



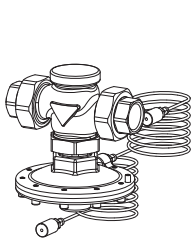
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SELF-ACTING PRESSURE REGULATORS

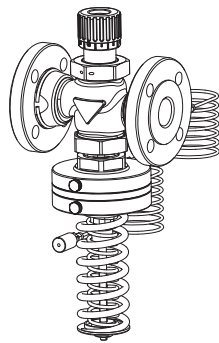
BEE line



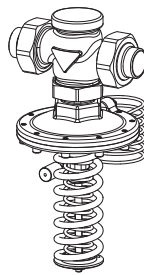
BEE line



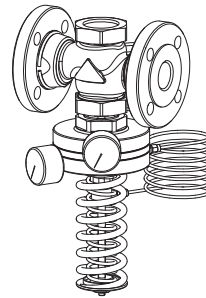
RD 122 D



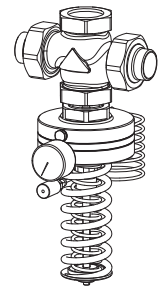
RD 122 P



RD 122 V



RD 123 R



RD 123 S

Application

These valves are designed for applications in common warm-water and hot-water heating circuits, refrigeration and air-conditioning with max. pressure differential of 1.6 MPa.

Process media

Valves series BEE line are suitable for process media such as water, air or steam to 1,0 MPa. In addition, they are suitable for cooling mixtures and other non-aggressive media and gases with temperature range +2 °C to +150 °C, possibly with condensate wells up to 180°C. They are not designed for working conditions with cavitation occurrence. Sealing surfaces of the trim are resistant to common sludge or water impurities. Yet it is recommended to pipe a strainer in front of the valve to ensure a reliable function and tightness in case there are abrasive particles present in the process medium.

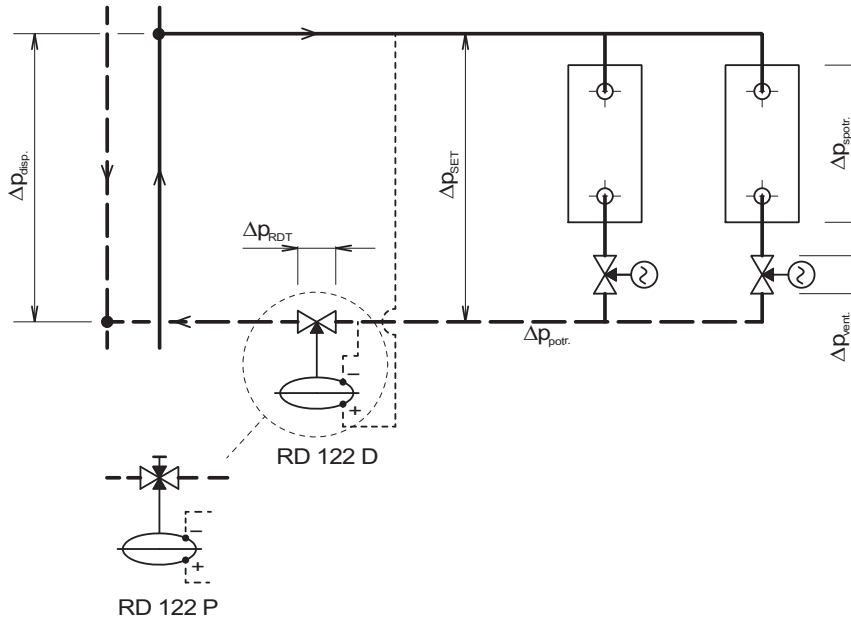
Installation

Basic operating position of regulator is when the body is above its controlling head that points downwards. This position must be kept especially when reducing steam pressure or when temperature exceeds 90 °C. For gases and liquids with temperatures under 90° C, the valve can be installed into vertical pipeline or into horizontal pipeline with controlling head pointing sideways.

Impulse pipelines for extraction of the pressure from the body or the pipeline are within the scope of supply as standard.

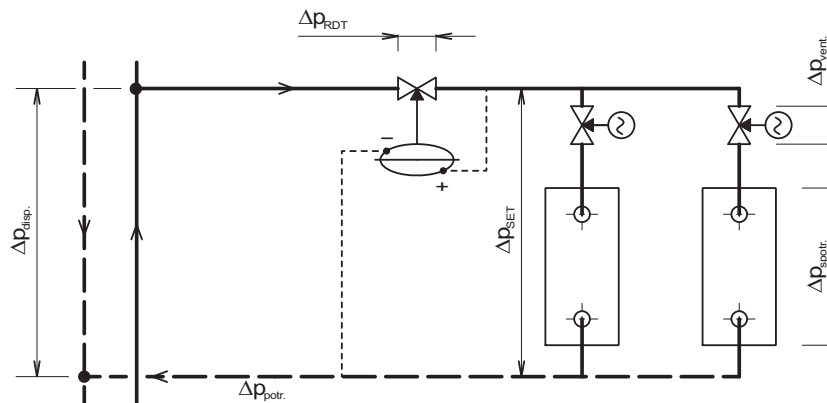
Typical scheme of wiring for regulators RD 122 D, P, V (rising pressure / pressure difference closes the valve)

Scheme of typical regulation loop with differential pressure regulator RD 122 D (P) at secondary side



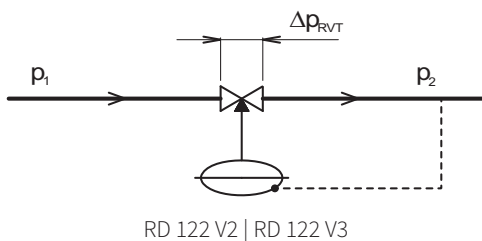
In cases that the differential pressure regulator is forced to work with high differential pressure ($\Delta p_{RDT} > 250 \text{ kPa}$), the producer recommends to install both differential pressure regulator and control valves at primary line of the control loop. Such an installation ensures better working conditions for the regulator and better function of the whole system.

Scheme of regulation loop with differential pressure regulator at primary side

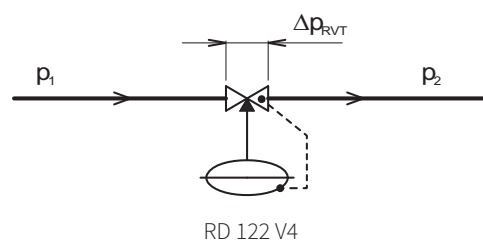


Basic scheme of piping output pressure regulator RD 122 V

- with pressure sampling point on the pipeline

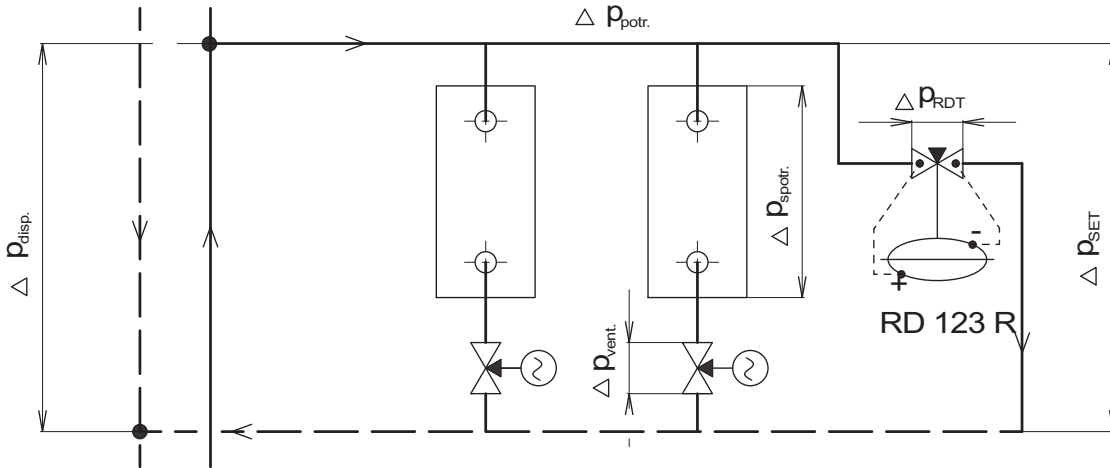


- with pressure sampling point on the valve



Typical scheme of wiring for regulators RD 123 R, S (rising pressure / pressure difference opens the valve)

