



Overpressure Leak Detector  
DL - 8  
08 / PTB No. III B/S 2347  
Z - 65.23 - 106

Documentation DL - 8

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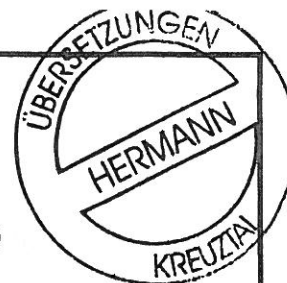
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**Landesanstalt für Arbeitsschutz Nordrhein-Westfalen**  
(North-Rhine Westphalia State Institute for Occupational Safety and Health)

Ulenbergstraße 127 – 131, 40225 Düsseldorf

Telephone: 0211/3101-0



-3.4-8604-Hat/Rt-

Düsseldorf, April 26, 1996

**GENERAL APPROVAL**

By virtue of §12 of the regulations on storage, filling and overland transportation of liquids, (code on inflammable liquids – VbF) dated Feb. 27, 1980 (Official Bulletin I, page 229) in its latest version,

Leak Detectors type 'DL-8/.'

manufactured by the company

**Sicherungsgerätebau GmbH**  
57076 Siegen

for the detection of leakage from tanks filled with inflammable liquids of the hazard classes AI, AII, AIII and B, the interstitial spaces of which are suitable for installation of such leak detectors and suitable also for the pressures generated by them (as per proof)

have been approved and registered under the reference number

**08/PTB no. III B/S 2347.**

This general approval is based on test certificate no. III B/S 2347 of Feb. 08, 1996 issued by the Federal Physical Technical Institution (PTB) and on the documents mentioned therein, which form an integral part of the general approval.

The general approval is subject to the following secondary conditions:

1. Each leak detector shall be subject to individual testing according to paragraph III of the a/m PTB certificate.
2. The conditions stated in paragraph II, no. 1 – 4 and paragraph IV of the a/m PTB test certificate shall apply as secondary conditions of this general approval.
3. Each leak detector shall be marked in a permanent and clearly visible manner with the following data
  - general approval ident. no.
  - manufacturer's sign
  - type designation
  - year of construction.

By attaching a label bearing these data, the manufacturer certifies compliance with the a/m secondary conditions.

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4. With each delivery of a leak detector, the user shall be given a copy of the general approval including any future supplements that may be issued.
5. In the event of an infringement of the conditions of this general approval and the secondary conditions, or if serious defects occur during use of the leak detector, the present general approval may be revoked. The same applies if the technical rules are subject to modification.
6. If manufacture of the leak detector is terminated, the approval authority shall be informed accordingly.

#### Note

The storage of inflammable liquids in tanks to be equipped with a leak detector must be admissible according to the relevant provisions of the Federal Lands or to the regulations of the code on inflammable goods VbF.

#### Information on legal remedy

Objection against this notification can be registered up to one month after its issue. Such objection shall be filed in writing with the North-Rhine Westphalia State Institute for Occupational Safety and Health Ulenbergstraße 127 – 131, 40225 Düsseldorf.

If the a/m period of time has expired due to the negligence of one of your authorised representatives, such negligence will be considered as your own negligence.

by order  
Signature  
(Hochgreve)

Official seal  
North-Rhine Westphalia State Institute for  
Occupational Safety and Health



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Federal Physical Technical Institution  
Braunschweig and Berlin

TEST CERTIFICATE  
PTB No. III B/S 2347  
for the leak detector type 'DL-8/.'



I General:

Object

A leak detector operated with inert gas overpressure for leak detection on tanks used for the storage of inflammable liquids of the hazard classes AI, AII, AIII and B.

In case of unpressurised tank operation and a liquid density of 1 kg/dm<sup>3</sup>, the leak detector control programme generates the following operating pressures in the interstitial space (space between the two tank walls)

- tank filling height  $\leq 4$  m:  
operating pressure of 500 mbar,  
in case of pressure drop, an alarm trips at 435 mbar
- tank filling height  $\leq 5.60$  m:  
operating pressure of 680 mbar,  
in case of pressure drop, an alarm trips at 600 mbar
- tank filling height  $\leq 10.70$  m:  
operating pressure of 1400 mbar,  
in case of pressure drop, an alarm trips at 1150 mbar

Manufacturer: Sicherungsgerätebau GmbH,  
Siegen

Type designation: "DL-8/."

- Test documents:
1. Report of the TUEV Nord e.V., Hamburg dated Jan. 15, 1996 on a test of the functional safety
  2. Descriptions and drawings as per appendix 1 of the test certificate, provided with the signature and the official seal of the Federal Physical Technical Institution.

II Assessment

On the basis of the test documents filed and of the report prepared by the TUEV Nord e.V., Hamburg, the leak detector is assessed as follows:

According to the present knowledge, there are no objections to the use of the leak detector type 'DL-8/.' for the detection of leakage on tanks, if the tanks are used for the storage of inflammable liquids of hazard classes AI, AII, AIII and B, and if they are permissible according to the Federal States' regulations or to the code on inflammable liquids – VbF. The interstitial spaces shall be suitable for the connection of the leak detector type 'DL-8/.' as well as for the pressures generated by the leak detector.

1. In case of installation out-of-doors, the leak detector is to be attached in a weather-protected box with a clear lid (DIN 40 050 IP 55) and fitted with an additional external signal (horn) at a suitable location.
2. The leak detector shall not be installed in potentially explosive locations.

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3. The plastic connection lines shall be laid in weatherproof sheath pipes. The sheath pipes shall be protected against the penetration of inflammable liquids and their vapours, in accordance with the technical rules for inflammable liquids TRbF 120 no. 4.4 and TRbF 220 no. 5.4.
4. The installation instructions described in the test documents shall be observed.

### III Individual testing

By testing individually each leak detector type 'DL-8/.' the manufacturer shall check that

1. the design, function, components, materials and electric circuits are in compliance with the test documents as per appendix 1;
2. all components are made of faultless material;
3. the trip pressures stated in table 1 are complied with;
4. the opening pressure of the overpressure valves corresponds to the opening pressure specified in table 1.

### IV Special conditions

Every buyer of a leak detector shall be advised in writing on the installation instructions, the procedure for maintaining the functional safety and the limitations of use. He shall be advised that the functional safety of the leak detector shall be checked at regular intervals, at least once a year.

Every purchaser of a leak detector shall be given a copy of this test certificate.

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The manufacturer shall give evidence of due compliance with the a/m requirements by affixing the company sign, the type designation and the mark of approval in a visible place.

Braunschweig, Feb. 08, 1996

Federal Physical Technical Institution  
Division III  
by order:

Dr. H. Bothe

Official seal



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Appendix 1 to certificate PTB no. III B/S 2347 of Feb. 08, 1996

	Page / Drg. no.	Date
Technical specification	16 pages	Jan. 10, 1996
Name plate	1.0694	Jan. 10, 1996
Outside view	2.0694	Jan. 10, 1996
Inside view	3.0694	Jan. 10, 1996
Example f. installation – rectangular tank	4.0694	Jan. 10, 1996
Example f. installation – tank to DIN 6608	5.0694	Jan. 10, 1996
Mounting of connecting lines	6.0694	Jan. 10, 1996
Installation of fixed pipes	7.0694	Jan. 10, 1996
Installation of refilling line	8.0694	Jan. 10, 1996
Circuit diagram	9.0694	Jan. 10, 1996
Component abbreviations	A.I	Jan. 10, 1996
List of parts	A.II	Jan. 10, 1996
Technical data	A.III	Jan. 10, 1996



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Tank and heating systems

Hamburg, Jan 15, 96  
2346-Stei  
File: 113 BL SGB  
Order no.: 113 BM 69150

**Report**  
**on the test of a leak detector**  
**forming part of a leak detection system**

**1 Object**

Overpressure leak detector using nitrogen forming part of a leak detection system for double-walled tanks used for the storage of inflammable liquids with a density  $\leq 1.9 \text{ kg/m}^3$ .

**2 Applicant**

Sicherungsgerätebau GmbH, Hofstraße 10, 57076 Siegen

Application filed on Dec. 14, 1994

**3 Details on the leak detector**

**3.1 Manufacturer**

Sicherungsgerätebau GmbH, Hofstraße 10, 57076 Siegen

**3.2 Type**

DL-8/.

**3.3 Field of application**

- double-walled tanks to DIN 6608, 6616 shape A, 6619 and 6623 for the leak detector type DL-8/A;
- tanks with interstitial space assembled on site, for which test certificates of the testing division of the TUEV Nord e.V. have been issued;
- double-walled tanks subject to a general approval issued by the competent building inspection authorities (mark of conformity);
- tanks according to building regulations A, part 1, item 15;
- other interstitial spaces to test certificates of the testing division of the TUEV Nord e.V. dealing with leak detectors.

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### 3.4 Design

The overpressure leak detection system is provided with a sensor for operating and alarm pressures, with indicating, operating and signalling equipment, with overpressure valves for protecting the interstitial space against excessive working overpressure, with one connection each for the measuring and pressure lines and with one connection for nitrogen supply.

For details of the leak detector design, see technical specifications of Sicherungsgerätebau GmbH dated Jan. 10, 1996.

## 4 Testing base

Design and testing principles for leak detection system used on tanks (TRbF 501/BPG-LAGB).

## 5 Test documents

- 5.1 Technical specifications of the overpressure leak detector type DL-8 of Sicherungsgerätebau GmbH /... dated Jan. 10, 1996, including lists of parts and drawings;
- 5.2 Characteristic curves of the overpressure valves (pressure reducing side) for DL-8/A, B and C, as well as records of tests carried out for determining the overpressure valve volume flows (valve identical to the valve used with leak detector type DL-6 ... of Aug. 20, 1994);
- 5.3 Documents of July 17, 1995 for determining the characteristic curves of refilling for the leak detector type DL-8/...;
- 5.4 Documents concerning the electrical components used;
- 5.5 Technical specification of residual pressure control (RD-2) of Jan. 27, 95
- 5.6 Manufacturer's certificate concerning the pressure switch as well as the nitrogen filling and refilling unit for the leak detector type DL-8/... issued by Messrs. Sicherungsgerätebau GmbH.

## 6 Test specimens

Leak detector specimens of the types     DL-8/A  
   DL-8/B  
   DL-8/C



## 7 Checks and tests

Checking of the technical documents and functional checking of the leak detector specimens type DL-8/... in accordance with BPG-LAGB.

In view of the fact that according to the technical specification, the leak detector can be installed either indoors or outdoors, the functional check according to BPG-LAGB was carried out at temperatures between -25°C and +70°C.

## 8 Test results

The technical specification of the leak detector complies with the principles laid down in BPG-LAGB. The components of the specimen correspond to the technical specification and to the drawings. Functional checking of the leak detector specimens type DL-8/... yielded satisfactory results.

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## 9 Assessment

Based on the tests carried out, a test certificate can be issued. The proper functioning of the leak detector type DL-8/.. as part of a leak detection system can be guaranteed under the following conditions:

1. The leak detector shall be used exclusively for tanks and interstitial spaces as specified in paragraph 3.1, taking into account the permissible density of the stored liquid and the maximum tolerable pressure.
2. In the case of double-walled tanks to DIN 6608, 6616 shape A, 6619 and 6623, only type DL-8/A leak detectors shall be used, because the interstitial spaces of these tanks are designed for a test pressure of 0.6 bar. In relation to the tank height, only liquids with maximum densities as specified in the following table shall be stored.

