

# PRESSURE RELIEF VALVE

## DHV 712-R

Nominal size DN 10–50

Nominal size 3/8"–2"

Nominal pressure PN 10 bar



### Features

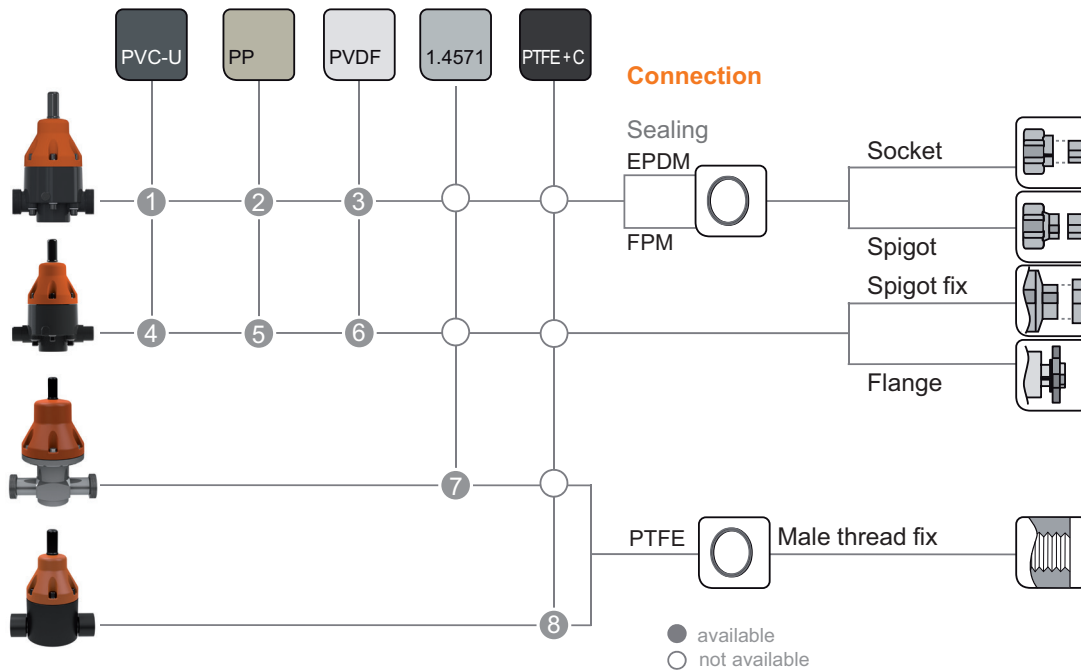
- pressure setting range 0.3 to 10 bar
- in resting position 100% not subject to back pressure, therefore well suited for use in metering points or injection points
- EPDM diaphragm, PTFE-coated on the medium side
- most powerful thermoplastic pressure relief valve with patented piston control
- for constant working pressures even with counter-pressure in the system
- constant, low vibration control behavior
- reliable reduction of pressure peaks and pulsations
- simple pressure setting possible at any time, even during operation

### Additional options on request

- silicone free
- pressure presetting
- alternative pressure setting range 0.3–4 bar
- pressure gauge
- pressure gauge hole
- sealed
- NSF certification
- Diffusion stop

[www.asv-stuebbe.com/produkte/mess-und-regeltechnik](http://www.asv-stuebbe.com/produkte/mess-und-regeltechnik)

# Pictogram Pressure relief valve DHV 712-R



**Diaphragm** PTFE (EPDM)

**On Demand**

- » Pressure Gauge Mounting
- » Sealing
- » Cleaning
- (Free of Surface Disturbing Substances)



**Pressure setting range** 0.3–10 bar

**Pressure settings** in 0.5 bar steps, between 0.5 and 10 bar

» **Diffusion resistance:** for Media which tend to Permeation - Valves with PTFE piston and PTFE (EPDM) diaphragm + ECTFE film  
Available Variants: PVC-U (FPM) | PVDF (FPM)

» **Pressure Gauge Installation:**

Valves with 2 Threaded Holes G 1/4" incl. Plug

**Basic Nominal Sizes:**

DN 8	DN 10	DN 15	DN 20	DN 25	DN 32	DN 40	DN 50	DN 65	DN 80	DN 100	DN 125	DN 150	DN 200	DN 250	DN 300	DN 350	DN 400
------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--------	--------	--------	--------	--------	--------	--------	--------

**Connection Material (process connection)**

<p><b>1</b> PVC-U socket <b>DIN, ANSI, BS, JIS</b> female thread Rp 1.4571 female thread Rp PE100 spigot <b>DIN*</b> (95 mm)</p> <p><b>2</b> PP socket <b>DIN</b> PP Stutzen (IR)* female thread Rp*</p> <p><b>3</b> PVDF socket <b>DIN</b> PVDF spigot IR*</p> <p><b>4</b> PVC-U spigot fix PP/St. flange <b>DIN*, ANSI*</b> GFK flange <b>DIN*</b></p>	<p><b>5</b> PP spigot fix** PP/St. flange <b>DIN*, ANSI*</b> GFK flange <b>DIN*</b></p> <p><b>6</b> PVDF spigot fix** PP/St. flange <b>DIN*, ANSI*</b></p> <p><b>7</b> 1.4571 male thread fix G</p> <p><b>8</b> PTFE+C male thread fix G</p> <p>* available in DN 15-50. **only for socket welding.</p>
--	---

## Pressure relief valve DHV 712-R

### Use

- chemical plant engineering
- industrial plant engineering
- water treatment

### Application

- as a pressure relief valve for constant counter pressure
- as overflow valve to protect the plant
- in connection with pulsation damper for low-pulsation dosing
- Not suited as equipment part with safety function according to the Pressure Equipment Directive.

