

Pressure Relief and Overflow Valve

DHV 712-R (pat.)



Advantages

- the optimal monitoring valves
- high operating reliability
- low pressure increase up to fully opened valve
- high operating reliability and long service life
- for constant working pressure even at counter pressure
- constant, low vibration controlling
- safe mounting with stainless steel bolts
- hermetically sealed by valve diaphragm with crimped O-rings
- low maintenance
- pressure settings at any time, also during operation
- easy connection to the pipe-line by approved solvent or fusion welding procedures
- radial demountability even after mounting
- short face-to-face dimension with injection moulded threaded neck acc. to DIN 8063.
- direct mounting on any valve support by metal inserts in the body.

Application

- chemical plants
- water treatment
- galvanotechnics

Utilisation

- The pressure relief valve DHV 712-R is used in process plants to maintain working or pressure constant and to relieve pressure pulsations. Due to a special diaphragm and the corresponding active surface of diaphragm, piston and valve seat this frictionless system ensures that the working pressure remains almost constant in case of arising counter pressure.
- Ideal application, e. g. for dosing pumps which work with a pressure relief valve with constant pressure acc. to the dosing accuracy. In case of counter pressure at the secondary side the primary pressure and thus the dosing quantity remains constant.

Type of fluids

- technical clean, neutral and aggressive liquids provided that the components getting in contact with the medium are resistant at operating temperature according to the ASV resistance guide.

Size

- DN 10 - DN 50

Nominal pressure (H₂O, 20 °C)

- PN 10

Media temperature

- see pressure/temperature diagram

Operating pressure

- see pressure/temperature diagram

Set range

- 0,3 - 10 bar

Working pressure

- set pressure plus flow depending pressure increase (see characteristic curves): appr. 0.3 up to 10.0 bar

Deviation to working pressure

- up to 5 bar counter pressure: appr. ± 0,3 bar
- above 5 bar counter pressure: appr. ± 0,5 bar

Opening pressure

- appr. 0.5 bar

Hysteresis

- difference between opening and closing pressure: appr. 0.3 bar

Pressure Relief Valve DHV 712-R (pat.)

Valve bottom, piston and separation disc

- PVC-U
- PP (Polypropylene)
- PVDF (Polyvinylidene Fluoride)
- PTFE (Polytetrafluoroethylene) - carbon fibre reinforced
- stainless steel 1.4571PVC-U (Polyvinylchlorid)

Valve bonnet

- PP-GFR

Diaphragm

- EPDM, PTFE-coated on medium side

Valve seat seal

- EPDM
- FPM
- PTFE covering ring for stainless steel and PTFE-execution

O-ring sealings of union ends

- EPDM
- FPM

Connecting screws

- stainless steel 1.4301

Connections

- housing with threaded necks acc. DIN 8063
- socket union ends made of PVC-U, PP or PVDF acc. DIN/ISO
- union nuts made of PVC-U, PP or PVDF
- housing with spigot ends for solvent welding acc. DIN 8063 or spigot ends for fusion welding acc. DIN 16 962
- housing (PTFE, SS) with threaded necks
- union nuts and union ends made of PTFE or stainless steel on request

Mounting

- variable, bonnet preferably in upright position

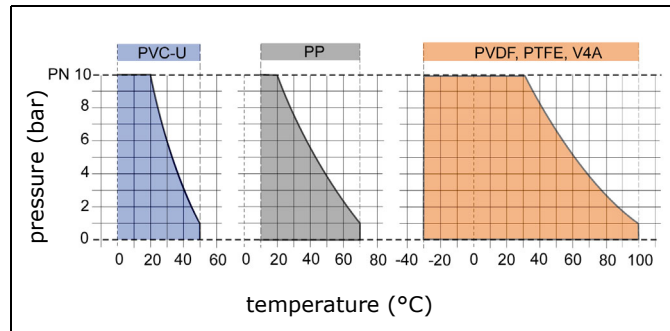
Flow direction

- direction of flow always in direction of arrow

Colour

- Valve bottom: PVC-U grey, RAL 7011
- PP grey, RAL 7032
- PVDF opaque (yellowish white)
- PTFE black
- SS bright
- Valve bonnet: PP-GFR orange, RAL 2004

Pressure/temperature diagram



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

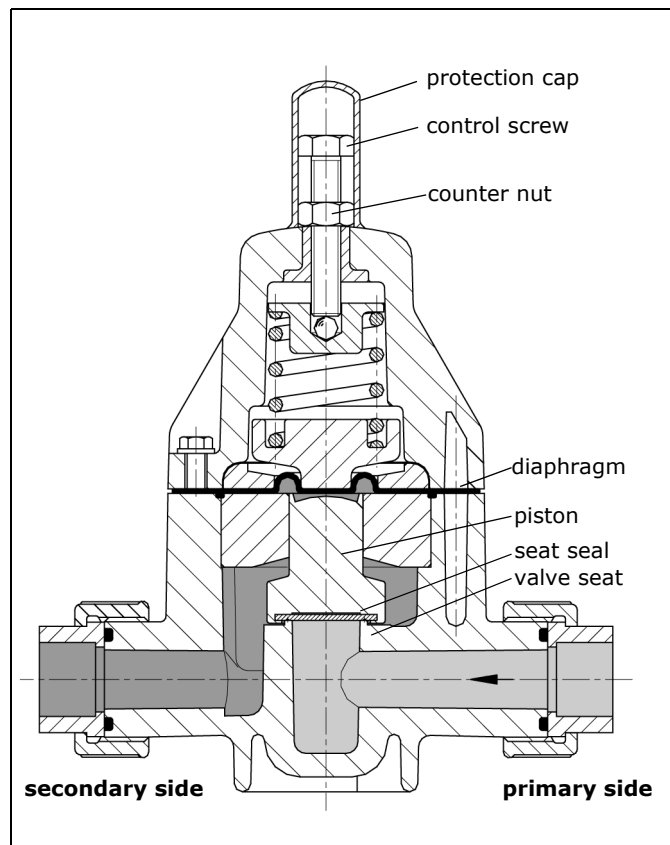
The values are a guide for harmless fluids (DIN 2403) the material of the valve is resistant against.

For other media see the ASV resistance guide.

Durability of wear and tear parts is depending on the operating conditions of the application.

Values below 0 °C (PP < +10 °C) on request with exact data of operation.

Sectional drawing DHV 712-R



Pressure Relief Valve DHV 712-R (pat.)

Valve function and design

Does the working pressure or primary pressure rise above a certain preset pressure value the pressurized valve piston is lifted against the spring force. The valve opens and a pressure relief on the secondary side (outlet side) takes place. It closes as soon as the working pressure at the valve piston drops below preset spring force.

If a system determined counter pressure arises at the secondary side this pressure has an impact on both simultaneously, namely under the diaphragm and on the valve piston, i.e. the forces cancel out each other. The valve force and thus the working pressure remain nearly constant.

