

Vacuum valve (weight loaded)

12504/ 12818, 12819

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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.

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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.

4 Installation, Operation, Maintenance

Wichtiger Hinweis !

- 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 CO₂/gas.

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

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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.

Execution with external cleaning:

- The external surface of the valve cone is able to be cleaned by an optional mounted spray pipe.
In this case it is necessary to lift the valve cone. Otherwise the CIP liquid is damming up within the cylindrically splash guard and runs off through the drainage drilling to the tank surface (cleaning time 10s, CIP pressure 2 bar).

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.

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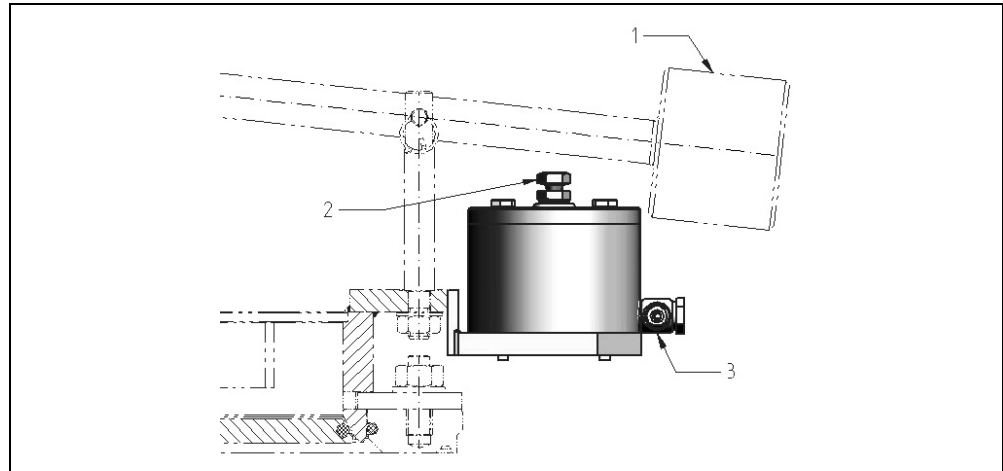


Fig. 1: Schematic representation with lifting device DN 150 – DN 200

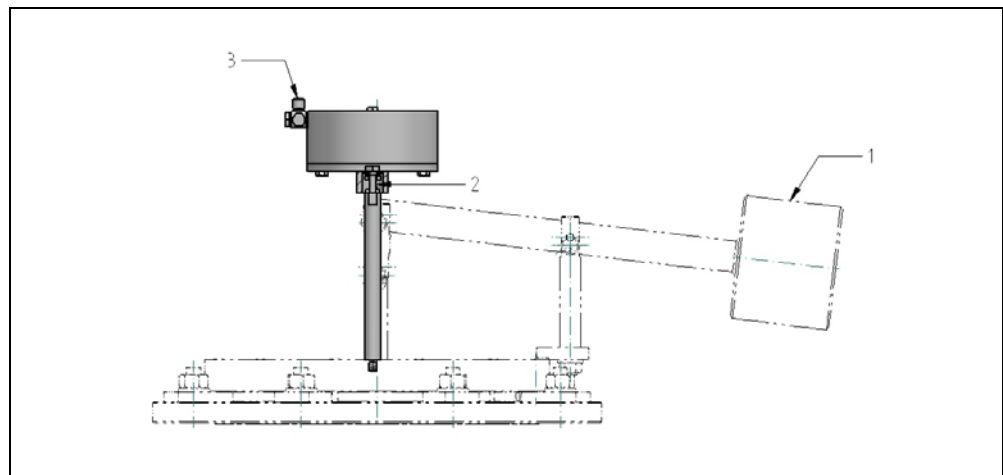


Fig. 2: Schematic representation with lifting device für DN 300 – DN 400

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

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Execution with splash guard - Type 12818