### Valve function

- If the working or inlet pressure rises above the set value, the pressurized valve piston is lifted against the spring force. The valve opens and pressure is relieved into the secondary line (outlet side). The valve closes as soon as the working pressure at the valve piston is lower than the set spring pre-load.
- When in the case of the dynamic flow valve with set working pressure, counter pressure is generated on the outlet side, this pressure acts simultaneously underneath the active area of the diaphragm and on the loosely guided valve piston, i.e. the forces under the diaphragm surface and the piston cancel each other out. The valve lift and thus the working pressure remain virtually constant.

### Valve setting

- can be adjusted easily across the entire pressure range
- can be secured against unauthorized opening by sealing

### Flow medium

- Technically pure, neutral and aggressive fluids, provided that the selected valve materials coming into contact with the media are resistant at the operating temperature according to the ASV resistance guide.

### Flow direction

- always in the direction of the arrow, see graphics „sectional drawing“

### ASV resistance guide

[www.asv-stuebbe.de/pdf\\_resistance/300051.pdf](http://www.asv-stuebbe.de/pdf_resistance/300051.pdf)

### Process temperature

- See graphics „pressure/temperature diagram“

### Process pressure

- See graphics „pressure/temperature diagram“

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

- PN 10 bar

### Size

- DN 10–50

### Pressure setting range

- 0.3–10 bar

### Working pressure

- equals set pressure plus flow-dependent pressure increase (see characteristic curves): approx. 0.3–10 bar

### Deviation from the working pressure

- up to 5 bar counter pressure: approx. ±0.3 bar
- over 5 bar counter pressure: approx. ±0.5 bar

### Opening pressure

- approx. 0.3–0.5 bar

### Hysteresis

- Difference between opening and closing pressure approx. 0.3 bar

### Actuation

- medium controlled

## Device connection

- See graphics „pictograph pressure relief valve 712-R“

## Material with medium contact

Housing:

- PVC-U, PP, PVDF
- PTFE carbon-fiber reinforced (PTFE+C)
- stainless steel (1.4571)

Piston:

- PVC-U, PP, PVDF
- PTFE piston for medium (for example HF, HCl, HNO<sub>3</sub>), tending to permeation (penetration).

Sealing:

- EPDM, FPM, PTFE

Diaphragm:

- PTFE  
(EPDM diaphragm with PTFE coating on the side coming into contact with the medium)
- PTFE diaphragm with ECTFE coating for medium (for example HF, HCl, HNO<sub>3</sub>), tending to permeation (penetration).

## Material without medium contact

Bonnet:

- PP, glass fiber reinforced

Screws:

- stainless steel (1.4301)

## Mounting position

- as required

## Fastening

- via threaded inserts (metal inserts) in the valve body

## Color

Housing:

- PVC-U, gray, RAL 7011
- PP, gray, RAL 7032
- PVDF, opaque, yellowish-white
- PTFE, black
- stainless steel, unpainted

Bonnet:

- orange, RAL 2004

## Pressure gauge connection

The pressure relief valve can be factory fitted with a pressure gauge for neutral medium types.

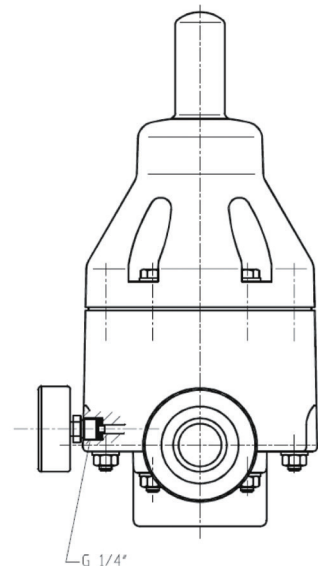
The resistance of the pressure gauge material has to be taken into consideration for other medium types.

## Pressure gauge

- Chemical version, damped
- Chemical version, undamped
- Contact pressure gauge

## Pressure gauge preparation

- Housing bore 2 x G 1/4" including plug.