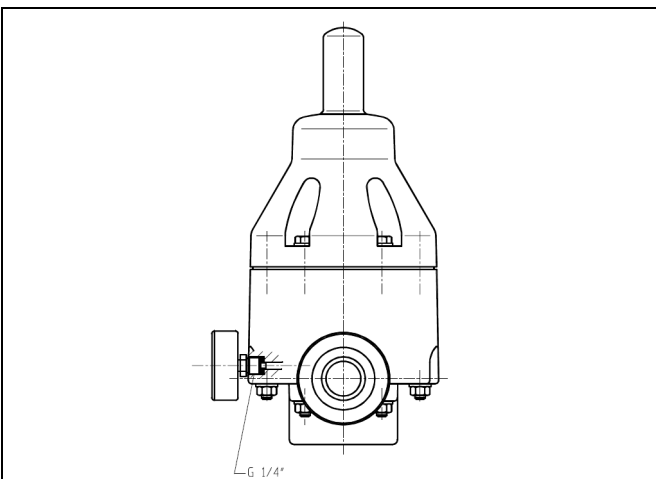
Valve setting

A presetting or readjustment of the required or admissible working pressure can be arranged by the adjustment screw. After removing the protection cap and loosening the counter nut the pressure setting can be made with the help of a pressure control device (e.g. ASV diaphragm pressure gauge guard type MDM pressure gauge). The adjustment screw is locked with the counter nut and can be leaded upon request.

Pressure gauge connection

For neutral fluids the valve can be equipped with a pressure gauge, normally at primary side.

DHV 712-R with mounted pressure gauge (option)



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 like DIN, DIN EN, DIN ISO and DVS* for example. ✓

The intended use includes adhering to the specified limit values for pressure and temperature as well as the check of the chemical resistance.

For this purpose, ensure that all components getting in

contact with the media are "resistant" in accordance with the ASV resistance guide.

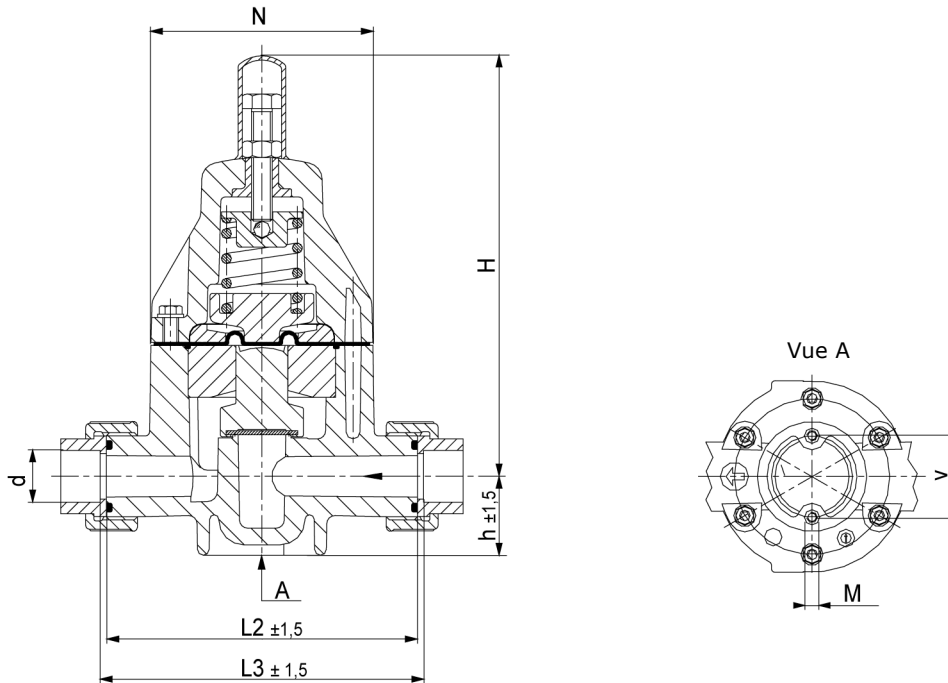
The owner/user must inform the authorized qualified personnel instructed to perform the assembly, inspection and/or maintenance work of any potential danger emanating from the machine line/medium, and ensure that suitable safety measures are observed. This includes also the consideration of local regulations and laws of the territories of use.

If the authorized qualified personnel does not have any operating and maintenance instruction this is to be requested prior installation, maintenance or repair.

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

Pressure Relief Valve DHV 712-R (pat.)

Housing: PVC-U, PP, PVDF with unions



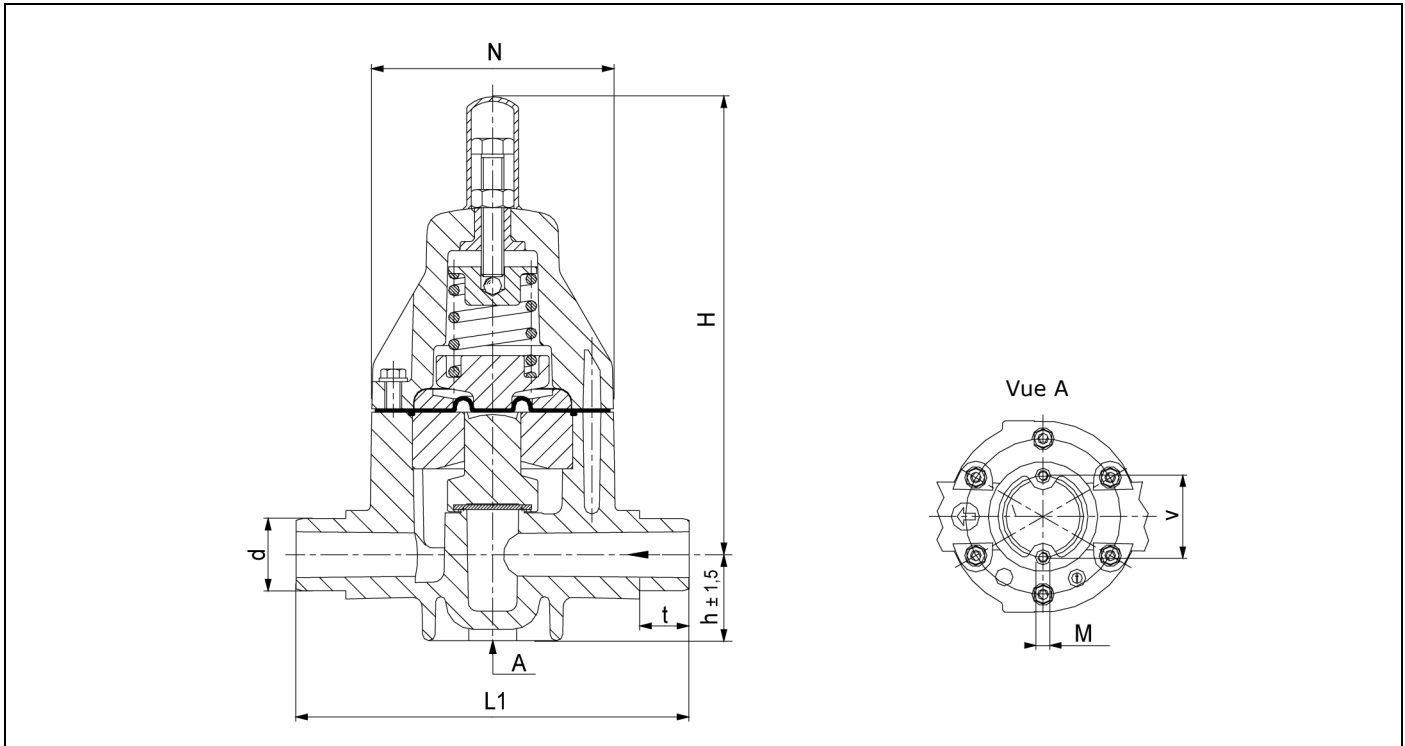
Dimensions		16	20	25	32	40	50	63
d (mm)		10	15	20	25	32	40	50
DN (mm)		3/8	1/2	3/4	1	1 1/4	1 1/2	2
DN (Zoll)								
PP/PVC	h	25	25	37	37	57	57	57
PVDF	h	24	24	36	36	54	54	54
	H	174	174	202	202	262	262	262
PP/PVC	L2	120	120	150	150	205	205	205
PVDF	L2	118	118	147	147	200	200	200
PP/PVC	L3	126	126	156	156	211	211	211
PVDF	L3	124	124	153	153	207	207	207
	M	M6	M6	M6	M6	M8	M8	M8
	N	81	81	107	107	147	147	147
	v	40	40	46	46	65	65	65
Weight (kg)								
PP		0,67	0,72	1,57	1,61	4,10	4,18	4,28
PVC		0,80	0,85	1,86	1,90	5,00	5,10	5,20
PVDF		1,02	1,07	2,11	2,15	5,45	5,55	5,65