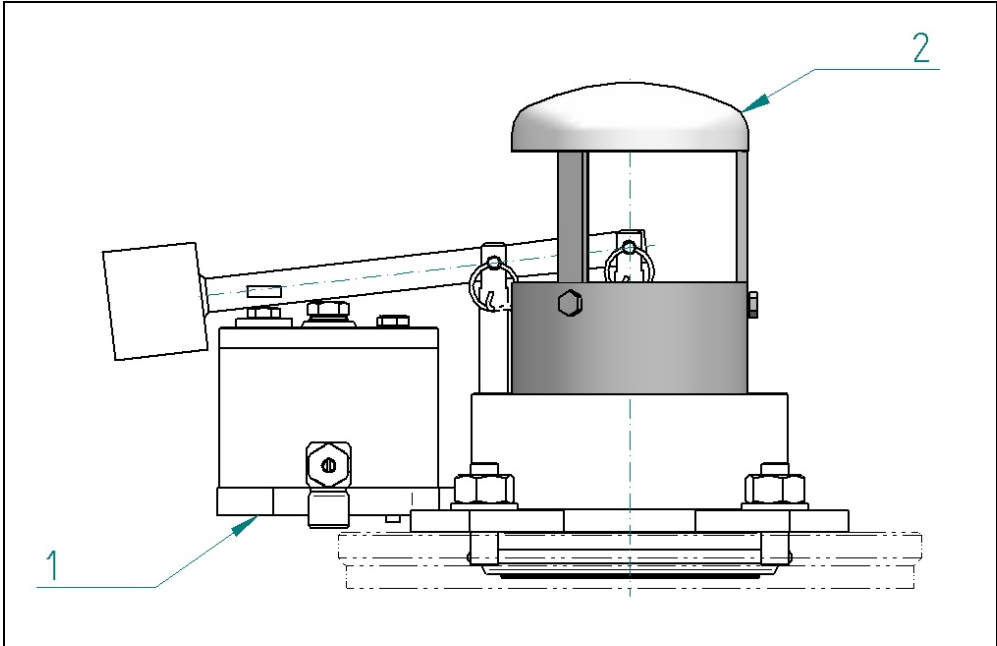


Fig. 3: Schematic representation DN 80 – 400

- 1 Vacuum valve
- 2 Splash guard

Execution with splash guard and jet pipe – Type 12819

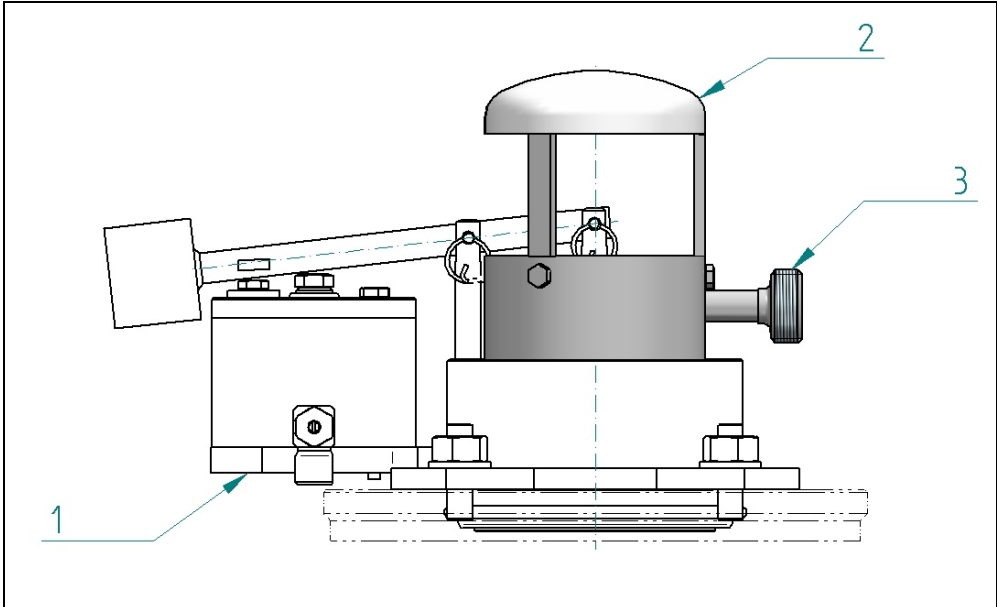


Fig. 4: Schematic representation DN 80 – 400

- 1 Vacuum valve
- 2 Splash guard
- 3 Jet pipe

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4.2 Operation

Type 12504

Construction with stainless steel valve disk DN 80 – 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

