

# Back Pressure/Relief Valve Type DHV 718

optimized design, safe in function



## Advantages

- frictionless components
- low maintenance
- low pressure increase up to fully opened valve
- constant low vibration controlling
- hermetically sealed by diaphragm
- for oscillating pumps
- for viscous media even slightly polluted

## Application

- chemical plants
- water treatment
- galvanotechnics

## Utilisation

- as back pressure valve; constant working or primary pressure
- as overflow valve; opens in case of exceeding the set opening pressure

## Flow media

- Technically clean neutral or aggressive fluids provided that the components coming into contact with the medium are resistant at the operating temperature according to the ASV resistance guide.

## Examinations

- Requirements and examinations acc. to DIN 3441, 3442, 8063, 16962/3.

## Nominal pressure (H<sub>2</sub>O, 20°C)

- PN 10

## Media temperature

- see pressure/temperature diagram

## Operating pressure

- see pressure/temperature diagram

## Opening pressure

- DN 8                    0.5 bar
- DN 10 - 50        0.3 bar

## Set range

- DN 8                    0.5 - 10 bar
- DN 10 - 50        0.5 - 8 bar

## Hysteresis

≤ 0.5 bar

## Size

- DN 8 - DN 50

## Body

- DN 8                    PVC-U, PP or PVDF
- DN 10 - 50        PVC-U, PP or SS 1.4571

## Bonnet

PP, glass fibre reinforced

## Diaphragm

- EPDM, fabric reinforced and PTFE-coated on fluid side

## Adjustment and connecting screws

- stainless steel (SS 1.4301)

## Connection

- DN 8: union socket ends (DIN 8063) for solvent or fusion welding acc. to DIN/ISO
- DN 10 - 50: spigot ends for solvent or fusion welding acc. to DIN/ISO or socket end with pipe or NPT threaded sockets

## Mounting

- variable, bonnet preferably in upright position

## Flow direction

- direction of flow always in direction of arrow

## Fastening

- thread inserts for easiest mounting

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### Colour

- body
  - PVC-U: grey, RAL 7011
  - PP: grey, RAL 7032
  - PVDF: opaque, yellowish-white
- bonnet
  - PP-GFR: orange, RAL 2004

### Pressure/temperature diagram

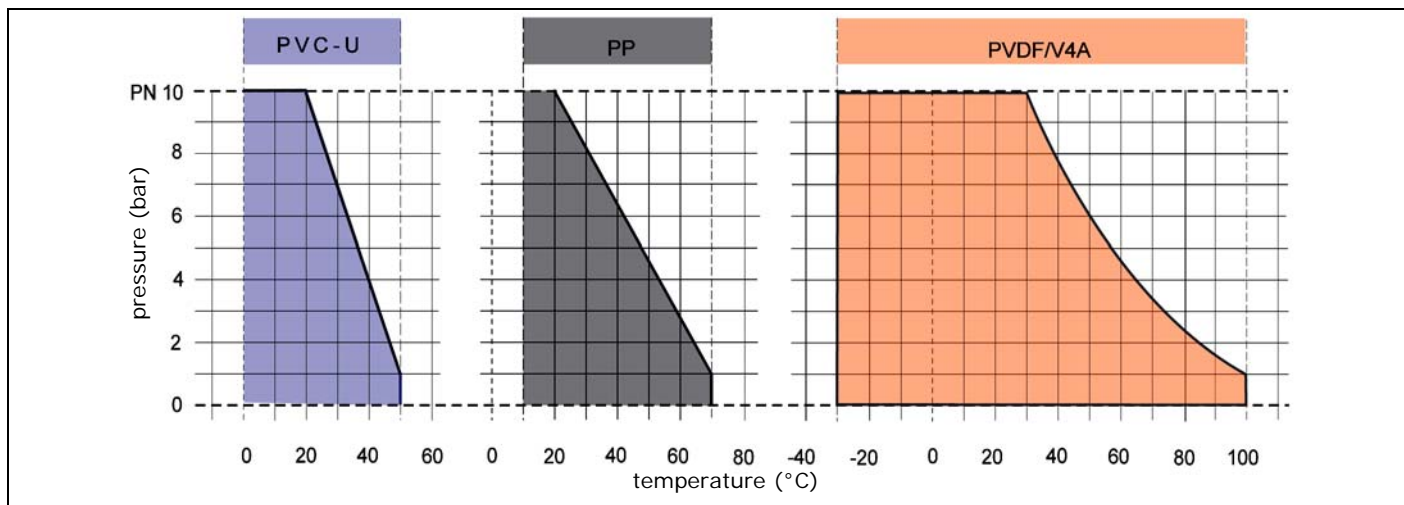
The pressure/temperature limits are applicable for the stated nominal pressures and a computed operating life factor of 25 years.

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

For other media see the ASV resistance guide.