Ident.No. DHV 712-R with unions

d (mm)	16	20	25	32	40	50	63
housing PP							
seals EPDM	120674	120675	120676	120677	120678	120679	120680
seals FPM	120681	120682	120683	120684	120685	120686	120687
housing PVC							
seals EPDM	120660	120661	120662	120663	120664	120665	120666
seals FPM	120667	120668	120669	120670	120671	120672	120673
housing PVDF							
seals EPDM	-	-	-	-	-	-	-
seals FPM	120695	120696	120697	120698	120699	120700	120701

Pressure Relief Valve DHV 712-R (pat.)

Housing: PVC-U, PP, PVDF with spigot ends



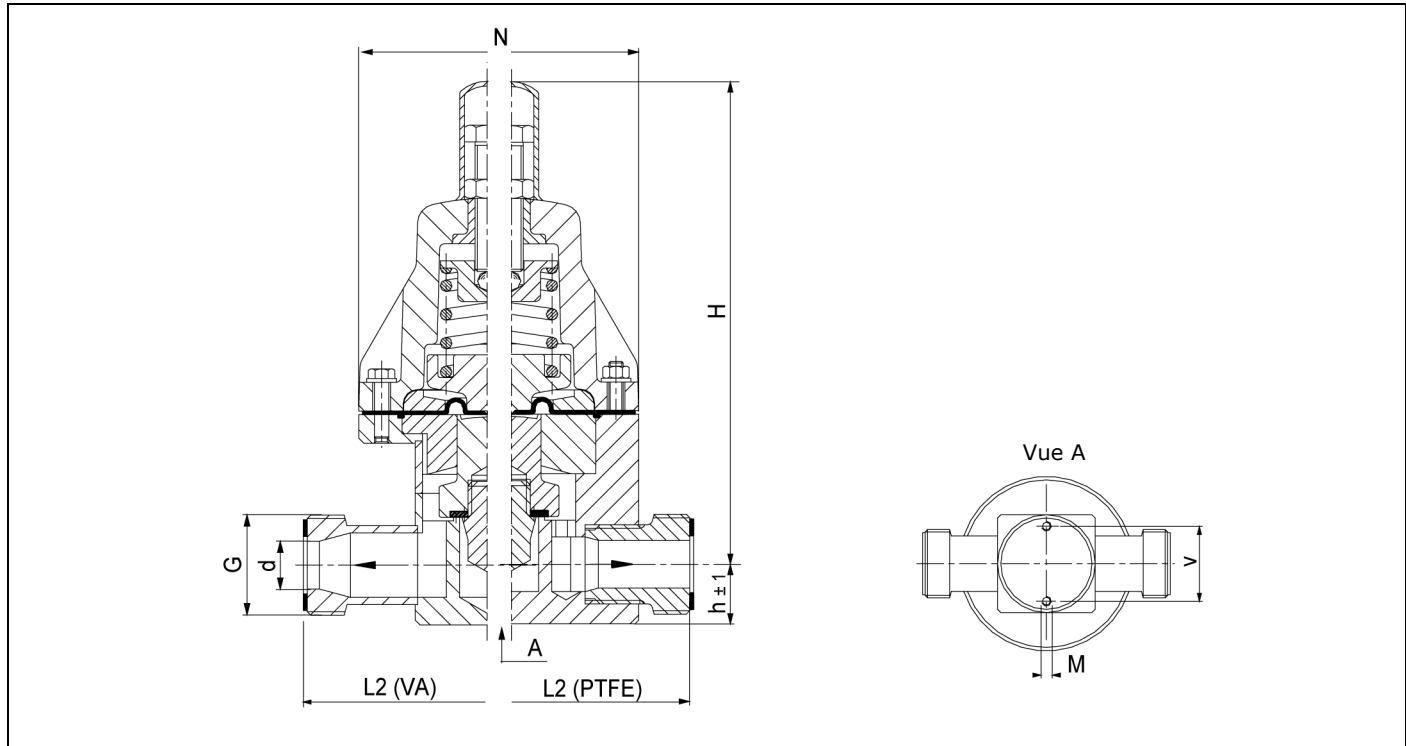
dimensions		16	20	25	32	40	50	63
d (mm)		16	20	25	32	40	50	63
DN (mm)		10	15	20	25	32	40	50
DN (Zoll)		3/8	1/2	3/4	1	1 1/4	1 1/2	2
PP/PVC	h	25	25	37	37	57	57	57
PVDF	h	24	24	36	36	54	54	54
	H	174	174	202	202	262	262	262
PP/PVDF	L1	144 \pm 2,1	144 \pm 2,1	174 \pm 2,6	174 \pm 2,6	224 \pm 3,3	224 \pm 3,3	244 \pm 3,6
PVC	L1	144 \pm 1,0	144 \pm 1,0	174 \pm 1,0	174 \pm 1,0	224 \pm 1,1	224 \pm 1,1	244 \pm 1,2
	M	M6	M6	M6	M6	M8	M8	M8
	N	81	81	107	107	147	147	147
	t	14	16	19	22	26	31	38
	v	40	40	46	46	65	65	65
weight (kg)								
PP		0,67	0,72	1,57	1,61	4,10	4,18	4,28
PVC		0,80	0,85	1,86	1,90	5,00	5,10	5,20
PVDF		1,02	1,07	2,11	2,15	5,45	5,55	5,65

Ident-No. DHV 712-R with spigot ends

d (mm)	16	20	25	32	40	50	63
housing PP							
seals EPDM	121894	121895	121896	121897	121898	121899	121900
seals FPM	121901	121902	121903	121904	121905	121906	121907
housing PVC							
seals EPDM	121880	121881	121882	121883	121884	121885	121886
seals FPM	121887	121888	121889	121890	121891	121892	121893
housing PVDF							
seals EPDM	-	-	-	-	-	-	-
seals FPM	121915	121916	121917	121918	121919	121920	121921

Pressure Relief Valve DHV 712-R (pat.)