Tanks to DIN 6608 / 6616		Tanks to DIN 6619	
Diameter	Max. density	Height	Max. density
2.90 m	1.40 kg/dm <sup>3</sup>	2.84 m	1.43 kg/dm <sup>3</sup>
2.50 m	1.63 kg/dm <sup>3</sup>	2.76 m	1.47 kg/dm <sup>3</sup>
2.00 m	1.90 kg/dm <sup>3</sup>	2.60 m	1.56 kg/dm <sup>3</sup>
1.60 m	1.90 kg/dm <sup>3</sup>	1.90 m	1.90 kg/dm <sup>3</sup>

3. The components of the leak detector shall be identical to those described in the test documents.
4. Appropriate manufacture of the leak detectors shall be ensured by Messrs. Sicherungsgerätebau GmbH by means of in-house inspection and testing, in accordance with the design and testing principles for leak detection systems for tanks.
5. Each leak detector shall be marked in a permanent manner with:
  - Manufacturer's name or sign
  - Year of construction
  - Type designation
  - Mark of conformity
  - Serial no.
  - Nominal operating data
6. The leak detector shall be installed and used in accordance with the technical specification.

Signature

Stein  
Expert of the Technical Control Board  
TUEV Nord e.V.  
Testing division for leak detectors



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# **Technical description of the overpressure leak detector DL - 8/..**

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## Drawings

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## Appendix

A.1 Legend of abbreviations used	A.I
A.2 List of parts	A.II
A.3 Technical data (summary)	A.III



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## 1 Object

Overpressure leak detector using nitrogen forming part of a leak detection system for interstitial spaces of tanks, designed as leak protection linings or double-walled tanks for the storage of inflammable liquids incompatible with water.

## 2 Type

Leak detector type DL-8/.. The exact designation depends on the maximum filling height in case of **unpressurised** tank operation and on the **density** of the liquid  $\rho = 1 \text{ kg/dm}^3$ , i.e.

for DL-8/A up to filling height of 4.00 m  $\rho_{\text{Alarm}} = 435 \text{ bar}$

for DL-8/B up to filling height of 5.60 m  $\rho_{\text{Alarm}} = 590 \text{ bar}$

for DL-8/C up to filling height of 10.7 m  $\rho_{\text{Alarm}} = 1100 \text{ bar}$

For other densities, please refer to paragraph 3.2 and 3.3.

## 3 Field of application

### 3.1 Tanks and interstitial spaces

In the case of the following system pressures, the inner wall (nearest the stored liquid) shall be designed to be resistant to buckling as follows:

600 mbar	for	DL-8/A
850 mbar	for	DL-8/B
1820 mbar	for	DL-8/C

3.1.1 Double-walled tanks subject to a general approval issued by the competent building inspection authorities (mark of conformity), the interstitial space of which is suitable for the connection of a leak detector type DL-8/..

3.1.2 Tanks with interstitial spaces, assembled either in the factory or on site, for which the competent testing division of the TUEV Nord e.V., Hamburg has issued test certificates stating that the interstitial spaces in combination with the leak detector DL-8/.. are suitable to be used as part of a leak detection system.

3.1.3 Single-walled factory-assembled tanks to DIN 6608, 6616, 6619, 6623 and 6624 as well as tanks subject to a general approval issued by the competent building inspection authorities (mark of conformity), equipped with an approved leak protection lining and with an interstitial space suitable for the connection of a leak detector type DL-8/..

3.1.4 Other interstitial spaces, for which the competent testing division of the TUEV Nord e.V., Hamburg has issued test certificates, and which are suitable for the connection of a leak detector type DL-8/.., for example double-walled leakage containments.

For DL-8 / A:

3.1.5 Double-walled tanks to DIN 6608, DIN 6616 shape A, DIN 6619, DIN 6623 and DIN 6624.



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### 3.2 Liquid to be stored

Inflammable liquids, hazard classes AI, AII, AIII and B.

The maximum pressure on the tank bottom (compare diagram 1), resulting from the static pressure of the liquid including a possible overpressure shall not exceed 400 mbar (DL-8/A), 560 mbar (DL-8/B) and 1070 mbar (DL-8/C), respectively.

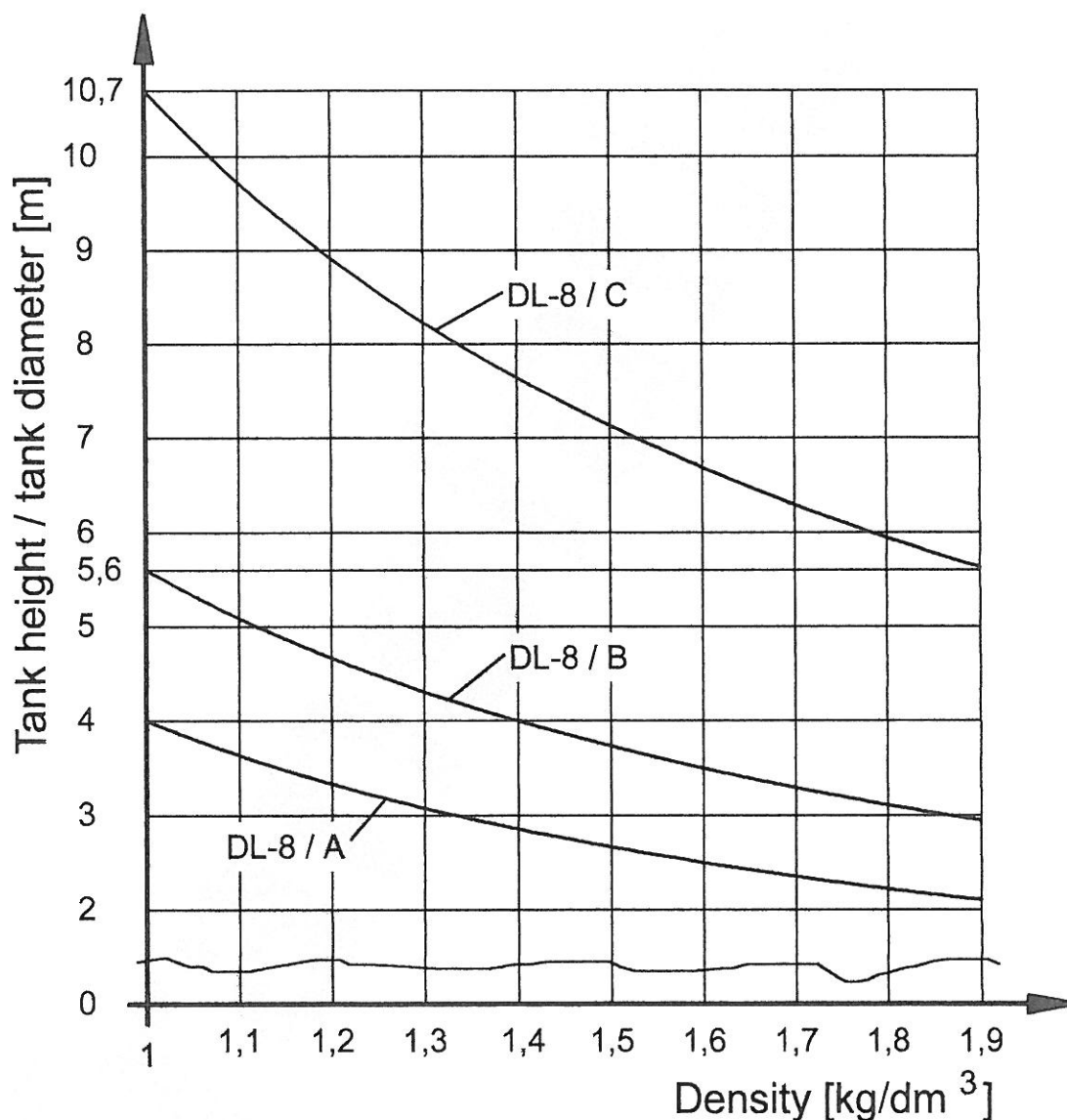


Diagram 1: Max. admissible tank height / diameter in case of unpressurised storage, in relation to density  $\rho$ .



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### 3.3 Maximum overpressure

The maximum pressure at the lowest point of the tank, resulting from the static pressure of the liquid including a possible internal overpressure shall not exceed  $p_{TSmax}$ . Therefore, the maximum internal overpressure  $p_B$  (overburden pressure above the liquid) shall be

$$p_B = p_{TSmax} - D \cdot \rho \cdot 0,98 \quad (1)$$

where

$p_{TSmax}$	Max. pressure on the tank bottom	$p_{TSmax} = 400 \text{ mbar (DL-8/A)}$ $p_{TSmax} = 560 \text{ mbar (DL-8/B)}$ $p_{TSmax} = 1070 \text{ mbar (DL-8/C)}$
D	Tank height / tank diameter in cm	
$p_B$	Max. internal overpressure (overburden pressure) in mbar	
$\rho$	Density of the liquid in g/cm <sup>3</sup> . In case of tanks not completely installed above ground, $\rho_{min} = 1.0 \text{ g/cm}^3$	
0,98	Conversion factor	



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## 4 Functional description

- (1) In the case where tanks and interstitial spaces as per 3.1 are equipped with a leak detector DL-8/..., any leakage in the interstitial space is automatically indicated under all operational conditions by pressure drop and by an optical and acoustic signal.
- (2) The **overpressure = rated pressure** required in the interstitial space is built up by **pressure-controlled refilling** from a **constantly** connected nitrogen accumulator<sup>1</sup>, via the refilling line NSL to the leak detector, and via the pressure line DL from the leak detector to the interstitial space.

Leak detector type	Overpressure in the interstitial space in mbar				OVERPR. VALVE 1		Overpressure / supply side		
	ALARM ON	ALARM OFF* <sup>1</sup>	REFILLING ON * <sup>2</sup>	REFILLING OFF	Opening pressure	Closing pressure	OVERPR. VALVE 2 Opening pressure	OVERPR. VALVE 2 Closing pressure	Setting pressure reducer
DL-8/A	435 <sup>+10</sup> <sub>-5</sub>	465 <sup>+10</sup> <sub>-10</sub>	470 <sup>+10</sup> <sub>-10</sub>	500 <sup>+10</sup> <sub>-10</sub>	540 <sup>+5</sup> <sub>-25</sub>	> Refilling ON (measured)	1000 <sup>+100</sup> <sub>-100</sub>	800	600
DL-8/B	600 <sup>+20</sup> <sub>-10</sub>	640 <sup>+20</sup> <sub>-15</sub>	640 <sup>+20</sup> <sub>-15</sub>	680 <sup>+20</sup> <sub>-15</sub>	750 <sup>+20</sup> <sub>-40</sub>		1250 <sup>+100</sup> <sub>-100</sub>	1000	850
DL-8/C	1150 <sup>+50</sup> <sub>-50</sub>	1250 <sup>+50</sup> <sub>-50</sub>	1300 <sup>+50</sup> <sub>-50</sub>	1400 <sup>+50</sup> <sub>-50</sub>	1600 <sup>+50</sup> <sub>-90</sub>		2400 <sup>+100</sup> <sub>-100</sub>	2000	1800

\*<sup>1</sup> The value for ALARM OFF may be higher or lower than that indicated, provided that the value measured for ALARM OFF is lower than the value measured for REFILLING OFF.

\*<sup>2</sup> The value for REFILLING ON may be higher or lower than that indicated, provided that the value measured for ALARM ON is lower than the value measured for REFILLING ON.

**Table 1:** Trip values of the overpressure switch in mbar (factory-set)

- (3) The overpressure built up in the interstitial space by means of the inert gas N<sub>2</sub> used as leak detector medium is measured by means of the overpressure switch PUE, which is connected to the interstitial space via the measuring line ML. The actual pressure in the interstitial space is indicated as an approximate value on the pressure gauge which is installed in the cover of the leak detector housing. For an exact measurement, a suitable test pressure gauge should be connected to the test-cock Ph.
- (4) In the interstitial space, the overpressure is adjusted by pressure-controlled refilling via the magnetic valve NSM with a downstream throttle valve for flow restriction. The refilling is controlled by means of the microswitch M1 (integrated in the PUE).

If the overpressure in the interstitial space drops to the trip value REFILLING ON, the pressure switch PUE opens the magnetic valve NSM, and the overpressure is built up again by a flow restricted throttle valve to 100 l/h.

In this way, pressure drop can be compensated for.