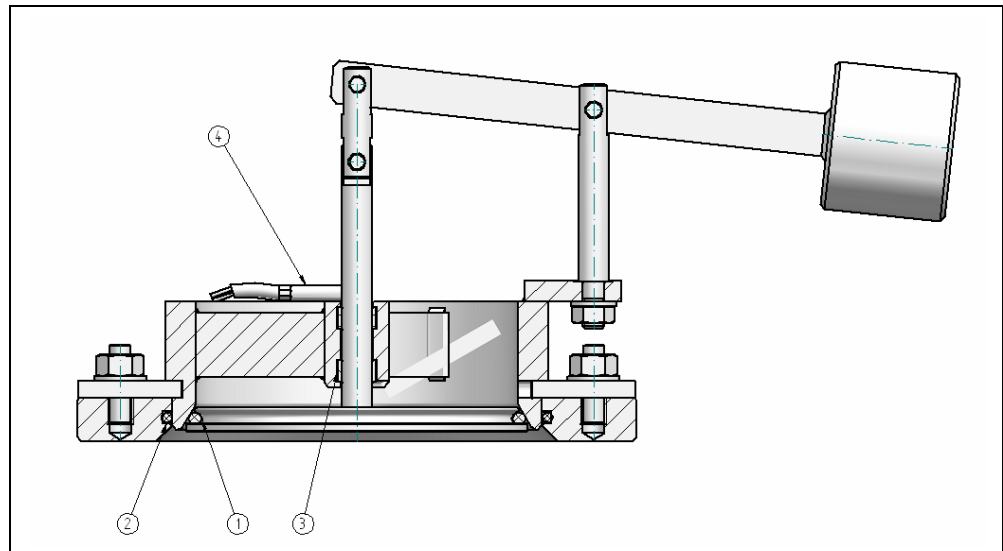


Fig. 5: with stainless steel valve cone

- 1 O-ring
- 2 O-ring (flange)
- 3 Guiding band
- 4 Heating inset

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4.3 Maintenance

- Maintain the valve carefully, avoid any damages.
 - Dismount the valve.
 - Exchange the O-rings (1), (2) and the guiding band (3), do not distort. Clean the grooves and sealing area.
- 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.

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 №.

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 № or “S” with manufacturing №

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4.5 Seals

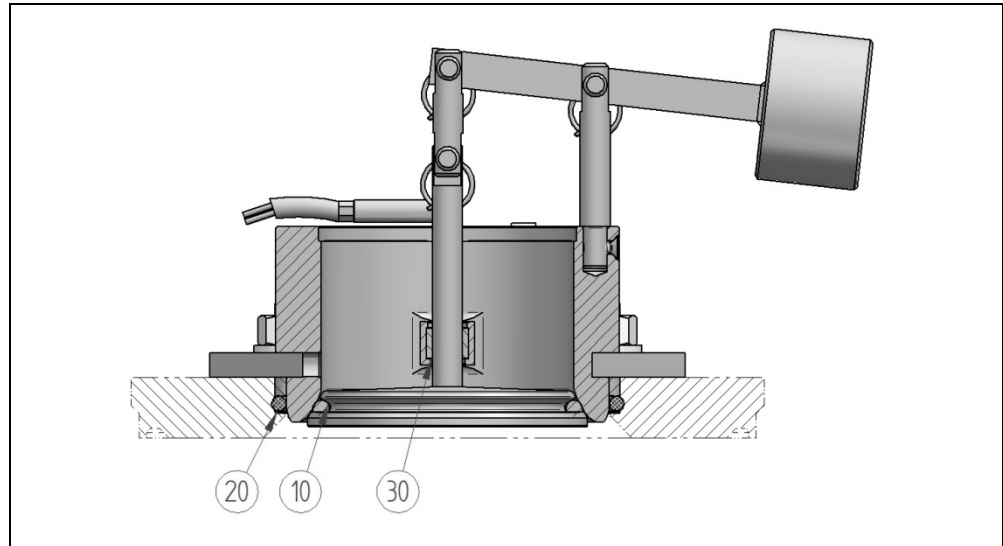


Fig. 6: Type 12504

- 10 O-ring
- 20 O-ring
- 30 Guiding band

4.6 Spare parts

DN	12504	12818	12819
80	012504.00080LE	012504.00080LE	012504.00080LE
100	012504.00100LE	012504.00100LE	012504.00100LE
150	012504.00150LE	012504.00150LE	012504.00150LE
200	012504.00200LE	012504.00200LE	012504.00200LE
300	012504.00300LE	012504.00300LE	012504.00300LE
400	012504.00400LE	012504.00400LE	012504.00400LE