Housing: PTFE, SS with threaded necks



dimensions							
d (mm)	16	20	25	32	40	50	63
DN (mm)	10	15	20	25	32	40	50
DN (Zoll)	3/8	1/2	3/4	1	1 1/4	1 1/2	2
G (Zoll)	3/4	1	1 1/4	1 1/2	2	2 1/4	2 3/4
h	20	20	25	25	37	37	37
H	173	173	201	201	261	261	261
Inox/PTFE	L2	120	120	150	150	205	205
	M	M6	M6	M6	M6	M8	M8
	N	81	81	107	107	147	147
V4A	v	24	24	46	46	65	65
PTFE	v	40	40	46	46	65	65
weight (kg)							
SS		2,0	2,2	4,6	4,6	12,8	12,8
PTFE		1,0	1,0	2,2	2,2	5,8	5,8

Ident-No. DHV 712-R with threaded necks

	d (mm)	16	20	25	32	40	50	63
housing SS								
seals FPM/PTFE		120705	120706	120704	120707	120708	120709	120710
housing PTFE								
seals FPM/PTFE		120711	120712	120713	120714	120715	120716	120717

Pressure Relief Valve DHV 712-R (pat.)

Characteristic curves

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

The parameter is the set pressure p_E at $Q = 0$ l/h.

The curve shows the progression of the opening pressure.

The curves are valid for water at $+20^\circ\text{C}$.

Example: DHV 712-R, size DN 15
housing: PVC-U / PP / PVDF

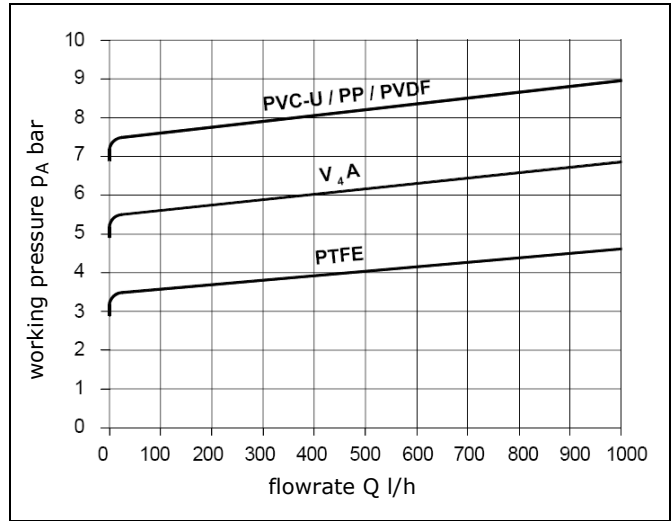
The valve is set closed at 7 bar.

At a pressure increase of 1 bar a flow of about 800 l/h is reached.

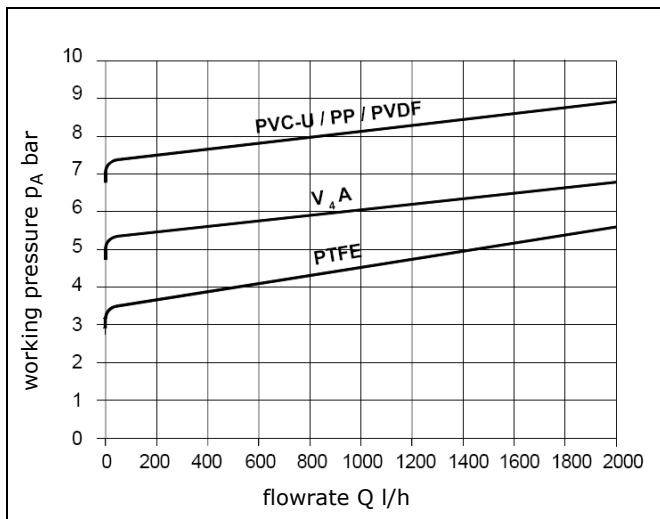
Acc. to the characteristic curve the values are:

- working pressure p_A appr. 8 bar
- closing pressure p_S appr. 6.8 bar
- Opening pressure p_O appr. 7.3 bar
- set pressure p_E appr. 7 bar