During refilling, the signal lamp N (= automatic refilling) lights up. It only goes out when the magnetic valve NSM (refilling) is closed. If the leak detector is equipped with an integrating hour meter, such

<sup>1</sup> Instead of the nitrogen accumulator, the operator can also use a factory-installed nitrogen distribution network for supplying the leak detector with nitrogen.

Several leak detectors DL-8 (with same pressure level) may be connected to one common pressure reducer.

In both operating modes, it is recommended that the leak detector DL-8 is provided with an hour meter, in order to record the nitrogen quantity used by each leak detector.



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meter will be activated during refilling. The hour meter reading is only activated during the counting phase. Manual activation, however, is possible at any time by pressing the black key beside the indicator.

If the supply pressure of the accumulator is not sufficient to build up the rated pressure (e.g. if the accumulator is empty), the magnetic valve NSM remains open. Any further pressure drop will signal an alarm. In order to avoid such an alarm, it is possible to use a pressure reducer with a contact making pressure gauge which gives an optical residual pressure signal<sup>2</sup> on the leak detector, so that the gas bottle may be changed in good time.

In order to accelerate filling during commissioning and refilling, a second magnetic valve FM can be opened by means of the filling key FT. Upon reaching the rated pressure, this valve closes automatically.

- (5) If due to leakage, the pressure in the monitoring system drops to the values specified in table 1, the pressure switch PUE gives an optical indication as well as an acoustic alarm (red signal lamp A, buzzer). The acoustic signal can be silenced by means of the switch T which is provided with a lead seal in normal operation.

In case of an alarm, a potential free contact is available for further external use of the alarm signal.

- (6) By means of the opening pressures adjusted on the overpressure valves SV1 (on the side of the interstitial space) and SV2 (on the side of the pressure reducer), excessive overpressure is prevented from building up in the system.
- (7) The leak detector is designed for 230~ V, 50 Hz. On connection of the leak detector to the mains supply, the green signal lamp B (operation) lights up.
- (8) A brief interruption of the supply voltage does not affect the functioning of the leak detector. After such a failure, it will restart automatically.
- (9) If the pressure reducer of the nitrogen accumulator is equipped with a contact making pressure gauge (residual pressure control), the residual pressure can also be indicated optically by means of the white signal lamp in the leak detector. This signal, too, can be transmitted via potential free contacts provided for this purpose.

<sup>2</sup>In the standard version, the residual pressure signal is not included in the leak detector.



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## 5 Design of the leak detector

The leak detector consists of a housing equipped with the following items:

- Pressure switch PUE
- Magnetic valve NSM for refilling via the throttle valve DR
- Pressure gauge used as approximate pressure value indicator
- Magnetic valve FM for faster pressurisation of the interstitial space, activated by means of the filling key FT on the cover of the housing
- Throttle valve DR for control of the max. refilling volume
- Fittings
- Terminal strip K for electrical connection
- Terminal RA for potential free transmission of the alarm signals
- Electrical switchgear
- Overpressure valves SV1 and SV2
- Alarm device

Optional:

- Electrical switchgear for residual pressure indication
- Integrating hour meter for determination of the refilling time



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## 6 Installation instructions

### 6.1 General instructions

- (1) The leak detection system including leak detector DL-8/.. shall only be installed by specialists according to § 19 I WHG having furnished proof of their qualifications to TRbF 180/280 no. 1.7.
- (2) The relevant rules for the prevention of accidents must be observed.
- (3) In the case of underground tanks, the possible groundwater table above the bottom of the tank should be taken into consideration.

### 6.2 Installation of the leak detector

- (1) The leak detector should preferably be installed in closed, dry, frost-protected rooms. **The leak detector must not be installed in potentially explosive locations.**
- (2) The leak detector is designed for wall installation. It is fastened by means of dowels and screws. The screw heads are covered by plastic caps. The distance between the interstitial space and the leak detector shall be kept to a minimum.
- (3) If the leak detector is intended for outdoor installation or for installation in humid areas as per VDE specification, it must be provided with a weather-protected box with a clear lid (DIN 40 050 IP 55). In this case, an additional external signal (horn) should be installed at a suitable location. As an alternative, the potential free contacts can be used for transmitting the alarm signal.
- (4) When the leak detector is installed in a leakage containment, it must be placed high enough to prevent it from getting into contact with liquid that may get into the leakage containment.

### 6.3 Electrical connection

- (1) The leak detector is designed for 230~ V, 50 Hz. It is firmly connected to the terminals of the terminal strip K; plug-in or switch-type connections are not permitted.
- (2) The instructions of the electric supply company and of the VDE are to be observed.
- (3) An additional outside signal for an alarm, if any, is connected to the terminals AS of the terminal strip KS (marked on the leak detector). The connected power shall not exceed 230~ V, 50 Hz, 2A.
- (4) For controlling other signal units or groups in case of an alarm, the potential free contacts (terminal strip RA) can be used. When using these contacts, the connected power shall not exceed 230~ V, 50 Hz, 16A.



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#### 6.4 Connection of the residual pressure indicator (if the leak detector is equipped with residual pressure control)

- (1) Open the housing of the leak detector and connect the contact making pressure gauge to terminals 1 and 2 of terminal strip Rd.
- (2) Press key Prd for a functional check (the white signal lamp will light up).
- (3) For other functional checks, see documentation relating to the residual pressure control.

#### 6.5 Installation of the connection lines

- (1) The measuring and pressure lines must be provided with shut-off valves (by others). Lead sealing of such shut-off valves in the open position must be possible.
- (2) For a connection of the leak detector, either compression-proof, weather- and waterproof plastic hoses or rigid pipes with a min. ID of 6 mm may be used.

Dimensions and colour codes of connecting lines:

Plastic hoses	Colour code	Dimensions
Pressure line	transparent or white	6 x 2
Measuring line	red	6 x 2
Rigid pipes	Colour code	Dimensions
Pressure line	white colour rings on both ends	8 x 1
Measuring line	red colour rings on both ends	8 x 1

- (3) Plastic hoses must have an adequate compressive strength in the temperature range of  $-25^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$ . All connections between pipes and sockets are to be secured by means of well-fitting and sealing hose clips (see fig. 6 on page 6.0694).
- (4) For connection lines laid above ground, used for liquids of the hazard classes A1, A11 and B, rigid pipes with a minimum dimension of 8 x 1 are to be used.
- (5) When using plastic pipes or hoses, the relevant specifications for fire protection are to be observed.
- (6) The diameter of pipes or hoses must be maintained over their full length. Compression or kinking is not permitted.
- (7) If plastic lines are laid underground, sheath pipes have to be used. For apertures to be made in shafts for sheath pipes, see TRbF 120 no. 4.4, paragraph 3.
- (8) For connecting the pressure line DL, the measuring line ML and the refilling line NSL to the leak detector and to the interstitial space, proceed as shown in fig. 4 and 5 and see fig. 6 to 8.
- (9) The installation instructions quoted in the approval documents of leak protection linings are unaffected.



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**Overpressure leak detector**  
**DL - 8**

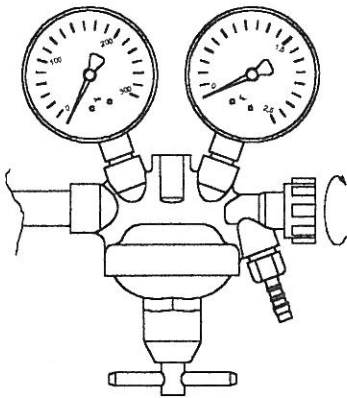
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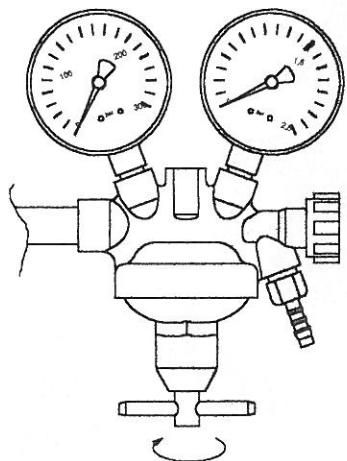
## 7 Commissioning of the leak detection system

- (1) Prior to delivery, the leak detector has been submitted to a leak test by applying the overpressure specified for the rated pressure (table 1). Consequently, no leak test is required on site.
- (2) The leak detector is connected to the interstitial space by means of the pressure line DL and the measuring line ML and to the accumulator for pressurising the interstitial space by means of the refilling line NSL. All connections must be made in a pressure-tight manner.
- (3) Now, the leak detection system is electrically connected. The green signal lamp B (operation) and the red signal lamp A (alarm) light up, the acoustic alarm is activated. The acoustic alarm may be switched off by means of the switch T (sound-off).
- (4) The magnetic valve NSM is opened by means of the pressure switch PUE, and the signal lamp N lights up.

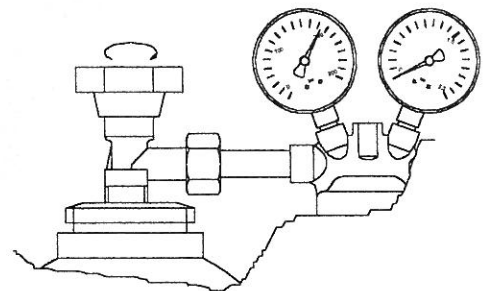
1. Close shut-off valve



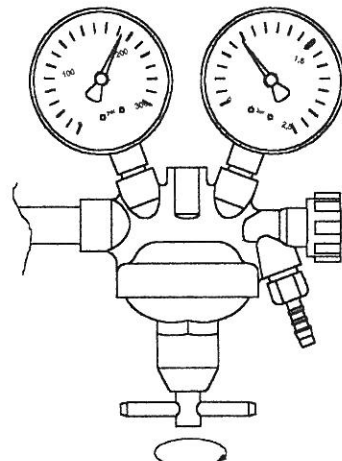
2. Reset pressure reducer



3. Open bottle shut-off valve



4. Adjust press. reducer acc. to table 1



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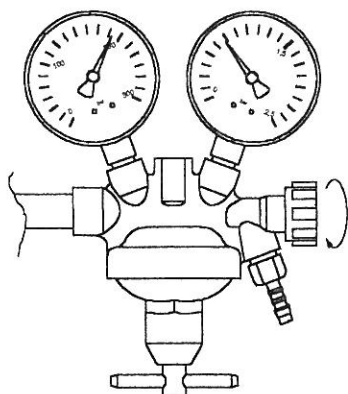
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Overpressure leak detector  
DL - 8

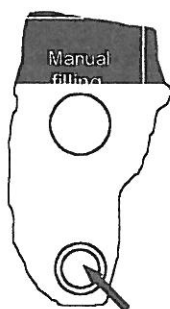
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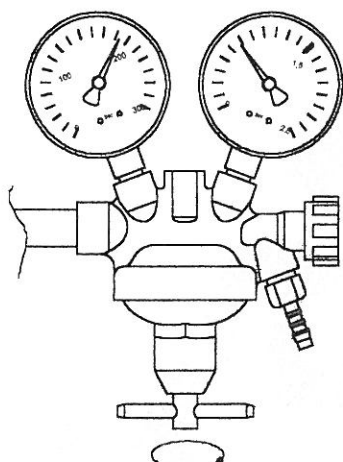
5. Open shut-off valve



6. Press filling key

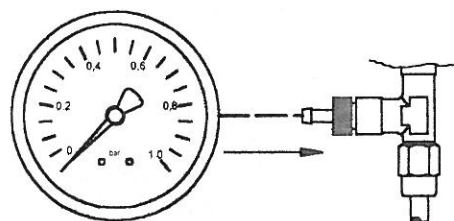


7. Readjust pressure reducer

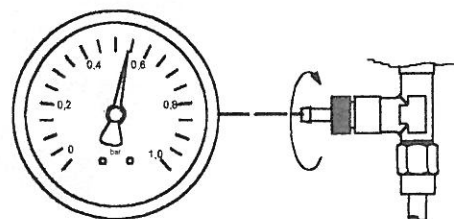


8. Wait for end of filling operation

9. Connect pressure gauge

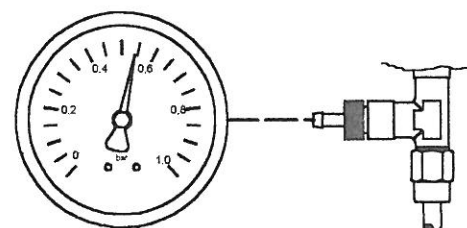


10. Open knurled screw



11. Wait for pressure compensation

12. Leak test (no pressure loss during 60 min.)



13. Continue with no. 4 paragraph 8.3 'Functional testing'



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Overpressure leak detector  
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## 8. Operating instructions

### 8.1 General instructions

- (1) When the leak detection system has been installed in an appropriate and pressure tight manner (interstitial space, connecting lines, leak detector), the leak detector will work within the control range. In case of a pressure drop due to unavoidable slight leakage, the leak detector will build up the pressure again until the rated value is reached.
- (2) Frequent or even constant refilling (frequent bottle change) indicates leakage that should be rectified without delay.
- (3) If an alarm is released, this points to an important leakage or to a defect. The cause has to be found, and remedial action has to be taken as quickly as possible.
- (4) The leak detector shall only be opened for repair with the power switched off.

