical components of the control (including the output signals). The components and component parts are specified in the Technical Description[2].

2.1.4 Proof of functional safety of the subject matter of the approval within the meaning of section 1.1 was provided in accordance with the "Approval principles for leak detection devices for tanks (ZG-LAGB)" of the German Institute of Structural Engineering of August 1994.

2.2 Manufacturing and Identification

2.2.1 Manufacturing

The leak detector may only be manufactured in the factories of the applicant. It must comply with the design, measurements and materials of the documents listed in Appendix 2 attached to this general construction permit.

2.2.2 Identification

The leak detector, its packaging or its delivery ticket must be identified by the manufacturer with the mark of conformity (CE-Mark) in accordance with the mark of conformity regulation of the respective countries. This identification may only take place when the requirements of section 2.3 have been met. In addition, the leak detector must be provided with the following information:

- Type designation
- Approval number

2.3 Proof of conformity

2.3.1 General

Confirmation of conformity of the leak detector with the provisions of this general construction permit must be given for each manufacturing plant with a statement of conformity by the manufacturer based on the plant's internal production control and an initial test of the leak detector by a test center approved for this purpose.

2.3.2 Internal plant production control

An internal plant production control must be set up and carried out at the manufacturing plant. Within the scope of the internal plant production control, a routine test of each leak detector must be carried out. By means of a routine test, the manufacturer must ensure that the materials, dimensions and passages as well as the design comply with the tested type and that the leak detector is functionally safe.

The results of the internal plant production control must be recorded and analyzed. The records must include at least the following information:

- Description of the leak detector
- Type of inspection or test
- Date of manufacture and of the leak detector test
- Results of inspections or tests
- Signature of the person responsible for the internal plant production control.

The records must be kept for at least 5 years. They must be presented to the German Institute of Structural Engineering and the highest construction permit authority upon request.

In the event of an unsatisfactory test result, the manufacturer must immediately undertake the necessary measures for remedying the defect. Approval items that do not meet the requirements must be handled in such a way that there can be no mix-ups with items that are in compliance. After remedying the problem – where technically feasible and as required for proof that the

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[2] Technical description of the leak detector VL-N2 dated 02/18/2003

defects have been corrected – the respective test must be repeated without delay.

2.3.3 Initial test by an approved test center
Within the scope of the initial test, the functional tests listed in the "Approval principles for leak detection devices for tanks" must be carried out. After verification of general construction approval has been provided on samples from the current production, the initial tests replace these tests.

3 Provisions for the Concept

3.1 The limits of use for the leak detector for ensuring the alarm for double-walled steel tanks according to consecutive no. 15.5 of the planning and building rules list A Part 1 depending on the density of the stored liquid can be found in the information in the tables in section 2.1 of the Technical Description of the leak detector.

For additional areas of application of the leak detector in accordance with section 1, ensuring the alarm must be verified in accordance with Appendix A[3] to the Technical Description.
If leak detectors are used for tanks stored underground, a density of at least 1.0 kg/dm^3 must be assumed.

3.2 The leak detector may only be used on tanks, collecting tubs and surface sealings whose stored liquids are not inclined toward viscousness or containing suspended solid deposits and whose operating temperature must be at least 10°K below the flash point of the stored liquid.

3.3 When storing liquids hazardous to water, the leak detector may only be used if the flash point is greater than 55°C

3.4 The MS 58 material as well as the materials of the installed connecting lines must be sufficiently resistant for the stored liquids in the tanks and collecting tubs and on the surface sealings.

4 Provisions for the Design

4.1 (1) The leak detector must be installed according to section 4 of the Technical Description and put into operation according to section 5. Only those service companies defined as technical specialists within the meaning of § 191 Federal Water Act (WHG) may be commissioned with the installation, maintenance, repair and cleaning of the leak detector.
(2) The activities listed in (1) do not need to be carried out by specialists if they are exceptions to the obligation to use specialists according to regulations of the respective *Länder* or if the manufacturer of the approval item carries out the activities with his own experienced personnel. The requirements of the statutory protection of labor shall remain unaffected.
(3) The leak detectors may not be installed in potentially explosive areas.
(4) The leak detectors may only be installed in frost-free areas or sheltered protective boxes in accordance with DIN EN 60 529 IP54[4]. When assembling in a protective box, an external acoustic alarm signal must also be installed or the forwarding of the alarm signal via a voltage-free contact is required.

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[3] Appendix A dated 7/22/2003 to the Technical Description of the Leak Detector VL-N2 dated 2/18/2003
[4] DIN EN 60 529: 2000-09, Types of protection in the form of housings (IP-Code)

5 Provision for use, servicing, maintenance and recurring tests

5.1 Maintenance work and functional tests may only be carried out by experienced personnel of the operator. The functional and operational safety of the leak detector must be tested at least once a year. The maintenance of the leak detector must be carried out according to the specifications for maintenance in section 6 of the Technical Description.

5.2 The manufacturer must include the Technical Description with Appendix A of the Leak Detector with delivery.

Dr.-Ing. Kanning [Stamp]: German Institute of Structural Engineering

EC DECLARATION OF CONFORMITY

We,

SGB Sicherungsgerätebau GmbH
Hofstraße 10
D- 57076 Siegen

hereby declare in sole responsibility that the leakage probes

VL-N2

comply with the essential requirements of the EC directives listed below.

This declaration shall lose its validity if the device is modified without consulting us.

Number / short title	**Satisfied regulations**
2004/108/EC EMC Directive	EN 55 014-1: 2006 EN 55 014-2: 1997 EN 61 000-3-2: 2006 EN 61 000-3-3: 1995 + A1: 2001 + A2: 2005
2006/95/EC Low Voltage Directive	EN 60 335-1: 2007 EN 61 010-1: 2001 EN 60 730-1: 2005
89/106/EEC Construction Products Directive 93/68/EEC	EN 13 160-1-2: 2003 Approved body: TÜV-Nord, Hamburg

Compliance is declared by

Martin Hücking
(Technical Director)

Warranty

Dear customer,

You have purchased a high-quality leak detector from our company.

All of our leak detectors undergo a 100% quality control examination.

The type plate with the serial number is only affixed after all test criteria have been complied with.

The **warranty period** for our leak detectors is **24 months**, beginning on the date of installation on site.

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

Our warranty will be effective only if the customer submits to us the functional report or test report on initial putting into service, prepared by a recognised company specialised in water and water protection systems, including the serial number of the leak detector.

Our warranty shall not apply in the event of faulty or improper installation or improper operation, or if modifications or repairs are carried out without the manufacturer's consent.

In case of malfunction, please contact your local specialist company:

Stamp of the specialist company

Yours sincerely

Sicherungsgerätebau GmbH
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☎ +49 / 271 / 48964 - 0
Fax: +49 / 271 / 48964 - 6