

## Vacuum valve (weight loaded)

12814/12817

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### 1 General

#### 1.1 Manufacturer

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#### 1.2 Proper application

Vacuum valves are used in the food, beverage, pharmaceutical and chemical industries. They are suitable for the protection of tanks and other closed systems against negative pressure.

During installation, operation and maintenance please pay attention to the generally accepted safety regulations as well as to the operating instructions.

#### 1.3 Misuse

Misuse is:

- Application in different operating conditions as intended for the specific type.
- Installation, operation and maintenance by unqualified staff.
- Any unauthorized modification of the valve or a valve component.
- On-observance of the operating instructions.

Any misuse will automatically lead to a loss of right to claim under guarantee as well as any liability.

#### 1.4 Duties of operator

The operator has to make sure that:

- The valve/component is operated properly and only in functional condition.
- The legal requirements are kept during operation and maintenance.
- Only sufficiently qualified and authorized staff maintain the valve/component.
- The staff responsible for operation and maintenance know and obey the operating instructions and in particular the safety advice.
- The safety and warning signs remain on the valve/component and are always legible.

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### 2 Safety Information

#### Notice and Safety

The following safety advice is an addition to existing national regulations and laws for accident prevention. Existing regulations and laws for accident prevention always have to be adhered to. Pay attention to the specific regulations and laws in your country.

The safety advice does not take into account:

- Coincidences and events that may occur during assembly, operation and maintenance.
- Local safety regulations in responsibility of the operator.

#### Basic safety advice

Requirements for a proper function of the valve/component:

- Proper transportation and storage
- Installation and setting into operation by authorized staff
- Operation according to these operating instructions – proper application
- Proper and regular maintenance



#### WARNING

#### Warning – general dangers!

To avoid danger for health and life the following safety instructions strictly have to be obeyed.

- Assembly and setting into operation only by qualified staff.
- Instruction and supervision by the operator.
- Keeping of technical and electrical data as specified in the operating instructions.
- Guarantee the electric safety of external devices.
- Keep legal regulations.

#### Non-observance may lead to the following dangers:

- Malfunction of the valve/component respectively of the plant.
- Danger for persons due to electrical, mechanical and chemical affects.
- Danger for the environment due to possible leakage of dangerous media.

### 3 Delivery, Completeness, Storage

- Check the data of the delivery note for factual correctness and the material for completeness. We regret that money cannot be refunded after purchase.
- Always check the material for transport damages. Possible damages have to be informed immediately.
- Store the material in a dry place and if possible in its original packaging.

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### 4 Installation, Operation, Maintenance

#### Important notice!

The vacuum valve is similar to type 12504

Type 12817 has a response pressure of 0,5 bar (vacuum).

- Valve/component suitable for vertical installation.
- Valves with standard weight open at a negative pressure of 3-5 mbar. Pressure compensation to ambient pressure by air draw in. The valve will be closed by the counter pressure of the weight.
- Valves with pneumatic lifting open only at a limited counter pressure, i.e. tank inside pressure. This pressure may not exceed 0.2 bar. This may cause a malfunction of the valve.
- During the CIP process the pneumatic lifting should be activated only, if the tank is depressurized. Other-wise, there will be explosion-like pressure compensation, due to the escaping medium. This mixture of gas and CIP liquid is splashed into the environment.
- The lifting itself can be performed according to the process requirements. The duration of lifting should be about 5-20 seconds and can take place during different cleaning steps. To prevent too strong splashing, the opening gap on the valve can be adjusted via the stroke on the pneumatic cylinder or lifting takes place during the startup phase of the pump with reduced power.  
**Further information can be found in the INFO sheet - IB\_CIP lifting VV-SV.02**
- During assembly/disassembly please pay attention to the operating instructions respectively to the type plate or type marking.



#### DANGER

##### Danger – General risk!

Lifting the valve during CIP and low tank inside pressure ( $p < 0.2$  bar) causes splashing of penetrating CIP liquid.

An increasing tank inside pressure can be caused by thermal expansion of the CIP medium during circulation or by pre-stressing of the tank with CO<sub>2</sub>/gas.

- Stop spraying of the tank before lifting the valve or de-pressurize the tank.
- Use fully closed splash guard.

#### 4.1 Assembly instructions

##### Execution with heating device:

- The heating insets may only be connected according to attached scheme. Pay attention to the connecting voltage!
- Do not remove the heating inset from the flange during function test (heating capacity). It may get damaged by overheating.

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### Execution with lifting device:

- Pneumatic lifting cylinder for function test and for lifting the valve cone during CIP. The stroke of the lifting cylinder is factory preset. So the stroke of the valve cone is limited to about 3 mm. With too large stroke, the emerging splash amount increases.
- Suitable for treated compressed air, max. 6 bar.
- Throttle of air inlet has to be adjusted upon setting into operation.
- Compressed air supply: air hose  $\varnothing$  6/4.