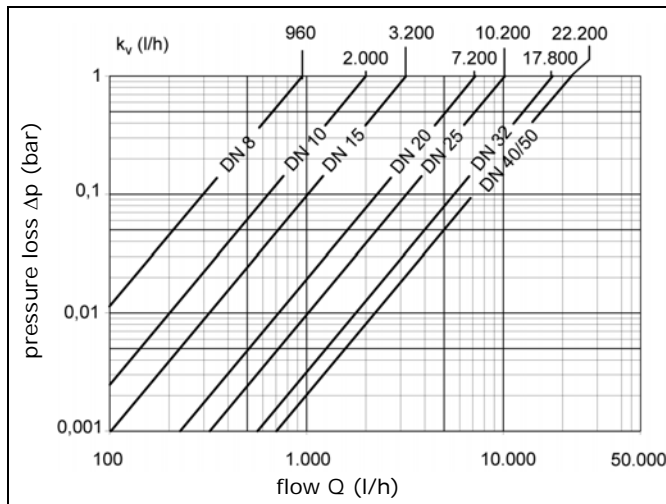
The durability of wear and tear parts depends on the operating conditions of the application.

For temperatures below 0°C (PP < +10°C) please specify the precise operating conditions of the application.



### Pressure loss curve

(reference values for H<sub>2</sub>O, 20°C)



### Pressure loss and k<sub>v</sub>-value

The diagram shows pressure loss  $\Delta p$  over the flow  $Q$ .

**For calculation:**

$$c_v = k_v \cdot 0.07$$

$$f_v = k_v \cdot 0.0585$$

**Units:**

$$k_v \text{ [l/min]}$$

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

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

### Function and design

Normally the valve is closed and the diaphragm is only loaded by the low secondary pressure at the valve seat. Any rise of working or primary pressure lifts the diaphragm against the spring force. The valve opens and the pressure decreases.

The flat diaphragm, constructed for full opening of the valve (D/4), safely separates the fluid from the spring housing.

The only components coming into contact with the medium are the PTFE-coated diaphragm and the valve body.

In normal position the diaphragm seats on the well dimensioned valve seat. An inadmissible compression set at max. spring force is impossible.

The valve body is provided with a cavity. The diaphragm has the appropriate design and is inserted into the cavity. At compression due to the screw tightening torques there is no leakage, even at higher temperatures.

#### NOTE

In normal position the counter pressure (secondary pressure) may be approximately 4 times higher than the set pressure  $p_E$ , the valve rests closed.

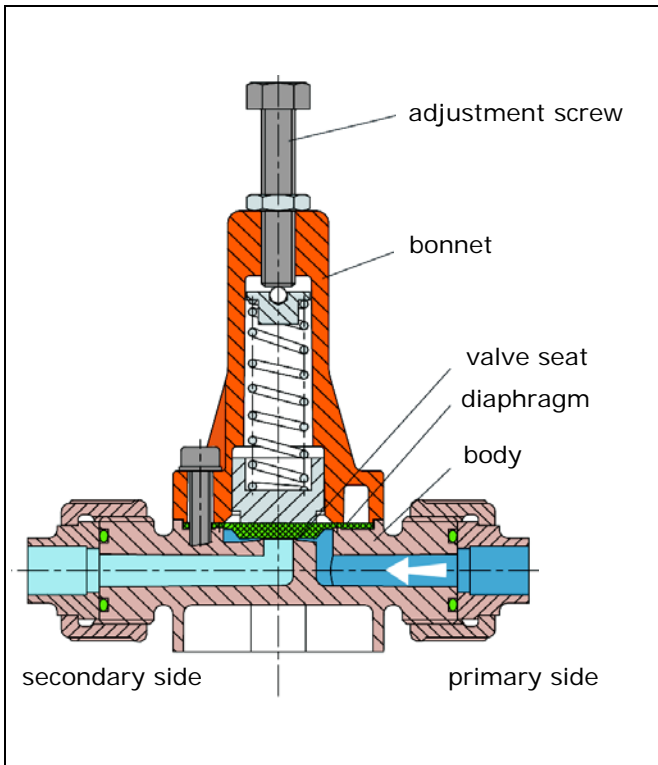
### Valve setting

For reading the set pressure we recommend the installation of a diaphragm pressure gauge guard with pressure gauge in the primary line.

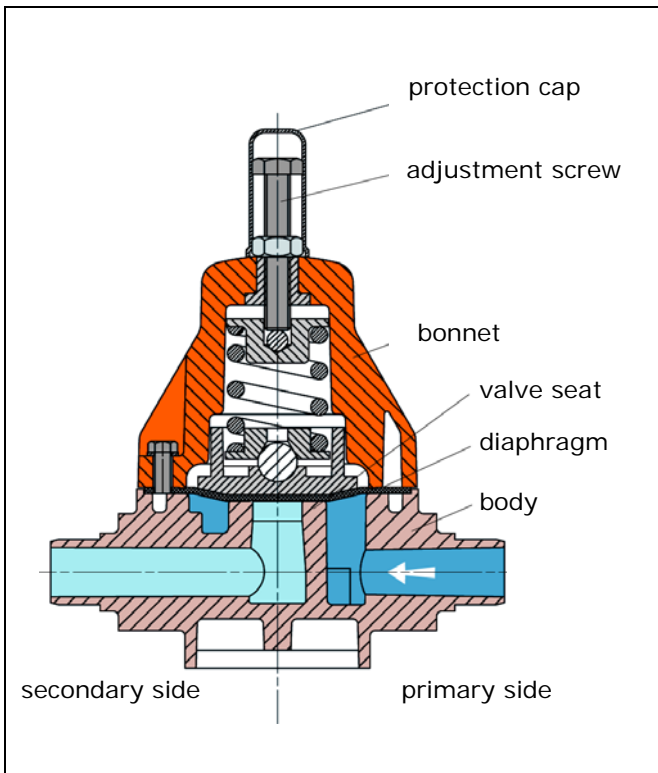
1. Pull off protection cap (DN 10 - DN 50).
2. Loosen counter nut at adjustment screw.
3. Turn adjustment screw clockwise (pressure increase) until the required set pressure or opening pressure is reached.