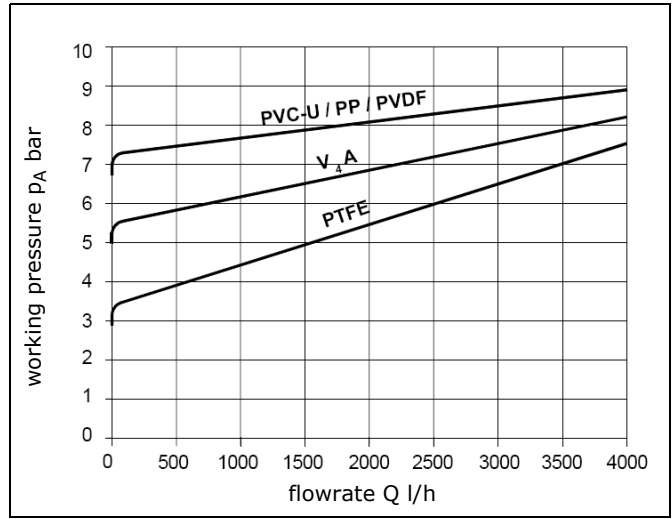
DN 10



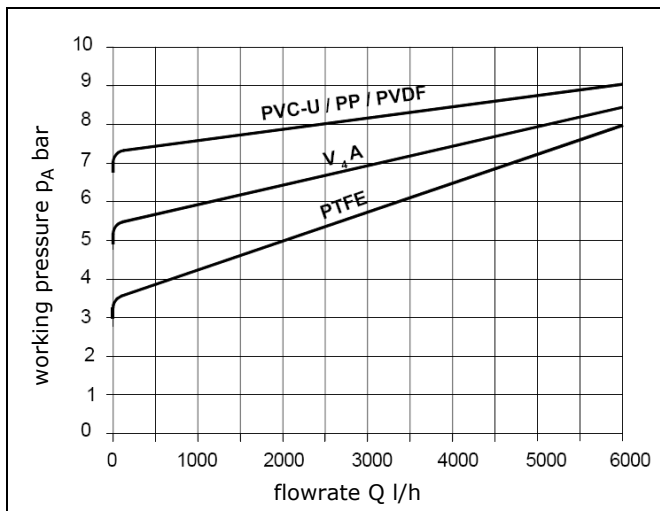
DN 15



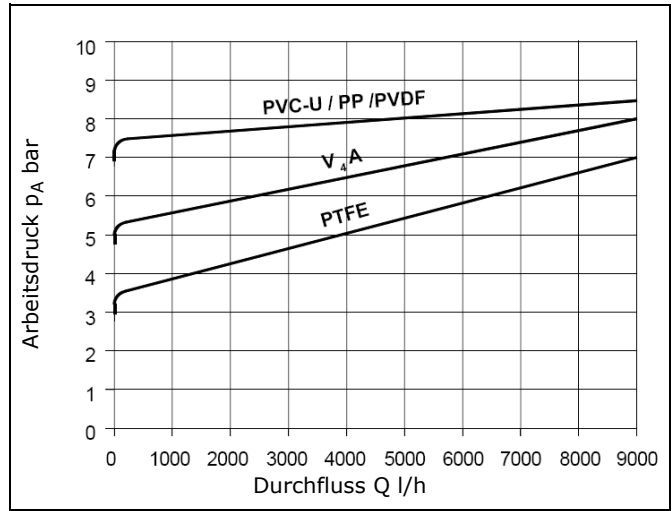
DN 20



DN 25

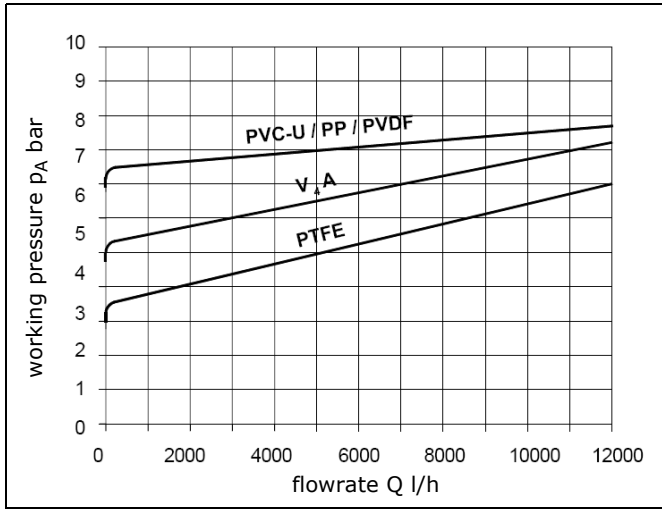


DN 32

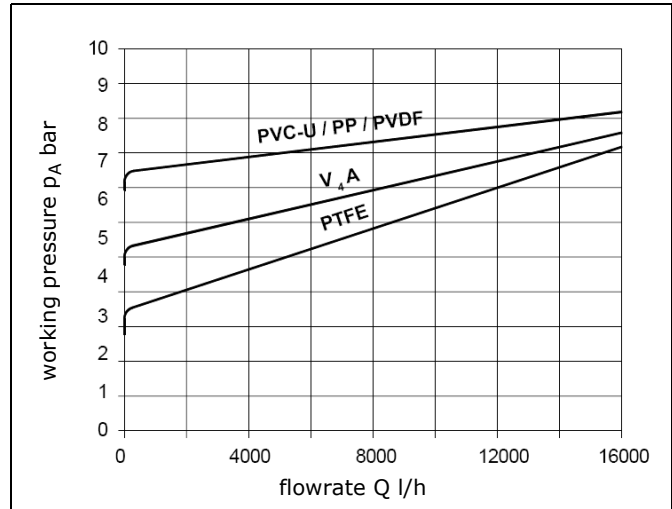


Pressure Relief Valve DHV 712-R (pat.)

