

Pressure Relief Valve Type DHV 718

explosion protected version



Advantages

- frictionless components
- low-maintenance
- low pressure increase until the valve is fully opened
- constant, low vibration control
- hermetically sealed by a chambered flat diaphragm
- suitable for oscillating pumps
- for viscous media and media containing solid particles
- ATEX approval

Application

- chemical plants
- water treatment
- electroplating plants

Utilisation

- as a pressure relief valve; constant working and/or primary pressure
- as an overflow valve which opens when the set opening pressure is exceeded

Flow media

- Neutral and aggressive fluids or fluids containing solid particles, provided that the valve components coming into contact with the fluids are resistant at the operating temperature in accordance with the ASV resistance guide.

Examinations

- Requirements and testing according to DIN 3441, 3442, 8063, 16962/3
- ATEX - EC Directive 94/9EC (EN 13463ff)

Nominal pressure (H₂O, 20 °C)

- PN 10

Fluid temperature

- see pressure/temperature diagram

Operating pressure

- see pressure/temperature diagram

Ambient temperature

- Ta = 0 - 60°C

Opening pressure

- DN 10 - 50 0.3 bar

Setting range

- 0.5 - 8 bar

Hysteresis

- ≤ 0.5 bar

Size

- DN 10 - DN 50

Housing

- stainless steel 1.4571

Bonnet (spring housing)

- PP, glass fibre reinforced

Diaphragm

- EPDM, conductive

Adjustment and connecting screws

- stainless steel V2A

Connection

- DN 10 - 50 pipe or female threaded sockets acc. to NPT

Mounting

- as required, preferably bonnet at the top

Flow direction

- arrow points in the flow direction

Fastening

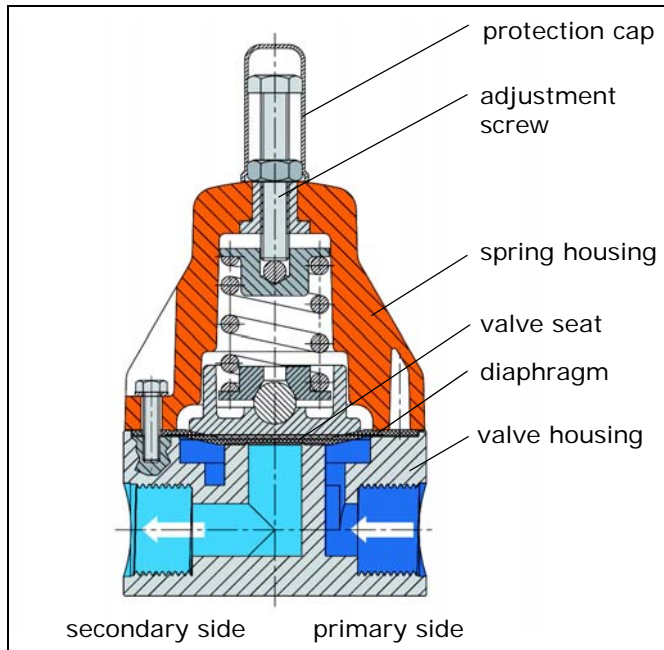
threaded inserts to ensure simple installation

Colour

- housing metallic silver
- bonnet orange, RAL 2004

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Sectional view DHV 718, DN 10 - DN 50



Function and design

When the valve is normally closed, the diaphragm under the valve seat is only subjected to the low secondary pressure.

Any rise in working or primary pressure lifts the diaphragm against the spring force. The valve opens and the pressure decreases.

The flat diaphragm, designed for full opening of the valve (D/4), securely separates the medium from the spring housing.

The only components coming into contact with the fluid are the diaphragm and the valve housing.

In the normal position, the diaphragm rests on the well dimensioned valve seat. Inadmissible compression at maximum spring force is impossible.

The valve housing is provided with an appropriate cavity for accommodating the chambered diaphragm. Compression due to the screw tightening torques does not cause leakages, even at increased temperatures.

NOTE

When the valve is in its normal position, the counter-pressure (secondary pressure) may be approx. 4 times higher than the set pressure p_E , the valve remains closed.

Valve setting

We recommend installing a diaphragm pressure gauge guard with pressure gauge in the primary line for reading the set pressure.

1. Pull off the protection cap.
2. Undo the counter nut on the adjustment screw.
3. Turn the adjustment screw clockwise (pressure increase) until the required set pressure or opening pressure is reached.