## Back Pressure/Relief Valve Type DHV 718

**Sectional drawing DHV 718, DN 8**



**Sectional drawing DHV 718, DN 10 - DN 50**



### Operating instructions

**ATTENTION**

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\* for example.

\*DVS = German Welding Society

The intended use includes adhering to the 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 media are **»resistant«** in accordance with the ASV resistance guide.

If no maintenance or instruction manual is available to the authorized qualified personnel, please request a manual prior to installation, maintenance or repair.

Non-observance of the specified information and safety instructions may lead to injuries and/or property damages.

**NOTE**

In the event of diaphragm settling and/or temperature fluctuations, it is necessary to check the tightening torque of the housing screws at certain intervals.

Following tightening torque must be observed:

tightening torque							
d (mm)	12	16	20	25	32	40	50 63
MD (Nm)	2,5	4,5	4,5	6	6	8	8 8

fastening torque for lubricated screws

**NOTE**

Do not allow elastomer components, especially the EPDM sealing elements, to come into contact with synthetic or mineral oils, grease or cleaning agents. Danger of swelling. Only appropriate grease should be used such as silicone grease.

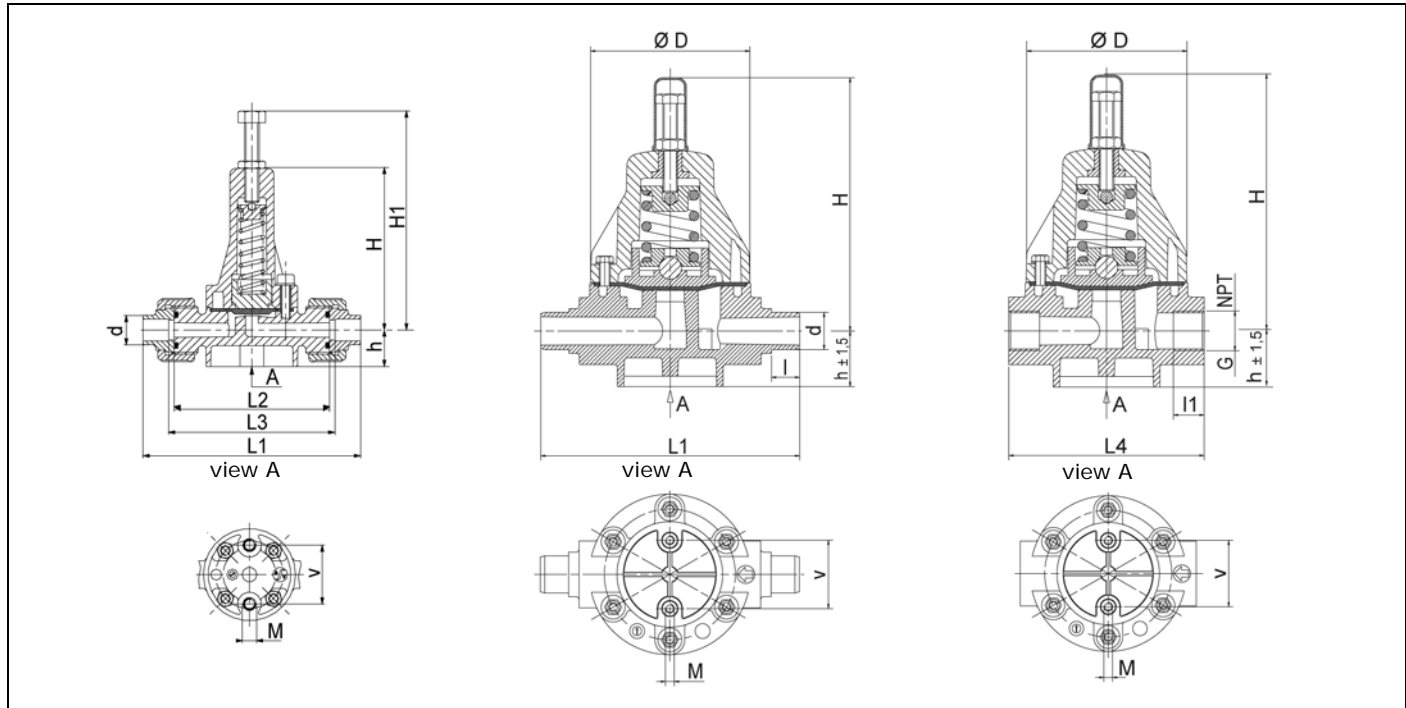
**NOTE**

We recommend

- installing of filter or strainer (see print 330551) directly before the valve for avoiding impurities e.g. at valve seat.