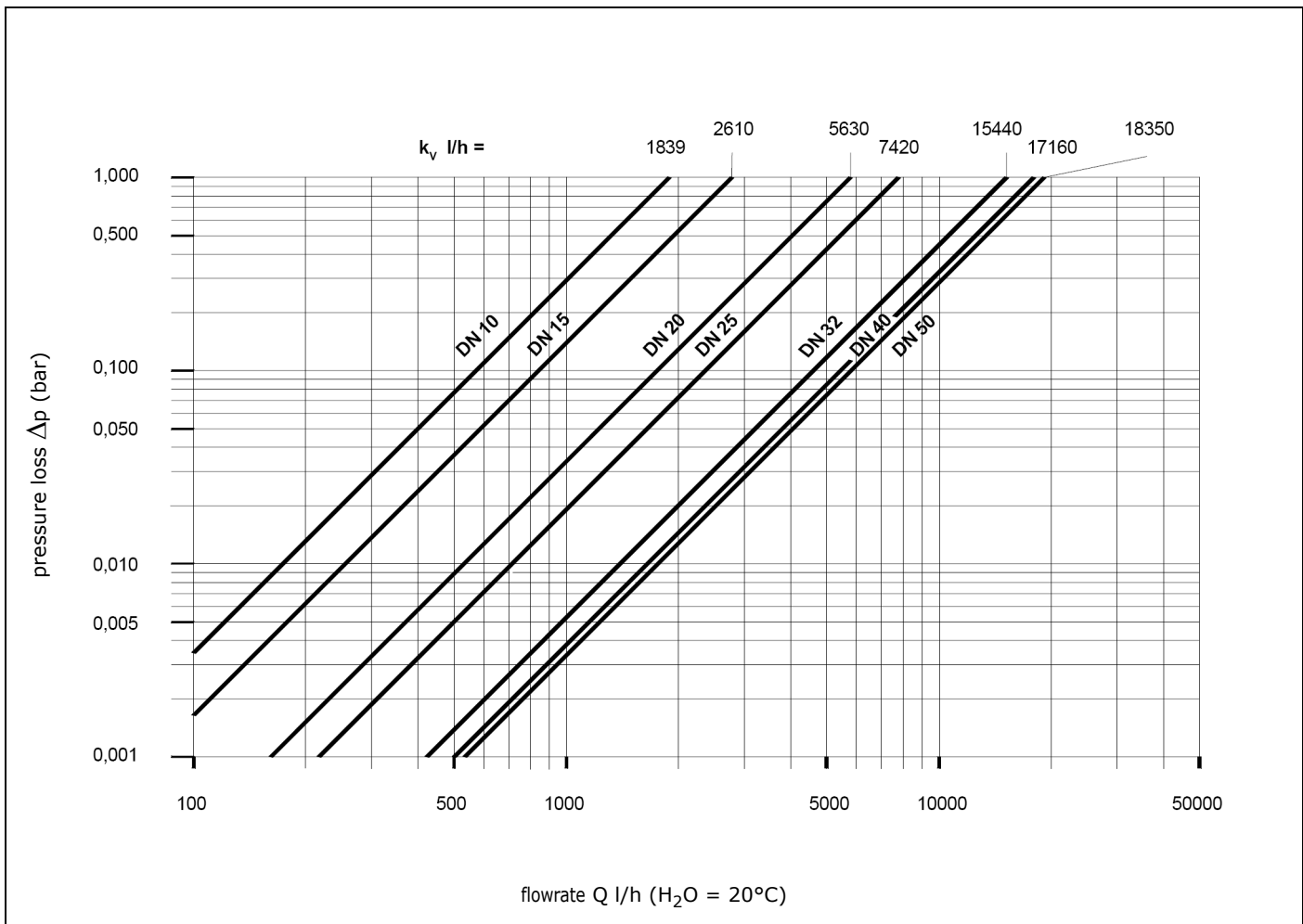
DN 40



DN 50

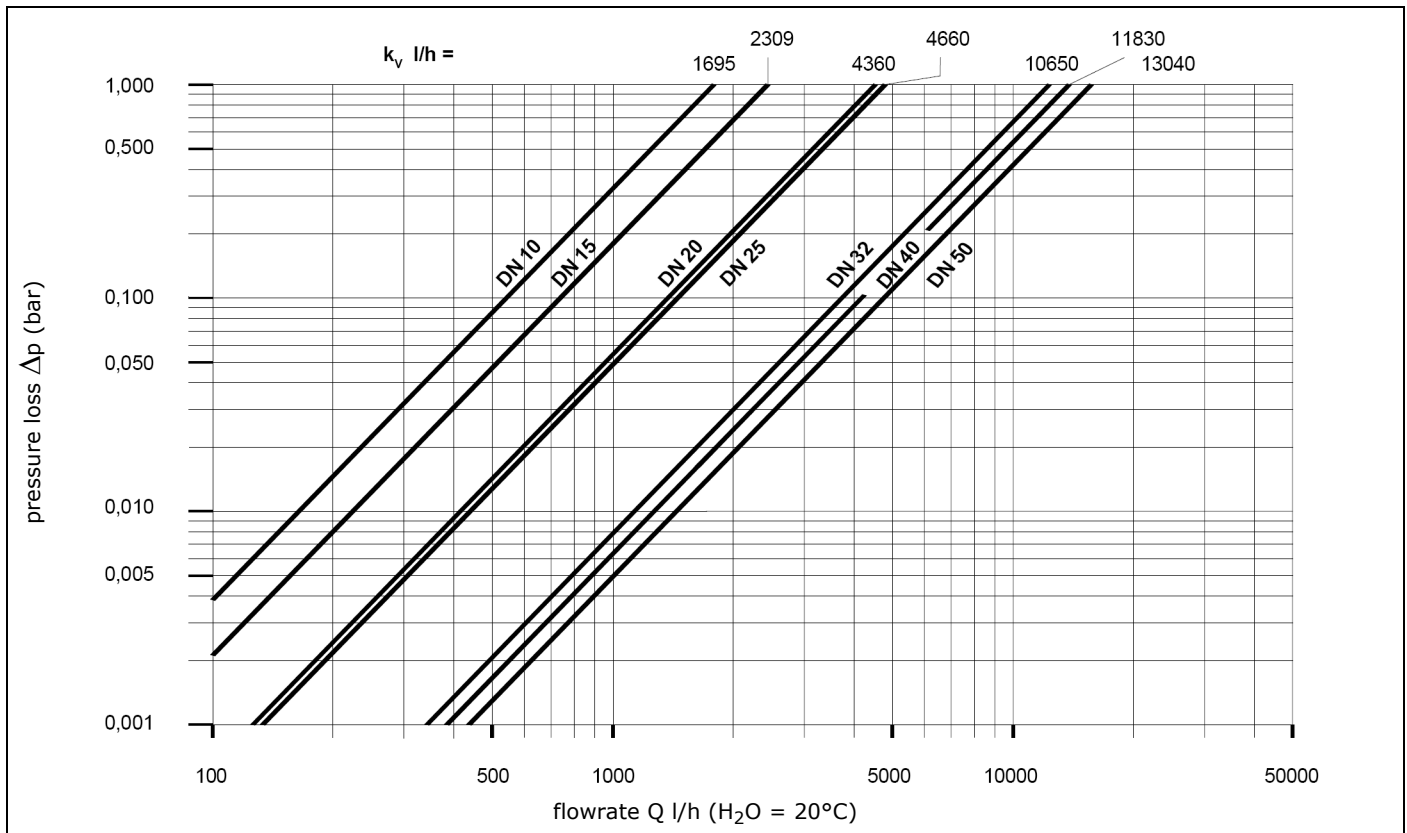


Pressure loss curves DHV 712-R PVC-U, PP, PVDF

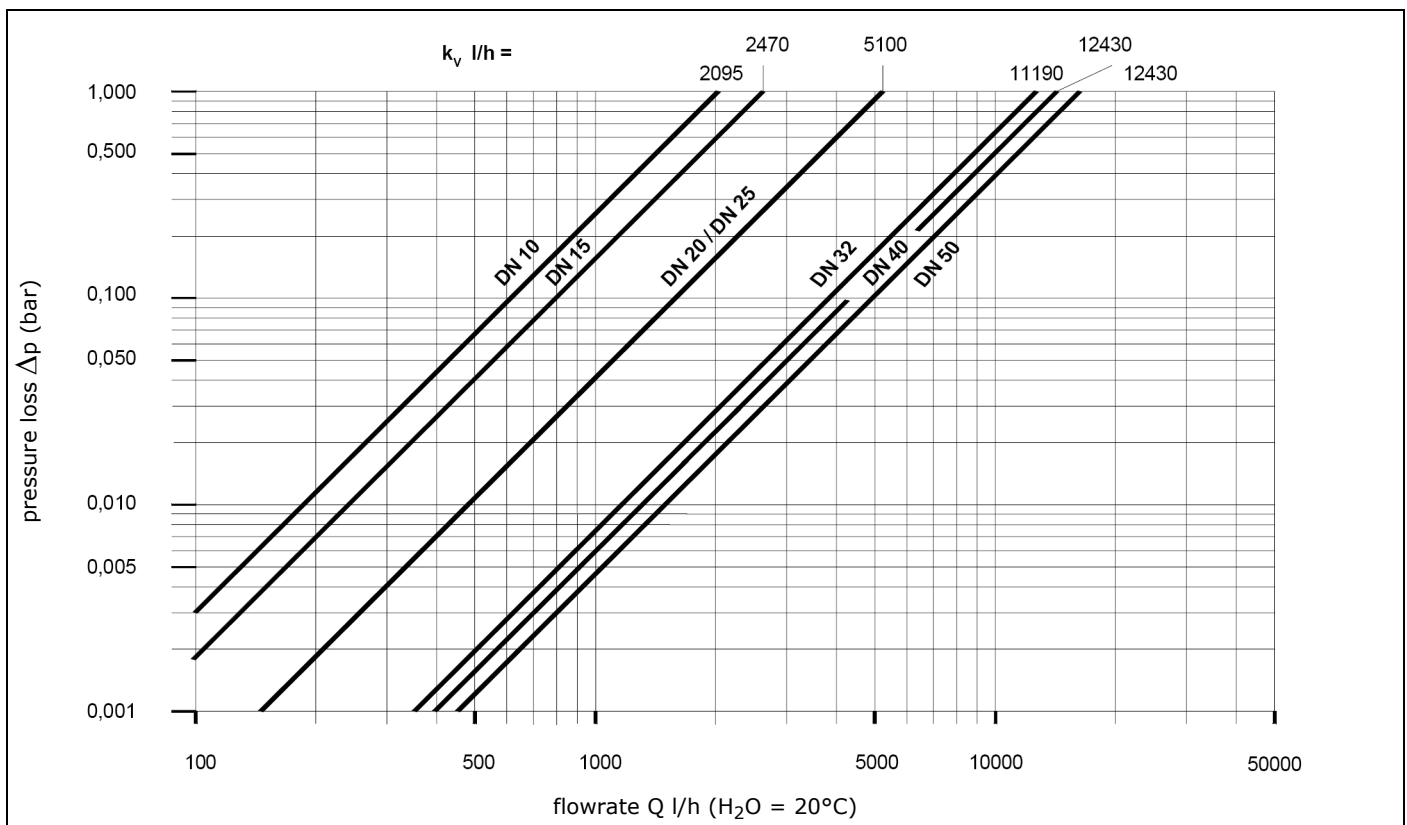


Pressure Relief Valve DHV 712-R (pat.)