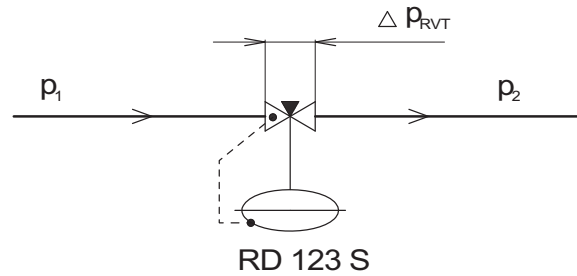
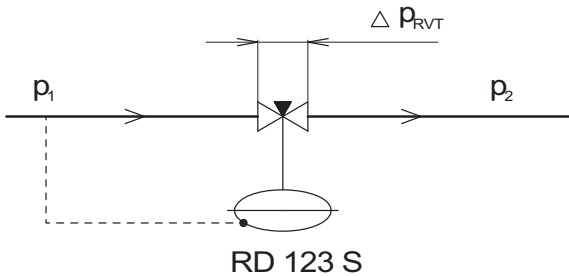
Scheme of typical regulation loop with bypass valve RD 123 R in the crossover



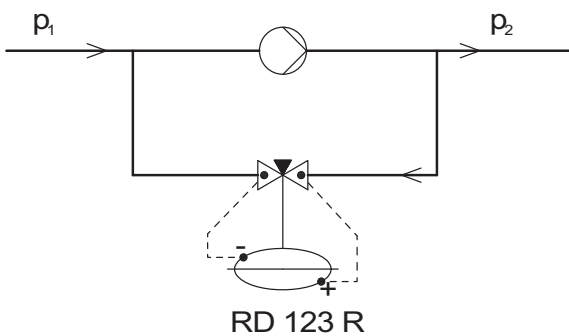
Basic scheme of piping for input pressure regulator RD 123 S

- with input of pressure signal from sample point on the pipeline

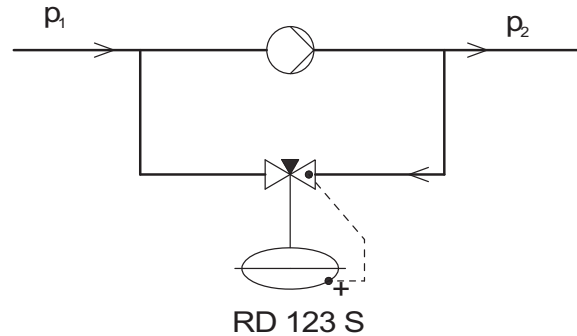
- with input of pressure signal from sample point on the valve



Scheme of piping for bypass valve RD 123 R in by-pass of the pump



Scheme of piping for input pressure regulator RD 123 S in by-pass of the pump





RD 122 D RD 122 P RD 122 V

BEE line

**DN 15 - 50
PN 25**

Self-acting regulator of differential pressure series RD 122 D is designed to keep a constant differential pressure value of given appliance. Such a function is ensured by a diaphragm exposed to effects of input and output pressure of the appliance. Deflection of the diaphragm is transferred to the valve plug and **it closes the valve upon increase of differential pressure value.**

Self-acting regulator of differential pressure with flow restrictor RD 122 P ensures requirement for restriction of maximum flow through the appliance apart from its basic function (keeping constant differential pressure value). This function is provided by a secondary plug adjusted for the required maximum flow by the operator.

Self-action regulator of output pressure type RD 122 V is designed to reduce output pressure of the appliance and to maintain it on set value. This function is enabled by diaphragm exposed to the effects of the output pressure and actuated by spring from the second side. Deflection of the diaphragm is transferred to the valve plug and **it closes the valve upon increase of output pressure value.**

In case when required value of regulated pressure quantity is within scope of two spring ranges, it is recommended to choose the spring with lower values to ensure sensitivity of the regulator. Owing to a pressure-balanced plug, value of differential pressure is not affected by pressure conditions within the valve.

Technical data			
Series	RD 122 D	RD 122 P	RD 122 V
Version	Differential pressure regulator	Differential pressure regulator with flow restrictor	Output pressure regulator
Function	The valve closes upon increase of differential pressure value		The valve closes upon increase of output pressure value
Nominal diameter range	DN 15 to 50		
Nominal pressure	PN 25		
Operating temperature range	+2 to +150 °C, version with condensate wells up to +180°C		
Body material	Nodular cast iron EN-JS1025		
Plug material	Stainless steel 1.4006		
Seat material	Stainless steel 1.4021		
Stem material	Stainless steel 1.4305		
Material of diaphragm and sealing	EPDM		
Material of diaphragm chamber bonnets	Nodular cast iron / Carbon steel		
Connection	Externally threaded coupling + screw joints Flanges with raised faces Externally threaded coupling + weld unions		
Material of weld unions	DN 15 to 32 ... 1.0038 DN 40 and 50 ... 1.0580 / 11 353.1		
Plug type	Contoured, pressure-balanced, with soft seat sealing		
Kvs values	0,63 to 32 m ³ /h	0,63 to 28,5 m ³ /h	0,63 to 32 m ³ /h
Leakage rate	Class IV. - S1 acc. to ČSN-EN 1349 (5/2001) (< 0.0005 % Kvs)		
Leakage rate of flow resistor	---	not guaranteed	---
Range of adjust. operating press. values Δp_{set}	see specification code table		

Dimensions of RD 122 ../T with thread couplings and RD 122 ../W with weld unions

DN	L	L ₁	V ₁	V ₂	H ₁ [*]	H ₂ [*]	H ₂ ^{**}	A	B	C	D	ØM	ØN	F
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		[mm]		[mm]	[mm]	[mm]	[mm]
15	100	145	44.5	100	119	254	287	Rp 1/2	25	G 1	41	16.1	21.3	9.5
20	100	148	44.5	100	119	254	287	Rp 3/4	32	G 1 1/4	51	21.7	26.9	11.5
25	105	159	44.5	100	119	254	287	Rp 1	38	G 1 1/2	56	28.5	33.7	12
32	130	192	63	119	139	274	307	Rp 1 1/4	47	G 2	71	37.2	42.4	12.5
40	140	206	63	119	139	274	307	Rp 1 1/2	53	G 2 1/4	76	43.1	48.3	15.5
50	160	232	63	119	139	274	307	Rp 2	66	G 2 3/4	91	54.5	60.3	16.5

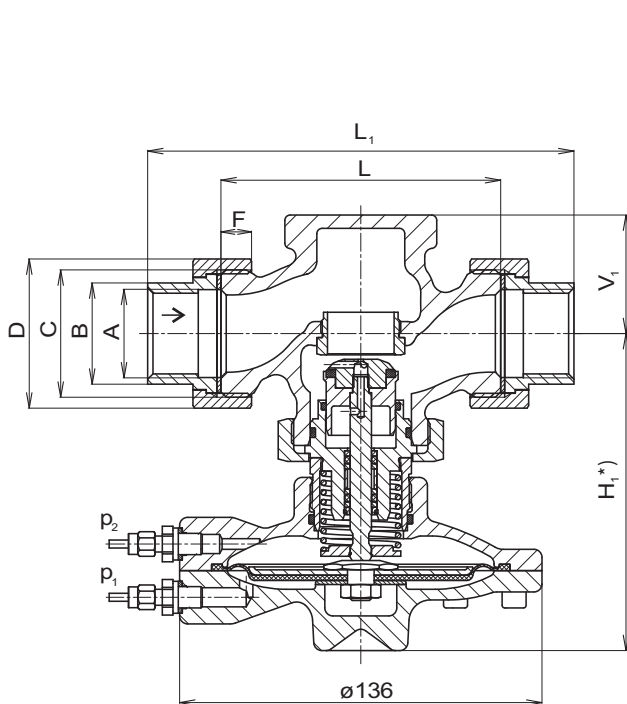
Weights of RD 122 ../T with thread couplings and RD 122 ../W with weld unions