## Back Pressure/Relief Valve Type DHV 718

Body: PVC-U, PP, PVDF



### Dimension

d (mm)		12	16	20	25	32	40	50	63
DN (mm)		8	10	15	20	25	32	40	50
DN (inch)		1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
female thread	G (inch)	-	3/8	1/2	3/4	1	1 1/4	1 1/2	2
female thread	NPT (inch)	-	3/8	1/2	3/4	1	1 1/4	1 1/2	2
PVDF/PVC-U/PP	D	50.0	81.0	81.0	107.0	107.0	147.0	147.0	147.0
	H	120.0	177.0	177.0	207.0	207.0	277.0	277.0	277.0
PVDF/PVC-U/PP	h	20.0	25.0	25.0	37.0	37.0	57.0	57.0	57.0
PVC-U	L1	119.0	144±1.0	144±1.0	174±1.0	174±1.0	224±1.1	224±1.1	244±1.2
PP	L1	119.0	144±2.1	144±2.1	174±2.6	174±2.6	224±3.3	224±3.3	244±3.6
PVDF	L1	119.0							
PVC-U/PP/PVDF	L2	85.0	-	-	-	-	-	-	-
PVC-U/PP/PVDF	L3	91.0	-	-	-	-	-	-	-
PVC-U/PP	L4	-	94±1.0	94±1.0	130±1.0	130±1.0	162±1.0	176±1.0	188±1.0
PVC-U/PP	I	-	14.0	16.0	19.0	22.0	26.0	31.0	38.0
PVC-U/PP	I1	-	16.0	18.0	20.0	22.0	24.0	26.0	30.0
	M	M 5	M 6	M 6	M 6	M 6	M 8	M 8	M 8
	v	32.0	40.0	40.0	46.0	46.0	65.0	65.0	65.0

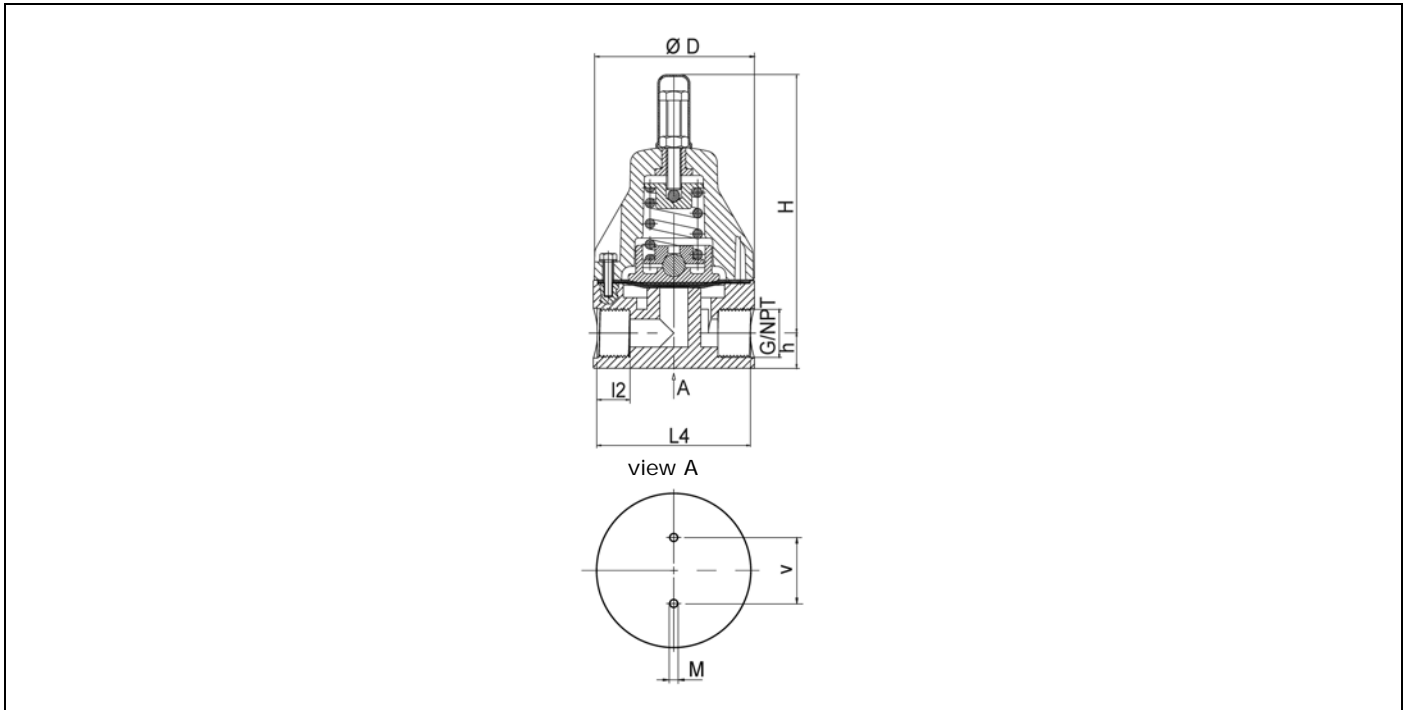
### Weight (kg)

d (mm)		12	16	20	25	32	40	50	63
PVC-U	socket/spigot	0.3	0.6	0.6	1.3	1.3	3.4	3.4	3.4
PP	socket/spigot	0.2	0.5	0.5	1.1	1.1	2.9	2.9	2.9
PVDF	socket	0.3	-	-	-	-	-	-	-
PVC-U	female thread	-	0.6	0.6	1.3	1.3	3.3	3.3	3.3
PP	female thread	-	0.5	0.5	1.1	1.1	2.9	2.9	2.9

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## Back Pressure/Relief Valve Type DHV 718