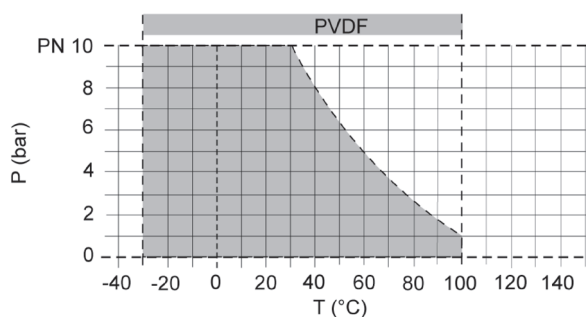
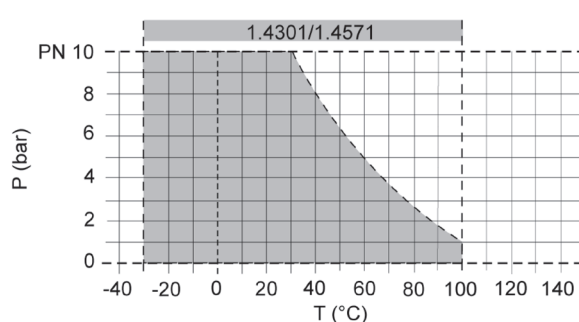
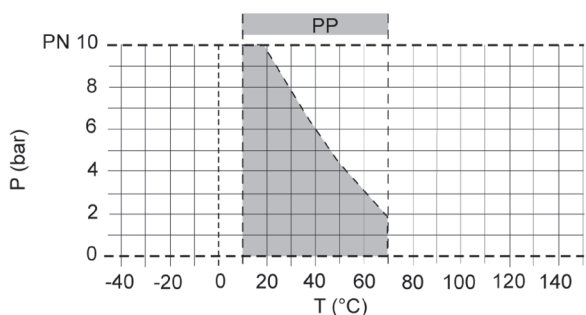
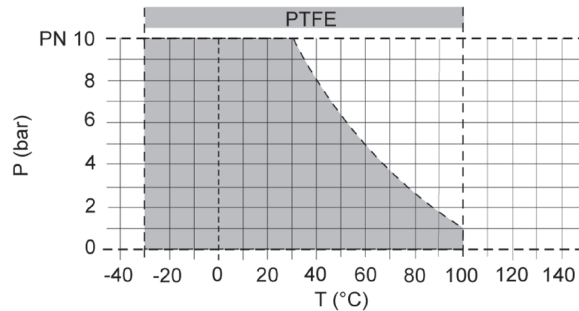
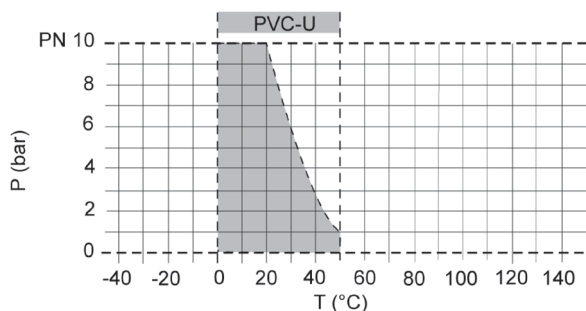


## Diffusion stop

- for medium tending to permeation: with PTFE piston and PTFE (EPDM) diaphragm + ECTFE coating
- Versions available: PVC-U (FPM) | PVDF (FPM)

# Pressure relief valve DHV 712-R

## Pressure/temperature diagram

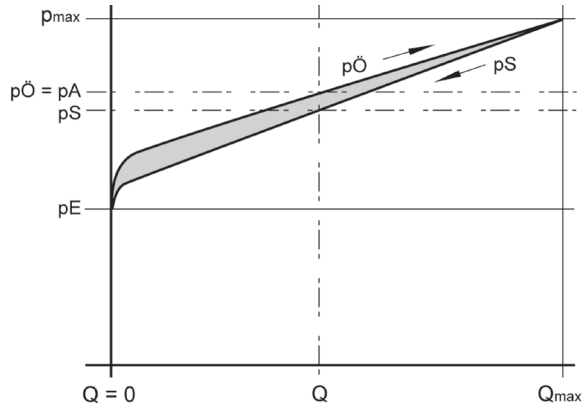


### Description

P	Operating pressure
T	Temperature

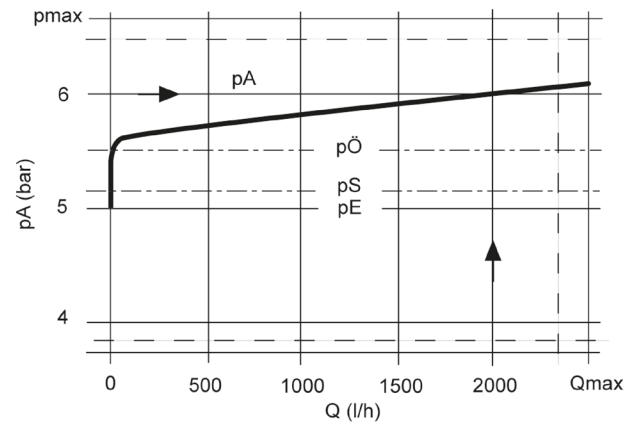
The pressure/temperature limits of the materials are valid for the stated nominal pressures and a service life of 25 years. These values are guide values for flow medium types which do not negatively impact the physical and chemical characteristics of the valve material. It may be necessary to take diminution factors into consideration. The operating life of the wear parts depends on the conditions of use.