Pressure loss curves DHV 712-R PTFE

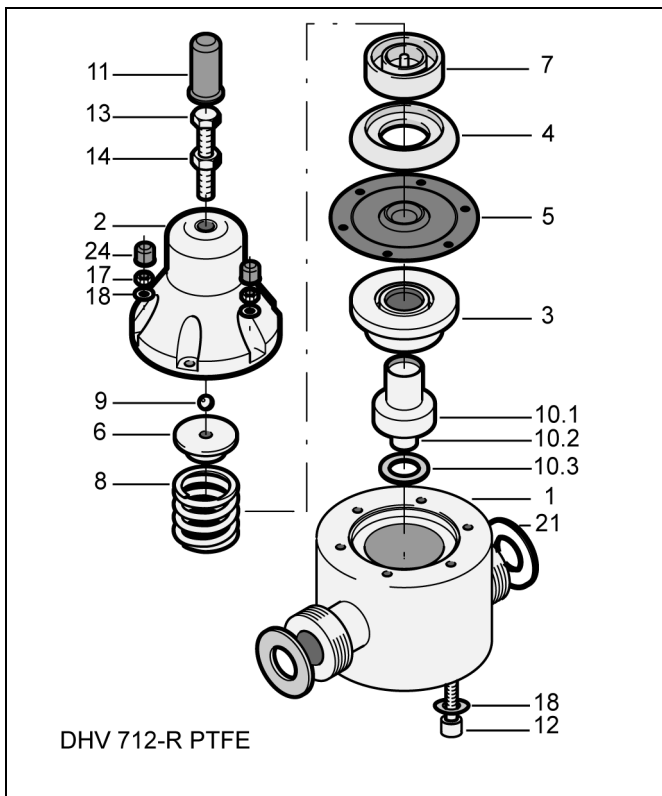
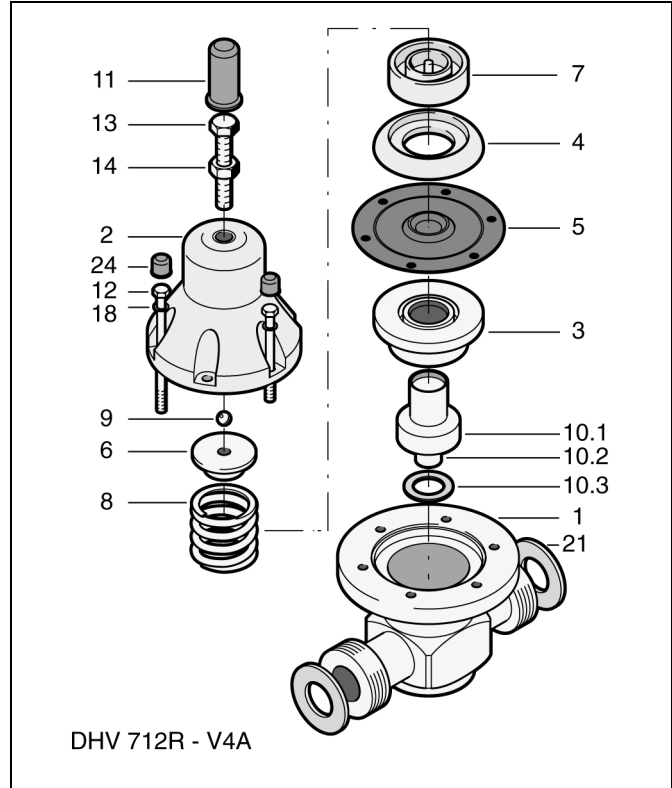
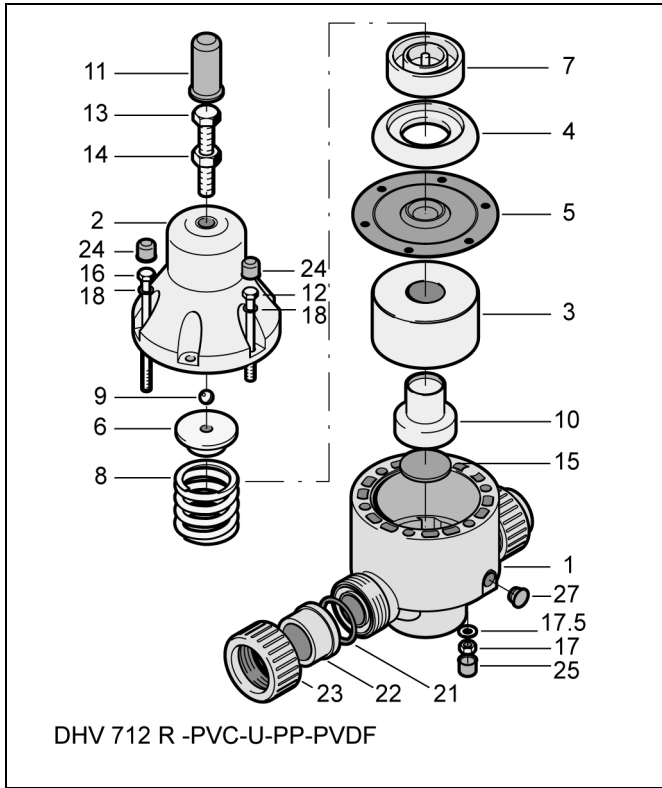


Pressure loss curves DHV 712-R stainless steel 1.4571



Pressure Relief Valve DHV 712-R (pat.)

Spare part and part list DHV 712-R



Pos.	Piece	Description
1	1	valve housing
2	1	bonnet
3	1	separation disc
4	1	pressure disc
5	1	sealing diaphragm*
6	1	pressure plate
7	1	spring plate
8	1	pressure spring*
9	1	steel ball
10	1	piston
10.1	1	piston
10.2	1	piston top
10.3	1	gasket*
11	1	protection cap
12	4/6	hexagonal screw
13	1	hexagonal screw
14	1	counter nut
15	1	gasket*
16	2	hexagonal screw
17	4/6	hexagonal nut
17.5	4/6	U-washer
18	4/6/8/12	U-washer
21	2	sealing*
22	2	union end
23	2	union nut
24	4/6	protection cap
25	4/6	protection cap

All parts marked with* are included in the respective wear and tear part set. In case of spare part order please state complete valve ident No. and serial No.

The quantities depend on size and material

Pressure Relief Valve DHV 712-R (pat.)

Installation

ATTENTION

Ensure that the valves are not subject to tension or carried out as anchor point. ✓

- Use suitable pipe compensators for line alterations.
- Remove unions nuts with socket ends from the valve.
- Put union nuts on the pipe ends; thread of union directed towards the union connection of the valve.
- Connect socket ends with pipeline according to the solvent and fusion welding procedures.
- The valve has to be installed in the pipeline. In case of PVC it has to be cemented and in case of PP/PVDF to be welded into the pipeline. The valve body is to be mounted between the two nuts which have to be fastened hand tight. Take care of proper position of the O-rings.
- Valves with spigot ends for solvent or fusion welding are to be connected with sockets considering the respective fusion and welding procedures.
- Valves with flange connection: Put flanges on the pipe ends. Flange adaptors, preferable with O-ring groove or flat face welding necks are to be completed with the pipeline according to the solvent and fusion welding procedures.
- Install valve in the pipe system.
- Appropriate gaskets have to be exactly positioned between the flange adaptors or welding necks.
- Put appropriate screws with U-washers into the flange bores and complete with U-washers and nuts.
- Consider screw tightening torques for thermoplastic flanges.
- After proper installation the pipe system with all components has to be tested for leakages.