**Body: SS 1.4571**



### Dimension

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
female thread	G (inch)	-	3/8	1/2	3/4	1	1 1/4	1 1/2	2
female thread	NPT (inch)	-	3/8	1/2	3/4	1	1 1/4	1 1/2	2
female thread	D	-	81.5	81.5	108.0	108.0	148.0	148.0	148.0
female thread	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
female thread NPT	I2	-	11.0	15.0	16.0	18.0	20.0	22.0	25.0
female 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
SS 1.4571	female thread	-	1.7	1.7	4.4	4.4	9.4	9.9	11.1



## Back Pressure/Relief Valve Type DHV 718

**Ident number**

**Body: PVC-U**

**Diaphragm: EPDM/PTFE**

connection			spigot ends		socket ends		socket ends		female thread G		female thread NPT	
sealing			-		EPDM		FPM		-		-	
d	DN	DN	ident no.	ident no.	ident no.	ident no.	ident no.	ident no.	ident no.	ident no.	ident no.	
(mm)	(mm)	(inch)										
12	8	1/4	-	127839	127840	-	-	-	-	-	-	
16	10	3/8	135269	-	-	135262	136331	-	-	-	-	
20	15	1/2	135270	-	-	135263	136332	-	-	-	-	
25	20	3/4	135271	-	-	135264	136333	-	-	-	-	
32	25	1	135272	-	-	135265	136334	-	-	-	-	
40	32	1 1/4	135273	-	-	135266	136335	-	-	-	-	
50	40	1 1/2	135274	-	-	135267	136336	-	-	-	-	
63	50	2	135275	-	-	135268	136337	-	-	-	-	

**Body: PP**

**Diaphragm: EPDM/PTFE**

connection			spigot ends		socket ends		socket ends		female thread G		female thread NPT	
sealing			-		EPDM		FPM		-		-	
d	DN	DN	ident no.	ident no.	ident no.	ident no.	ident no.	ident no.	ident no.	ident no.	ident no.	
(mm)	(mm)	(inch)										
12	8	1/4	-	127841	127842	-	-	-	-	-	-	
16	10	3/8	135283	-	-	135276	136338	-	-	-	-	
20	15	1/2	135284	-	-	135277	136339	-	-	-	-	
25	20	3/4	135285	-	-	135278	136340	-	-	-	-	
32	25	1	135286	-	-	135279	136341	-	-	-	-	
40	32	1 1/4	135287	-	-	135280	136342	-	-	-	-	
50	40	1 1/2	135288	-	-	135281	136343	-	-	-	-	
63	50	2	135289	-	-	135282	136344	-	-	-	-	

**Body: PVDF**

**Diaphragm: EPDM/PTFE**

connection			socket ends		socket ends	
sealing			EPDM		FPM	
d	DN	DN	ident no.	ident no.	ident no.	ident no.
(mm)	(mm)	(inch)				
12	8	1/4	127843	127844	-	-

**Body: SS 1.4571**

**Diaphragm: EPDM/PTFE**

connection			female thread G		female thread NPT	
sealing			-		-	
d	DN	DN	ident no.	ident no.	ident no.	ident no.
(mm)	(mm)	(inch)				
16	10	3/8	137134	136286	-	-
20	15	1/2	137135	136287	-	-
25	20	3/4	137136	136288	-	-
32	25	1	137137	136289	-	-
40	32	1 1/4	137138	136290	-	-
50	40	1 1/2	137139	136291	-	-
63	50	2	137140	136292	-	-

## Back Pressure/Relief Valve Type DHV 718

### Characteristic curves DHV 718 for H<sub>2</sub>O, 20°C

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

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

The curve shows the progression of the opening pressure.

#### Example: Size DN 10

The valve is set tight at 5 bar.

At a pressure increase of 1 bar a flow of appr. 940 l/h is reached.