ATTENTION



Identification

II 2GD c

Equipment group II:

Equipment for potentially explosive atmospheres, excluding mine operations with the risk of mine gas.

Equipment category 2:

Equipment that is designed to allow operation in accordance with the specified parameters and guarantee a high level of safety.



G = gas

D = dust

Equipment in these groups and categories can be used in the following zones in accordance with the specified parameters:

Zone 1 / Zone 21

Zone 2 / Zone 22

NOTE

The DHV 718 does not represent a source of heat according to EN 13463-1, Section 14.2g and is, therefore, not marked with a temperature category and/or surface temperature.

If there is a potentially explosive atmosphere inside the above mentioned equipment, the absolute pressure and the temperature of the medium must be 0.8 to 1.1 bar and -20 to $+60^\circ\text{C}$ and the residual air must have the normal atmospheric oxygen content. If the above specified equipment is operated outside these atmospheric conditions, this approval serves as a guide. Additional tests are recommended for the specific application planned. These tests are the responsibility of the user/owner.

It is necessary for the user/owner to clarify and eliminate any risk of chemical reactions between the components of the DHV 718 and the chemical fluids used, in cooperation with the manufacturer.

Ensure that the valve body is included in the equipotential bonding during installation.

Adhere to EN 60079-14 and EN 50281-1-2 for installation and operation.

Ensure that the electrical connection between the adjustment screw and housing screw is correctly performed and intact.

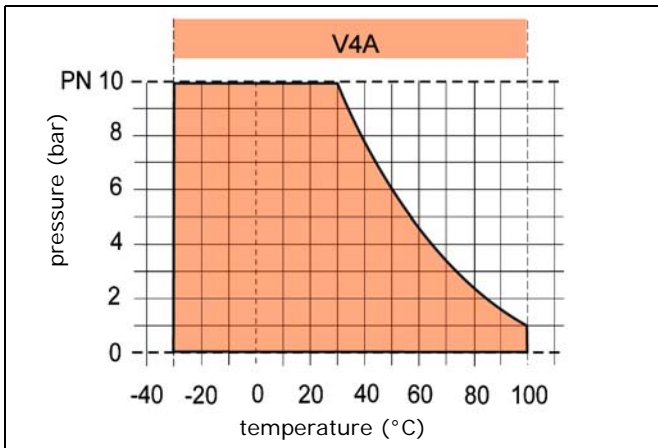
Ensure that the entire valve is included in the equipotential bonding "Connection to earth of the housing".

During operation, maintenance or inspection, only use a damp cloth to wipe or clean in order to avoid static charges.

Observe the maximum permissible temperature.

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Pressure/temperature diagram



The pressure/temperature limits are applicable for PN 10 and a computed operating life factor of 25 years.

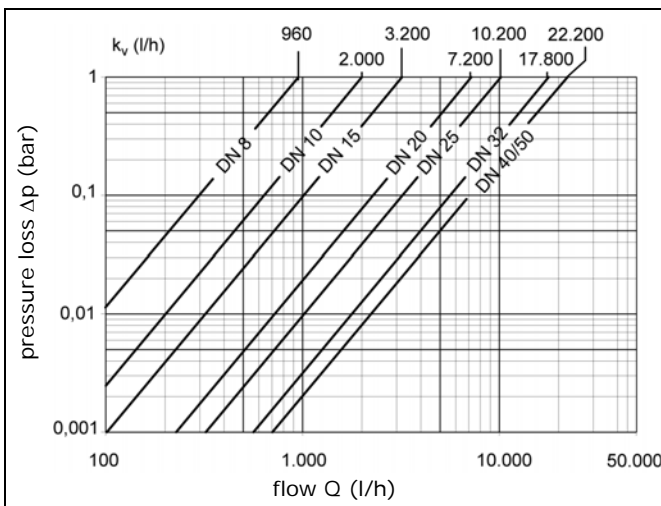
The values are a guide for harmless media (DIN 2403), to which the valve material is resistant.

For other fluids please refer to the ASV resistance guide.

The operating life of the wear parts depends on the conditions of use.

For temperatures below 0 °C please specify the precise operating conditions of the application.

Pressure loss curve (standard values for H₂O, 20°C)



Pressure loss and kv value

The diagram shows the pressure loss Δp in relation to the flow Q .