Function	D, V		P	
	m ₁ [*]	m ₂ [*]	m ₁ [*]	m ₂ [*]
DN	[kg]	[kg]	[kg]	[kg]
15	3.6	4.1	4	4.5
20	3.9	4.4	4.3	4.8
25	4.2	4.7	4.6	5.1
32	5.6	6.1	6.4	6.9
40	6.5	7	7.4	7.9
50	8.6	9.1	9.9	10.4

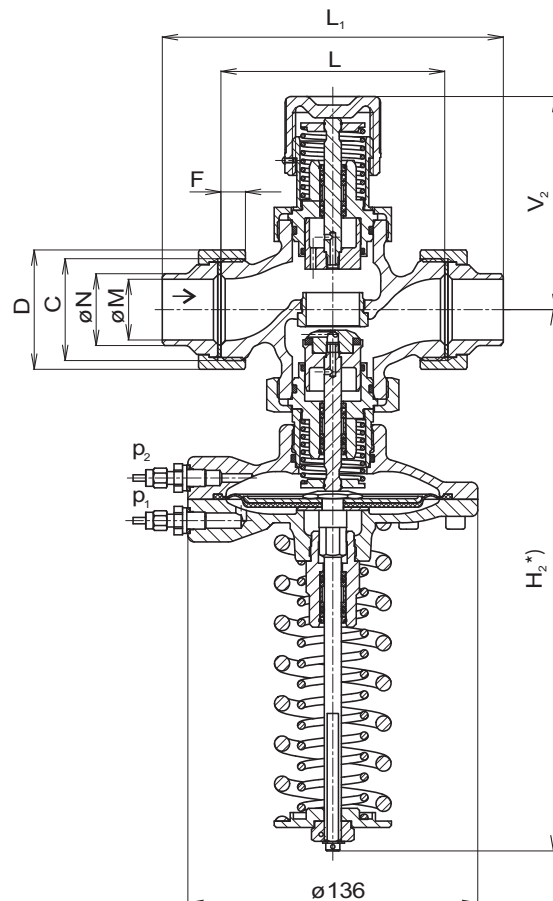
*) H₁, m₁ ... dimensions and weights for the valves with constant differential pressure
 H₂, m₂ ... dimensions and weights for the valves with adjustable differential pressure

***) For version up to 180°C. Weight of adapter 0,2 kg

Valve RD 122 D../T with thread couplings with constant differential pressure



Valve RD 122 P../W with weld unions with adjustable differential pressure



Dimensions of RD 122 ../F with flange connection

DN	L_1	V_1	V_2	$H_1^*)$	$H_2^*)$	$H_2^{**})$	$\varnothing D_1$	$\varnothing D_2$	$\varnothing D_3$	a	f	n	$\varnothing d$
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		[mm]
15	130	44.5	100	119	254	287	95	65	45	16	2	4	14
20	150	44.5	100	119	254	287	105	75	58	16	2	4	14
25	160	44.5	100	119	254	287	115	85	68	18	2	4	14
32	180	63	119	139	274	307	140	100	78	18	2	4	18
40	200	63	119	139	274	307	150	110	88	19	3	4	18
50	230	63	119	139	274	307	165	125	102	19	3	4	18

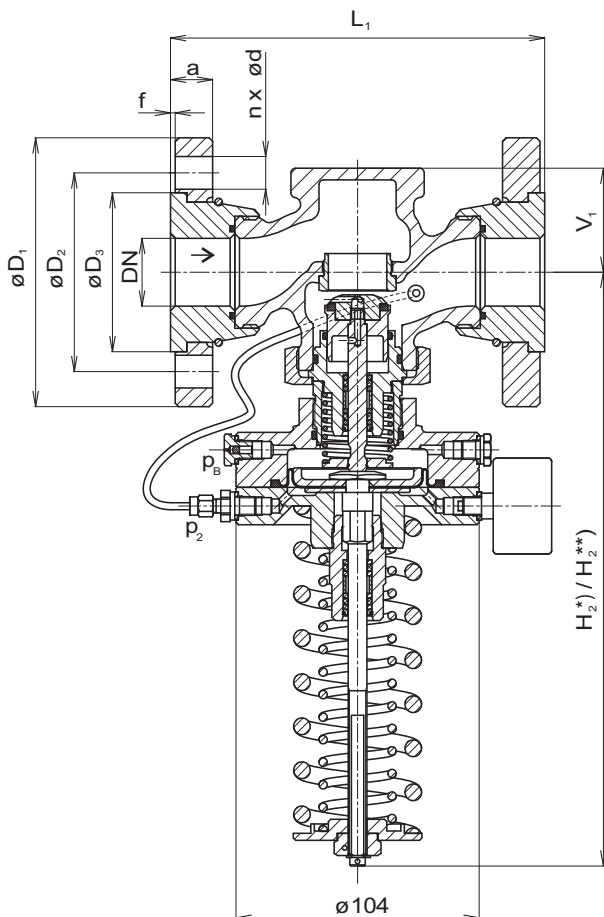
Weights of RD 122 ../F with flange connection

Function	D, V		P	
	$m_1^*)$	$m_2^*)$	$m_1^*)$	$m_2^*)$
DN	[kg]	[kg]	[kg]	[kg]
15	4.7	5.2	5.1	5.6
20	5.4	5.9	5.8	6.3
25	6.3	6.8	6.7	7.2
32	8.4	8.9	9.2	9.7
40	9.9	10.4	10.8	11.3
50	12.8	13.3	14.1	14.6

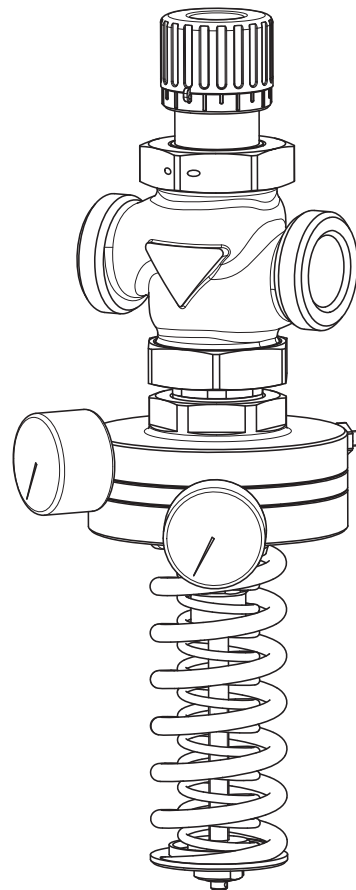
*) $H_1, m_1 \dots$ dimensions and weights for the valves with constant differential pressure
 $H_2, m_2 \dots$ dimensions and weights for the valves with adjustable differential pressure

***) For version up to 180°C. Weight of adapter 0,2 kg

Valve RD 122 V ../F with raised face flanges and adjustable differential pressure