#### According to the curve following values arise:

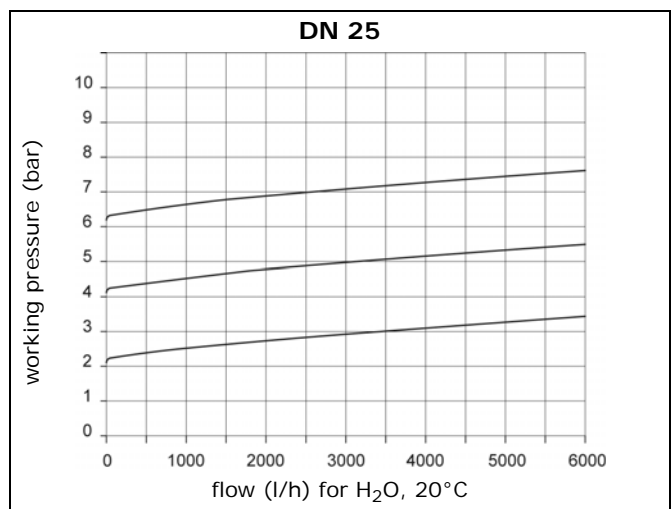
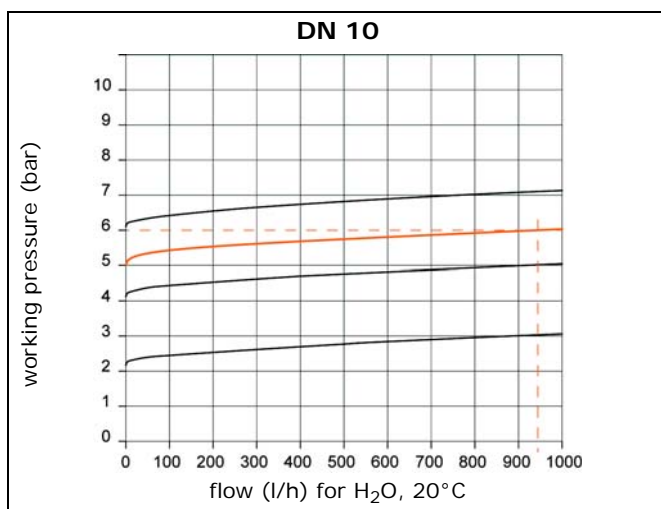
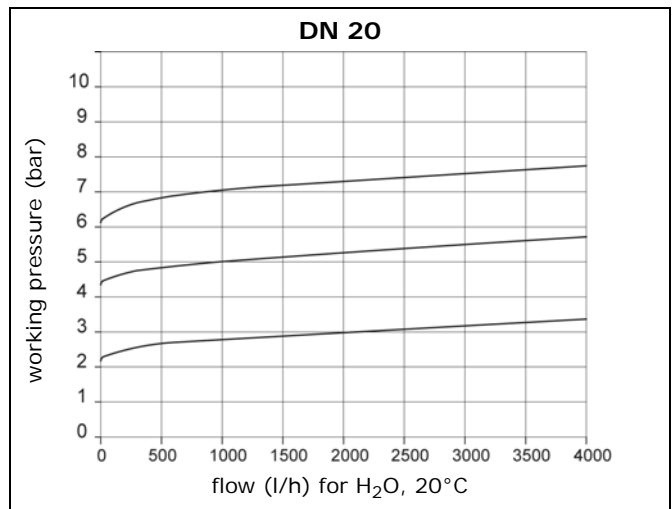
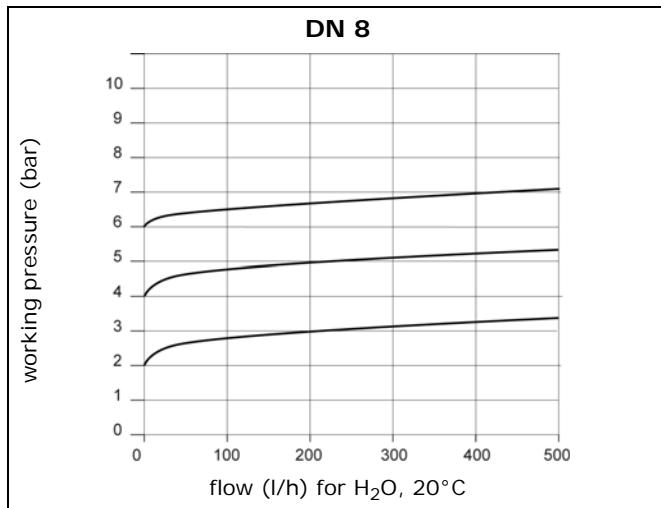
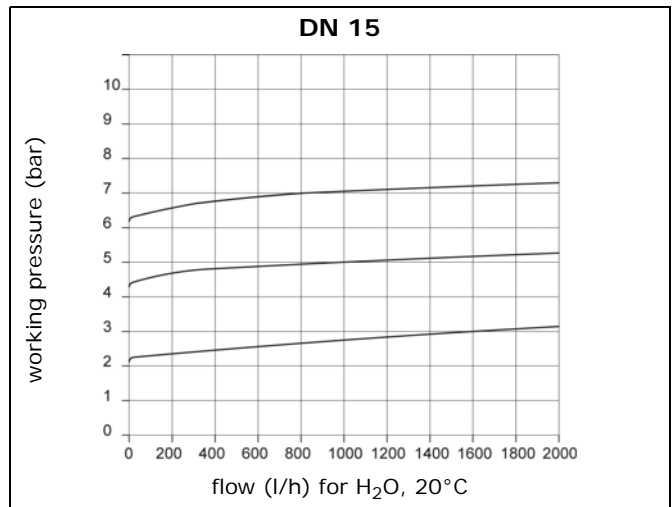
Set pressure  $p_E$  appr. 5.0 bar