LE - EPDM

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4.7 Performance diagram

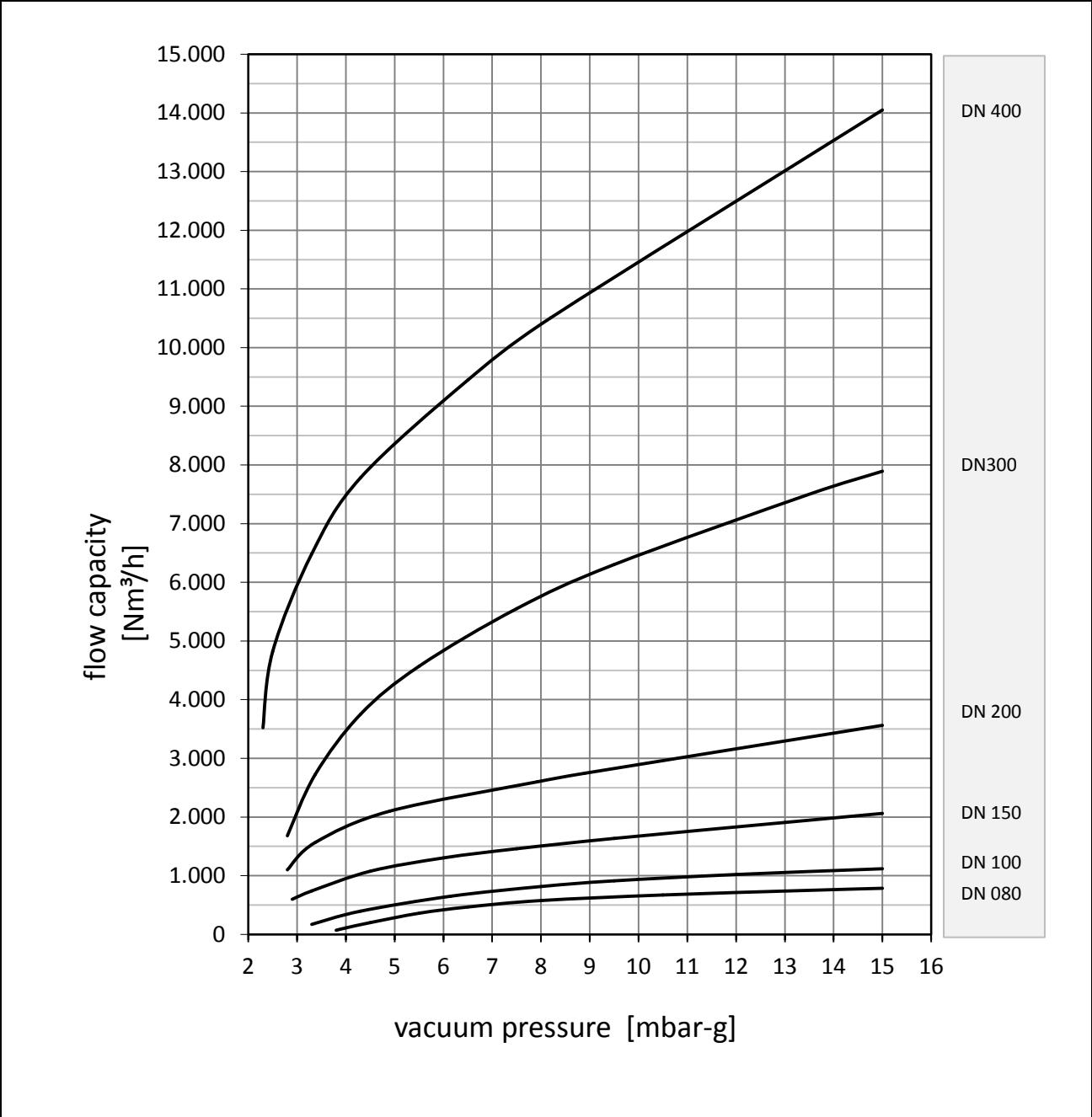


Fig. 7: 12504, DN 80 – DN 400

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

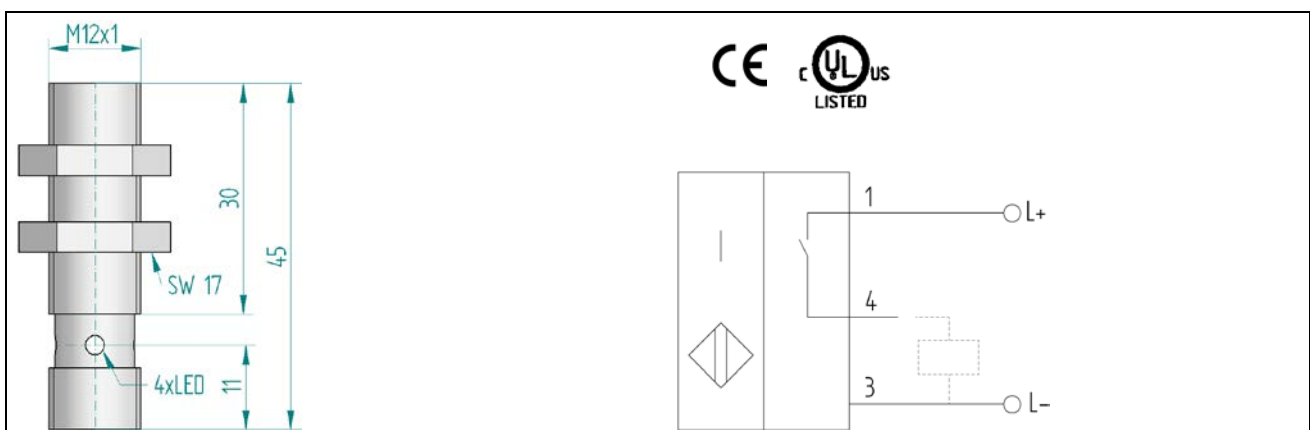


Fig. 8: Dimensions and connection scheme PNP

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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