### 8.2 Maintenance

- (1) **Once a year**, the leak detector DL-8/.. shall be checked for functional safety by an expert of a specialised company or by the tank user's expert.
- (2) The extent of the annual check is described in paragraph 8.3.
- (3) It should be ascertained whether the provisions of paragraph 6 are still complied with.
- (4) It should be checked whether the inert gas content of the accumulator is still adequate.

### 8.3 Functional testing of the leak detection system

The functional safety and the reliability of the leak detector should be checked

- after each commissioning
- at intervals as specified in paragraph 8.2

and

- after each trouble shooting.

*Note:*

If the functional check is carried out in a closed room, the increasing nitrogen content necessitates adequate ventilation of the room.

If the leak detector is equipped with an integrating hour meter, the number of hours shall be read at the annual functional check. After the functional check, the counter shall be reset to '0'. Resetting is only possible if the reading is visible (press ZAT key if necessary).

Where leak detectors are equipped with a residual pressure indication, the test key Prd can be pressed for an indication. The white signal lamp will light up until the test key Prd is released. For other functional checks, see documentation relating to the residual pressure control.



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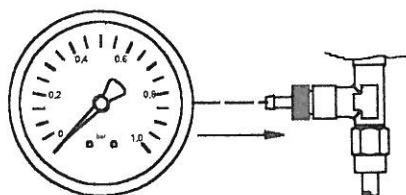
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**Overpressure leak detector  
DL - 8**

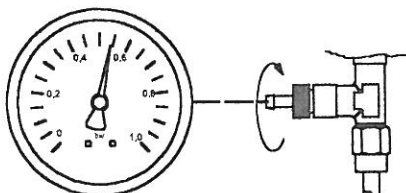
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**Minimum extent of the functional check:**

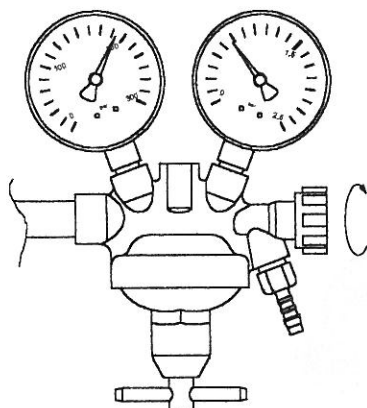
1. Connect test pressure gauge to the test cock Ph



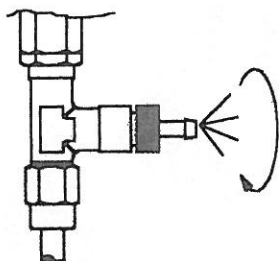
2. Undo knurled screw



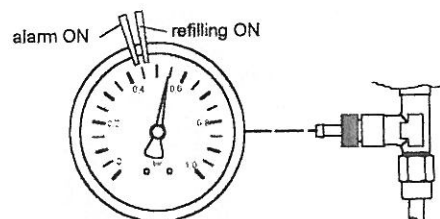
3. Shut shut-off valve



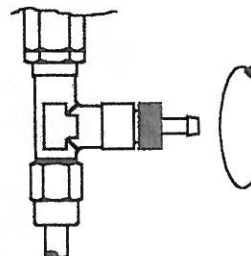
4. Open venting device



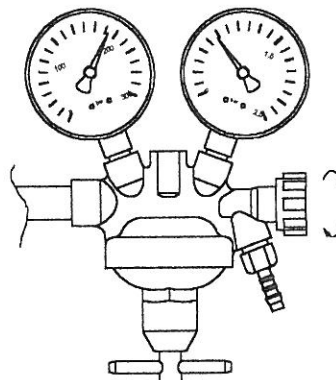
5. Check refilling ON and alarm ON



6. Close venting device



7. Open shut-off valve



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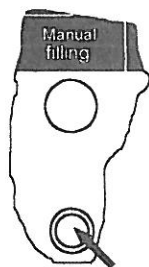
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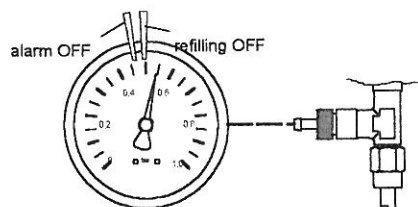
**Overpressure leak detector  
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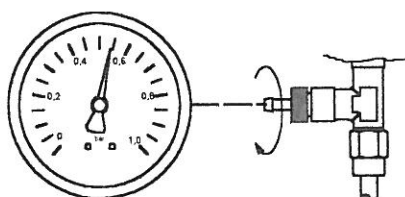
8. Press filling key



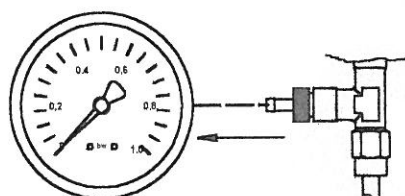
9. Check alarm OFF and refilling OFF



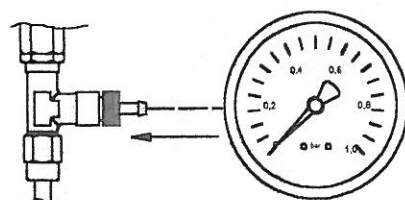
10. Tighten knurled screw



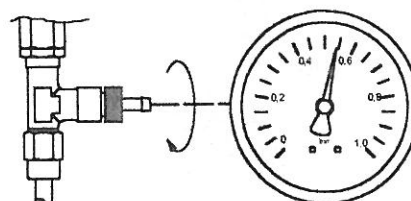
11. Remove test pressure gauge



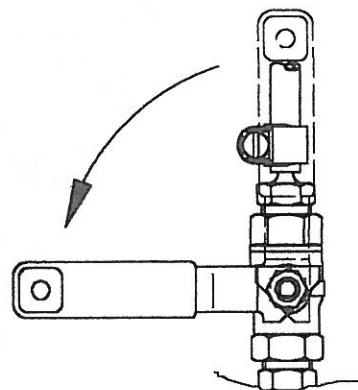
12. Connect test pressure gauge to the venting device



13. Open knurled screw / venting device



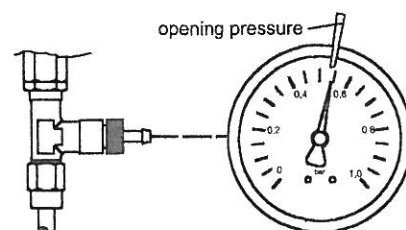
14. Close shut-off valve in the pressure line (installed by others)



15. Place flip switch KS in ON position



16. Check overpressure valve opening pressure



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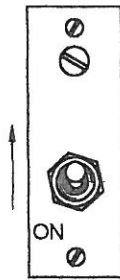
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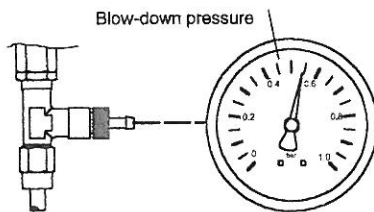
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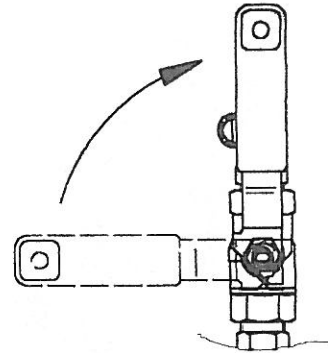
17. Reset flip switch KS



18. Check blow-down pressure overpressure valve 1



19. Open shut-off valve in the pressure line (installed by others)



20. Provide alarm OFF switch, housing and shut-off cocks in open position with lead seal.

#### 8.4 Occurrence of alarm signal

- (1) In case of an alarm, the red signal lamp A lights up, and the acoustic signal Su sounds.
- (2) Remove the lead seal on the alarm switch T, stop the acoustic alarm and immediately contact a specialised company.
- (3) The expert of the specialised company or the tank user's expert must establish the cause of the alarm, take remedial action and carry out a functional check as per paragraph 8.3.

#### **Note:**

In case an alarm is (still) activated even though the operating overpressure (rated pressure) of the leak detector is correct, check flip switch KS for correct position.



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OVERPRESSURE LEAK DETECTOR TYPE

DL - 8 /

08 PTB No.: III B/S 2347 and Z-65.23-106

Year of  
construction

Serial No.

Nominal operating data: 230~ V - 50 Hz - 30 W (without outdoor signal)  
Electrical rating (terminals AS): 230~ V - 50 Hz - max. 2 A  
Electrical rating (terminal strip RA) 230~ V - 50 Hz - max. 16 A



**Operation:** The green signal lamp must permanently be on.

**Alarm:** When the red signal lamp lights up, remove lead seal, stop alarm signal and contact a specialised company immediately.

**Maintenance:** The leak detector has to be checked once a year for functional safety and reliability by an expert of a specialised company or by an expert of the tank user.

OPERATION

Manual  
filling

ALARM

Automatic  
REFILLING

Fig. 1: Name plate of the overpressure leak detector DL-8/..