Conversion aid:

$$c_v = k_v \cdot 0.07$$

$$f_v = k_v \cdot 0.0585$$

Units:

$$k_v \quad [l/min]$$

$$c_v \quad [gal/min] \text{ US}$$

$$f_v \quad [gal/min] \text{ GB}$$

Notes on operation

Safe operation of the valve can only be ensured if it is properly installed, operated, serviced or repaired by qualified personnel according to its intended use while observing the accident prevention regulations, safety regulations, relevant standards and technical regulations or data sheets such as e.g. DIN, DIN EN, DIN ISO and DVS*. *DVS = German Welding Society

The intended use includes adhering to specified limit values for pressure and temperature, as well as checking the chemical resistance with regard to the operating conditions.

For this purpose, ensure that all components coming into contact with the medium are **"resistant"** in accordance with the ASV resistance guide.

The user/owner is obligated to inform the authorised qualified personnel instructed with the installation, inspection and/or maintenance of any potential dangers emanating from the system/medium and to ensure that suitable protective measures are taken.

If there is no operating and maintenance manual available to the authorised qualified personnel, please request a manual from us prior to installation, maintenance or repair.

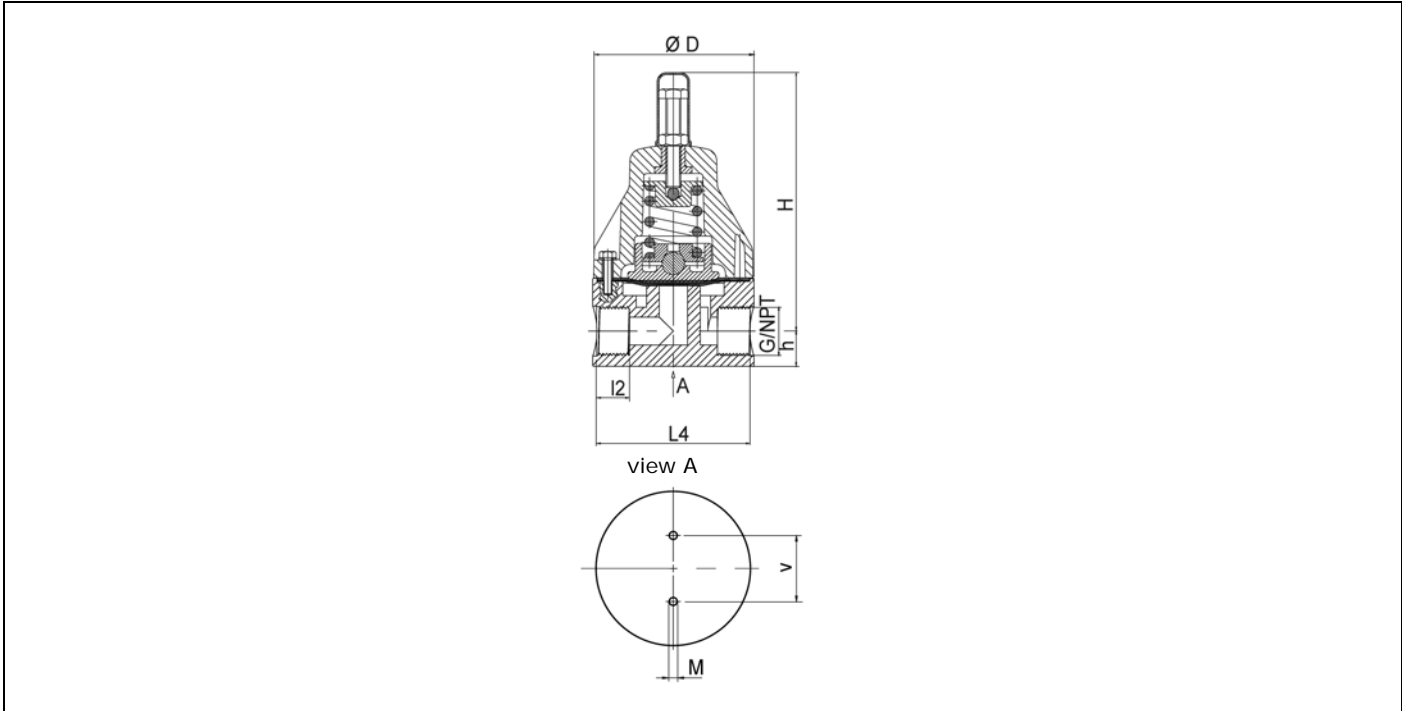
Non-observance of the specified instructions and safety regulations may cause damage to health and/or damage to assets.