Working pressure  $p_A$  appr. 6.0 bar

Opening pressure  $p_O$  appr. 5.4 bar

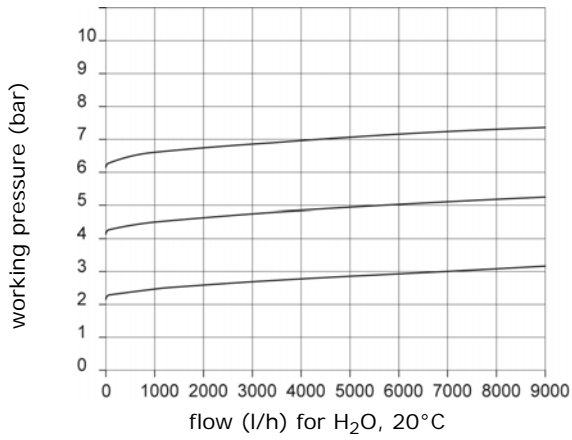
Closing pressure  $p_S$  appr. 4.5 bar

Hysteresis ( $p_O - p_S$ ) appr. 1.0 bar

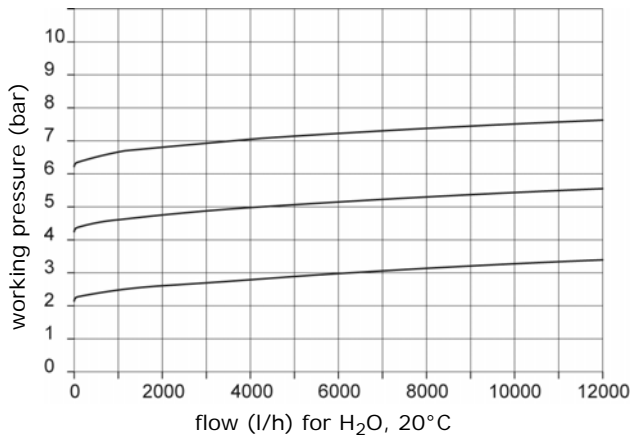


## Back Pressure/Relief Valve Type DHV 718

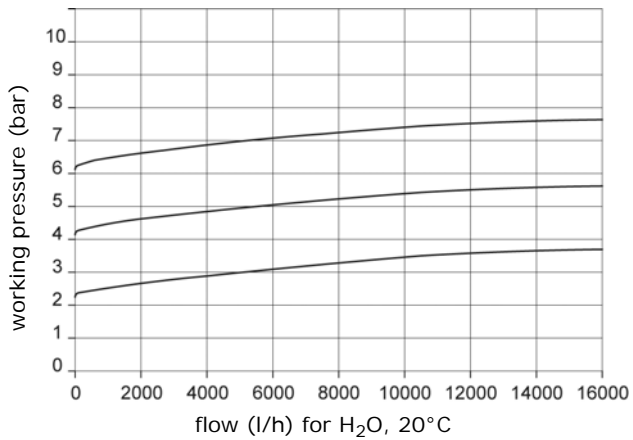
**DN 32**



**DN 40**



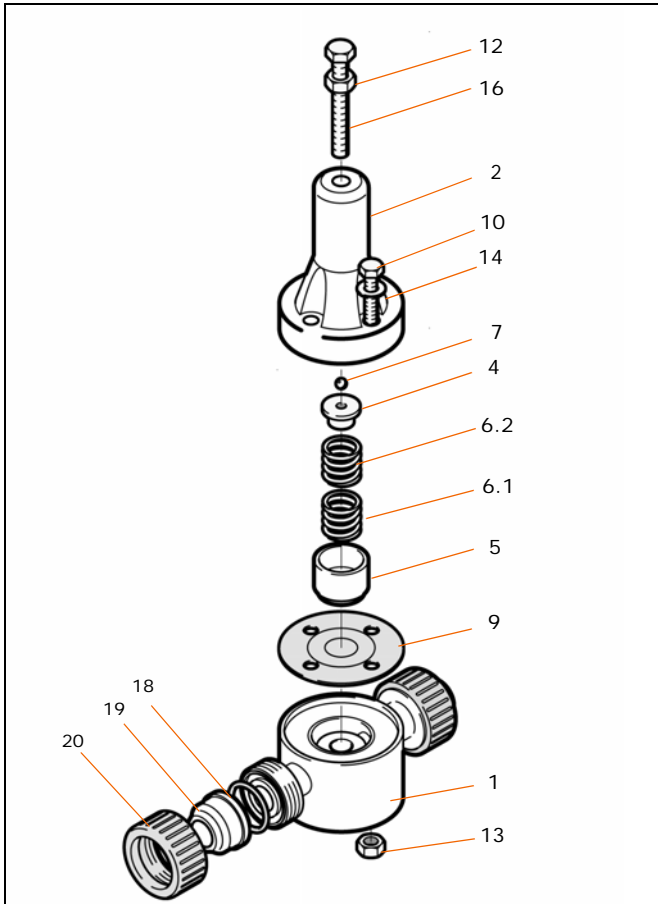
**DN 50**





# Back Pressure/Relief Valve Type DHV 718

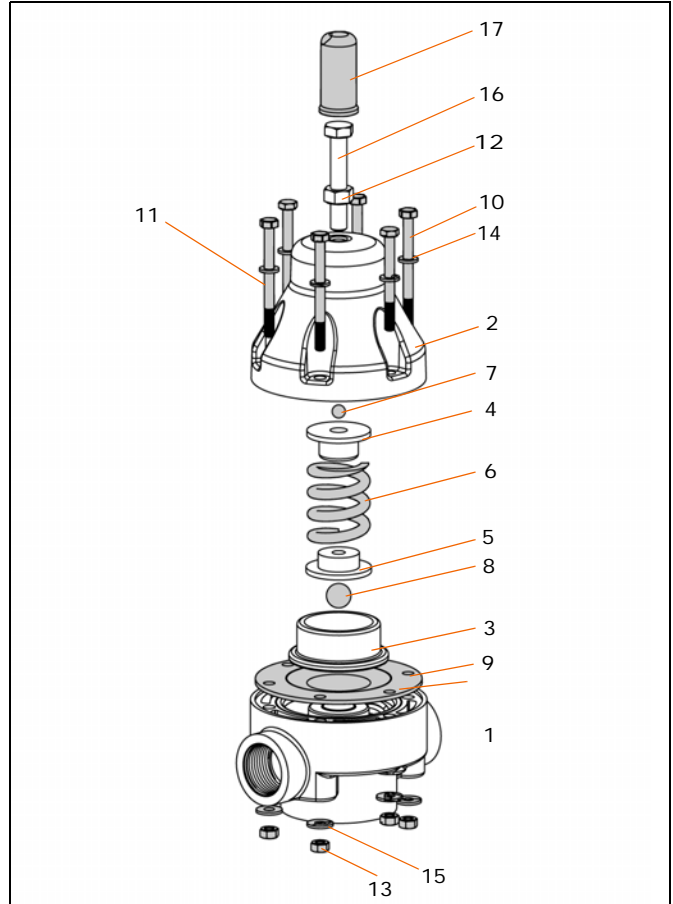
## Spare parts list DN 8



item	qty.	designation
1	1	body
2	1	bonnet
3	-	-
4	1	pressure plate
5	1	spring plate
6.1	1	spring
6.2	1	spring
7	1	steel ball
8	-	steel ball
9	1	diaphragm*
10	4	hexagonal bolt
11	-	-
12	1	hexagonal nut
13	4	hexagonal nut
14	4	washer
15	-	-
16	1	hexagonal bolt
17	-	-
18	2	O-ring
19	2	insert
20	2	union nut

\*spare part

## Spare parts list DN 10 - 50



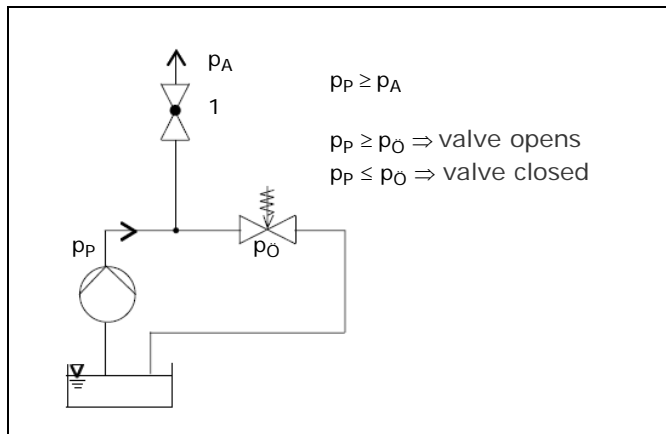
item	qty.	designation
1	1	body
2	1	bonnet
3	1	diaphragm plate
4	1	pressure plate
5	1	spring plate
6	1	spring
7	1	steel ball
8	1	steel ball
9	1	diaphragm*
10	2	hexagonal bolt
11	4	hexagonal bolt