Version with manometer



Specification code for ordering of valves RD 122 D, P, V

		XX	XXX	X	XXXX	XX	/	XXX	-	XX	/	X			
1. Valve	Self-acting pressure regulator	RD													
2. Series	Pressure-balanced		122												
3. Function	Differential pressure regulator										D				
	Differential pressure regulator with flow restrictor										P				
	Output pressure regulator										V				
4. Version	Function D, P	With constant differential pressure value										1			
		With adjustable differential pressure value, diaphragm 63 cm ²											2		
		With adjustable differential pressure value, diaphragm 26 cm ²											3		
		With adjustable differential pressure value, diaphragm 26 cm ² , with manometers											4		
	Function V	Diaphragm 63 cm ² , without manometer, pressure sampling point on the pipeline											2		
		Diaphragm 26 cm ² , with manometer, direct inlet pressure sampling point on the pipeline											3		
Diaphragm 26 cm ² , with manometer, with integral pressure sampling point												4			
5. Range of operating pressure setting / spring colour	Function D, P	DN 15 - 25	10 kPa									11			
			15 - 60 kPa / red										22		
			30 - 210 kPa / red + yellow											23	
			60 - 400 kPa / red + black											24	
		DN 32 - 50	10 kPa ¹⁾											10	
			20 kPa											11	
			15 - 60 kPa ¹⁾ / red											20	
			25 - 70 kPa / red											22	
		DN 15 - 50	40 - 220 kPa / red + yellow											23	
			70 - 410 kPa / red + black											24	
		DN 15 - 50	150 - 550 kPa / red + yellow											33	
			220 - 1000 kPa / red + black											34	
		DN 15 - 50	150 - 550 kPa / red + yellow											43	
			220 - 1000 kPa / red + black											44	
		Function V	DN 15 - 50	25 - 70 kPa / red										22	
				40 - 220 kPa / red + yellow											23
				70 - 410 kPa / red + black											24
				150 - 550 kPa / red + yellow											33
220 - 1000 kPa / red + black													34		
150 - 550 kPa / red + yellow													43		
		220 - 1000 kPa / red + black										44			
6. Impulse pipeline	Without impulse pipeline (only for V4)											0			
	Standard 1,6 m (neck M8x1)											1			
	Extended 2,5 m (neck M8x1)												2		
	Length 1,6 m, with cock R 1/4 (neck R1/4)												3		
	Extended 2,5 m, with cock R 1/4 (neck R1/4)												4		
	Length 1,6 m (neck G1/2)												5		
	Extended 2,5 m (neck G1/2)												6		
	Other execution after agreement												9		
7. Kvs	Column header according to Kvs table (page no. 18)											X			
8. Pressure nominal	PN 25											25			
9. Max. operating temp.	150°C											150			
	²⁾ not applicable for version V4 With condensate wells up to 180°C ²⁾											180			
10. Nominal size	DN 15 - 50											XX			
11. Connection	Threaded couplings											T			
	Flange PN 25 with raised-faced flanges											F			
	Weld unions											W			

Tolerance of the start and end values from the setting range is ± 10%

Note: Dimensions for PN 25, PN 16 and PN 10 flanges are identical in the range of DN 15 - 50

Ordering example: **RD122 D 2411 25/150-25/W**



RD 12 R RD 123 S

BEE line

**DN 15 - 50
PN 25**

Self-acting bypass valve RD 123 R is designed to by-pass appliance when set pressure difference is exceeded. Such a function is ensured by a diaphragm exposed to the effects of input and output pressure of the appliance. Deflection of the diaphragm is transferred to the valve plug and **it opens the valve upon increase of differential pressure value.**

Self-acting regulator of input pressure RD 123 S is designed to limit maximum pressure in the system. Diaphragm is exposed to the pressure from the pipeline and **the increase of this pressure over set value causes opening of the valve.**

In case when required value of regulated pressure quantity is within scope of two spring ranges, it is recommended to choose the spring with lower values to ensure sensitivity of the regulator. Owing to a pressure-balanced plug, value of controlled pressure is not affected by pressure conditions within the valve.

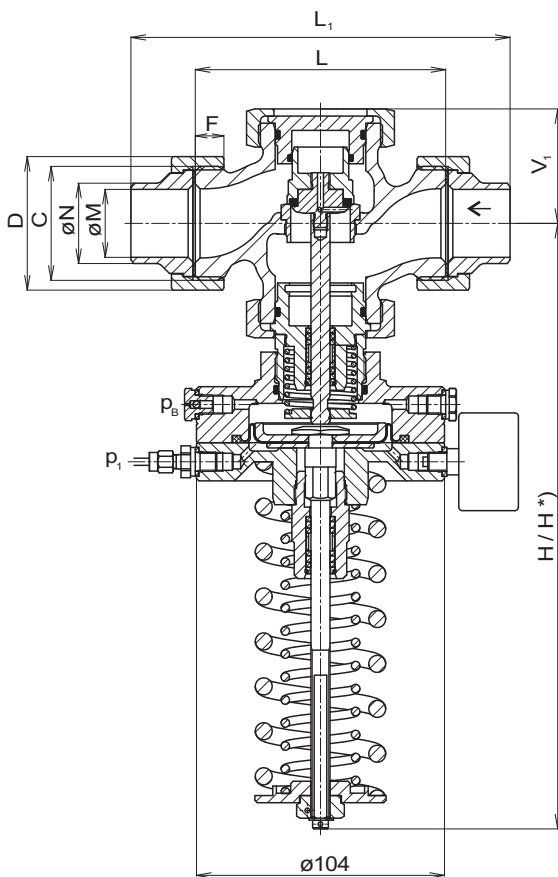
Technical data		
Series	RD 123 R	RD 123 S
Version	Bypass valve	Input pressure regulator
Nominal diameter range	DN 15 to 50	
Nominal pressure	PN 25	
Operating temperature range	+2°C to +150°C, version with condensate well up to +180°C	
Body material	Stainless steel EN-JS1030	
Plug material	Stainless steel 1.4006	
Seat material	Stainless steel 1.4021	
Stem material	Stainless steel 1.4305	
Material of diaphragm and sealing	EPDM	
Material of diaphragm chamber bonnets	Spheroidal cast iron / Carbon steel	
Connection	Externally threaded coupling + screw joints Flanges with raised faces Externally threaded coupling + weld unions	
Material of weld unions	DN 15 to 32 ... 1.0038 DN 40 to 50 ... 1.0580 / 11 353.1	
Plug type	Contoured, pressure-balanced, with soft seat sealing	
Kvs values	4,5 to 27,5 m ³ /h	
Leakage rate	Class IV. - S1 acc. to ČSN-EN 1349 (5/2001) (< 0.0005 % Kvs)	
Range of adjust. operating press. values Δp_{set}	63 cm ² : 30 - 75 kPa, 40 - 220 kPa, 50 - 385 kPa 26 cm ² : 100 - 570 kPa, 130 - 1000 kPa	

Dimensions and weights of RD 123 ../T with thread couplings and RD 123 ../W with weld unions

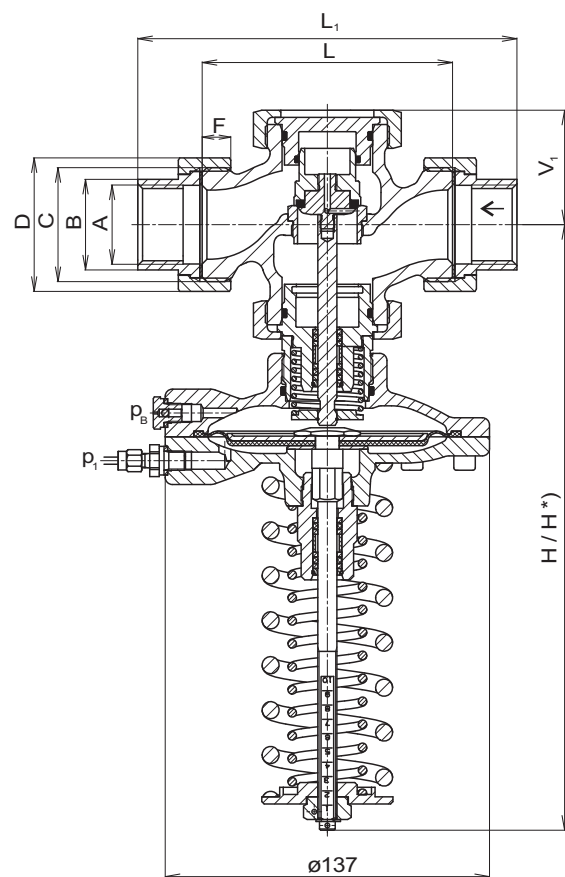
DN	L	L ₁	V ₁	H	H [*])	A	B	C	D	ØM	ØN	F	m
	[mm]	[mm]	[mm]	[mm]	[mm]		[mm]		[mm]	[mm]	[mm]	[mm]	[kg]
15	100	145	48	254	287	Rp 1/2	25	G 1	41	16.1	21.3	9.5	5
20	100	148	48	254	287	Rp 3/4	32	G 1 1/4	51	21.7	26.9	11.5	5.3
25	105	159	48	254	287	Rp 1	38	G 1 1/2	56	28.5	33.7	12	5.5
32	130	192	67	274	307	Rp 1 1/4	47	G 2	71	37.2	42.4	12.5	6.9
40	140	206	67	274	307	Rp 1 1/2	53	G 2 1/4	76	43.1	48.3	15.5	8
50	160	232	67	274	307	Rp 2	66	G 2 3/4	91	54.5	60.3	16.5	9.8