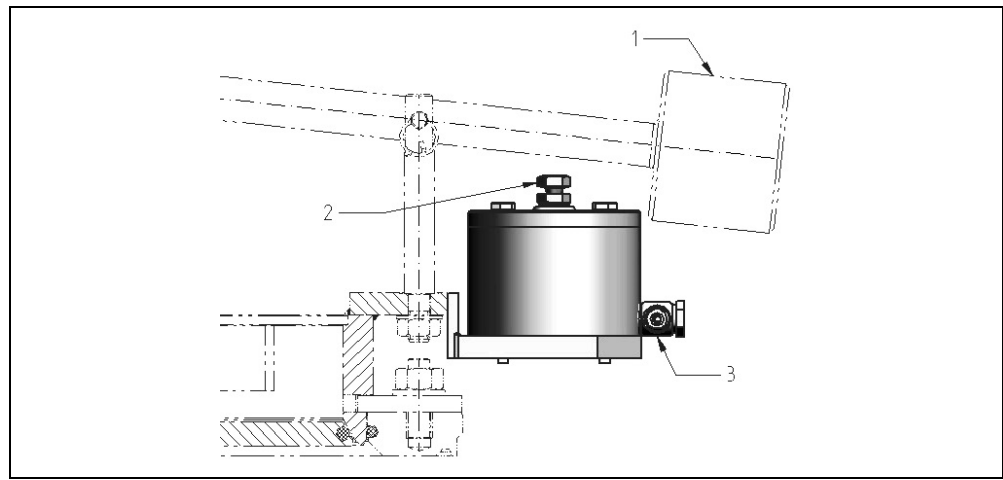


Fig. 1: Schematic representation with lifting device DN 150 – DN 200

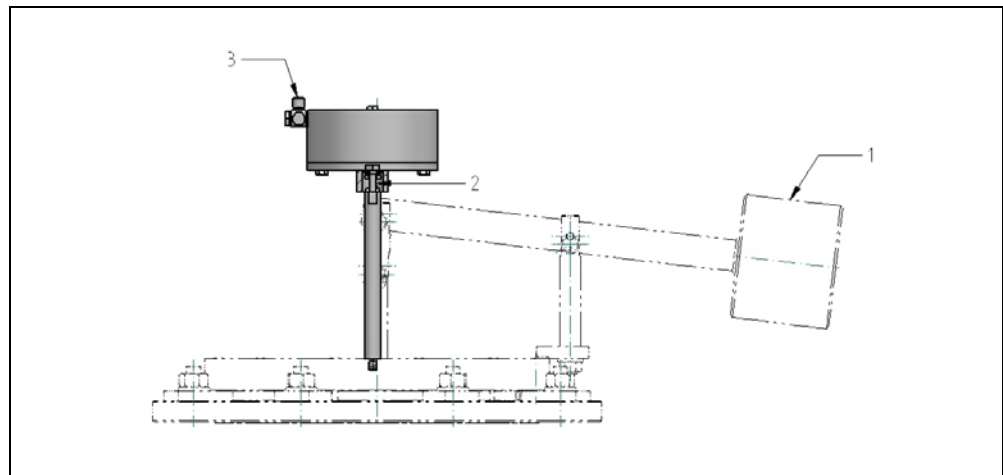


Fig. 2: Schematic representation with lifting device für DN 300 – DN 400

- 1 Counter weight
- 2 Lifting adjustment
- 3 Compressed air supply

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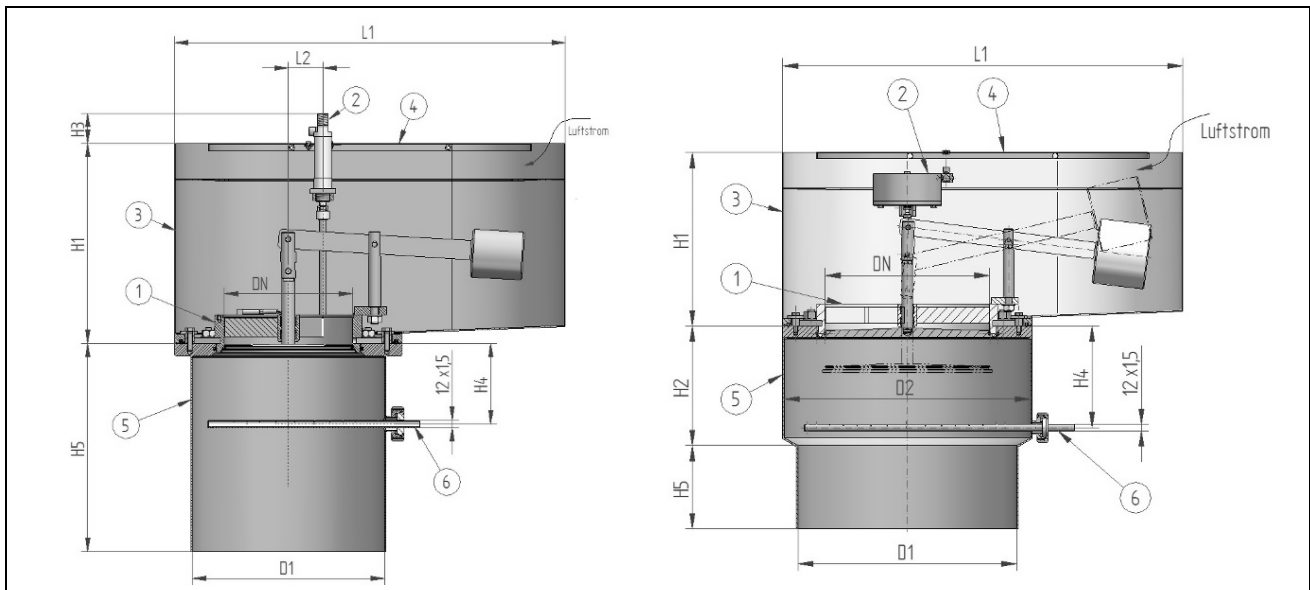