## Operating behavior



	Description
$p_{max}$	Maximum pressure
$p_A$	Working pressure
$p_E$	Set pressure
$p_A - p_E$	Flow-dependent pressure increase
$p_{\ddot{O}}$	Opening pressure
$p_S$	Closing pressure
$p_{\ddot{O}} - p_S$	Hysteresis
$Q$	Flow
$Q_{max}$	maximum flow

## Characteristic curve, design example



	Description
$p_{max}$	Maximum pressure
$p_A$	Working pressure
$p_E$	Set pressure
$p_{\ddot{O}}$	Opening pressure
$p_S$	Closing pressure
$Q$	Flow
$Q_{max}$	maximum flow

The valve is set tight at 5 bar.

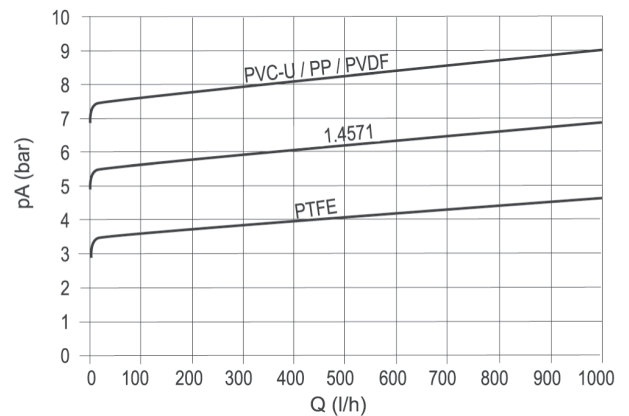
A flow of approx. 2000 l/h is reached at a pressure increase of 1 bar.

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

- Set pressure  $p_E$ : 5 bar
- working pressure  $p_A$ : 6 bar
- opening pressure  $p_{\ddot{O}}$ : 5.5 bar
- closing pressure  $p_S$ : 5.2 bar

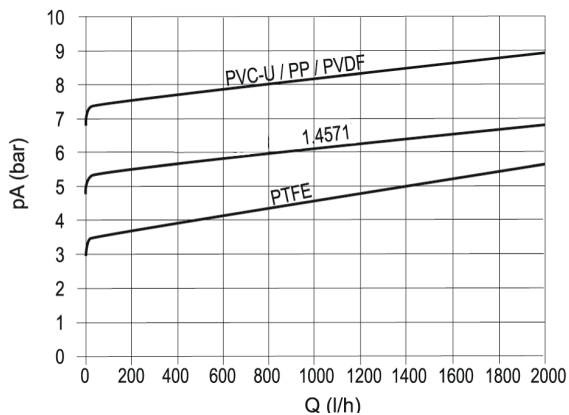
## Characteristic curve pressure setting range