*) For version RD 123 S up to 180°C. Weight of adapter 0,2 kg

Valves RD 123 S ../T with weld unions



Valves RD 123 S ../T with thread couplings

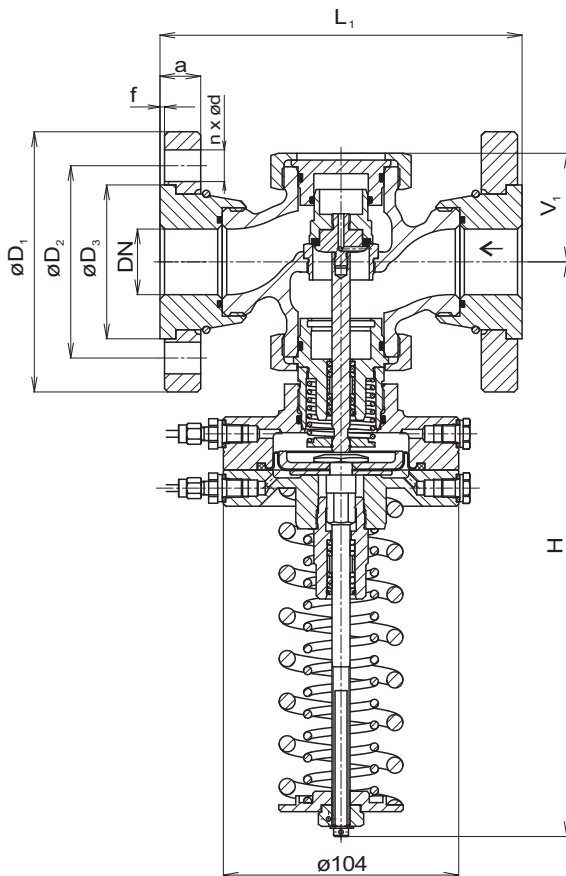


Dimensions and weights for RD 123 ../F with flanges

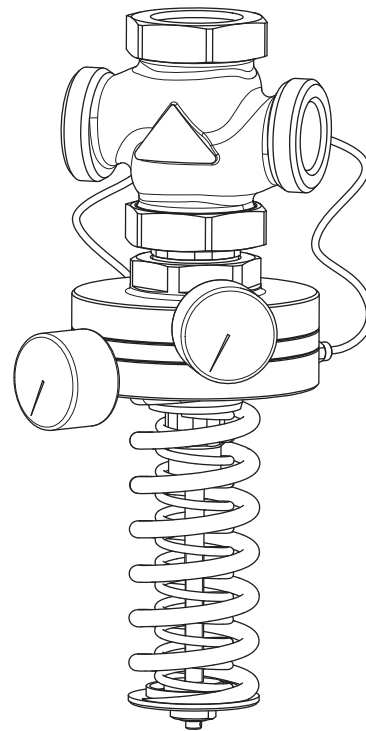
DN	L ₁ [mm]	V ₁ [mm]	H [mm]	H [*]) [mm]	ØD ₁ [mm]	ØD ₂ [mm]	ØD ₃ [mm]	a [mm]	f [mm]	n	Ød [mm]	m [kg]
15	130	48	254	287	95	65	45	16	2	4	14	6.2
20	150	48	254	287	105	75	58	16	2	4	14	7
25	160	48	254	287	115	85	68	18	2	4	14	7.7
32	180	67	274	307	140	100	78	18	2	4	18	10
40	200	67	274	307	150	110	88	19	3	4	18	11.5
50	230	67	274	307	165	125	102	19	3	4	18	13.8

*) For version up to 180°C. Weight of adapter 0,2 kg

Valves RD 123 R ../F with raised face flanges



Version with manometers and integral sampling point



Specification code for ordering of valves RD 123 R, S			XX	XXX	X	XXXX	XX	/	XXX	-	XX	/	X		
1. Valve	Self-acting pressure regulator		RD												
2. Series	Pressure-balanced			123											
3. Function	Bypass valve											R			
	Input pressure regulator												S		
4. Version	Function	R	Diaphragm 63 cm ²										2		
			Diaphragm 26 cm ²											3	
		Diaphragm 26 cm ² , with manometers												4	
		S	Diaphragm 63 cm ²												2
			Diaphragm 26 cm ² , with manometers												4
5. Range of operating pressure setting / spring colour	Diaphragm 63 cm ²	30 - 75 kPa / red											22		
		40 - 220 kPa / red + yellow												23	
		50 - 385 kPa / red + black												24	
	Diaphragm 26 cm ²	100 - 570 kPa / red + yellow												33	
		130 - 1000 kPa / red + black												34	
	Diaphragm 26 cm ²	100 - 570 kPa / red + yellow												43	
130 - 1000 kPa / red + black												44			
6. Impulse pipeline	Without impulse pipeline (integral sampling point)												0		
	Standard 1,6 m (neck M8x1)												1		
	Extended 2,5 m (neck M8x1)												2		
	Length 1,6 m, with cock R 1/4 (neck R1/4)												3		
	Extended 2,5 m, with cock R 1/4 (neck R1/4)												4		
	Length 1,6 m (neck G1/2)												5		
	Extended 2,5 m (neck G1/2)												6		
	Other version after agreement													9	
7. Kvs	Column header according to Kvs table (page no. 18)												X		
8. Pressure nominal	PN 25												25		
9. Max. operating temp.	150 °C												150		
	With condensate well up to 180°C												180		
10. Nominal size	DN 15 - 50												XX		
11. Connection	Threaded couplings												T		
	Flange PN 25 with raised face flanges												F		
	Weld unions												W		

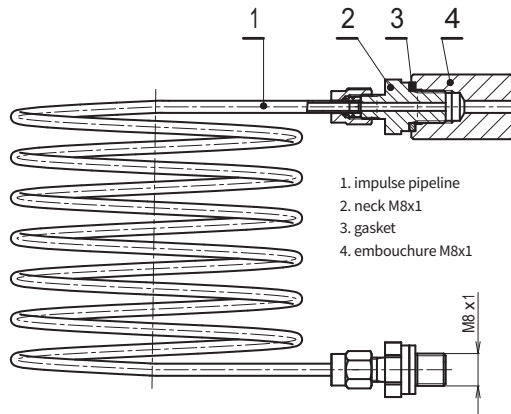
Tolerance of the start and end values from the setting range is $\pm 10\%$

Note: Dimensions for PN 25, PN 16 and PN 10 flanges are identical in the range of DN 15 - 50

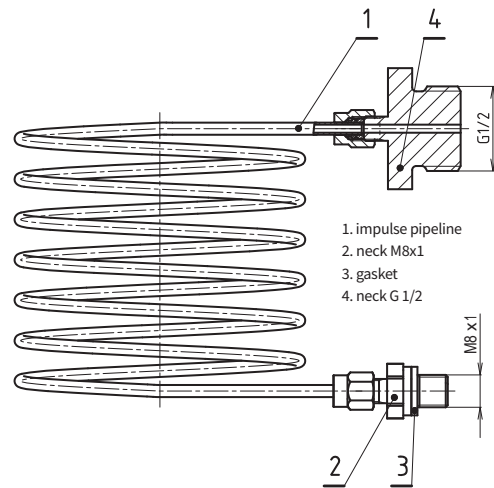
Ordering example: **RD123 R 3311 25/150-25/W**

Accessories

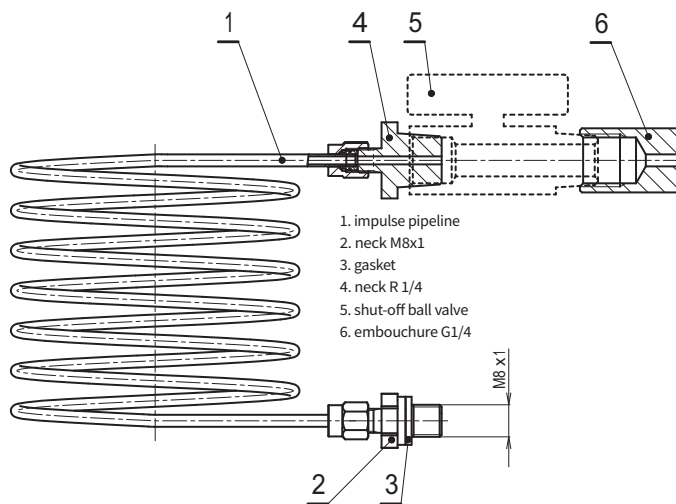
Standard impulse pipeline (neck M8x1)