Fig. 3: Type 12814 DN 150 - 200 with splash guard cover

Type 12814 DN 300 - 400 with splash guard cover

- 1 Vacuum valve Typ 12504
- 2 Lifting cylinder
- 3 Splash guard cover
- 4 Cover
- 5 Locking device
- 6 CIP connection

12814								
DN / connection	D1	D2	L1	H1	H2	H3	H4	H5
150	254 x 2	250	511	271.5	---	69	92.5	242.5
200	304 x 2	300	611	313.5	---	47	126.5	326.5
300	306 x 3	450	731	316.5	218	---	185.5	151
400	406 x 3	600	900	406.5	291.5	---	215.5	402

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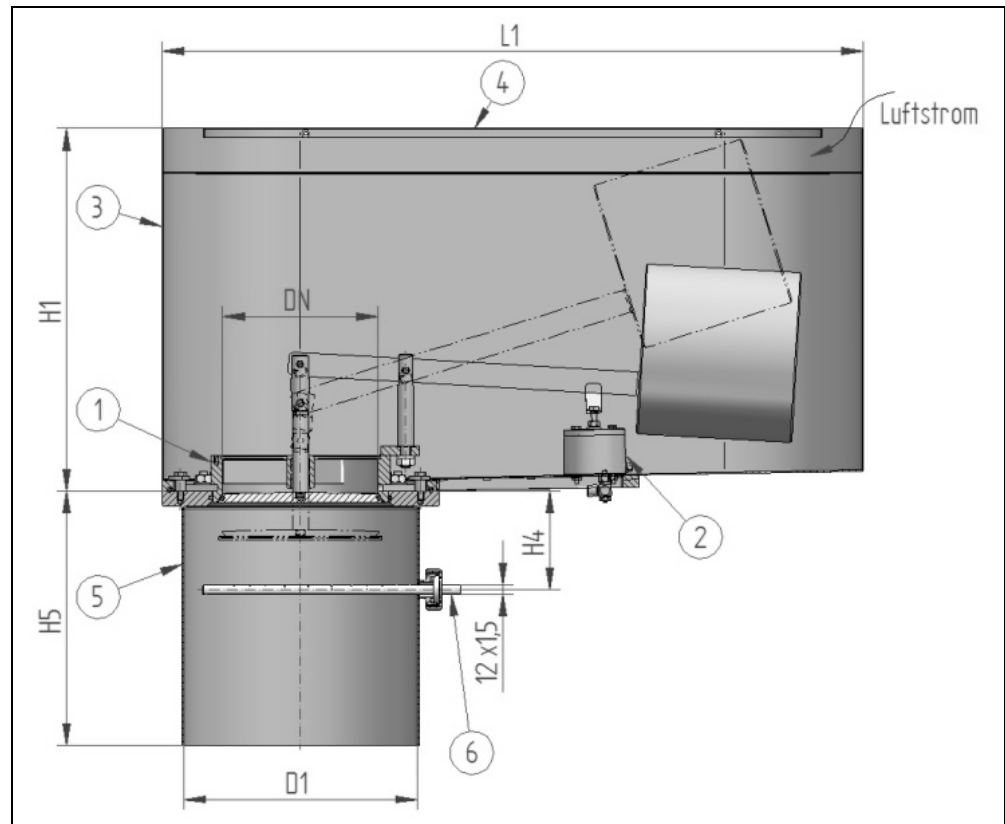


Fig. 4: Type 12817 DN 100 – 200 with splash guard cover

- 1 Vacuum valve Typ 12504
- 2 Lifting cylinder
- 3 Splash guard cover
- 4 Cover
- 5 Locking device
- 6 CIP connection