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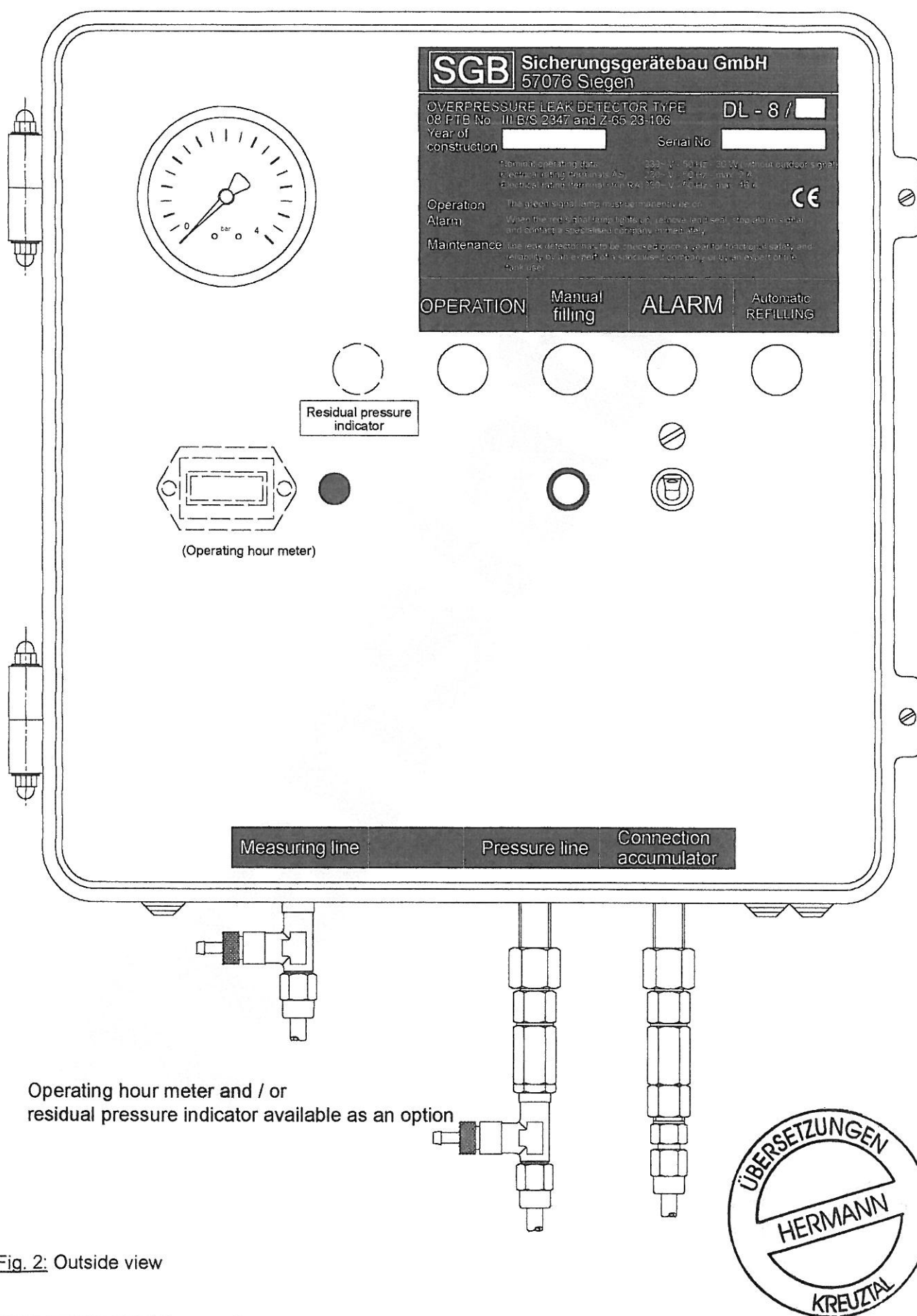


Fig. 2: Outside view

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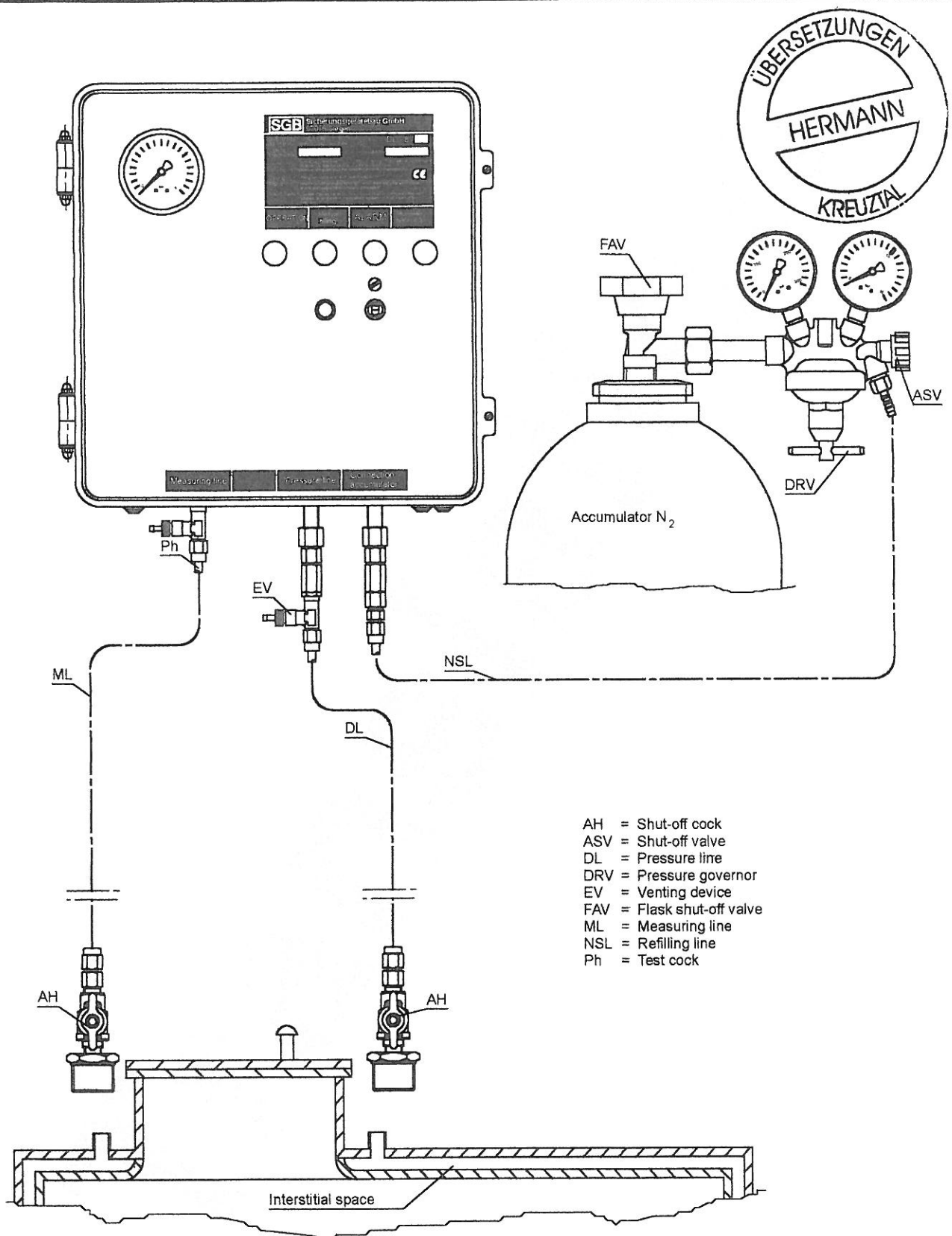


Fig. 4: Example for installation - rectangular tank with leak protection lining

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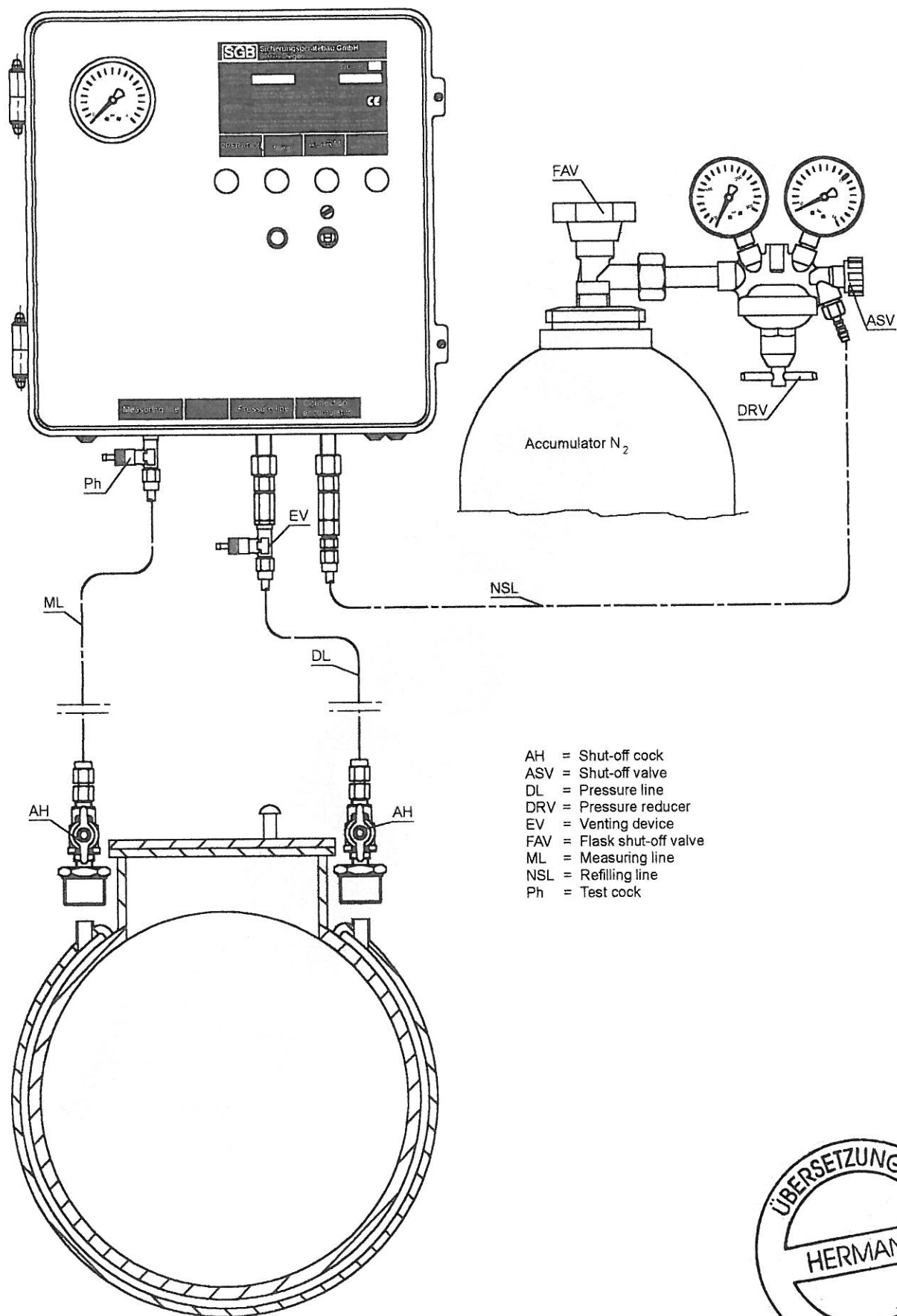


Fig. 5: Example for installation - tank to DIN 6608



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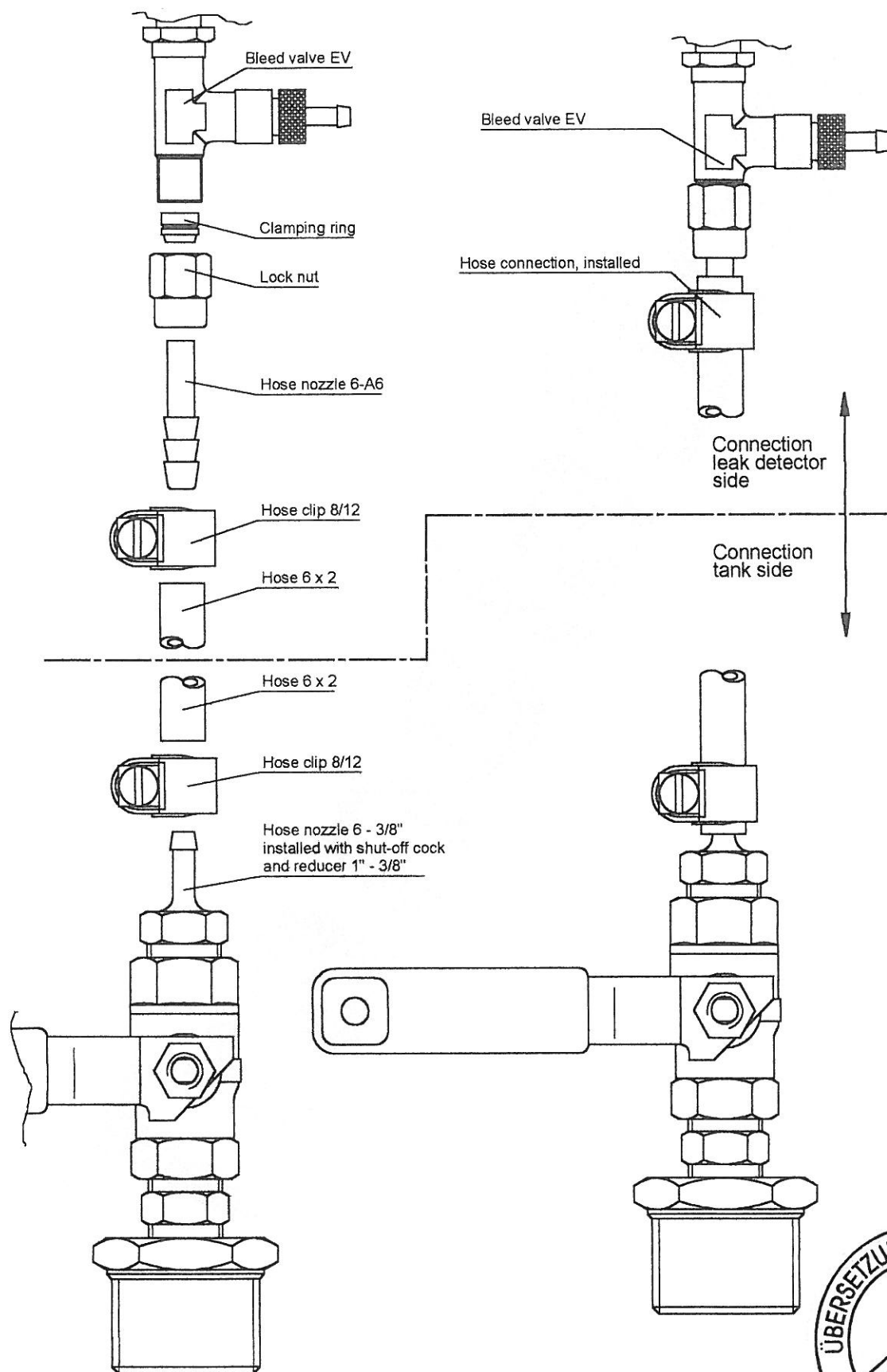