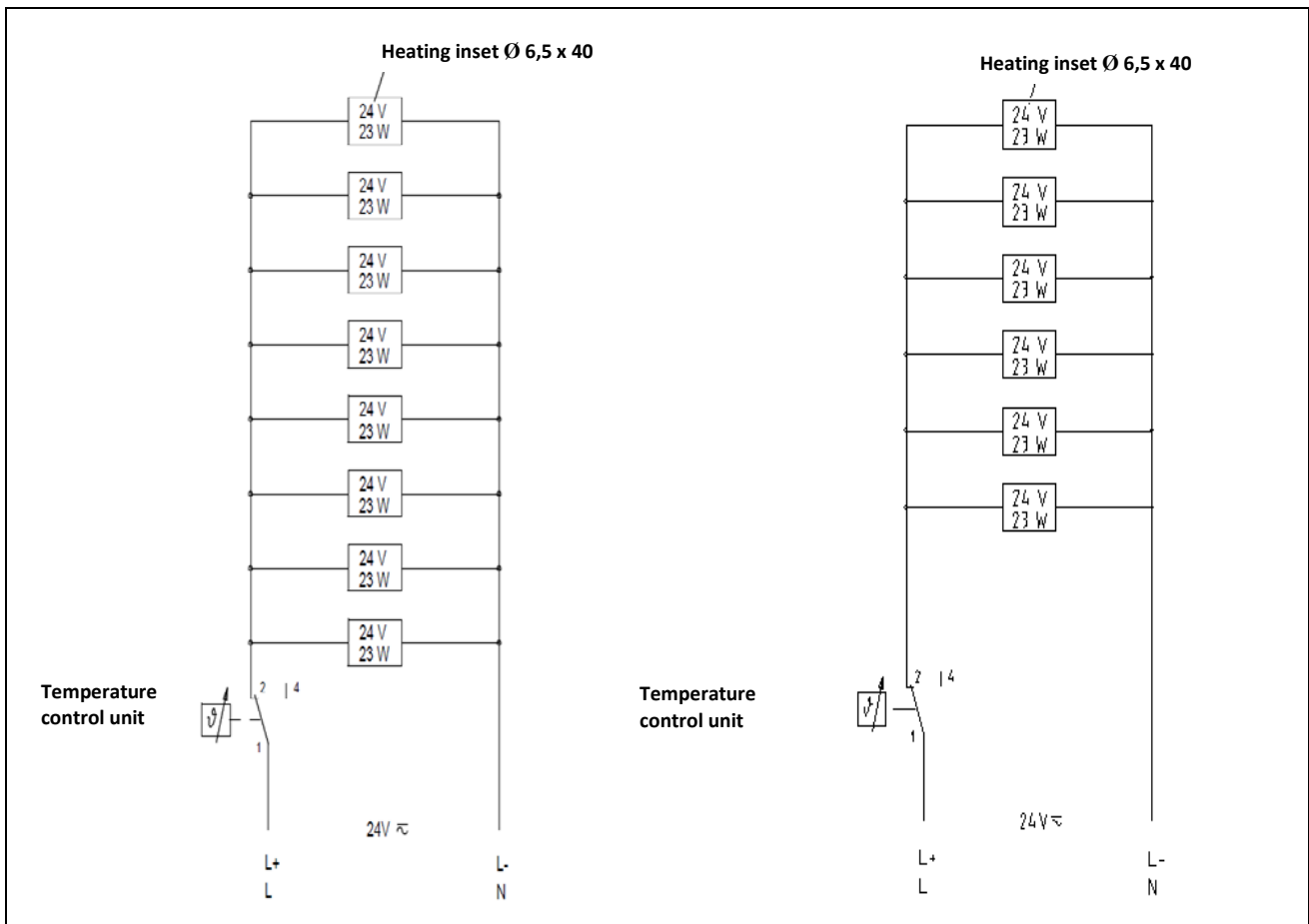


Fig. 9: E 33, DN 400

E 10, DN 300

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