12817								
DN / connection	D1	D2	L1	H1	H2	H3	H4	H5
100	204 x 2	200	500	292	---	---	90	190
150	254 x 2	250	800	371	---	---	92.5	242.5
200	304 x 2	300	900	465.5	---	---	126.5	326.5

## Vacuum valve (weight loaded)

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#### 4.2 Operation

##### Type 12814 / 12817

Construction with stainless steel valve disk DN 150 – DN 400

- Keep the valve clean.
- Lift the valve cone from time to time.
- Exchange the O-ring (1) carefully.
- Avoid any damages at the valve seat.
- Protect vacuum valves from any force influence from outside. Any damage may affect the function.
- Admissible temperature: 125°C

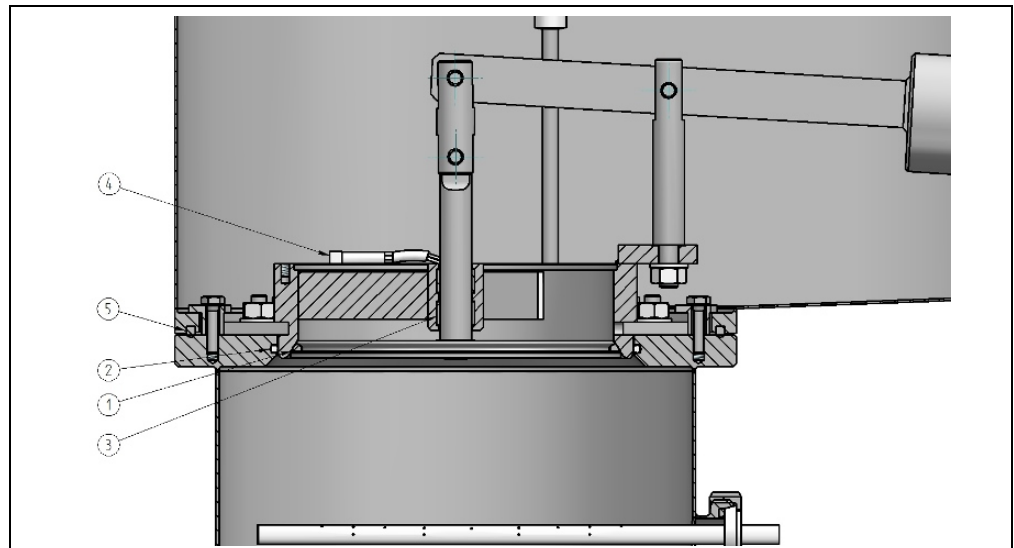


Fig. 5: with stainless steel valve cone

- 1 O-ring (seat)
- 2 O-ring (flange)
- 3 Guiding band
- 4 Heating inset
- 5 Profile seal

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### 4.3 Maintenance

- Maintain the valve carefully, avoid any damages.
  - Exchange the O-rings (1) and (2) do not distort.  
Clean the grooves and sealing area.
  - **Demounting of:**
    - cover of splash guard cover
    - weight and lever
    - splash guard cover
    - vacuum valve
  - **Assembly** in reverse order.
- The maintenance should be executed at regular intervals of min. every year. Depending on the operating conditions of the valves, these intervals may be shorter.
  - During maintenance pay attention to the assembly and safety instructions.
  - Any maintenance work may be carried out only in a depressurized system.

In case of spare parts orders please inform us the order No.

Gasket material EPDM

### 4.4 Identification of components

All vacuum valves (VV) must be provided with permanent identification of the component.

- Standard vacuum valves are provided with a setting value (4 mbar) specified by us (opening pressure range 3-5 mbar)
- Special vacuum valves (with special weight) are provided with a customer-specific setting value.  
They also include the identifying letter "S" before the manufacturing No.

#### Explanation of the identification:

Numerical code	AH	VV	xxxxx	xxx	yyy	xx / xxxxx
	AH	VV	xxxxx	xxx	yyy	xx / S xxxxx
Allocation	1	2	3	4	5	6

- 1 Manufacturer
- 2 Vacuum valve
- 3 Valve type
- 4 Nominal width / DN [mm]
- 5 Set negative pressure p [mbar]
- 6 Year of manufacture with manufacturing No or "S" with manufacturing No