Fig. 6: Installation of flexible connecting lines



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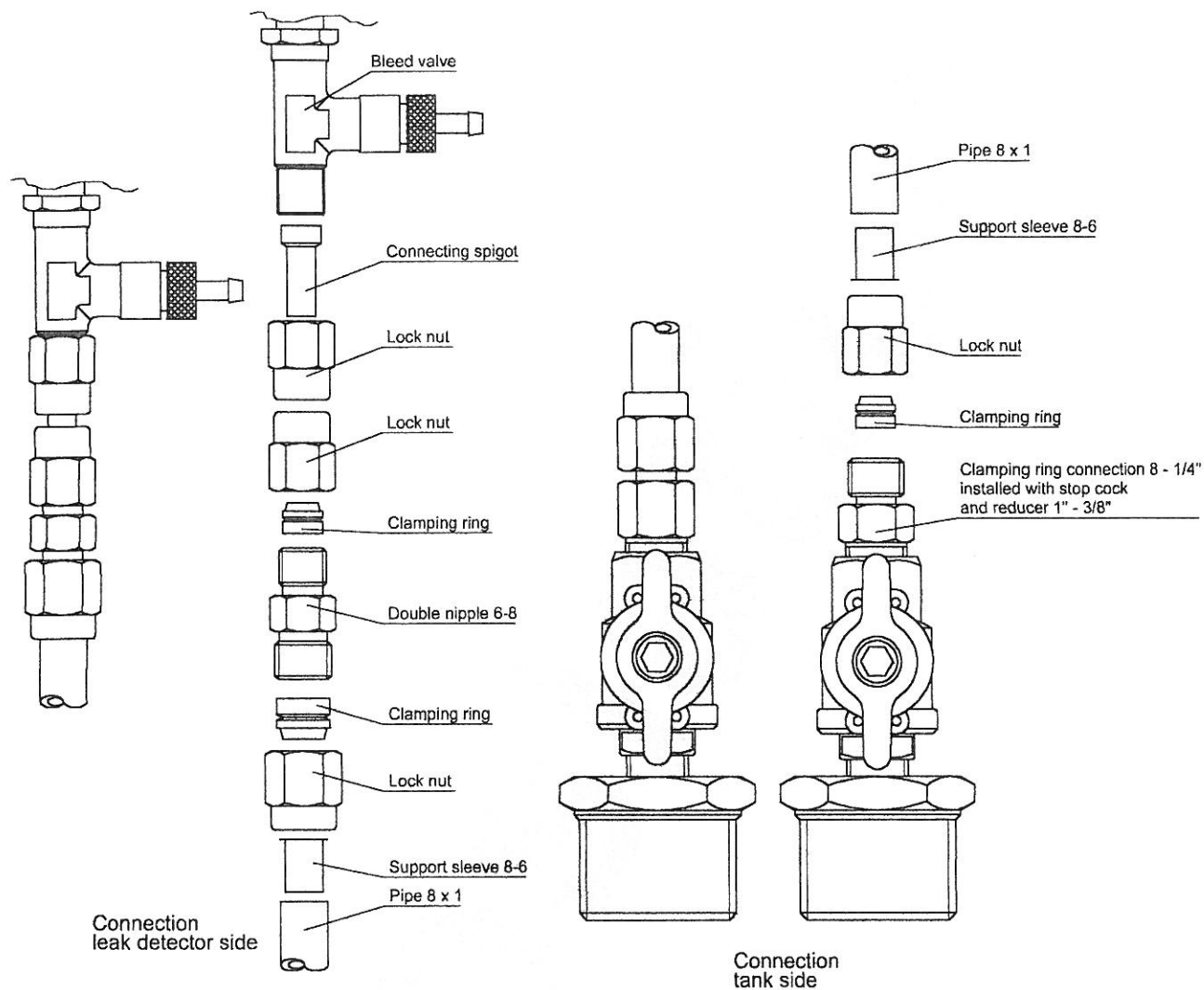


Fig. 7: Installation of fixed pipes



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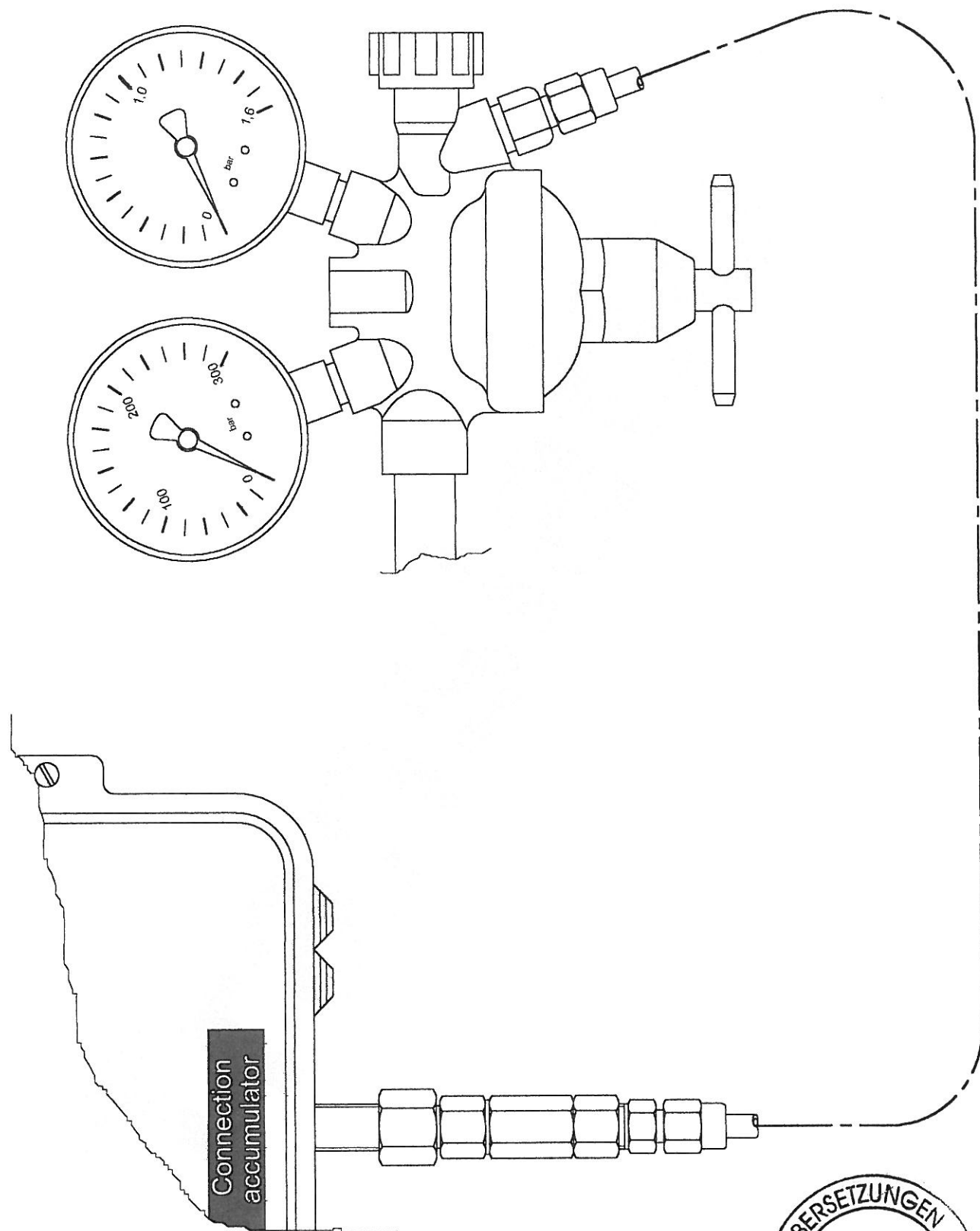
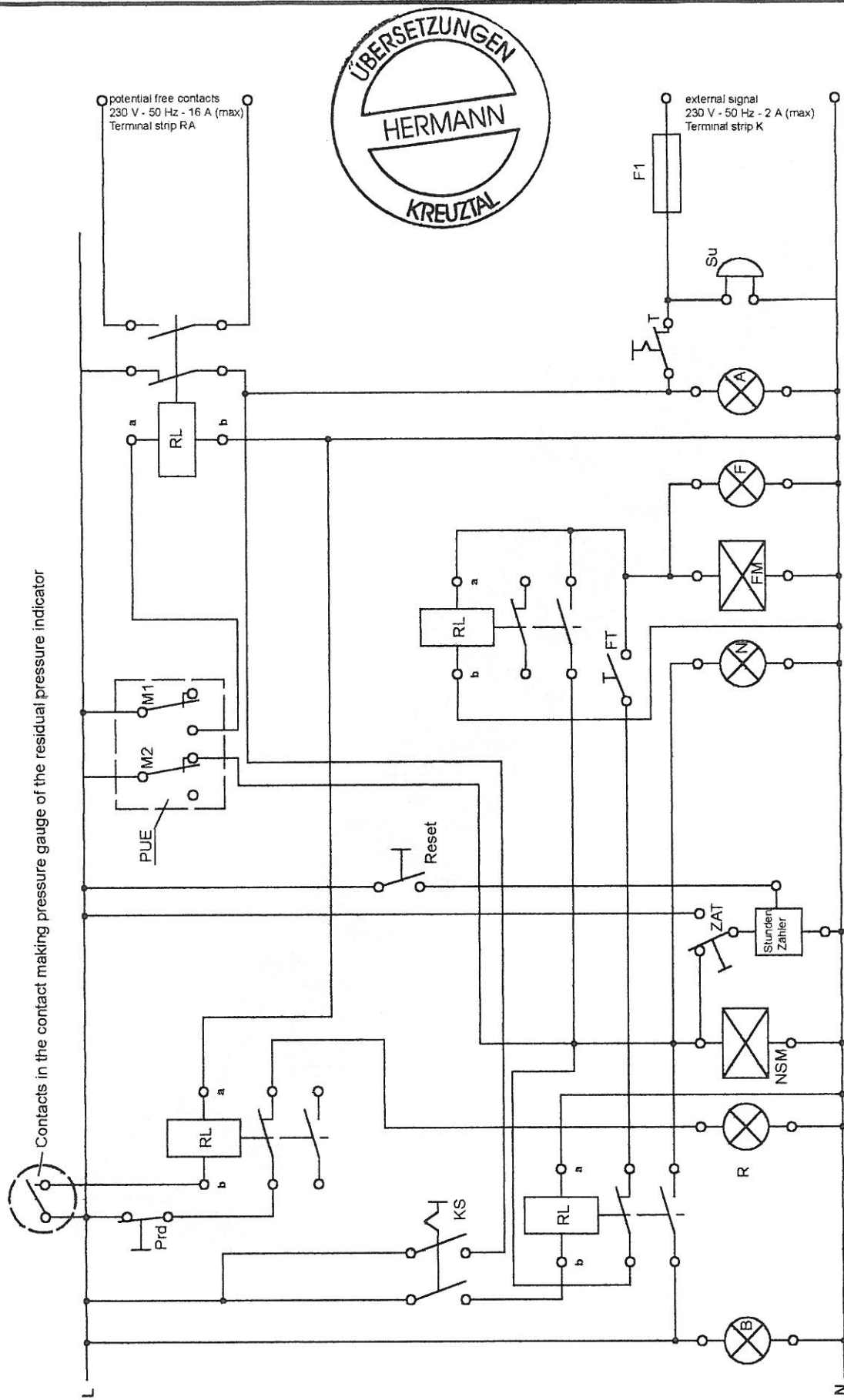