### DN 10

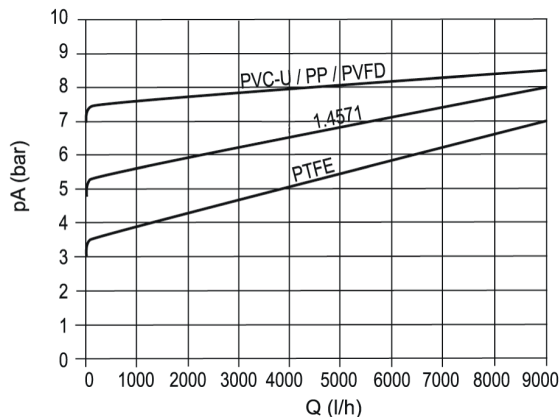


# Pressure relief valve DHV 712-R

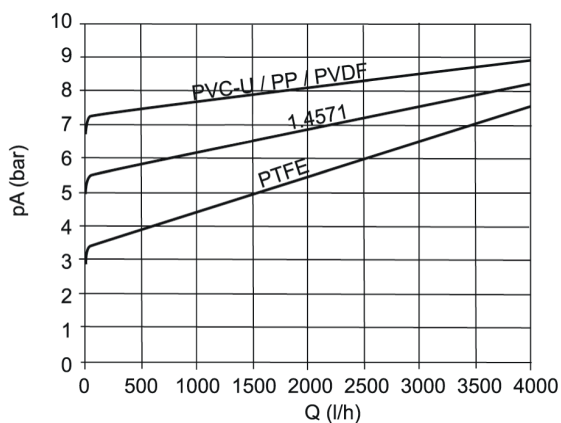
**DN 15**



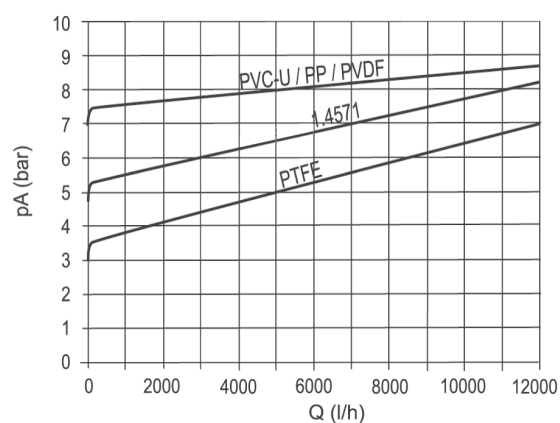
**DN 32**



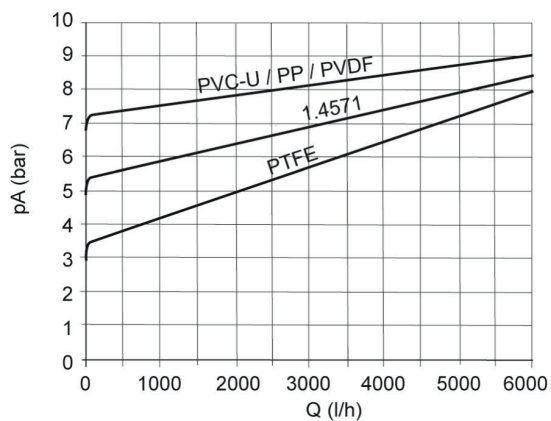
**DN 20**



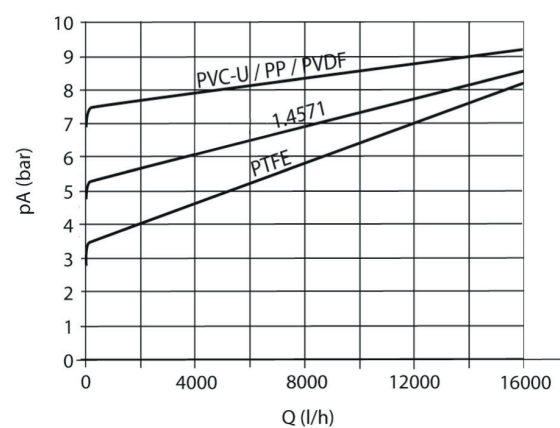
**DN 40**



**DN 25**



**DN 50**

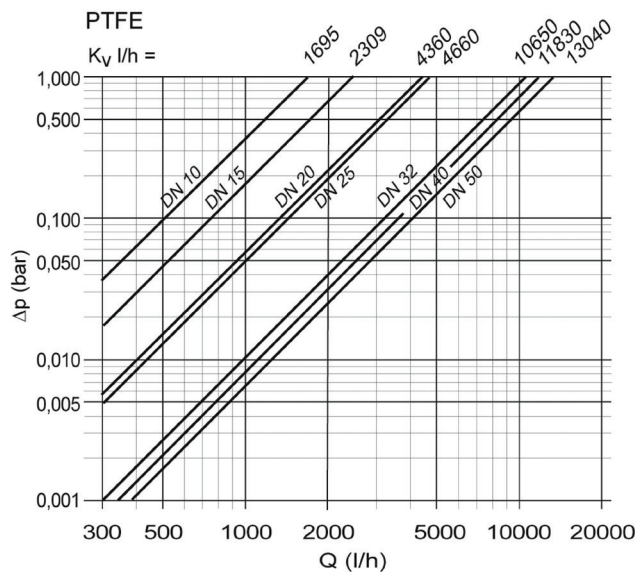
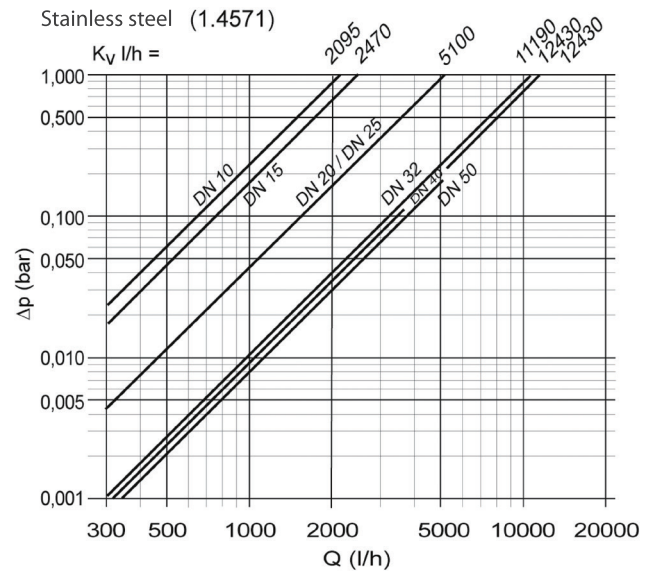
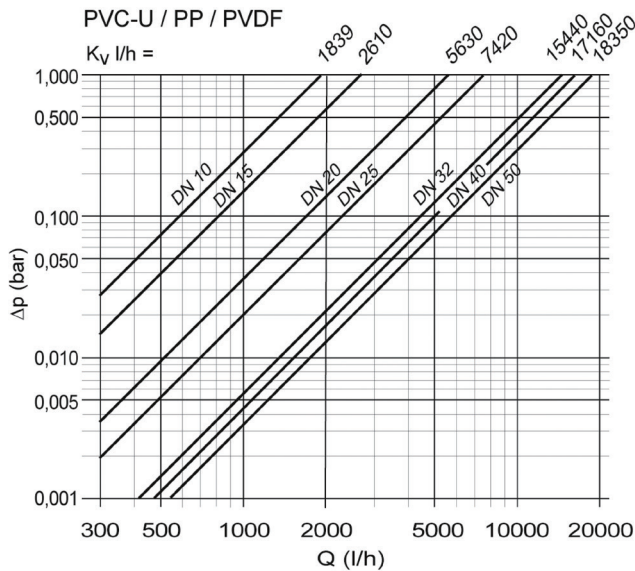