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#### 4.5 Seals

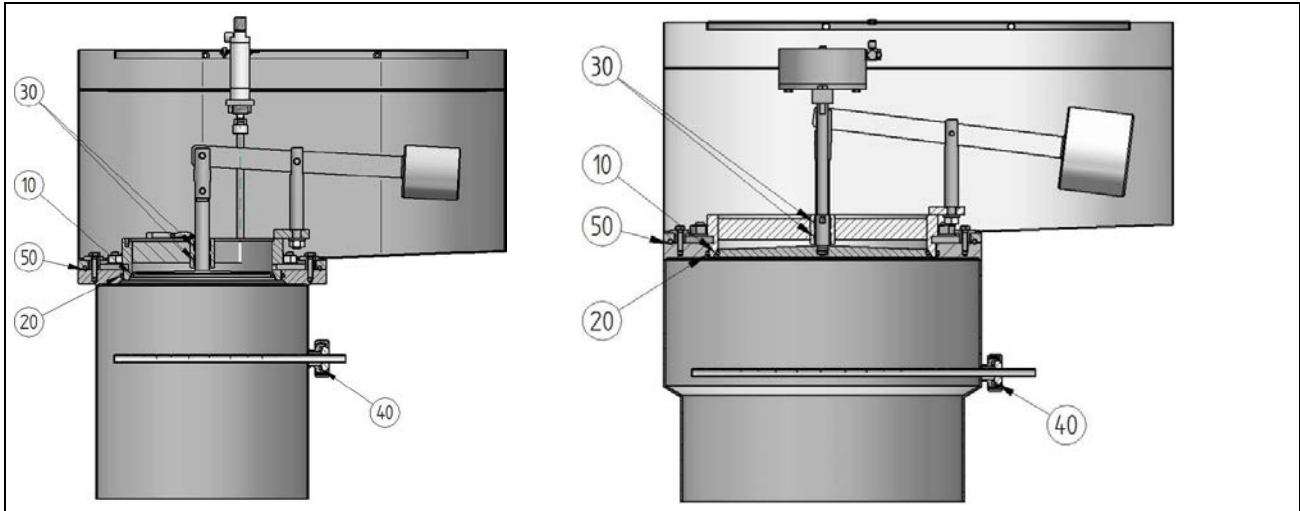


Fig. 6: Type 12814 DN 150 – 200

Type 12814 DN 300 - 400

- 10 O-ring
- 20 O-ring
- 30 Guiding band
- 40 Gasket
- 50 Profile seal

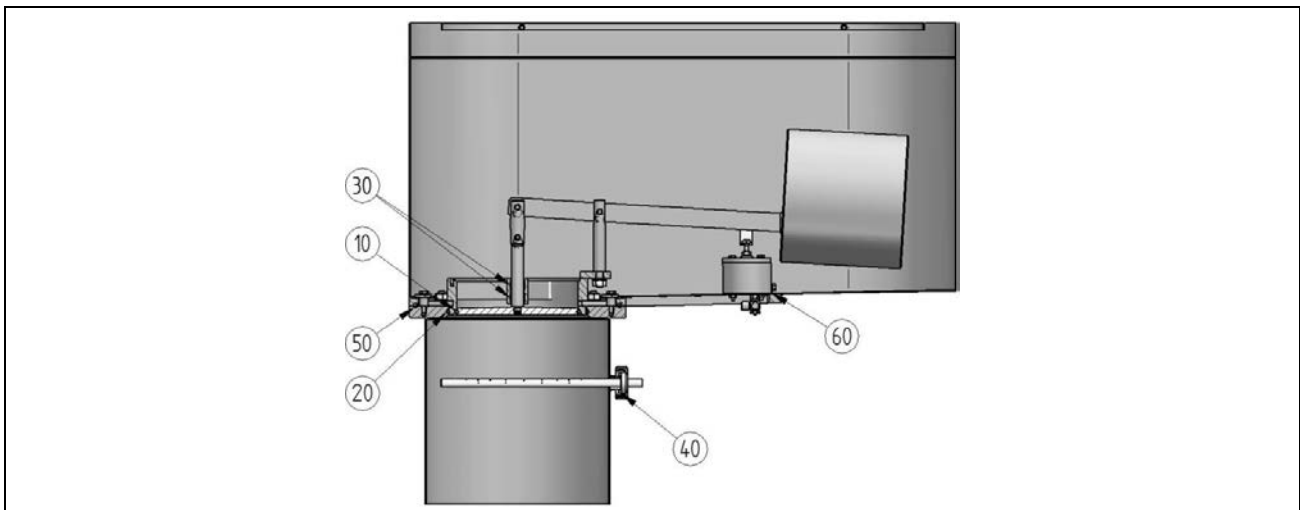


Fig. 7: Type 12817 DN 100 – 200

- 10 O-ring
- 20 O-ring
- 30 Guiding band
- 40 Gasket
- 50 Profile seal
- 60 Flat seal

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### 4.6 Spare parts

DN	12814	12817
100	---	012817.00100LE
150	012814.00150LE	012817.00150LE
200	012814.00200LE	012817.00200LE
300	012814.00300LE	---
400	012814.00400LE	---