Impulse pipeline (neck G 1/2)

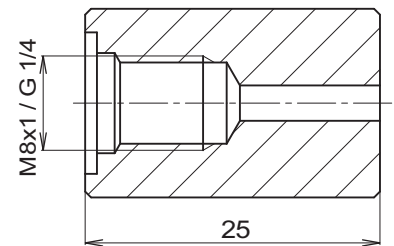


Impulse pipeline with shut-off ball valve R 1/4 (neck R 1/4)



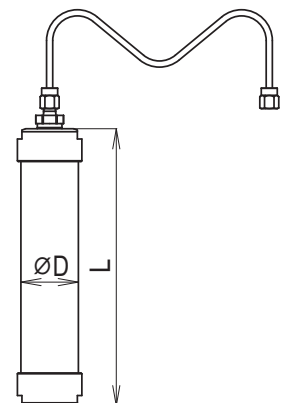
Welding coupling for connecting of impulse pipeline

It is in the scope of supply as standard
Material: **1.0533**



Cooling condensate well

Supplied with impulse pipeline VM M72 0026



Order codes for RD 12x accessories

Standard impulse pipeline (neck M8x1)

length 1,6 m	VM M72 0022*
length 2,5 m	VM M72 0023*

Impulse pipeline with shut-off ball valve R 1/4 (neck R 1/4)

length 1,6 m	VM M72 0024**
length 2,5 m	VM M72 0025**

Impulse pipeline (neck G 1/2)

length 1,6 m	VM M72 0040
length 2,5 m	VM M72 0041

Welding coupling for connecting of impulse pipeline

M8x1 thread	VM 43 0046
G1/4 thread	VM 43 0048

Cooling condensate well (VM M28 0003)

impulse pipeline 0,2 m (output)	VM M72 0026
condensate well	VM S28 0001

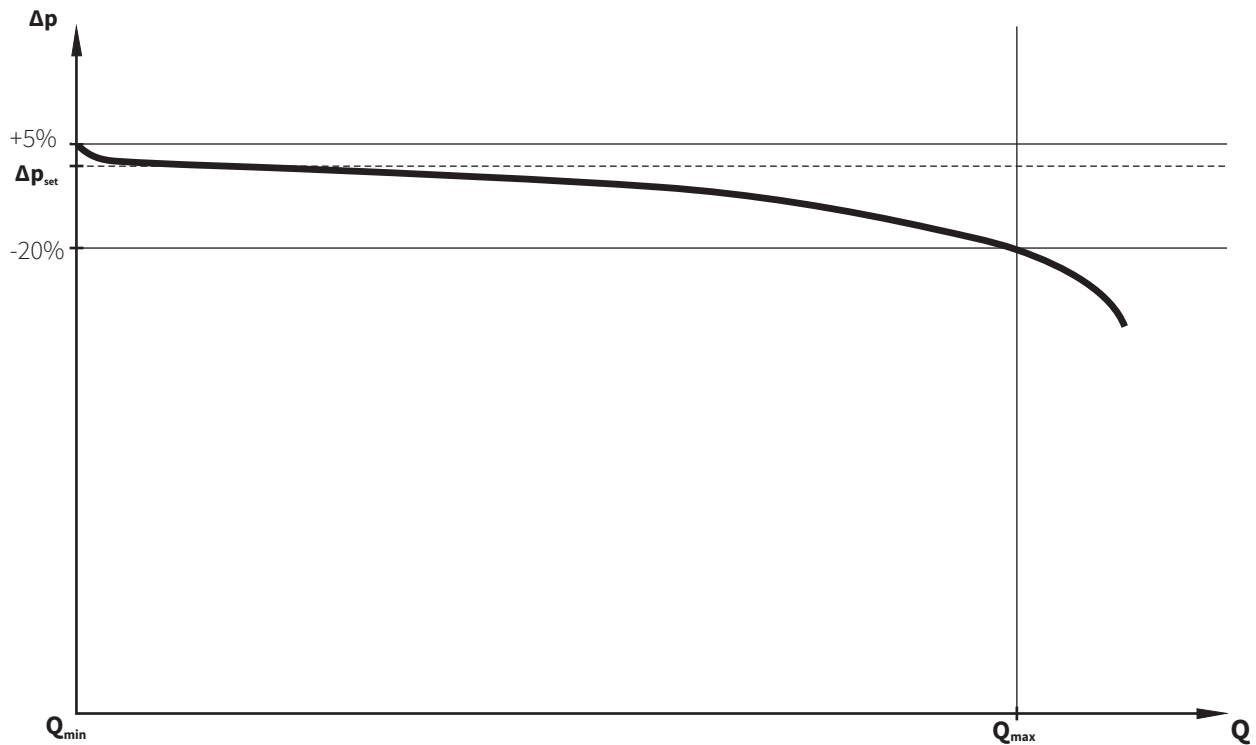
* already includes VM 43 0046 welding coupling

** already includes VM 43 0048 welding coupling

Dimensions of cooling cond. well

Diaphragm	L	ØD
	[mm]	[mm]
26 cm ²	135	28
63 cm ²		

Δp flow rate diagram for RD 122 D, P, V



Q_{max} [m³/h] table for selected set pressure differential values Δp_{set}

The values have been measured at total pressure drop $\Delta p_{disp} = 2 \times \Delta p_{set}$

DN	Kvs	Δp _{set} [kPa]								Coefficient k
		10	25	40	60	80	100	180	400	
15	2.5	0.85	1.60	2.05	2.25	2.40	2.70	3.80	4.70	1
15	5	1.35	2.20	3.00	3.80	4.00	4.70	6.50	7.60	1.12
20	8	1.85	3.25	4.45	5.50	6.20	7.00	9.50	12.00	1.15
25	10	2.65	4.60	6.40	7.80	8.80	9.80	13.00	16.00	1.1

The values have been measured at total pressure drop $\Delta p_{disp} = 2 \times \Delta p_{set}$

DN	Kvs	Δp _{set} [kPa]								Coefficient k
		10	20	30	45	65	100	180	400	
32	15	5.50	6.70	8.70	10.50	12.70	14.90	20.50	25.00	1
40	21	6.30	10.80	11.90	13.30	16.00	20.00	26.40	33.00	1.05
50	32	7.00	12.10	14.40	17.50	21.00	26.50	34.00	42.00	1.25

For in-between values of Δp_{set}, it is possible to calculate an approximate value of Q_{max} according to the following formula:

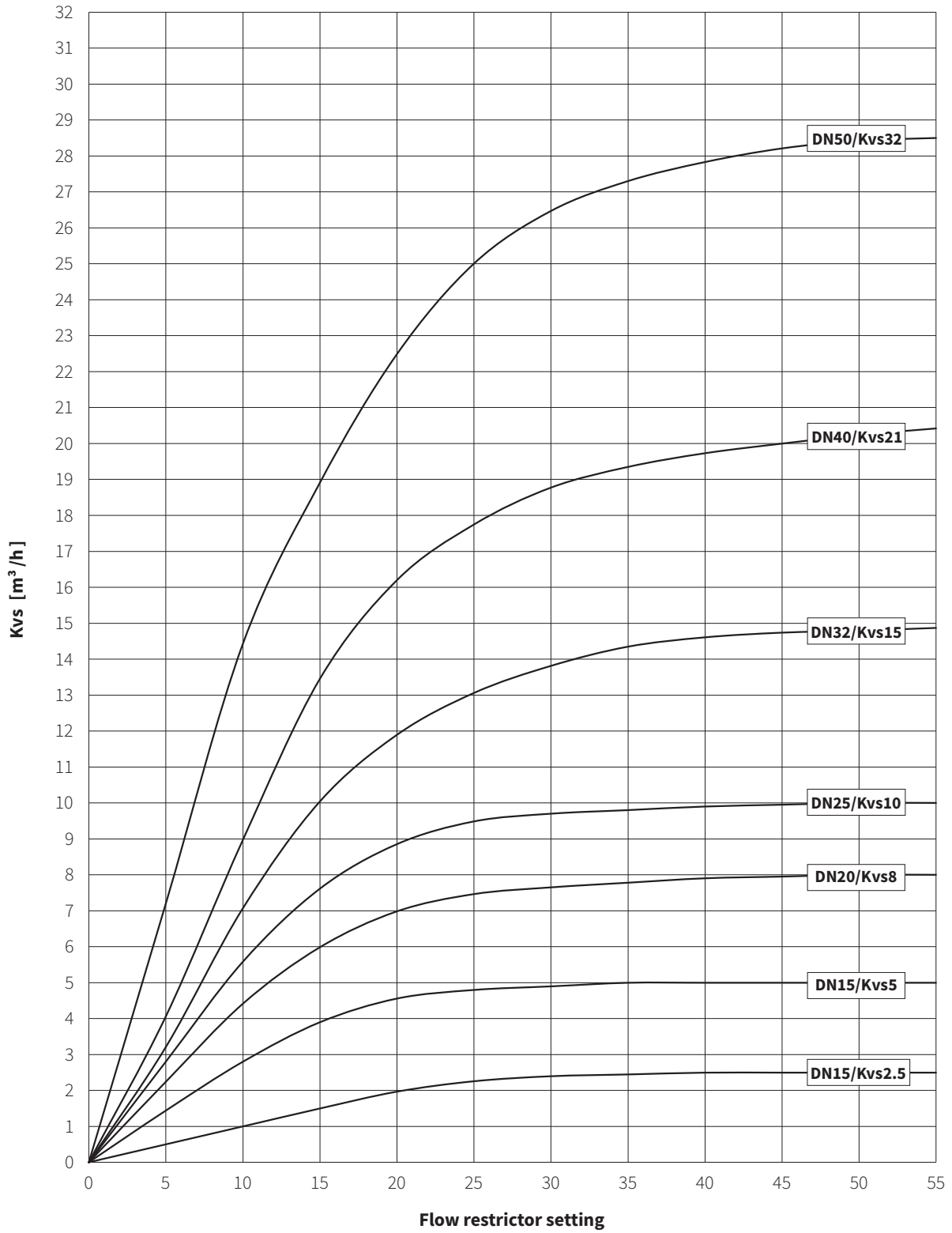
$$Q_{max} = \frac{Kvs}{k} \cdot \sqrt{\frac{\Delta p_{set}}{100}}$$

where: Δp_{set} stands for set differential pressure value [kPa]

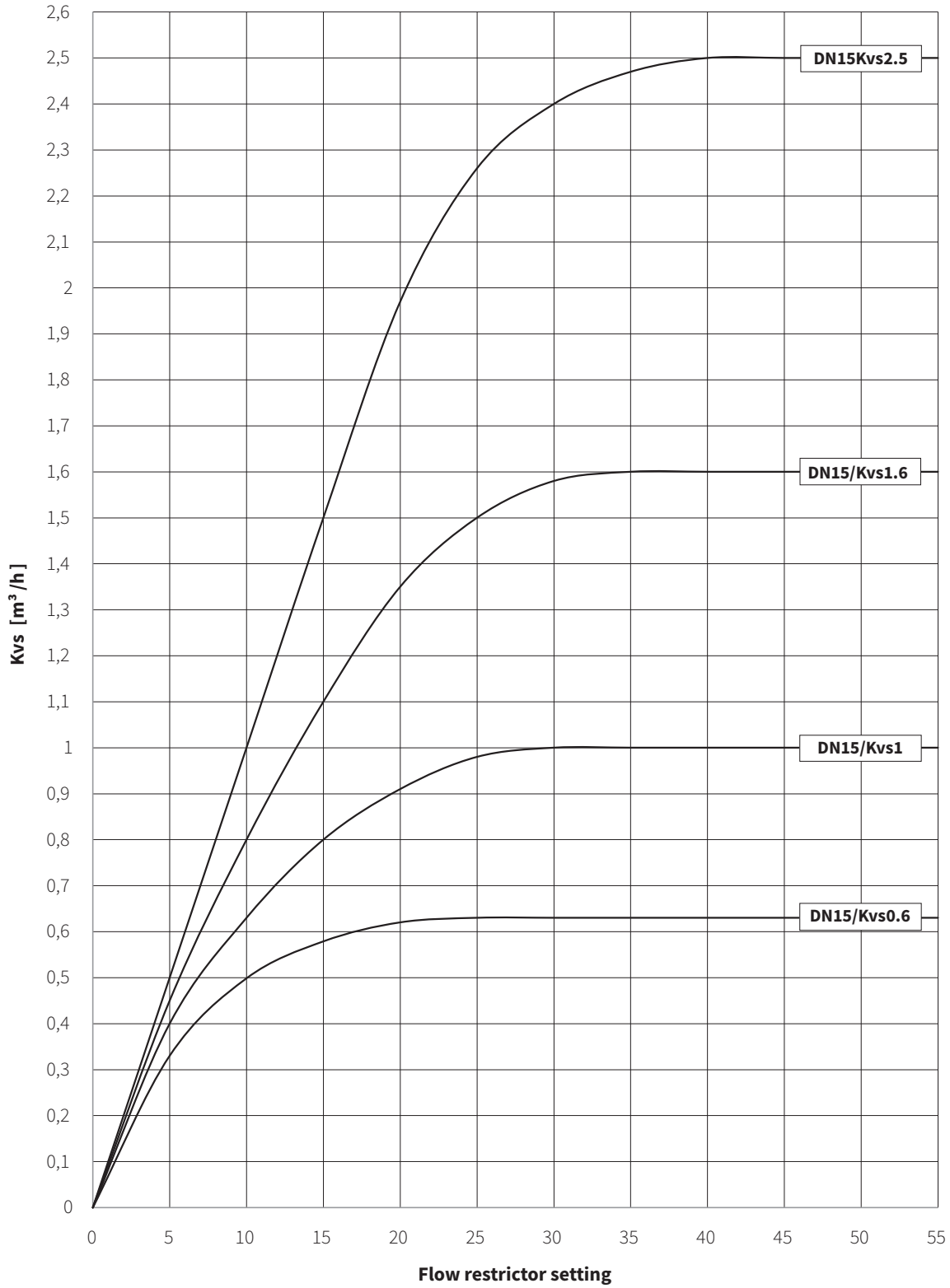
k is correction coefficient [-]

For minimum flow rate Q_{min} the following applies Q_{min} = 0.