12	1	hexagonal nut
13	6	hexagonal nut
14	6	washer
15	6	washer
16	1	socket head cap screw
17	1	protection cap
18	-	-
19	-	-
20	-	-

\*spare part

## Back Pressure/Relief Valve Type DHV 718

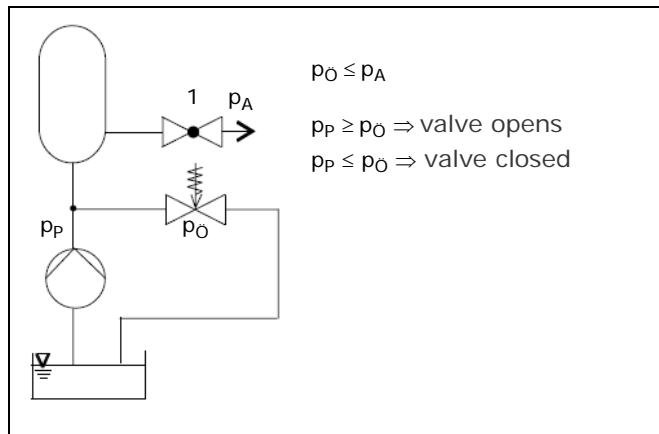
### Applications of back pressure/relief valves

#### 1. Constant system pressure

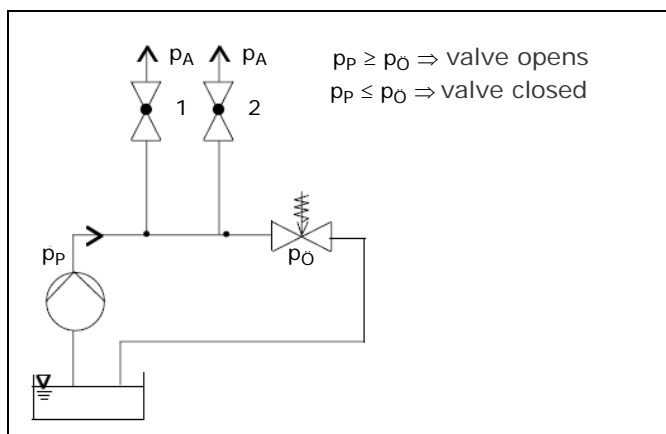


#### 3. As overflow valve

Pressure of container or plant system must not exceed the max. pressure value.



#### 2. Consumer 1 and/or 2 opens, valve closes



$P_A$  = working pressure

$P_P$  = pump pressure

$P_O$  = opening pressure

### Failures, possible causes and repair

Failure	Possible cause	Repair
Valve leaking at diaphragm.	Diaphragm clamping pressure too low.	Fasten housing screws.
Pressure drops below set pressure.	Diaphragm in the range of seal seat defective. High degree of pollution.	Replace diaphragm, if necessary, rectify seal seat. Clean valve body.
Pressure rises above set value.	Secondary area is blocked.	Clean valve.
Valve is leaking at adjustment screws.	Diaphragm defective.	Replace diaphragm.

Subject to technical modifications