LE - EPDM

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4.7 Performance diagram

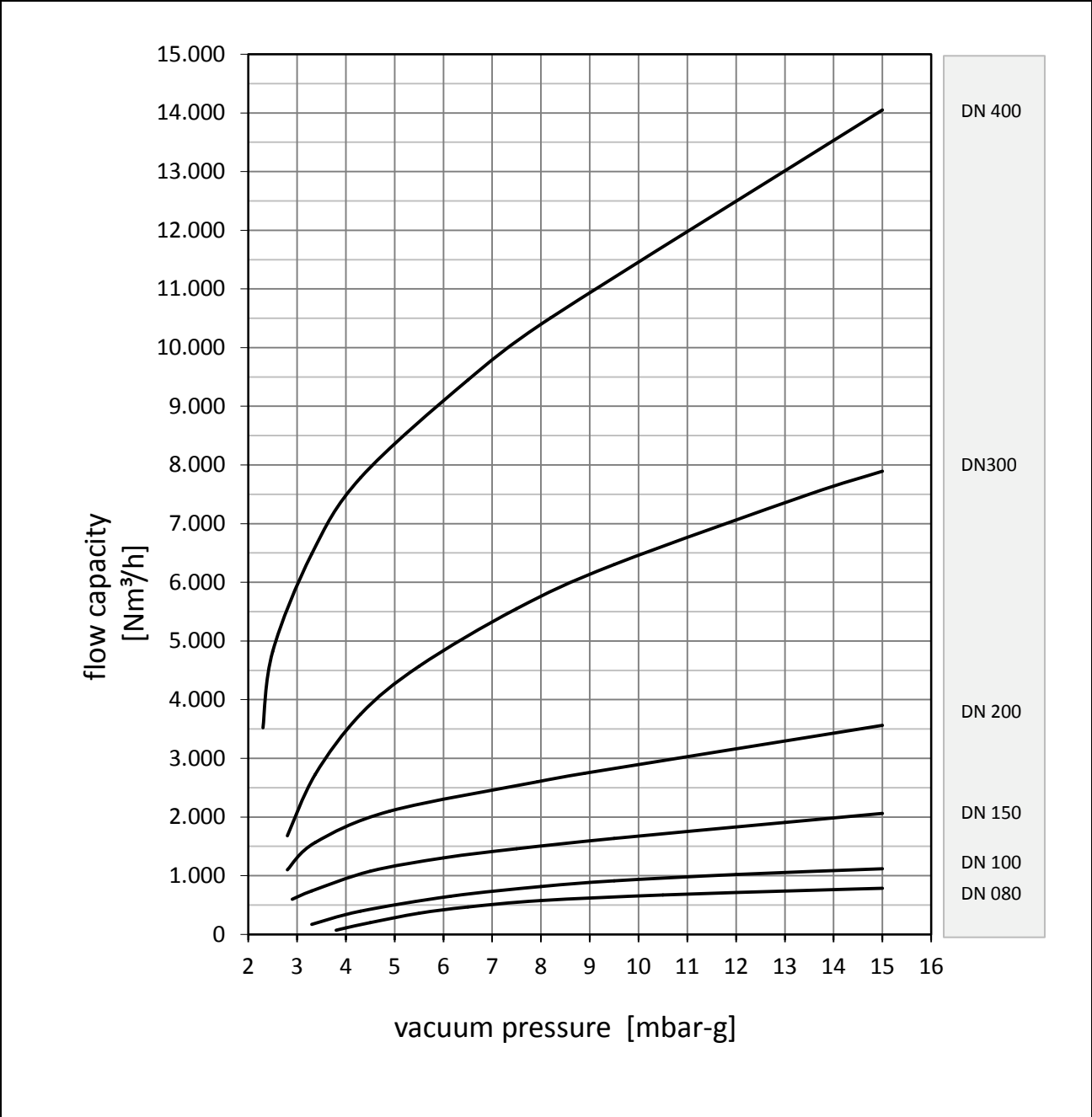


Fig. 8: 12504, DN 80 – DN 400

Conversion: 1 mbar >> 10 mmWS >> 100 Pa >> 0.1 KPa

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### 5 Additional Equipment

#### 5.1 Proximity switch, inductive

Type	make contact (NO); № 106220	BES M12EE-PSC40B-S04G,
Nominal switching distance		4 mm even
	>> with trip cam material steel	
	>> with trip cam material stainless steel	2,8 mm even
Supply current U		10 ...30 VDC
No-load current bedämpft / unbedämpft		max. 10 mA/max. 5 mA
Operating current		200 mA
Potential drop U		max. 2,5 V
Switching frequency		200 Hz
Reserve battery protection		yes
Short-circuit proof		yes
Construction size		M12x1
Casing material		Stainless steel
Temperature range		- 25° C ... + 85° C
Enclosure rating		IP 68
Indicator		Multi-hole – LED