Fig. 8: Installation of refilling line (only with Cu pipe 6x1)



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- A = Signal lamp "Alarm", red  
 B = Signal lamp "Operation", green  
 F = Signal lamp "Filling", yellow  
 F1 = Fuse, max. 2 A  
 FM = Magnetic valve, "Filling"  
 FT = Filling key  
 KS = Flip switch  
 M1 = Alarm switch in PUE  
 M2 = Refilling switch in PUE  
 N = Signal lamp "Refilling" yellow  
 NSM = Magnetic valve "Refilling"  
 Prd = Test key "Residual pressure indication"  
 PUE = Overpressure switch  
 R = Signal lamp "Residual pressure indication", white (optional)  
 RL = Relay with potential free contacts  
 Su = Buzzer  
 T = Sound-off switch  
 ZAP = Time indicator key

Fig. 9: Circuit diagram

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## A.1 Legend of abbreviations used

A	=	Signal lamp red, alarm
AH	=	Shut-off cock
ASV	=	Shut-off valve
B	=	Signal lamp green, operation
DL	=	Pressure line
Dr	=	Throttle
DRV	=	Pressure reducer
EV	=	Venting device
F1	=	Fine-wire fuse
FAV	=	Flask shut-off valve
FM	=	Magnetic valve 'Filling'
G	=	Housing
K	=	Terminal strip
KS	=	Flip switch KS
M1	=	Microswitch 1 (alarm)
M2	=	Microswitch 2 (operation)
ML	=	Measuring line
NSL	=	Refilling line
NSM	=	Magnetic valve 'Refilling'
Ph	=	Test cock
Prd	=	Test key 'Residual pressure indication'
PUE	=	Overpressure switch
R	=	Signal lamp white, residual pressure indication
RA	=	Terminal strip, potential free contacts
Rd	=	Terminal strip, residual pressure indication
RL	=	Relay with potential free contacts
Su	=	Buzzer
SV1	=	Overpressure valve 1, interstitial space side
SV2	=	Overpressure valve 2, supply side
T	=	Sound-off switch
ZAT	=	Time indicator key



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## A.2 Parts list

Index	Component	Designation / Material	Manufacturer
A	Signal lamp	Glow lamp 250V, red	Hurst & Schröder, suitable
B	Signal lamp	Glow lamp 250V, green	Hurst & Schröder, suitable
Dr	Throttle valve	Type B 4.35 (DL-8/A) Type B 6.0 (DL-8/B) Type B 11.5 (DL-8/C)	SGB, suitable
EV	Venting device	MS	Serto, suitable
F1	Fine-wire fuse	max. 2A	commercial type
FM	Magnetic valve	MA 222-001 P27	Staiger, suitable
K	Terminal strip	BK 6, 6 poles	commercial type
KS	Flip switch	Flip switch 0860.0501	Marquart, suitable
M1	Alarm switch in PUE	Microswitch, 4 A	Marquart, suitable
M2	Pump switch in PUE	Microswitch, 4 A	Marquart, suitable
NSM	Magnetic valve	MA 222-001 P27	Staiger, suitable
Ph	Test cock	MS	Serto, suitable
PUE	Maximum pressure governor	PUE 30 / 430 (DL-8/A) PUE 30 / 590 (DL-8/B) PUE 50 / 1100 (DL-8/C)	SGB, suitable
R	Signal lamp	Glow lamp 250 V, white	Hurst & Schröder, suitable
RA	Terminal strip, potential free contacts	BK 2, 2 poles	commercial type
RL	Relay	E 3252	Eichhoff, suitable
Su	Buzzer	E 2772, BV 01	Eichhoff, suitable
SV1	Overpressure valve	type 532 B – 1M- 7.7 (DL-8/A) type 532 B – 1M- 11 (DL-8/B) type 532 B – 1M- 23 (DL-8/C)	Drukcon, suitable
SV2	Overpressure valve	type 532 B – 1M- 14.5 (DL-8/A) type 532 B – 1M- 18.2 (DL-8/B) type 532 B – 1M- 34.8 (DL-8/C)	Drukcon, suitable
T	Sound-off switch	Flip switch 1620.0403	Marquart, suitable



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### A.3 Technical data

#### A.3.1 External electrical data

Connected wattage (without outside signal)	230~ V – 50 Hz – 30 W
Switching contact load, terminal strip K, terminals KS	230~ V – 50 Hz – max. 2A
Switching contact load, terminal strip RA:	230~ V – 50 Hz – max. 16A
Fusing of terminals AS with F1:	2.0 A (max. 2A)

#### A.3.2 Internal electrical data

Switching contact load, microswitch	230~ V – 50 Hz – 2A
Switching contact load, sound-off switch	230~ V – 50 Hz – 3A
Switching contact load, flip switch KS	230~ V – 50 Hz – 6A
Connected power magnetic valve	230~ V – 50 Hz – 8W
Connected power relay	230~ V – 50 Hz – 1W

#### A.3.3 Audible alarm / buzzer

70 dB(A) at 1 m distance

#### A.3.4 Pneumatic data (trip values of leak detector)

Leak de- tector type	Overpressure in the interstitial space in mbar						Overpressure / supply side		
	ALARM		REFILLING		OVERPR. VALVE 1		OVERPR. VALVE 2		Setting pres- sure reducer
	ON	OFF* 1	ON * 2	OFF	Opening pressure	Closing pressure	Opening pressure	Closing pressure	
DL-8/A	435 <sup>+10</sup> <sub>-5</sub>	465 <sup>+10</sup> <sub>-10</sub>	470 <sup>+10</sup> <sub>-10</sub>	500 <sup>+10</sup> <sub>-10</sub>	540 <sup>+5</sup> <sub>-25</sub>	> Refilling ON (measured)	1000 <sup>+100</sup> <sub>-100</sub>	800	600
DL-8/B	600 <sup>+20</sup> <sub>-10</sub>	640 <sup>+20</sup> <sub>-15</sub>	640 <sup>+20</sup> <sub>-15</sub>	680 <sup>+20</sup> <sub>-15</sub>	750 <sup>+20</sup> <sub>-40</sub>		1250 <sup>+100</sup> <sub>-100</sub>	1000	850
DL-8/C	1150 <sup>+50</sup> <sub>-50</sub>	1250 <sup>+50</sup> <sub>-50</sub>	1300 <sup>+50</sup> <sub>-50</sub>	1400 <sup>+50</sup> <sub>-50</sub>	1600 <sup>+50</sup> <sub>-90</sub>		2400 <sup>+100</sup> <sub>-100</sub>	2000	1800

\*1 The value for ALARM OFF may be higher or lower than that indicated, provided that the value measured for ALARM OFF is lower than the value measured for REFILLING OFF.

\*2 The value for REFILLING ON may be higher or lower than that indicated, provided that the value measured for ALARM ON is lower than the value measured for REFILLING ON.

#### A.3.5 Pneumatic data (requirements conc. testing / test pressure gauge)

Nominal size	100 mm min.
Accuracy, depending on class	1,6 min
End scale value	as appropriate, depending on pressure rating



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**overpressure leak detector**  
**DL - 8**

**SGB Sicherungsgerätebau**  
GmbH  
57076 Siegen

**DEUTSCHES INSTITUT FÜR BAUTECHNIK**  
**Anstalt des öffentlichen Rechts**  
**(German Institute for Constructional Engineering)**

10829 Berlin, April 09, 1997  
Kolonnenstraße 30  
Telephone: (030) 78730-315  
Telefax: (030) 78730-320  
Ref.: II46-1.65.23-10/97

**General Approval of the Building Inspection Authorities**

Approval no.: Z-65.23-106

Applicant: Sicherungsgerätebau GmbH  
Hofstr. 10  
57076 Siegen

Subject of approval: Overpressure leak detector forming part of a leak detection system for tanks used for the storage of liquids incompatible with water

Validity: March 31, 2002

The building inspection authorities herewith issue general approval for the a/m device. The present approval comprises six pages and two appendices.



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## I. GENERAL PROVISIONS

- 1 The general approval issued by the Building Inspection Authorities confirms the acceptability of the subject of approval as per State Building Regulations.
- 2 The general approval issued by the Building Inspection Authorities does not replace any of the permits, consents and certificates that may be necessary for carrying out building projects.
- 3 The general approval of the Building Inspection Authorities is issued without prejudice to rights of third parties, especially of protective rights under private law.
- 4 The manufacturer and seller of the subject of approval shall provide the user / operator of the subject of approval with copies of this general approval, without prejudice to other regulations in the 'Special Provisions' and shall point out that such copies shall be kept at the place of use. The authorities involved shall be given copies of this general approval upon their request.
- 5 The general approval issued by the Building Inspection Authorities shall be reproduced as complete unit only. The publication of excerpts is subject to the consent of the German Institute for Constructional Engineering. Any descriptions and publicity material shall not contradict the general approval. Translations of the general approval shall contain the proviso: 'Translation not verified by the German Institute for Constructional Engineering'.
- 6 The issue of the general approval can be revoked. The provisions of the general approval can be subsequently supplemented and modified, especially if this is the result of new technical developments.
- 7 The building products mentioned in the general approval are subject to a certificate of conformity and to a mark of conformity, in accordance with the relevant codes of the different states.



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## II. SPECIAL PROVISIONS

### 1 Subject of approval and field of application

- 1.1 The present general approval applies to overpressure leak detectors type DL-8/. The leak detectors are suitable for an installation on double-walled tanks as specified in paragraph 3.1. Leaks in the walls of the interstitial space are detected by pressure loss and brought to notice by an acoustic signal (for design of the leak detection systems, see appendix 1).
- 1.2 The application is limited to double-walled steel tanks to DIN 6608-2, DIN 6616 shape A, DIN 6619-2, DIN 6623-2 and DIN 6624-2 used for the storage of liquids incompatible with water. The overpressure leak detector can also be used for tanks subject to a general approval issued by the Building Inspection Authorities, provided that the space to be interstitial is suitable for the installation of such leak detector.
- 1.3 This general approval confirms the functional safety of the subject of approval in the sense of paragraph 1.1 It does not signify that the components meet the requirements of the '11<sup>th</sup> code of the legal provisions for the safety of devices' (code on the suitability of devices and protective systems for potentially explosive locations – code on protection against explosion – 11<sup>th</sup> GSGV) of December 1996 (Official Bulletin I, p. 1914).

### 2 Regulations applicable to the subject of approval

#### 2.1 Composition

- 2.1.1 The subject of approval consists of a leak detector type DL-8/ with indicator and control elements, refilling unit with max. pressure governor, pressure switch, overpressure valve and electrical components for output signal processing.
- 2.1.2 The functional safety of the subject of approval in the sense of paragraph 1.1 has proved to be in accordance with the 'principles of approval for leak detection systems for tanks' (ZG-LAGB) of August 1994, issued by the German Institute for Constructional Engineering.