NOTE

Check the tightening torques of the housing screws at certain time intervals.

Admissible tightening torques for lubricated housing screws:

size	tightening torque (Nm)
DN 10	6
DN 15	6
DN 20	9
DN 25	9
DN 32	12
DN 40	12
DN 50	12

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Housing: Stainless steel 1.4571

Dimensions

d (mm)		-	16	20	25	32	40	50	63
DN (mm)		-	10	15	20	25	32	40	50
DN (inch)		-	3/8	1/2	3/4	1	1 1/4	1 1/2	2
pipe thread	G (inch)	-	3/8	1/2	3/4	1	1 1/4	1 1/2	2
thread	NPT (inch)	-	3/8	1/2	3/4	1	1 1/4	1 1/2	2
female threaded socket	D	-	81.5	81.5	108.0	108.0	148.0	148.0	148.0
female threaded socket	H	-	152.0	152.0	175.0	175.0	217.0	219.5	227.5
	h	-	16.0	16.0	24.0	24.0	27.5	30.0	35.0
	L4	-	79.0	79.0	103.0	103.0	142.0	140.0	136.0
NPT thread	I2	-	11.0	15.0	16.0	18.0	20.0	22.0	25.0
pipe thread G	I2	-	16.0	18.0	20.0	22.0	25.0	25.0	25.0
	M	-	M 6	M 6	M 6	M 6	M 8	M 8	M 8
	v	-	40	40	46	46	65	65	65

Weight (kg)

d (mm)		-	16	20	25	32	40	50	63
V4A	female thread	-	1.7	1.7	4.4	4.4	9.4	9.9	11.1

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Characteristic curves of DHV 718 for H₂O, 20°C

The valve characteristic curves show the working and/or primary pressure p_A (bar) in relation to the flow Q (l/h).

The parameter is the set pressure p_E , whereby the valve is closed ($Q = 0$ l/h).

The curve shows the progression of the opening pressure.