**Description**

pA	Working pressure
Q	Flow

# Pressure relief valve DHV 712-R

## Pressure loss curve (standard values for H<sub>2</sub>O, 20 °C)



Description	
Δp	Pressure loss
Q	Flow

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

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

### Conversion formulas

$$c_v = k_v \times 0.07$$

$$f_v = k_v \times 0.0585$$

### Units:

k<sub>v</sub> [l/min]

c<sub>v</sub> [gal/min] US

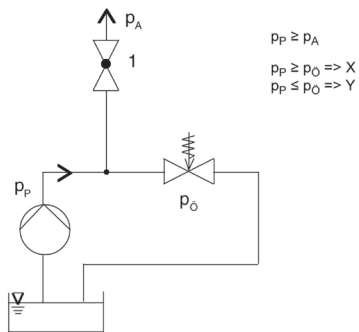
f<sub>v</sub> [gal/min] GB



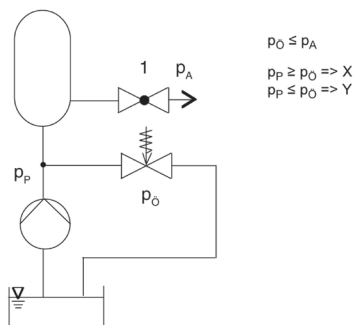
# Pressure relief valve DHV 712-R

## Applications for pressure relief valves

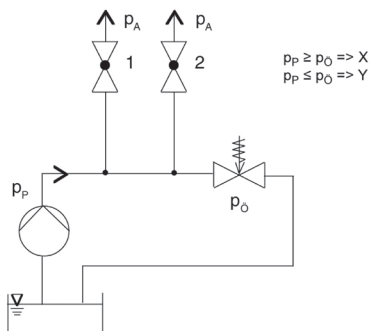
Example 1: Constant system pressure



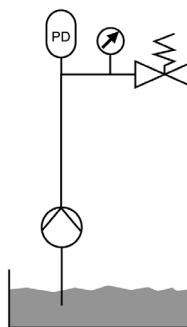
Example 4: Pressure relief valve as overflow valve; container pressure must not exceed max. pressure



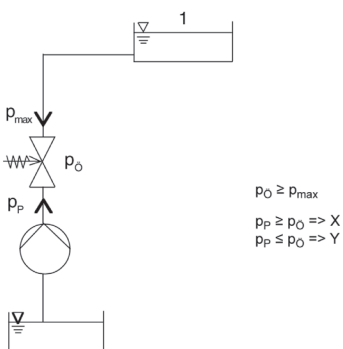
Example 2: Consumer 1 and/or 2 opens, pressure relief valve closes.



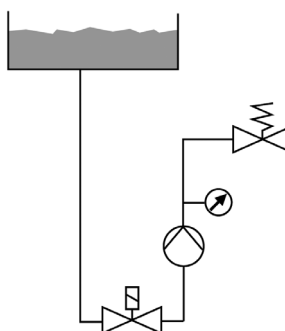
Example 5: Use in connection with pulsation damper for low-pulsation dosing.



Example 3: Pressure relief valve as backflow preventer



Example 6: Use with high primary pressure

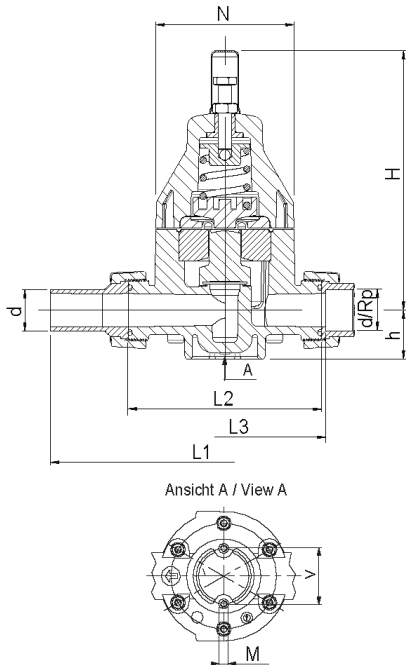


### Description

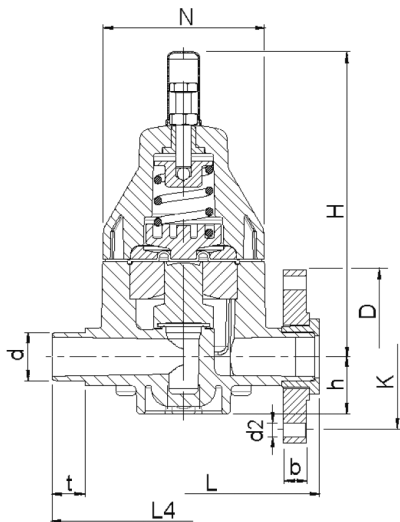
$p_{max}$	Maximum pressure
$p_A$	Working pressure
PD	Pulsation damper
$p_o$	Opening pressure
$p_p$	Pump pressure
X	Valve opens
Y	Valve closed