ATTENTION

Prior commissioning or pressure test the valve setting must be controlled or adjusted acc. to the installation parameter. Non-observance may lead to damages at the installation components. ✓

Disassembly

NOTE

Observe operating conditions. ✓

- The pipe section is to be shut off and to be emptied.
- Any fluid rest is to be disposed properly.
- If required protection clothes must be worn

Valve bonnet

1. Position the valve upright.
2. Remove cap (11).
3. Loosen counter nut (14) and setting screw (13) so far until the spring (8) is totally released.
4. Loosen and pull out housing screws (12 und 16).
5. Bonnet (2) to be pulled off upwards. Remove spring (8), pressure plate (6), steel ball (9) and pressure disc (4).

Valve bottom and diaphragm

1. Perform demontage as described under point 2.1 up to 2.5.
2. Pull diaphragm (5), separation disc (3), piston (10) with gasket (15) out of valve housing. For valves made of PTFE and stainless steel (1.4571) pull off the complete piston (10).
3. For the valves made of PTFE and stainless steel 1.4571 carefully fix the piston - without damages - loosen and pull off piston top (10.2), remove gasket (10.3).
4. As to the other valves remove gasket out of piston using a blunt tool.

Assembly

In reverse order as described above.

NOTE

Carefully check diaphragm, seat seal and O-ring sealings for damages, dimensional differences and shore hardness. Replace if necessary. ✓

NOTE

Damaged sealing elements or components lead to leakages or function loss. ✓

NOTE

Consider screw tightening torques. ✓

Torque of housing screws (12/16) for lubricated screws:

M 6 and M 8: appr. 6 Nm.

NOTE

Consider tightening torque for mounting of pressure gauge: max. 3 Nm. ✓

NOTE

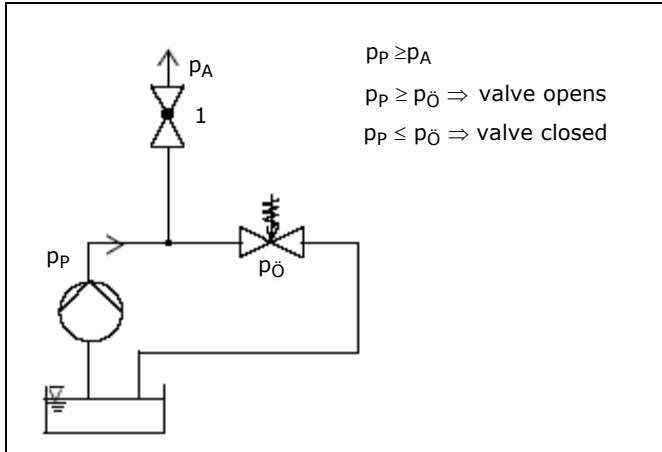
Elastomeres, especially the EPDM sealing elements, should not be touched or cleaned with synthetic oils, mineral oils, fats or cleaning agents. Danger of swelling. Only appropriate fats should be used, e.g. silicone greases. ✓

Subject to technical modifications

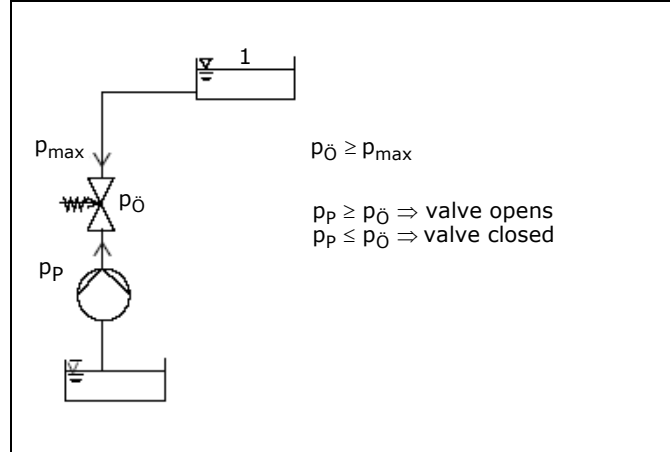
Pressure Relief Valve DHV 712-R (pat.)

Application for pressure relief valves

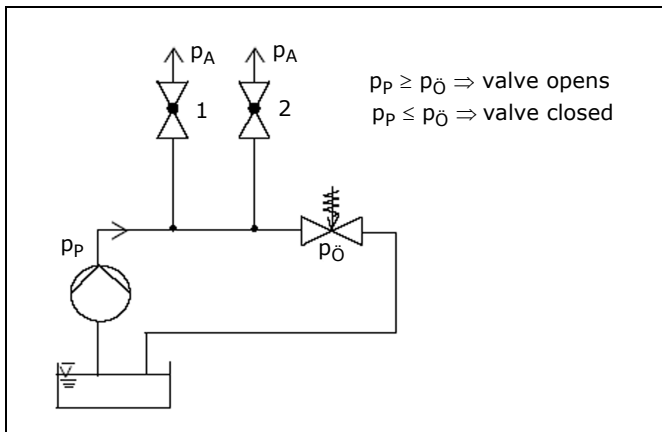
1. constant system pressure



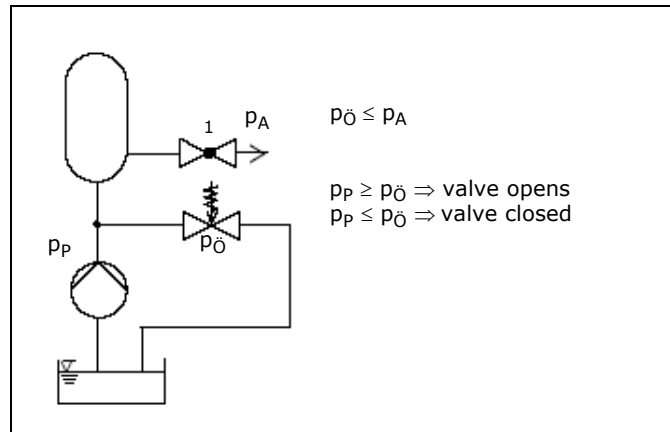
3. Pressure relief valve as non-return valve. Container 1 is located above the pump.



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



4. Pressure relief valve as overflow valve. Pressure of container or application system may not exceed max. pressure value.



p_A = working pressure
 p_p = pump pressure
 p_0 = opening pressure

Failures, possible causes and repair

Failure	Possible causes	Repair
Valve leaks at diaphragm	Clamping pressure for diaphragm too low.	Tighten screws (12 and 16).
Pressure drops below set value.	Piston guide or valve seat leaking. Diaphragm (5) leaking.	Check piston or seat seal. Replace if necessary. Replace diaphragm.
Pressure rises above set value.	Piston guide clamps, perhaps dirty.	Clean valve.
Valve is leaking at setting control screw.	Diaphragm defect.	Replace diaphragm.

Subject to technical modifications