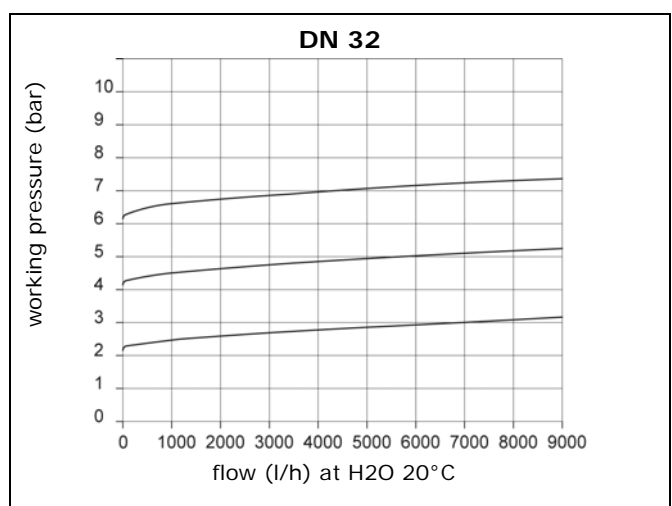
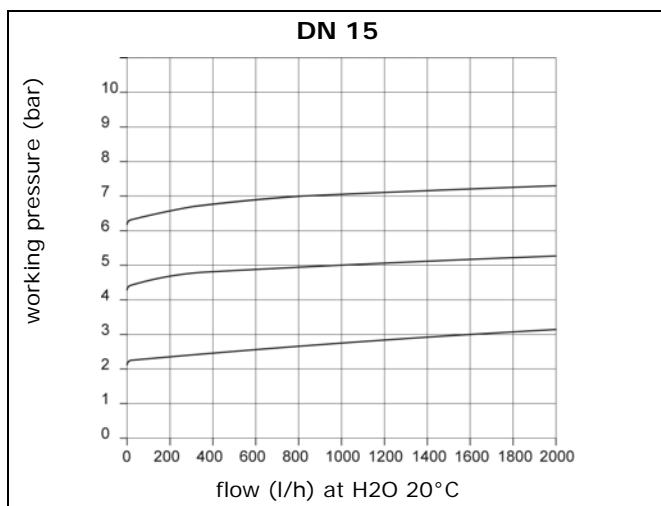
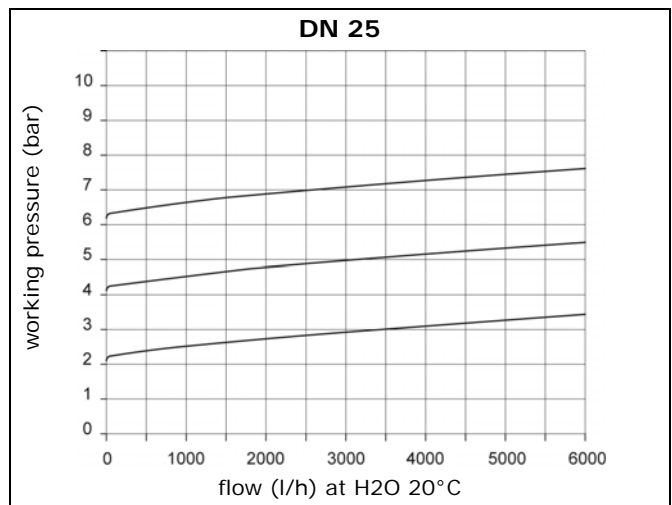
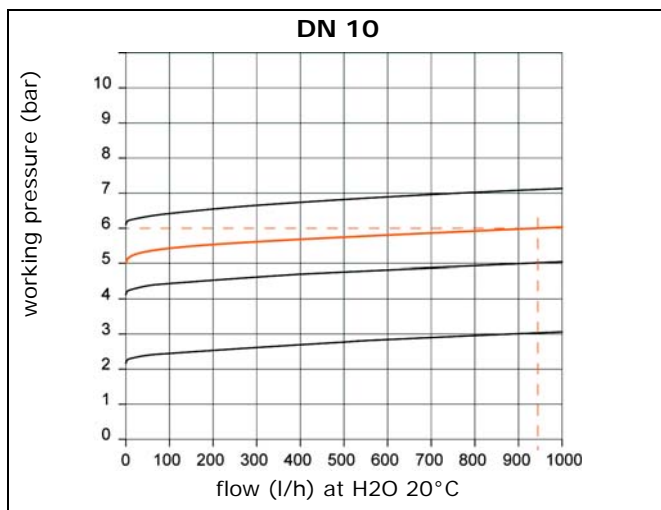
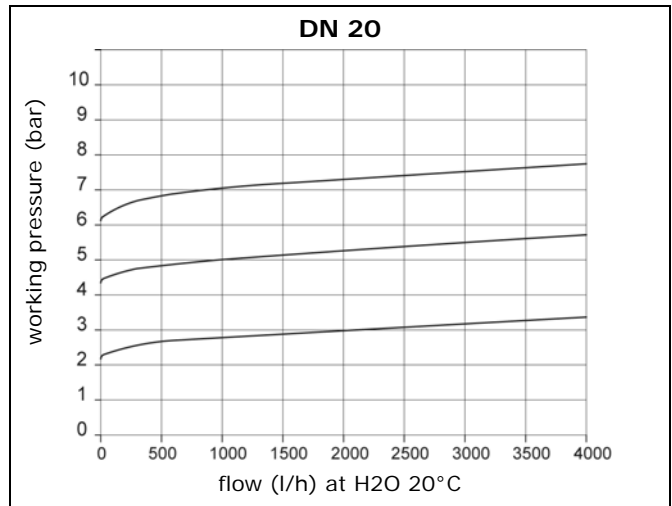
Configuration example: Size DN 10

The valve is set tight at 5 bar.