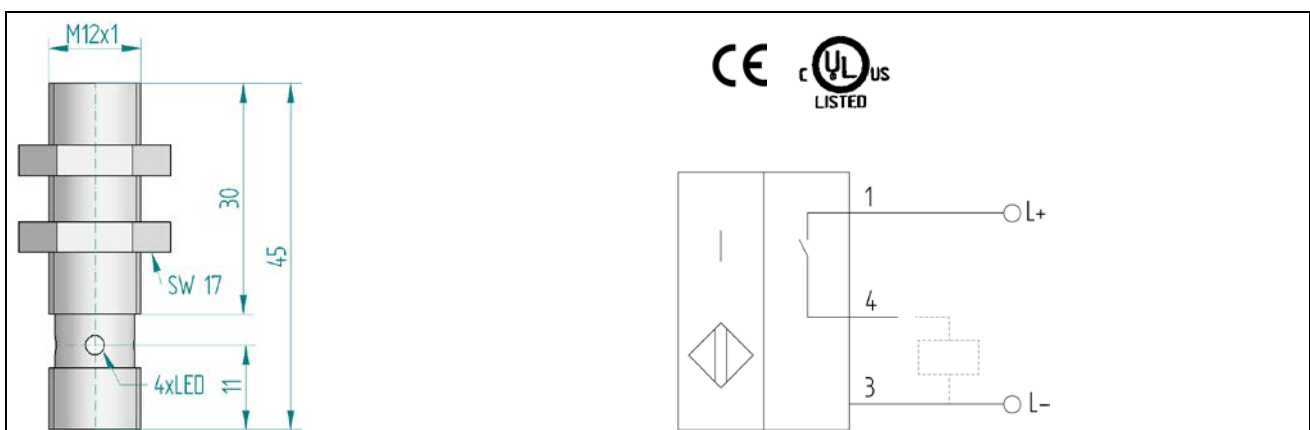


Fig. 9: Dimensions and connection scheme PNP

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## 5.2 Heating insets

Heating insets							
DN	Connection-scheme №	Connection voltage Volt	Heating capacity Watt	Quantity	Rated power:		Part №
					Volt	Watt	
400	11 125E 33	24	184	8	24	23	105373
300	11 125E10	24	138	6	24	23	105373
200	11 125E30	24	92	4	24	23	105373
150	11 125E31	24	46	2	24	23	105373
100	11 125E31	24	46	2	24	23	105373
80	11 125E31	24	46	2	24	23	105373