RD 122 P - Kvs flow restrictor setting diagram

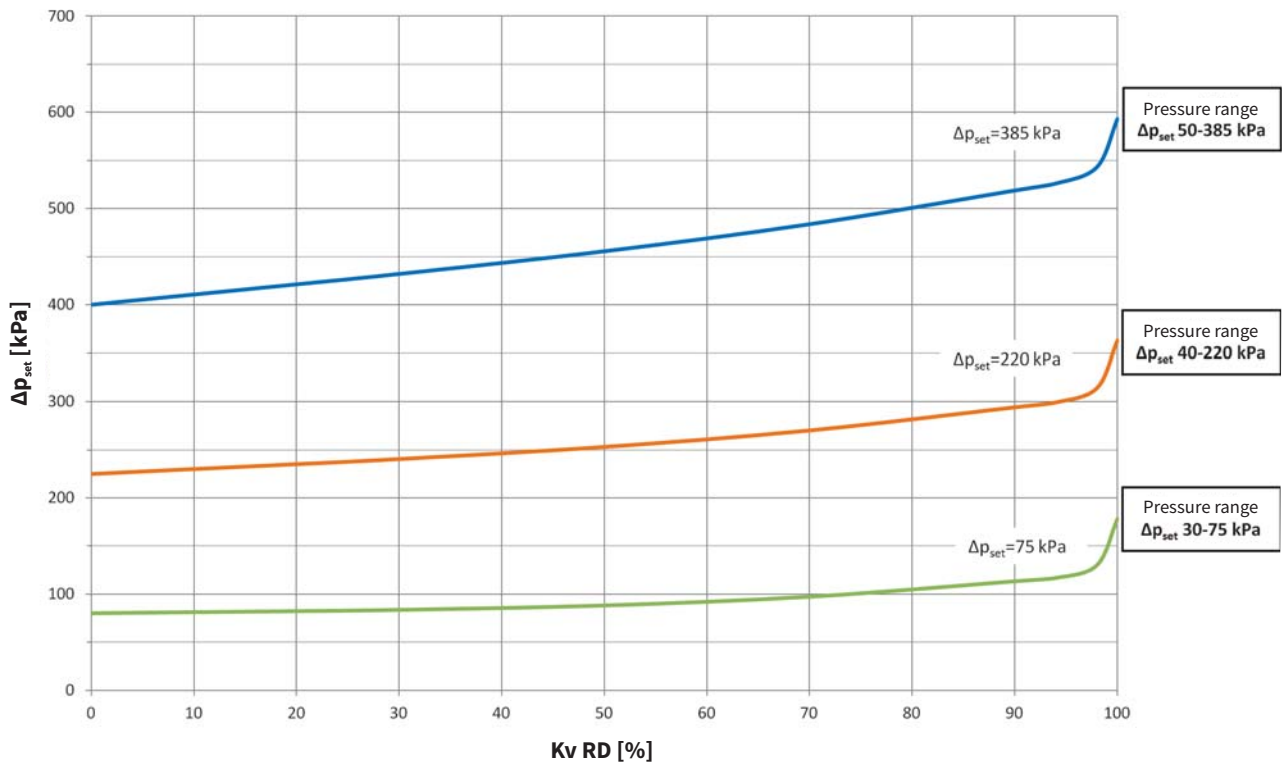


RD 122 P - Kvs flow restrictor setting diagram

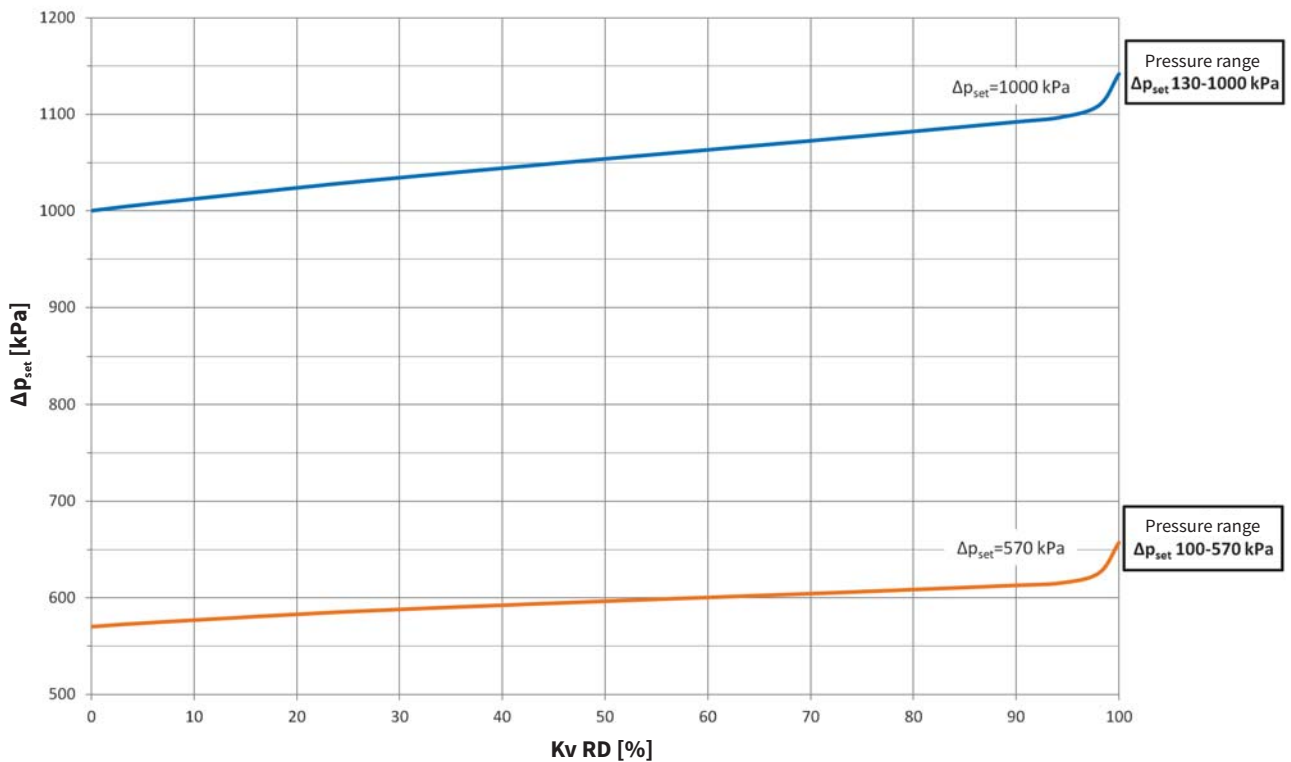


Operating chart of RD 123 R, S (the valve opens upon increase of pressure / pressure difference)

Operating chart of RD 123 R, S (chamber 63 cm²) DN 15 - 50



Operating chart of RD 123 R, S (chamber 26 cm²) DN 15 - 50



Kvs values

RD 122					
DN	Kvs [m ³ /h]				
	1	2	3	4	5
15	5	2.5	1.6	1.0	0.63
20	8	---	---	---	---
25	10	---	---	---	---
32	15	---	---	---	---
40	21	---	---	---	---
50	32 / 28.5 *)	---	---	---	---

RD 123	
DN	Kvs [m ³ /h]
15	4,5
20	7
25	10
32	14
40	22,5
50	27,5

*) Kvs value for self-acting regulator with flow restrictor RD 122 P

Maximum permissible pressure values [MPa] according to ČSN EN 1092-2

Material	PN	Temperature [°C]				
		RT ¹⁾	100	120	150	180
Spheroidal cast iron EN-JS1030	25	2,50	2,50	2,50	2,43	2,38

¹⁾ -10°C to 50°C



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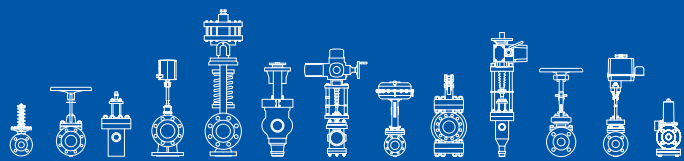
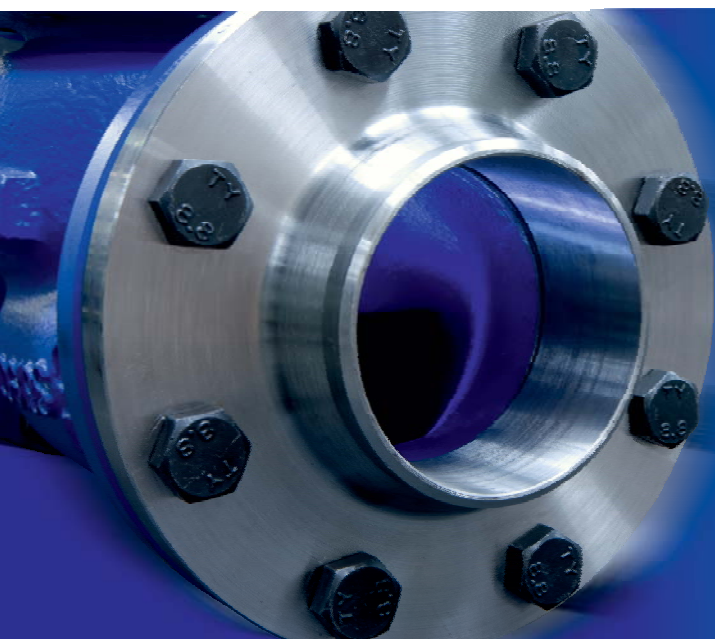
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