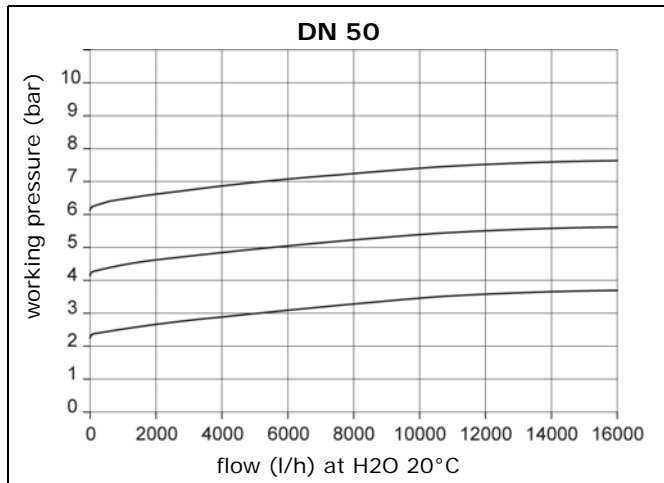
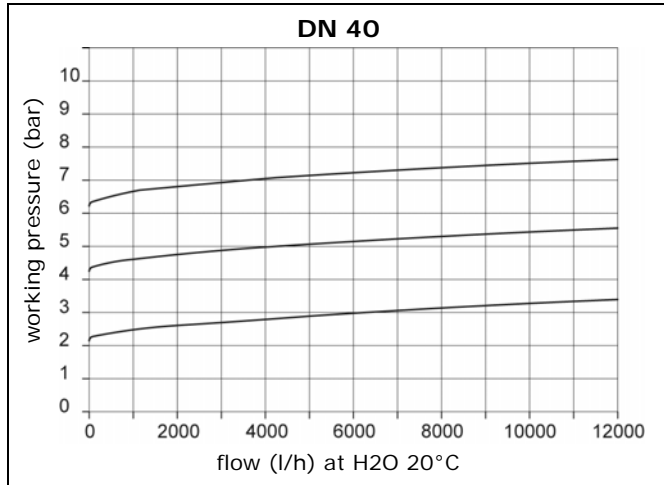
A flow of approx. 940 l/h is reached at a pressure increase of 1 bar.

According to the curve, this results in the following values:

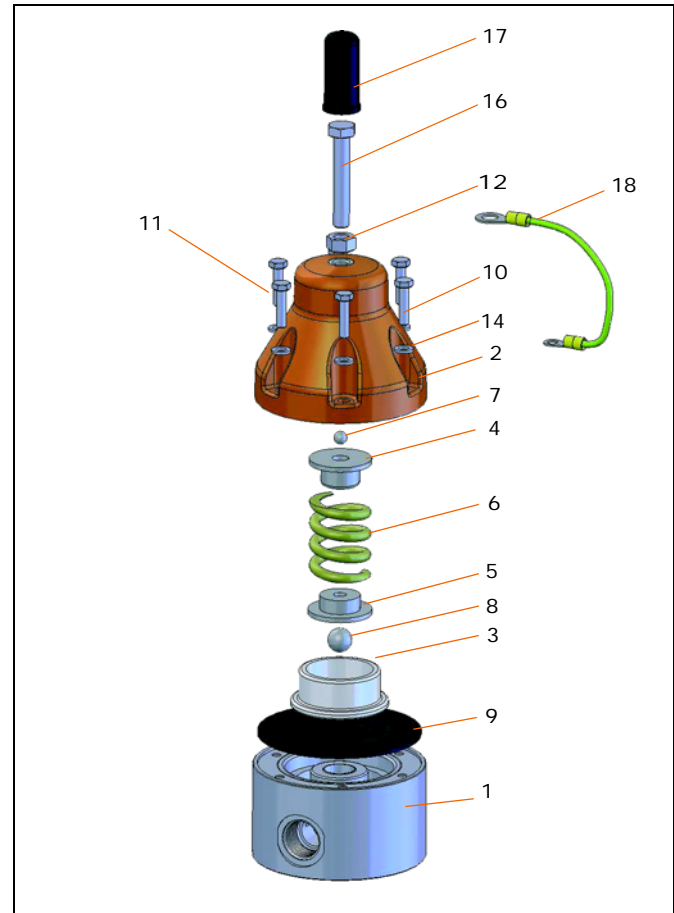
Set pressure p_E	approx. 5.0 bar
Working pressure p_A	approx. 6.0 bar
Opening pressure p_O	approx. 5.4 bar
Closing pressure p_S	approx. 4.5 bar
Hysteresis ($p_O - p_S$)	approx. 1.0 bar