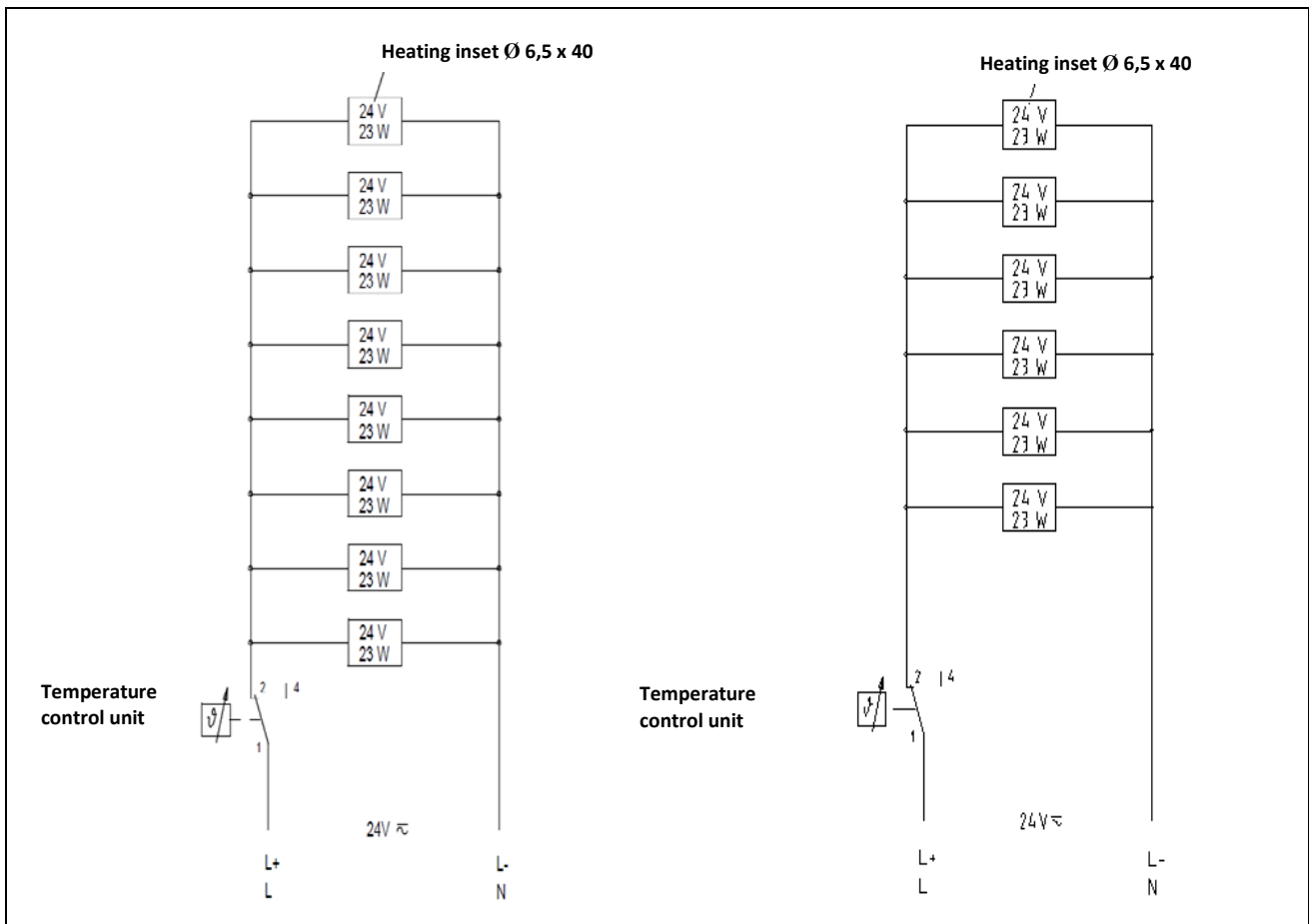


Fig. 10: E 33, DN 400

E 10, DN 300

**Vacuum valve (weight loaded)**

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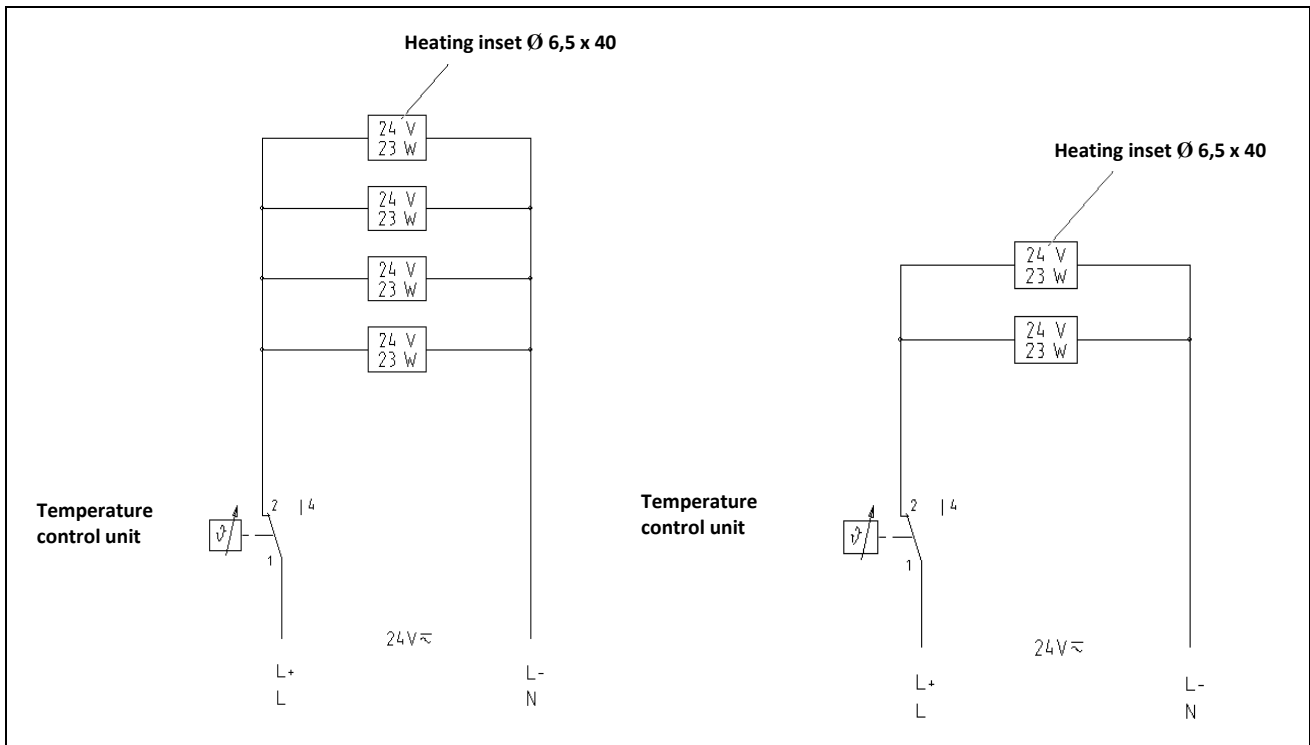


Fig. 11: E 30, DN 200

E31, DN 80 - DN150