#### 2.2 Manufacture and marking

##### 2.2.1 Manufacture

The leak detectors shall be manufactured only in the applicant's manufacturing shops. Their design, dimensions and materials shall be in accordance with the specifications described in appendix 2 of the present general approval.

The leak detectors shall be manufactured only in manufacturing plants that are qualified to provide them with the certificate of conformity, in accordance with the relevant codes of the different states. Their design, dimensions and materials shall be in accordance with the specifications described in appendix 2 of the present general approval.



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### 2.2.2 Marking

The manufacturer shall place the conformity mark on the packing of the leak detector or on the delivery note. The conformity mark shall be in accordance with the relevant codes of the different states. Such marking is only valid if the conditions as per paragraph 2.3 have been complied with. In addition, the leak detector shall be marked with the following data:

Type designation

Approval number

## 2.3 Certificate of conformity

### 2.3.1 General

Conformity of the leak detector with the provisions of the present general approval must be confirmed by the manufacturer's certificate of conformity, issued on the basis of in-house inspection and testing and an initial testing of the leak detector by an authorised technical control board.

### 2.3.2 In-house inspection and testing

The manufacturer shall complete in-house inspection and testing. In the course of such in-house inspection and testing, every leak detector or its components shall be checked. By means of such individual checks, the manufacturer shall ensure that materials, dimensions, tolerances and design correspond to the approved sample, and that the leak detector is reliable.

The results of in-house inspection and testing shall be recorded and evaluated. The records should contain the following details as a minimum:

- designation of the leak detector
- type of in-house inspection and testing
- results of inspection and testing
- signature of the person responsible for in-house inspection and testing.

The records shall be kept on file for at least 5 years. Upon request, they shall be presented to the German Institute for Constructional Engineering and the Building Inspection Authorities.

In the event of inadequate test results, the manufacturer shall immediately take appropriate remedial action. Leak detectors that do not meet the requirements, shall be separated so as to avoid confusion with satisfactory units. After repair (if possible and necessary from a technical point of view), the leak detector shall be re-tested.

### 2.3.3 Initial testing of the leak detector by an authorised technical control board.

Initial testing shall comprise the functional checks as defined in the approval principles for leak detectors on tanks. If the general approval of the Building Inspection Authorities includes checking of samples from current production, initial testing as described herein is not necessary.



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### 3 Conditions relating to the design of leak detectors

- 3.1 The pressure of the stored liquid and, if applicable, of groundwater or other water against the tank bottom shall not exceed 400 mbar (type DL-8/A), 560 mbar (type DL-8/B) and 1070 mbar (type DL-8/C), respectively.
- 3.2 For tanks to DIN 6608-2<sup>3</sup>, DIN 6616 shape A<sup>4</sup>, DIN 6619-2<sup>5</sup>, DIN 6623-2<sup>6</sup> and DIN 6624-2<sup>7</sup>, only leak detectors type DL-8/A shall be used. Liquids should have the following maximum densities:

Tank diameter / tank height (m)	Adm. density of the stored liquid (kg/dm <sup>3</sup> )
≤ 2.00	≤ 1.90
≤ 2.50	≤ 1.63
≤ 2.60	≤ 1.56
≤ 2.76	≤ 1.47
≤ 2.84	≤ 1.43
≤ 2.90	≤ 1.40

- 3.3 When selecting a leak detector, it is important to ensure that all components that may contact the stored liquid, its vapours or condensate have adequate resistance.

### 4 Conditions relating to the construction of leak detectors

- 4.1 Leak detectors should be installed in accordance with paragraph 6 of the technical specification<sup>8</sup> and commissioned in accordance with paragraph 7 of the technical specification<sup>8</sup>. Installation, maintenance, repair and cleaning of the leak detectors shall only be carried out by companies specialised as per § 19 I of the Water Resources Law, unless such work is exempted from these rules, or the manufacturer has this work carried out by his own experts.
- 4.2 The leak detectors must not be installed in potentially explosive locations.
- 4.3 The leak detectors shall be installed in frost-protected rooms or in weatherproof boxes to DIN 40 050<sup>9</sup> IP 55 with a thermostatically controlled heating system that prevents the leak detector from cooling down to below -5°C. When leak detectors are installed in a box, an additional acoustic outside alarm should be installed in a suitable place, and the signal should be transmitted via potential free contact.

<sup>3</sup>DIN 6608-2: Horizontal steel tanks, double-walled, for underground storage of inflammable and non-flammable liquids incompatible with water - Issue August 1989 -

<sup>4</sup>DIN 6616: Horizontal steel tanks, double-walled, for above ground storage of inflammable and non-flammable liquids incompatible with water - Issue September 1989 - shape A

<sup>5</sup>DIN 6619-2: Vertical steel tanks, double-walled, for underground storage of inflammable and non-flammable liquids incompatible with water - Issue September 1989 -

<sup>6</sup>DIN 6623-2: Vertical steel tanks, double-walled, with a capacity of less than 1000 l, for above ground storage of inflammable and non-flammable liquids incompatible with water - Issue September 1989 -

<sup>7</sup>DIN 6624-2: Horizontal steel tanks, double-walled, with a capacity between 1000 and 5000 l, for above ground storage of inflammable and non-flammable liquids incompatible with water - Issue September 1989 -

<sup>7</sup> The manufacturer's technical specification of January 10, 1996 for the leak detector type DL-8 was verified by the technical control board TUEV Nord e.V.

<sup>9</sup>DIN 40 050-10: Protective systems, protection against accidental contact, foreign objects, water. Small transformers up to 16 kVA.

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## 5 Provisions concerning use, maintenance and regular checks

Leak detection systems with leak detectors have to be operated in accordance with paragraph 8 of the technical specification<sup>8</sup> and maintained in accordance with paragraph 8.2 of the technical specification<sup>8</sup>. Error messages or faulty signals are described in paragraph 8.3 and 8.4 of the technical specification<sup>8</sup>. The technical specification<sup>8</sup> should be part of the manufacturer's supply.

By order

Dr. Ing. Kanning

Official seal

German Institute for  
Constructional Engineering



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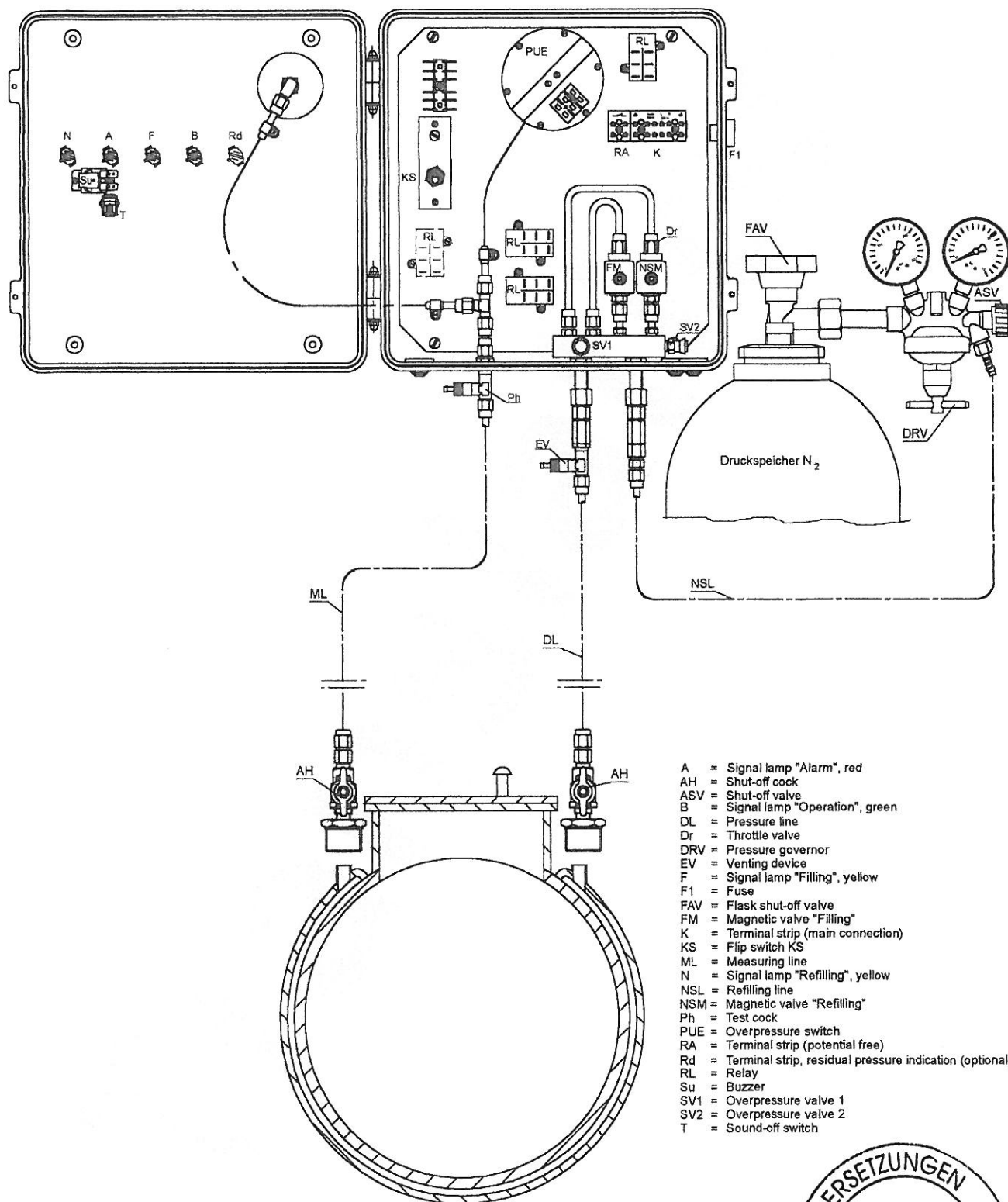


**Test documents  
for the  
overpressure leak detector DL - 8**

- |   |                                    |
|---|------------------------------------|
| 1. Technical specification  |                                    |
| <ul style="list-style-type: none"> <li>• Technical specification of Jan. 10, 1996</li> <li>• Drawings</li> <li>• Parts list of Jan. 10, 1996</li> </ul> | 01 - 16<br>1.0694 - 9.0694<br>A.II |
| 2. 1 <sup>st</sup> supplement of Aug. 20, 1996  | N1-1                               |
| 3. Characteristic curves of the overpressure switches on the pressure reducing side and on the interstitial space side                                  |                                    |
| 4. Characteristic curve of refilling line   |                                    |
| 5. Documentation relating to component parts  |                                    |
| 6. Technical specification of residual pressure control RD-2  |                                    |
| 7. Manufacturer's declaration concerning pressure switch and refilling unit   |                                    |
| 8. Report of the TUEV Nord e.V. of Jan. 15, 1996  | 1 - 4                              |
| 9. Test specimens of the following types:   |                                    |
| <ul style="list-style-type: none"> <li>• DL - 8 / A</li> <li>• DL - 8 / B</li> <li>• DL - 8 / C</li> </ul>  |                                    |



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# Overpressure leak detector DL - 8

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 GmbH  
 57076 Siegen

# CE Declaration of conformity

We hereby confirm that the

**overpressure leak detector**

**type DL-8**

complies with the protection requirements specified in the EC directive 89/336/EEC for an adaptation of the legal provisions applicable in the member states concerning electromagnetic compatibility (EMC), dated November 09, 1992 (§4, subparagraph 1).

This declaration applies to all leak detectors manufactured in accordance with the attached technical documents that are an integral part of this declaration.

For product assessment with respect to EMC, the following prescriptions were referred to:

- EN 50081-1: 1992
- EN 55014:1993
- EN 61000-3-2:1995
- EN 61000-3-3:1995

This declaration is given on behalf of the manufacturing company



**Sicherungsgerätebau GmbH**

Hofstr. 10

57076 Siegen

by its managing director

Mr. Berg.

Prepared in D-57076 Siegen

on May 23, 1996



J. Berg, Managing Director

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