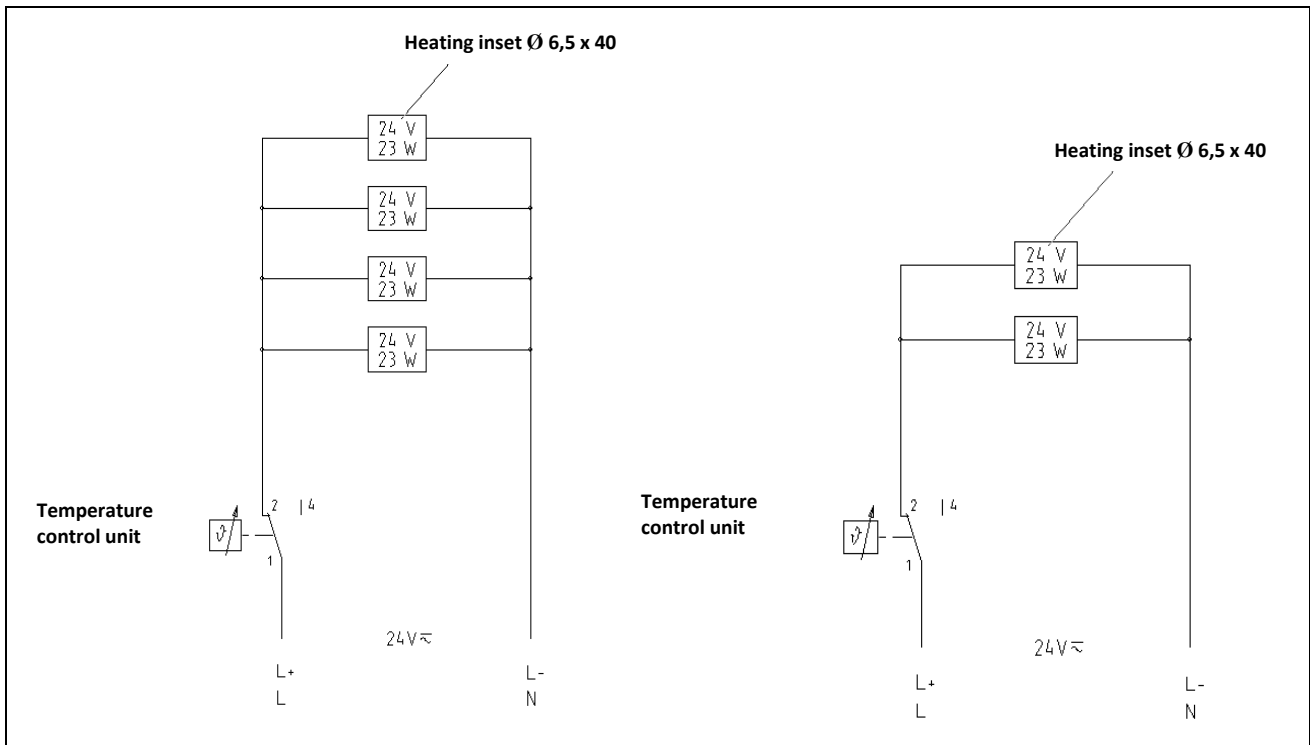


Fig. 10: E 30, DN 200

E31, DN 80 - DN150