# Pressure relief valve DHV 712-R

## Connection, spigot/socket



## Connection spigot, fixed/flange

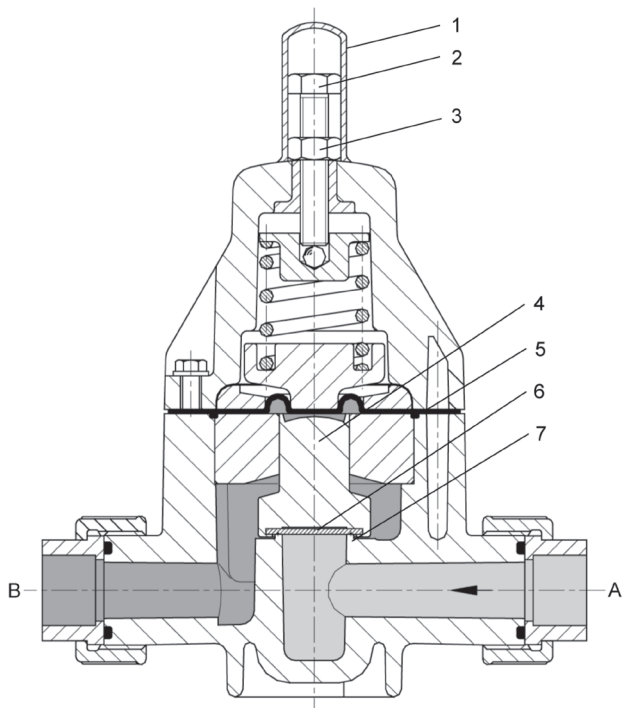


d (mm)		16	20	25	32	40	50	63	
DN (mm)		10	15	20	25	32	40	50	
DN (inch)		3/8	1/2	3/4	1	1 1/4	1 1/2	2	
valve body	insert component/ flange								
b	GFR flange DIN	-	12.2	14	15	17	17	18	
	PP steel flange DIN	-	13	14.5	15.5	17.5	17.5	19	
	PP steel flange ANSI	-	12	12	16	16	18	18	
d2	GFR flange DIN	-	14	14	14	18	18	18	
	PP steel flange DIN	-	14	14	14	18	18	18	
	PP steel flange ANSI	-	16	16	16	16	16	20	
D	GFR flange DIN	-	96.5	106	115	142	152	168	
	PP steel flange DIN	-	96	106	116	141	151	166	
	PP steel flange ANSI	-	95	105	113	130	133	160	
G*		3/4	1	1 1/4	1 1/2	2	2 1/4	2 3/4	
h	PVC-U, PP, PVDF	25	25	38	38	56	56	56	
	1.4571, PTFE	20	20	25	25	37	37	37	
H	PVC-U, PP, PVDF	174	174	202	202	262	262	262	
	1.4571, PTFE	173	173	201	201	261	261	261	
K	GFR flange DIN	-	65	75	85	100	110	125	
	PP steel flange DIN	-	60	70	80	89	98	121	
	PP steel flange ANSI	-	65	75	85	100	110	125	
L		-	150	180	180	230	230	250	
L1	PVC-U	PE100 spigot DIN	-	310	340	340	405	433	453
	PP	PP spigot	-	228	264	270	331	338	343
	PVDF	PVDF spigot	-	225	262	268	324	331	336
L2	PVDF		120	120	150	150	200	201	200
	PP, PVC-U, PTFE, 1.4571		120	120	150	150	205	205	205
L3	PVC-U	socket PVC-U DIN, PVC-U ANSI, BS	126	126	156	156	211	211	211
		socket PVC-U JIS	132	128	160	159	211	211	213
		PVC-U female thread Rp	126	127.6	158	162.6	221	231	235.6
		female thread 1.4571	130	130	161	164	221	223	223
	PP	PP socket DIN	128	126	156	156	211	211	211
PP female thread Rp		-	126	156	156	211	213	215	
PVDF	PVDF socket DIN	127	125	156	156	206	207	206	
L4		144	144	174	174	224	224	244	
M		6	6	6	6	8	8	8	
N		81	81	107	107	147	147	147	
Rp*		3/8	1/2	3/4	1	1 1/4	1 1/2	2	
t		14	16	19	22	26	31	38	
V	PP, PVC-U, PVDF, 1.4571	40	40	46	46	65	65	65	
	PTFE	24	24	46	46	65	65	65	

all dimensions in mm / \* dimensions in inch

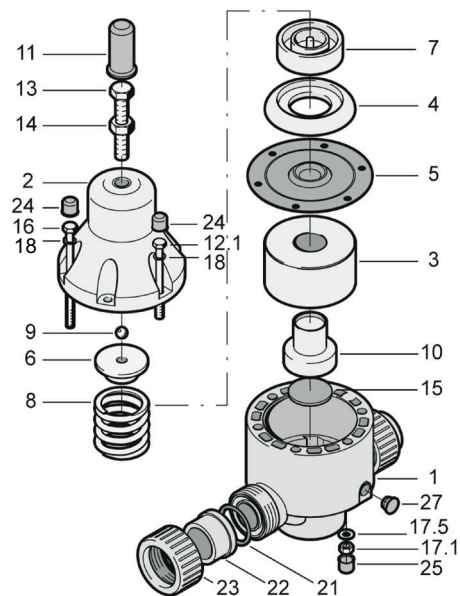
# Pressure relief valve DHV 712-R

## Sectional drawing



	Description
A	Primary side
B	Secondary side
1	Protection cap
2	Adjustment screw
3	Counter nut
4	Piston
5	Diaphragm
6	Flat sealing ring
7	Valve seat