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Exploded drawing

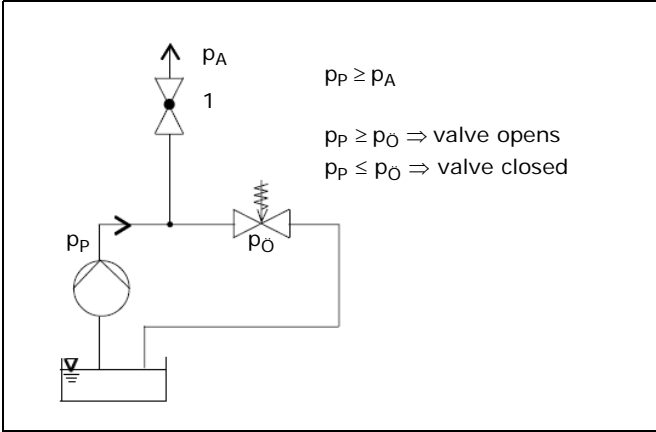


item	qty.	designation
1	1	valve housing
2	1	spring dome
3	1	diaphragm disc
4	1	pressure plate
5	1	spring plate
6	1	pressure spring
7	1	steel ball
8	1	steel ball
9	1	diaphragm
10	2	hexagon screw
11	4	hexagon screw
12	1	hexagon nut
13	-	-
14	6	washer
15	-	-
16	-	-
17	1	protection cap
18	1	earth cable
19	-	-
20	-	-

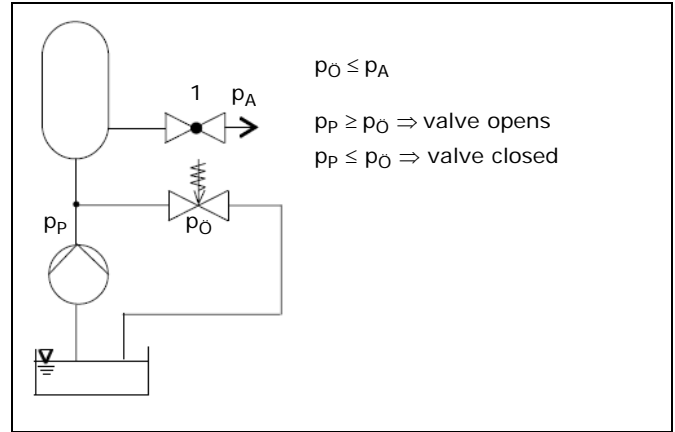
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Applications for pressure relief valves

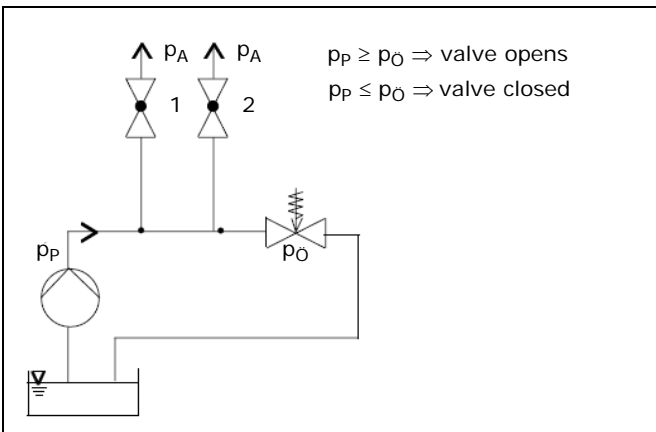
Example 1: Constant system pressure



Example 3: Pressure relief valve as overflow valve
The container pressure or system must not exceed the max. pressure value



Example 2: Consumer 1 and/or 2 opens, pressure relief valve closes



P_A = working pressure
 P_P = pump pressure
 P_O = opening pressure

Malfunctions, possible causes and their rectification

malfunction	cause	rectification
Valve leaking at the diaphragm.	Insufficient contact pressure.	Retighten housing screws.
Pressure falls below set value.	Diaphragm defective in the area of the seal seat. Heavy soiling.	Renew diaphragm, rework seal seat, if necessary. Clean valve body.
Pressure rises above set value.	Secondary area blocked.	Clean valve.



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Ident number

Housing: stainless steel 1.4571

Diaphragm: EPDM, conductive

connection			thread G	NPT thread
seal			-	-
d	DN	DN	ident No.	ident No.
(mm)	(mm)	(inch)		
16	10	3/8	139212	139219
20	15	1/2	139213	139220
25	20	3/4	139214	139221
32	25	1	139215	139222
40	32	1 1/4	139216	139223
50	40	1 1/2	139217	139224
63	50	2	139218	139225

Subject to technical modifications