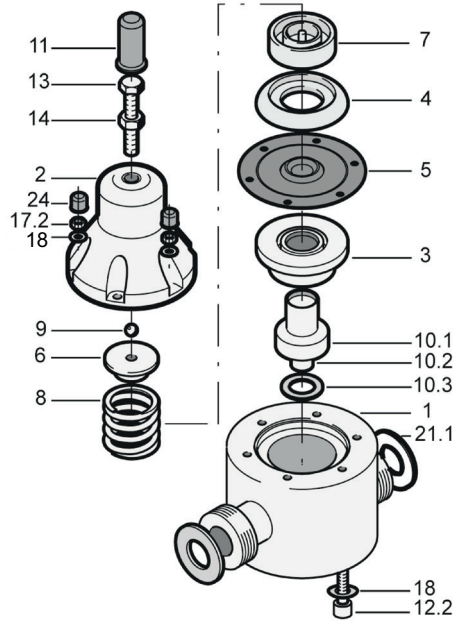
## Components housing PVC-U, PP, PVDF



	Quantity DN 10-15	Quantity DN 20-50	Description
1	1	1	Housing, complete
2	1	1	Bonnet
3	1	1	Separating disc
4	1	1	Pressure disc
5	1	1	Diaphragm
6	1	1	Pressure plate
7	1	1	Spring plate
8	1	1	Pressure spring
9	1	1	Steel ball
10	1	1	Piston, complete
11	1	1	Protection cap
12.1	4	2	Hexagon screw
13	1	1	Hexagon screw
14	1	1	Counter nut
15	1	1	Flat sealing ring
16	-	4	Hexagon screw
17.1	4	6	Hexagon nut
17.5	4	6	Washer
18	4	6	Washer
21	2	2	O-ring
22	2	2	Union end
23	2	2	Union nut
24	4	4	Protection cap
25	4	4	Protection cap
27	2	2	Plug

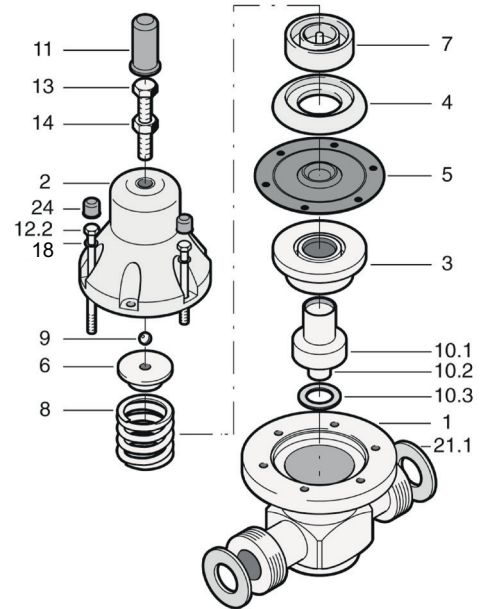
# Pressure relief valve DHV 712-R

## Components housing PTFE+C



	Quantity DN 10-15	Quantity DN 20-50	Description
1	1	1	Housing, complete
2	1	1	Bonnet
3	1	1	Separating disc
4	1	1	Pressure disc
5	1	1	Diaphragm
6	1	1	Pressure plate
7	1	1	Spring plate
8	1	1	Pressure spring
9	1	1	Steel ball
10.1	1	1	Piston
10.2	1	1	Piston point
10.3	1	-	Flat sealing ring
11	1	1	Protection cap
12.2	4	4	Hexagon screw
13	1	1	Hexagon screw
14	1	1	Counter nut
17.2	4	4	Hexagon screw
18	4	6	Washer
21.1	2	2	O-ring
24	4	4	Protection cap

## Components housing stainless steel



	Quantity DN 10-15	Quantity DN 20-50	Description
1	1	1	Housing, complete
2	1	1	Bonnet
3	1	1	Separating disc
4	1	1	Pressure disc
5	1	1	Diaphragm
6	1	1	Pressure plate
7	1	1	Spring plate
8	1	1	Pressure spring
9	1	1	Steel ball
10.1	1	1	Piston
10.2	1	1	Piston point
10.3	1	1	Flat sealing ring
11	1	1	Protection cap
12.2	4	6	Hexagon screw
13	1	1	Hexagon screw
14	1	1	Counter nut
18	4	6	Washer
21.1	2	2	O-ring
24	4	6	Protection cap